Study Data Tabulation Model Implementation Guide:
Human Clinical Trials

Prepared by the
CDISC Submission Data Standards Team

Notes to Readers

- This is the implementation guide for Human Clinical Trials corresponding to Version 1.2 of the CDISC Study Data Tabulation Model.
- This Implementation Guide comprises version 3.1.2 (V3.1.2) of the CDISC Submission Data Standards and domain models.

Revision History

Date	Version	Summary of Changes
2008-11-12	3.1.2 Final	Released version reflecting all changes and corrections identified during comment period.
2007-07-25	3.1.2 Draft	Draft for comment.
2005-08-26	3.1.1 Final	Released version reflecting all changes and corrections identified during comment period.
2004-07-14	3.1	Released version reflecting all changes and corrections identified during comment periods.

Note: Please see Appendix F for Representations and Warranties, Limitations of Liability, and Disclaimers.

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1 Introduction

1.1 PURPOSE

This document comprises the CDISC Version 3.1.2 (V3.1.2) Study Data Tabulation Model Implementation Guide for Human Clinical Trials (SDTMIG), which has been prepared by the Submissions Data Standards (SDS) team of the Clinical Data Interchange Standards Consortium (CDISC). Like its predecessors, V3.1.2 is intended to guide the organization, structure, and format of standard clinical trial tabulation datasets submitted to a regulatory authority such as the US Food and Drug Administration (FDA). V3.1.2 supersedes all prior versions of the CDISC Submission Data Standards.

The SDTMIG should be used in close concert with the current version of the CDISC Study Data Tabulation Model (SDTM, available at http://www.cdisc.org/standards) that describes the general conceptual model for representing clinical study data that is submitted to regulatory authorities and should be read prior to reading the SDTMIG. V3.1.2 provides specific domain models, assumptions, business rules, and examples for preparing standard tabulation datasets that are based on the SDTM.

Tabulation datasets, which are electronic listings of individual observations for a subject that comprise the essential data reported from a clinical trial, are one of four types of data currently submitted to the FDA along with patient profiles, listings, and analysis files. By submitting tabulations that conform to the standard structure, sponsors may benefit by no longer having to submit separate patient profiles or listings with a product marketing application. SDTM datasets are not intended to fully meet the needs supported by analysis datasets, which will continue to be submitted separately in addition to the tabulations. Since July 2004, the FDA has referenced use of the SDTM in the Study Data Specifications for the Electronic Common Technical Document, available at http://www.fda.gov/cder/regulatory/ersr/Studydata-v1.2.pdf.

The availability of standard submission data will provide many benefits to regulatory reviewers. Reviewers can be trained in the principles of standardized datasets and the use of standard software tools, and thus be able to work with the data more effectively with less preparation time. Another benefit of the standardized datasets is that they will support 1) the FDA's efforts to develop a repository for all submitted trial data, and 2) a suite of standard review tools to access, manipulate, and view the tabulations. Use of these data standards is also expected to benefit industry by streamlining the flow of data from collection through submission, and facilitating data interchange between partners and providers. Note that the SDTM represents an interchange standard, rather than a presentation format. It is assumed that tabulation data will be transformed by software tools to better support viewing and analysis.

This document is intended for companies and individuals involved in the collection, preparation, and analysis of clinical data that will be submitted to regulatory authorities.

1.2 ORGANIZATION OF THIS DOCUMENT

This document is organized into the following sections:

- Section 1, Introduction, provides an overall introduction to the V3.1.2 models and describes changes from prior versions.
- Section 2, Fundamentals of the SDTM, recaps the basic concepts of the SDTM, and describes how this implementation guide should be used in concert with the SDTM.
- Section 3, Submitting Data in Standard Format, explains how to describe metadata for regulatory submissions, and how to assess conformance with the standards.
- Section 4, Assumptions for Domain Models, describes basic concepts, business rules, and assumptions that should be taken into consideration before applying the domain models.

- Section 5, Models for Special-Purpose Domains, describes special-purpose domains, including Demographics, Comments, Subject Visits, and Subject Elements.
- Section 6, Domain Models Based on the General Observation Classes, provides specific metadata models based on the three general observation classes, along with assumptions and example data.
- Section 7, Trial Design Datasets, provides specific metadata models, assumptions, and examples.
- Section 8, Representing Relationships and Data, describes how to represent relationships between separate domains, datasets, and/or records, and information to help sponsors determine where data belongs in the SDTM.
- Appendices provide additional background material and describe other supplemental material relevant to implementation.

1.3 RELATIONSHIP TO PRIOR CDISC DOCUMENTS

This document, together with the SDTM, represents the most recent version of the CDISC Submission Data Domain Models. Since all updates are intended to be backward compatible the term "V3.x" is used to refer to Version 3.1 and all subsequent versions. The most significant changes since the prior version, V3.1.1, include:

- New domain models for Clinical Events and Findings About Events and Interventions (formerly Clinical Findings in v3.1.2 Draft), and inclusion of previously posted domain models for Protocol Deviations, Drug Accountability, pharmacokinetic data, and microbiology.
- Additional assumptions and rules for representing common data scenarios and naming of datasets in Section 4, including guidance on the use of keys and representing data with multiple values for a single question.
- Corrections and clarifications regarding the use of ISO 8601 date formats in Section 4.1.4.
- Additional guidance about how to address Findings data collected as a result of Events or Interventions, and data submitted for pre-specified Findings and Events.
- The use of new SDTM variables (Section 6.2 of the SDTM).
- Implementation advice on the use of new timing variables, --STRTPT, --ENRTPT, --STTPT, and --ENTPT (Section 4.1.4.7), and the new variable --OBJ (Section 6.4.3).
- Listing of Qualifier variables from the same general observation class that would not generally be used in the standard domains.
- Several changes to the organization of the document, including the reclassification of Subject Elements (SE) and Subject Visits (SV) as special-purpose domain datasets in Section 5 (these were formerly included as part of Trial Design), and moving data examples from a separate section (former Section 9) to locations immediately following each domain model in Section 5 and Section 6.
- Changes to the method for representing multiple RACE values in DM and SUPPDM with examples.
- Removed the Origin column from domain models based on the three general classes since origins will need to be defined by the sponsor in most cases. Definitions of origin metadata have been added.

A detailed list of changes between versions is provided in Appendix E.

V3.1 was the first fully implementation-ready version of the CDISC Submission Data Standards that was directly referenced by the FDA for use in human clinical studies involving drug products. However, future improvements and enhancements such as V3.1.2 will continue to be made as sponsors gain more experience submitting data in this format. Therefore, CDISC will be preparing regular updates to the implementation guide to provide corrections, clarifications, additional domain models, examples, business rules, and conventions for using the standard domain models. CDISC will produce further documentation for controlled terminology as separate publications, so sponsors are encouraged to check the CDISC website (www.cdisc.org/standards/) frequently for additional information. See Section 4.1.3 for the most up-to-date information on applying Controlled Terminology.

1.4 HOW TO READ THIS IMPLEMENTATION GUIDE

This SDTM Implementation Guide (SDTMIG) is best read online, so the reader can benefit from the many hyperlinks included to both internal and external references. The following guidelines may be helpful in reading this document:

1. First, read the SDTM to gain a general understanding of SDTM concepts.
2. Next, read Sections 1-3 of this document to review the key concepts for preparing domains and submitting data to regulatory authorities. Refer to the Glossary in Appendix B as necessary.
3. Read the General Assumptions for all Domains in Section 4.
4. Review Section 5 and Section 6 in detail, referring back to Assumptions as directed (hyperlinks are provided). Note the implementation examples for each domain to gain an understanding of how to apply the domain models for specific types of data.
5. Read Section 7 to understand the fundamentals of the Trial Design Model and consider how to apply the concepts for typical protocols. New extensions to the trial design model will be published separately on the CDISC website.
6. Review Section 8 to learn advanced concepts of how to express relationships between datasets, records and additional variables not specifically defined in the models.
7. Finally, review the Appendices as appropriate.

1.5 SUBMITTING COMMENTS

Comments on this document can be submitted through the CDISC Discussion Board.

2 Fundamentals of the SDTM

2.1 OBSERVATIONS AND VARIABLES

The V3.x Submission Data Standards are based on the SDTM's general framework for organizing clinical trials information that is to be submitted to the FDA. The SDTM is built around the concept of observations collected about subjects who participated in a clinical study. Each observation can be described by a series of variables, corresponding to a row in a dataset or table. Each variable can be classified according to its *Role*. A Role determines the type of information conveyed by the variable about each distinct observation and how it can be used. Variables can be classified into five major roles:

- *Identifier* variables, such as those that identify the study, subject, domain, and sequence number of the record
- *Topic* variables, which specify the focus of the observation (such as the name of a lab test)
- *Timing* variables, which describe the timing of the observation (such as start date and end date)
- *Qualifier* variables, which include additional illustrative text or numeric values that describe the results or additional traits of the observation (such as units or descriptive adjectives)
- *Rule* variables, which express an algorithm or executable method to define start, end, and branching or looping conditions in the Trial Design model

The set of Qualifier variables can be further categorized into five sub-classes:

- *Grouping Qualifiers* are used to group together a collection of observations within the same domain. Examples include --CAT and --SCAT.
- *Result Qualifiers* describe the specific results associated with the topic variable in a Findings dataset. They answer the question raised by the topic variable. Result Qualifiers are --ORRES, --STRESC, and --STRESN.
- *Synonym Qualifiers* specify an alternative name for a particular variable in an observation. Examples include --MODIFY and --DECOD, which are equivalent terms for a --TRT or --TERM topic variable, --TEST and --LOINC which are equivalent terms for a --TESTCD.
- *Record Qualifiers* define additional attributes of the observation record as a whole (rather than describing a particular variable within a record). Examples include --REASND, AESLIFE, and all other SAE flag variables in the AE domain; AGE, SEX, and RACE in the DM domain; and --BLFL, --POS, --LOC, --SPEC and --NAM in a Findings domain
- *Variable Qualifiers* are used to further modify or describe a specific variable within an observation and are only meaningful in the context of the variable they qualify. Examples include --ORRESU, --ORNRHI, and --ORNRLO, all of which are Variable Qualifiers of --ORRES; and --DOSU, which is a Variable Qualifier of --DOSE.

For example, in the observation, "Subject 101 had mild nausea starting on Study Day 6, " the Topic variable value is the term for the adverse event, "NAUSEA". The Identifier variable is the subject identifier, "101". The Timing variable is the study day of the start of the event, which captures the information, "starting on Study Day 6", while an example of a Record Qualifier is the severity, the value for which is "MILD". Additional Timing and Qualifier variables could be included to provide the necessary detail to adequately describe an observation.

2.2 DATASETS AND DOMAINS

Observations about study subjects are normally collected for all subjects in a series of domains. A domain is defined as a collection of logically related observations with a common topic. The logic of the relationship may pertain to the scientific subject matter of the data or to its role in the trial. Each domain is represented by a single dataset.

Each domain dataset is distinguished by a unique, two-character code that should be used consistently throughout the submission. This code, which is stored in the SDTM variable named DOMAIN, is used in four ways: as the dataset name, the value of the DOMAIN variable in that dataset, as a prefix for most variable names in that dataset, and as a value in the RDOMAIN variable in relationship tables (Section 8).

All datasets are structured as flat files with rows representing observations and columns representing variables. Each dataset is described by metadata definitions that provide information about the variables used in the dataset. The metadata are described in a data definition document named "define" that is submitted with the data to regulatory authorities. (See the Case Report Tabulation Data Definition Specification [define.xml], available at www.CDISC.org). Define.xml specifies seven distinct metadata attributes to describe SDTM data:

- The *Variable Name* (limited to 8 characters for compatibility with the SAS Transport format)
- A descriptive *Variable Label*, using up to 40 characters, which should be unique for each variable in the dataset
- The data *Type* (e.g., whether the variable value is a character or numeric)
- The set of controlled terminology for the value or the presentation format of the variable (*Controlled Terms* or *Format*)
- The *Origin* of each variable (see Section 4.1.1.8)
- The *Role* of the variable, which determines how the variable is used in the dataset. For the V3.x domain models, Roles are used to represent the categories of variables such as Identifier, Topic, Timing, or the five types of Qualifiers.
- *Comments* or other relevant information about the variable or its data included by the sponsor as necessary to communicate information about the variable or its contents to a regulatory agency.

Data stored in SDTM datasets include both raw (as originally collected) and derived values (e.g., converted into standard units, or computed on the basis of multiple values, such as an average). The SDTM lists only the name, label, and type, with a set of brief CDISC guidelines that provide a general description for each variable used for a general observation class.

The domain dataset models included in Section 5 and Section 6 of this document provide additional information about Controlled Terms or Format, notes on proper usage, and examples. Controlled terminology (CT) is now represented one of four ways:

- A single asterisk when there is no specific CT available at the current time, but the SDS Team expects that sponsors may have their own CT and/or the CDISC Controlled Terminology Team may be developing CT.
- A list of controlled terms for the variable when values are not yet maintained externally
- The name of an external codelist whose values can be found via the hyperlinks in either the domain or Appendix C1.
- A common format such as ISO 8601

The CDISC Controlled Terminology team will be publishing additional guidance on use of controlled terminology separately.

2.3 SPECIAL-PURPOSE DATASETS

The SDTM includes three types of special-purpose datasets:

- Domain datasets, consisting of Demographics (DM), Comments (CO), Subject Elements (SE), and Subject Visits (SV)[1], all of which include subject-level data that do not conform to one of the three general observation classes. These are described in Section 5.
- Trial Design Model (TDM) datasets, such as Trial Arms (TA) and Trial Elements (TE), which represent information about the study design but do not contain subject data. These are described in Section 7.
- Relationship datasets, which include the RELREC and SUPP-- datasets described in Section 8.

2.4 THE GENERAL OBSERVATION CLASSES

Most subject-level observations collected during the study should be represented according to one of the three SDTM general observation classes: Interventions, Events, or Findings. The lists of variables allowed to be used in each of these can be found in the STDM.

- The *Interventions* class captures investigational, therapeutic and other treatments that are administered to the subject (with some actual or expected physiological effect) either as specified by the study protocol (e.g., exposure to study drug), coincident with the study assessment period (e.g., concomitant medications), or self-administered by the subject (such as use of alcohol, tobacco, or caffeine).
- The *Events* class captures planned protocol milestones such as randomization and study completion, and occurrences, conditions, or incidents independent of planned study evaluations occurring during the trial (e.g., adverse events) or prior to the trial (e.g., medical history).
- The *Findings* class captures the observations resulting from planned evaluations to address specific tests or questions such as laboratory tests, ECG testing, and questions listed on questionnaires.

In most cases, the choice of observation class appropriate to a specific collection of data can be easily determined according to the descriptions provided above. The majority of data, which typically consists of measurements or responses to questions usually at specific visits or time points, will fit the Findings general observation class. Additional guidance on choosing the appropriate general observation class is provided in Section 8.6.1.

General assumptions for use with all domain models and custom domains based on the general observation classes are described in Section 4 of this document; specific assumptions for individual domains are included with the domain models.

[1] SE and SV were included as part of the Trial Design Model in earlier versions of the SDTMIG.

2.5 THE SDTM STANDARD DOMAIN MODELS

The following standard domains with their respective domain codes have been defined or referenced by the CDISC SDS Team in this document. Note that other domain models may be posted separately for comment after this publication.

Special-Purpose Domains (defined in Section 5):

- Demographics — DM
- Comments — CO
- Subject Elements — SE
- Subject Visits — SV

Interventions General Observation Class (defined in Section 6.1):

- Concomitant Medications — CM
- Exposure — EX
- Substance Use — SU

Events General Observation Class (defined in Section 6.2):

- Adverse Events — AE
- Disposition — DS
- Medical History — MH
- Protocol Deviations — DV
- Clinical Events — CE

Findings General Observation Class (defined in Section 6.3):

- ECG Test Results — EG
- Inclusion/Exclusion Criterion Not Met — IE
- Laboratory Test Results — LB
- Physical Examination — PE
- Questionnaires — QS
- Subject Characteristics — SC
- Vital Signs — VS
- Drug Accountability — DA
- Microbiology Specimen — MB
- Microbiology Susceptibility Test — MS
- PK Concentrations — PC
- PK Parameters —PP

Findings About (defined in Section 6.4)

- Findings About — FA

Trial Design Domains (defined in Section 7):

- Trial Arms — TA
- Trial Elements — TE
- Trial Visits — TV
- Trial Inclusion/Exclusion Criteria — TI
- Trial Summary — TS

Relationship Datasets (defined in Section 8):

- Supplemental Qualifiers — SUPPQUAL or multiple SUPP-- datasets
- Related Records — RELREC

A sponsor should only submit domain datasets that were actually collected (or directly derived from the collected data) for a given study. Decisions on what data to collect should be based on the scientific objectives of the study, rather than the SDTM. Note that any data that was collected and will be submitted in an analysis dataset must also appear in a tabulation dataset.

The collected data for a given study may use some or all of the SDS standard domains as well as additional custom domains based on the three general observation classes. A list of standard domain codes for many commonly used domains is provided in . Additional standard domain models will be published by CDISC as they are developed, and sponsors are encouraged to check the CDISC website for updates.

These general rules apply when determining which variables to include in a domain:

- The Identifier variables, STUDYID, USUBJID, DOMAIN, and --SEQ are required in all domains based on the general observation classes. Other Identifiers may be added as needed.
- Any Timing variables are permissible for use in any submission dataset based on a general observation class except where restricted by specific domain assumptions.
- Any additional Qualifier variables from the same general observation class may be added to a domain model except where restricted by specific domain assumptions.

- Sponsors may not add any other variables than those described in the preceding three bullets. The addition of non-standard variables will compromise the FDA's abilities to populate the data repository and to use standard tools. The SDTM allows for the inclusion of the sponsors non-SDTM variables using the Supplemental Qualifiers special-purpose dataset structure, described in Section 8.4. As the SDTM continues to evolve over time, certain additional standard variables may be added to the general observation classes. Therefore, Sponsors wishing to nominate such variables for future consideration should provide a rationale and description of the proposed variable(s) along with representative examples to the CDISC Public Discussion Forum.
- Standard variables must not be renamed or modified for novel usage. Their metadata should not be changed.
- As long as no data was collected for Permissible variables, a sponsor is free to drop them and the corresponding descriptions from the define.xml.

2.6 CREATING A NEW DOMAIN

This section describes the overall process for creating a custom domain, which must be based on one of the three SDTM general observation classes. The number of domains submitted should be based on the specific requirements of the study. Follow the process below to create a custom domain:

1. Confirm that none of the existing published domains will fit the need. A custom domain may only be created if the data are different in nature and do not fit into an existing published domain.
    - Establish a domain of a common topic (i.e., where the nature of the data is the same), rather than by a specific method of collection (e.g. electrocardiogram - EG). Group and separate data within the domain using --CAT, --SCAT, --METHOD, --SPEC, --LOC, etc. as appropriate. Examples of different topics are: microbiology, tumor measurements, pathology/histology, vital signs, and physical exam results.
    - Do not create separate domains based on time, rather represent both prior and current observations in a domain (e.g., CM for all non-study medications). Note that AE and MH are an exception to this best practice because of regulatory reporting needs.
    - How collected data are used (e.g., to support analyses and/or efficacy endpoints) must not result in the creation of a custom domain. For example, if blood pressure measurements are endpoints in a hypertension study, they must still be represented in the VS (Vital Signs) domain as opposed to a custom "efficacy" domain. Similarly, if liver function test results are of special interest, they must still be represented in the LB (Laboratory Tests) domain.
    - Data that were collected on separate CRF modules or pages may fit into an existing domain (such as separate questionnaires into the QS domain, or prior and concomitant medications in the CM domain).
    - If it is necessary to represent relationships between data that are hierarchical in nature (e.g., a parent record must be observed before child records), then establish a domain pair (e.g., MB/MS, PC/PP). Note, domain pairs have been modeled for microbiology data (MB/MS domains) and PK data (PC/PP domains) to enable dataset-level relationships to be described using RELREC. The domain pair uses DOMAIN as an Identifier to group parent records (e.g., MB) from child records (e.g., MS) and enables a dataset-level relationship to be described in RELREC. Without using DOMAIN to facilitate description of the data relationships, RELREC, as currently defined could not be used without introducing a variable that would group data like DOMAIN.
2. Check the Submission Data Standards area of the CDISC website (http://www.cdisc.org/) for models added after the last publication of the SDTMIG.
3. Look for an existing, relevant domain model to serve as a prototype. If no existing model seems appropriate, choose the general observation class (Interventions, Events, or Findings) that best fits the data by considering the topic of the observation The general approach for selecting variables for a custom domain is as follows (also see Figure 2.6 below)
    a. Select and include the required Identifier variables (e.g., STUDYID, DOMAIN, USUBJID, --SEQ) and any permissible Identifier variables from SDTM Table 2.2.4.
    b. Include the Topic variable from the identified general observation class (e.g., --TESTCD for Findings) (SDTM table 2.2.1, SDTM table 2.2.2 or SDTM table 2.2.3).
    c. Select and include the relevant Qualifier variables from the identified general observation class (SDTM table 2.2.1, SDTM table 2.2.2 or SDTM table 2.2.3). Variables belonging to other general observation classes must not be added.

d. Select and include the applicable Timing variables (SDTM Table 2.2.5). Determine the domain code. Check Appendix C2 and Appendix C2A for reserved two-character domain identifiers or abbreviations. If one has not been assigned by CDISC, then the sponsor may select the unique two-character domain code to be used consistently throughout the submission.

e. Apply the two-character domain code to the appropriate variables in the domain. Replace all variable prefixes (shown in the models as two hyphens "--") with the domain code. If no domain code exists in Appendix C2 or Appendix C2A for this data and if it desired to have this domain code as part of CDISC controlled terminology then submit a request to add the new domain via the CDISC website. Requests for new domain codes must include:
    1) Two-letter domain code and description
    2) Rationale for domain code
    3) Domain model with assumptions
    4) Examples

    Upon receipt, the SDS Domain Code Subteam will review the package. If accepted, then the proposal will be submitted to the SDS Team for review. Upon approval, a response will be sent to the requestor and package processing will begin (i.e., prepare for inclusion in a next release of the SDTM and SDTMIG, mapping concepts to BRIDG, and posting an update to the CDISC website). If declined, then the Domain Code Subteam will draft a response for SDS Team review. Upon agreement, the response will be sent to the requestor and also posted to the CDISC website.

f. Set the order of variables consistent with the order defined in SDTM Tables 2.2.1, 2.2.2, or 2.2.3, depending upon the general observation class the custom domain is based on.

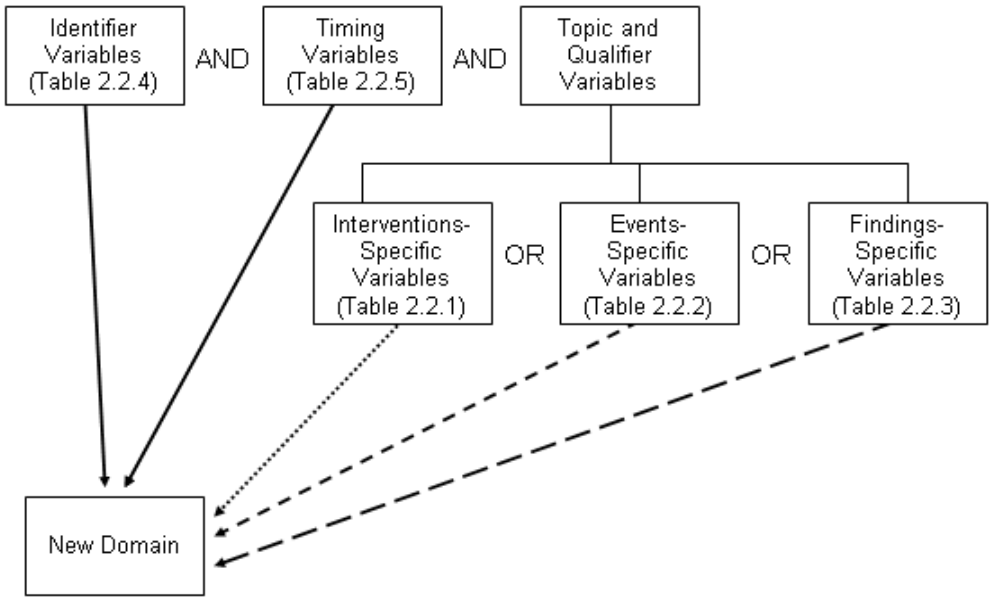
g. Adjust the labels of the variables only as appropriate to properly convey the meaning in the context of the data being submitted in the newly created domain. Use title case for all labels (title case means to capitalize the first letter of every word except for articles, prepositions, and conjunctions).

h. Ensure that appropriate standard variables are being properly applied by comparing the use of variables in standard domains.

i. Describe the dataset within the define.xml document (see Section 3.2).

j. Place any non-standard (SDTM) variables in a Supplemental Qualifier dataset. Mechanisms for representing additional non-standard Qualifier variables not described in the general observation classes and for defining relationships between separate datasets or records are described in Section 8.4 of this document.

Figure 2.6. Creating a New Domain



3 Submitting Data in Standard Format

3.1 STANDARD METADATA FOR DATASET CONTENTS AND ATTRIBUTES

The SDTMIG provides standard descriptions of some of the most commonly used data domains, with metadata attributes. The descriptive metadata attributes that should be included in a define.xml as applied in the domain models are:

- The SDTMIG -standard variable name (standardized for all submissions, even though sponsors may be using other variable names internally in their operational database)
- The SDTMIG -standard variable label
- Expected data types (the SDTMIG uses character or numeric to conform to the data types consistent with SAS V5 transport file format, but define.xml allows for more descriptive data types, such as integer or float)
- The actual controlled terms and formats used by the sponsor (do not include the asterisk (*) included in the CDISC domain models to indicate when controlled terminology applies)
- The origin or source of the data (e.g., CRF, derived; see definitions in Section 4.1.1.8)
- The role of the variable in the dataset corresponding to the role in the SDTM if desired. Since these roles are predefined for all standard domains that follow the general observation classes, they do not need to be specified by sponsors in their define.xml for these domains.
- Any Comments provided by the sponsor that may be useful to the Reviewer in understanding the variable or the data in it.

In addition to these metadata attributes, the CDISC domain models include three other shaded columns that are not sent to the FDA. These columns assist sponsors in preparing their datasets:

- "CDISC Notes" is for notes to the sponsor regarding the relevant to the use of each variable
- "Core" indicates how a variable is classified as a CDISC Core Variable (see Section 4.1.1.5)
- "References" provides references to relevant section of the SDTM or the SDTMIG.), and one to provide references to relevant section of the SDTM or the SDTMIG.

The domain models in Section 6 illustrate how to apply the SDTM when creating a specific domain dataset. In particular, these models illustrate the selection of a subset of the variables offered in one of the general observation classes along with applicable timing variables. The models also show how a standard variable from a general observation class should be adjusted to meet the specific content needs of a particular domain, including making the label more meaningful, specifying controlled terminology, and creating domain-specific notes and examples. Thus the domain models demonstrate not only how to apply the model for the most common domains, but also give insight on how to apply general model concepts to other domains not yet defined by CDISC.

3.2 USING THE CDISC DOMAIN MODELS IN REGULATORY SUBMISSIONS — DATASET METADATA

The define.xml that accompanies a submission should also describe each dataset that is included in the submission and describe the natural key structure of each dataset. While most studies will include DM and a set of safety domains based on the three general observation classes (typically including EX, CM, AE, DS, MH, IE, LB, and VS), the actual choice of which data to submit will depend on the protocol and the needs of the regulatory reviewer. Dataset definition metadata should include dataset filenames, descriptions, locations, structures, class, purpose, keys, and comments as described below in Table 3.2.1.

In the event that no records are present in a dataset (e.g., a small PK study where no subjects took concomitant medications), the empty dataset should not be submitted and should not be described in the define.xml document. The annotated CRF will show the data that would have been submitted had data been received; it need not be re-annotated to indicate that no records exist.

Table 3.2.1. SDTM Submission Dataset-Definition Metadata Example

Dataset	Description	Class	Structure	Purpose	Keys*	Location
DM	Demographics	Special Purpose Domains	One record per subject	Tabulation	STUDYID, USUBJID	dm.xpt
CO	Comments	Special Purpose Domains	One record per comment per subject	Tabulation	STUDYID, USUBJID, COSEQ	co.xpt
SE	Subject Elements	Special Purpose Domains	One record per actual Element per subject	Tabulation	STUDYID, USUBJID, ETCD, SESTDTC	se.xpt
SV	Subject Visits	Special Purpose Domains	One record per actual visit per subject	Tabulation	STUDYID, USUBJID, VISITNUM	sv.xpt
CM	Concomitant Medications	Interventions	One record per recorded medication occurrence or constant-dosing interval per subject.	Tabulation	STUDYID, USUBJID, CMTRT, CMSTDTC	cm.xpt
EX	Exposure	Interventions	One record per constant dosing interval per subject	Tabulation	STUDYID, USUBJID, EXTRT, EXSTDTC	ex.xpt
SU	Substance Use	Interventions	One record per substance type per reported occurrence per subject	Tabulation	STUDYID, USUBJID, SUTRT, SUSTDTC	su.xpt
AE	Adverse Events	Events	One record per adverse event per subject	Tabulation	STUDYID, USUBJID, AEDECOD, AESTDTC	ae.xpt
DS	Disposition	Events	One record per disposition status or protocol milestone per subject	Tabulation	STUDYID, USUBJID, DSDECOD, DSSTDTC	ds.xpt
MH	Medical History	Events	One record per medical history event per subject	Tabulation	STUDYID, USUBJID, MHDECOD	mh.xpt
DV	Protocol Deviations	Events	One record per protocol deviation per subject	Tabulation	STUDYID, USUBJID, DVTERM, DVSTDTC	dv.xpt
CE	Clinical Events	Events	One record per event per subject	Tabulation	STUDYID, USUBJID, CETERM, CESTDTC	ce.xpt

Dataset	Description	Class	Structure	Purpose	Keys*	Location
EG	ECG Test Results	Findings	One record per ECG observation per time point per visit per subject	Tabulation	STUDYID, USUBJID, EGTESTCD, VISITNUM, EGTPTREF, EGTPTNUM	eg.xpt
IE	Inclusion/ Exclusion Criteria Not Met	Findings	One record per inclusion/exclusion criterion not met per subject	Tabulation	STUDYID, USUBJID, IETESTCD	ie.xpt
LB	Laboratory Tests Results	Findings	One record per analyte per planned time point number per time point reference per visit per subject	Tabulation	STUDYID, USUBJID, LBTESTCD, LBSPEC, VISITNUM, LBTPTREF, LBTPTNUM	lb.xpt
PE	Physical Examination	Findings	One record per body system or abnormality per visit per subject	Tabulation	STUDYID, USUBJID, PETESTCD, VISITNUM	pe.xpt
QS	Questionnaires	Findings	One record per questionnaire per question per time point per visit per subject	Tabulation	STUDYID, USUBJID, QSCAT, QSTESTCD, VISITNUM, QSTPTREF, QSTPTNUM	qs.xpt
SC	Subject Characteristics	Findings	One record per characteristic per subject	Tabulation	STUDYID, USUBJID, SCTESTCD	sc.xpt
VS	Vital Signs	Findings	One record per vital sign measurement per time point per visit per subject	Tabulation	STUDYID, USUBJID, VSTESTCD, VISITNUM, VSTPTREF, VSTPTNUM	vs.xpt
DA	Drug Accountability	Findings	One record per drug accountability finding per subject	Tabulation	STUDYID, USUBJID, DATESTCD, DADTC	da.xpt
MB	Microbiology Specimen	Findings	One record per microbiology specimen finding per time point per visit per subject	Tabulation	STUDYID, USUBJID, MBTESTCD, VISITNUM, MBTPTREF, MBTPTNUM	mb.xpt
MS	Microbiology Susceptibility Test	Findings	One record per microbiology susceptibility test (or other organism-related finding) per organism found in MB	Tabulation	STUDYID, USUBJID, MSTESTCD, VISITNUM, MSTPTREF, MSTPTNUM	ms.xpt
PC	Pharmacokinetic Concentrations	Findings	One record per analyte per planned time point number per time point reference per visit per subject"	Tabulation	STUDYID, USUBJID, PCTESTCD, VISITNUM, PCTPTREF, PCTPTNUM	pc.xpt

Dataset	Description	Class	Structure	Purpose	Keys*	Location
PP	Pharmacokinetic Parameters	Findings	One record per PK parameter per time-concentration profile per modeling method per subject	Tabulation	STUDYID, USUBJID, PPTESTCD, PPCAT, VISITNUM, PPTPTREF	pp.xpt
FA	Findings About Events or Interventions	Findings	One record per finding per object per time point per time point reference per visit per subject	Tabulation	STUDYID, USUBJID, FATESTCD, FAOBJ, VISITNUM, FATPTREF, FATPTNUM	fa.xpt
TA	Trial Arms	Trial Design	One record per planned Element per Arm	Tabulation	STUDYID, ARMCD, TAETORD	ta.xpt
TE	Trial Elements	Trial Design	One record per planned Element	Tabulation	STUDYID, ETCD	te.xpt
TV	Trial Visits	Trial Design	One record per planned Visit per Arm	Tabulation	STUDYID, VISITNUM, ARMCD	tv.xpt
TI	Trial Inclusion/ Exclusion Criteria	Trial Design	One record per I/E criterion	Tabulation	STUDYID, IETESTCD	ti.xpt
TS	Trial Summary	Trial Design	One record per trial summary parameter value	Tabulation	STUDYID, TSPARMCD, TSSEQ	ts.xpt
RELREC	Related Records	Special Purpose Datasets	One record per related record, group of records or datasets	Tabulation	STUDYID, RDOMAIN, USUBJID, IDVAR, IDVARVAL, RELID	relrec.xpt
SUPP--**	Supplemental Qualifiers for [domain name]	Special-Purpose Datasets	One record per IDVAR, IDVARVAL, and QNAM value per subject	Tabulation	STUDYID, RDOMAIN, USUBJID, IDVAR, IDVARVAL, QNAM	supp--.xpt or suppqual.xpt

* Note that the key variables shown in this table are examples only. A sponsor's actual key structure may be different.

** Separate Supplemental Qualifier datasets of the form supp--.xpt are recommended. See Section 8.4.

3.2.1.1 PRIMARY KEYS

Table 3.2.1 above shows examples of what a sponsor might submit as variables that comprise the primary key for SDTM datasets. Since the purpose of this column is to aid reviewers in understanding the structure of a dataset, sponsors should list all of the natural keys (see definition below) for the dataset. These keys should define uniqueness for records within a dataset, and may define a record sort order. The naming of these keys should be consistent with the description of the structure in the Structure column. For all the general-observation-class domains (and for some special-purpose domains), the --SEQ variable was created so that a unique record could be identified consistently across all of these domains via its use, along with STUDYID, USUBJID, DOMAIN. In most domains, --SEQ will be a surrogate key (see definition below) for a set of variables which comprise the natural key. In certain instances, a Supplemental Qualifier (SUPP--) variable might also contribute to the natural key of a record for a particular domain. See assumption 4.1.1.9 for how this should be represented, and for additional information on keys.

A *natural key* is a piece of data (one or more columns of an entity) that uniquely identify that entity, and distinguish it from any other row in the table. The advantage of natural keys is that they exist already, and one does not need to introduce a new "unnatural" value to the data schema. One of the difficulties in choosing a natural key is that just about any natural key one can think of has the potential to change. Because they have business meaning, natural

keys are effectively coupled to the business, and they may need to be reworked when business requirements change. An example of such a change in clinical trials data would be the addition of a position or location that becomes a key in a new study, but wasn't collected in previous studies.

A *surrogate key* is a single-part, artificially established identifier for a record. Surrogate key assignment is a special case of derived data, one where a portion of the primary key is derived. A surrogate key is immune to changes in business needs. In addition, the key depends on only one field, so it's compact. A common way of deriving surrogate key values is to assign integer values sequentially. The --SEQ variable in the SDTM datasets is an example of a surrogate key for most datasets; in some instances, however, --SEQ might be a part of a natural key as a replacement for what might have been a key (e.g. a repeat sequence number) in the sponsor's database

3.2.1.2 CDISC SUBMISSION VALUE-LEVEL METADATA

In general, the CDISC V3.x Findings data models are closely related to normalized, relational data models in a vertical structure of one record per observation. Since the V3.x data structures are fixed, sometimes information that might have appeared as columns in a more horizontal (denormalized) structure in presentations and reports will instead be represented as rows in an SDTM Findings structure. Because many different types of observations are all presented in the same structure, there is a need to provide additional metadata to describe the expected differences that differentiate, for example, hematology lab results from serum chemistry lab results in terms of data type, standard units and other attributes.

For example, the Vital Signs data domain could contain subject records related to diastolic and systolic blood pressure, height, weight, and body mass index (BMI). These data are all submitted in the normalized SDTM Findings structure of one row per vital signs measurement. This means that there could be five records per subject (one for each test or measurement) for a single visit or time point, with the parameter names stored in the Test Code/Name variables, and the parameter values stored in result variables. Since the unique Test Code/Names could have different attributes (i.e., different origins, roles, and definitions) there would be a need to provide value-level metadata for this information.

The value-level metadata should be provided as a separate section of the Case Report Tabulation Data Definition Specification (CRT-DDS). This information, which historically has been submitted as a pdf document named "define.pdf", should henceforth be submitted in an XML format. For details on the CDISC specification for submitting define.xml, see www.cdisc.org/standards/

3.2.2 CONFORMANCE

Conformance with the SDTMIG Domain Models is minimally indicated by:

- Following the complete metadata structure for data domains
- Following SDTMIG domain models wherever applicable
- Using SDTM-specified standard domain names and prefixes where applicable
- Using SDTM-specified standard variable names
- Using SDTM-specified variable labels for all standard domains
- Using SDTM-specified data types for all variables
- Following SDTM-specified controlled terminology and format guidelines for variables, when provided
- Including all collected and relevant derived data in one of the standard domains, special-purpose datasets, or general-observation-class structures
- Including all Required and Expected variables as columns in standard domains, and ensuring that all Required variables are populated
- Ensuring that each record in a dataset includes the appropriate Identifier and, Timing variables, as well as a Topic variable
- Conforming to all business rules described in the CDISC Notes column and general and domain-specific assumptions.

4 Assumptions for Domain Models

4.1 GENERAL ASSUMPTIONS FOR ALL DOMAINS

4.1.1 GENERAL DOMAIN ASSUMPTIONS

4.1.1.1 REVIEW STUDY DATA TABULATION AND IMPLEMENTATION GUIDE

Review the Study Data Tabulation Model as well as this Implementation Guide before attempting to use any of the individual domain models. See the Case Report Tabulation Data Definition Specification (define.xml), available on the CDISC website, for information about an xml representation of the define.xml document.

4.1.1.2 RELATIONSHIP TO ANALYSIS DATASETS

Specific guidance on preparing analysis datasets can be found in the CDISC Analysis Dataset Model General Considerations document, available at www.cdisc.org/standards/

4.1.1.3 ADDITIONAL TIMING VARIABLES

Additional Timing variables can be added as needed to a standard domain model based on the three general observation classes except where discouraged in Assumption 4.1.4.8 and specific domain assumptions. Timing variables can be added to special-purpose domains only where specified in the SDTMIG domain model assumptions. Timing variables cannot be added to SUPPQUAL datasets or to RELREC (described in Section 8).

4.1.1.4 ORDER OF THE VARIABLES

The order of variables in the define.xml should reflect the order of variables in the dataset. The order of variables in the CDISC domain models has been chosen to facilitate the review of the models and application of the models. Variables for the three general observation classes should be ordered with Identifiers first, followed by the Topic, Qualifier, and Timing variables. Within each role, variables are ordered as shown in Tables 2.2.1, 2.2.2, 2.2.3, 2.2.3.1, 2.2.4, and 2.2.5 of the SDTM.

4.1.1.5 CDISC CORE VARIABLES

The concept of core variable is used both as a measure of compliance, and to provide general guidance to sponsors. Three categories of variables are specified in the "Core" column in the domain models:

- A **Required** variable is any variable that is basic to the identification of a data record (i.e., essential key variables and a topic variable) or is necessary to make the record meaningful. Required variables must always be included in the dataset and cannot be null for any record.
- An **Expected** variable is any variable necessary to make a record useful in the context of a specific domain. Expected variables may contain some null values, but in most cases will not contain null values for every record. When no data has been collected for an expected variable, however, a null column should still be included in the dataset, and a comment should be included in the define.xml to state that data was not collected.
- A **Permissible** variable should be used in a domain as appropriate when collected or derived. Except where restricted by specific domain assumptions, any SDTM Timing and Identifier variables, and any Qualifier variables from the same general observation class are permissible for use in a domain based on that general observation class. The Sponsor can decide whether a Permissible variable should be included as a column when all values for that variable are null. The sponsor does not have the discretion to not submit permissible variables when they contain data.

4.1.1.6 ADDITIONAL GUIDANCE ON DATASET NAMING

SDTM datasets are normally named to be consistent with the domain code; for example, the Demographics dataset (DM) is named dm.xpt (see Appendix C2 for a list of standard and reserved domain codes). Exceptions to this rule are described in Section 4.1.1.7 for general-observation-class datasets and in Section 8 for the RELREC and SUPP-- datasets.

In some cases, sponsors may need to define new custom domains other than those represented in the SDTMIG or listed in Appendix C2, and may be concerned that CDISC domain codes defined in the future will conflict with those they choose to use. To eliminate any risk of a sponsor using a name that CDISC later determines to have a different meaning, domain codes beginning with the letters X, Y, or Z have been reserved for the creation of custom domains. Any letter or number may be used in the second position. Note the use of codes beginning with X, Y, or Z is optional, and not required for custom domains.

4.1.1.7 SPLITTING DOMAINS

Sponsors may choose to split a domain of topically related information into physically separate datasets. In such cases, one of two approaches should be implemented:

1) For a domain based on a general observation class, splitting should be according to values in --CAT (which must not be null).
2) The Findings About (FA) domain (Section 6.4) can be split either by --CAT values (per the bullet above) or relative to the parent domain of the value in --OBJ. For example, FACM would store Findings About CM records. See Section 6.4.2 for more details.

The following rules must be adhered to when splitting a domain into separate datasets to ensure they can be appended back into one domain dataset:

1) The value of DOMAIN must be consistent across the separate datasets as it would have been if they had not been split (e.g., QS, FA).
2) All variables that require a domain prefix (e.g., --TESTCD, --LOC) must use the value of DOMAIN as the prefix value (e.g., QS, FA).
3) --SEQ must be unique within USUBJID for all records across all the split datasets. If there are 1000 records for a USUBJID across the separate datasets, all 1000 records need unique values for --SEQ.
4) When relationship datasets (e.g., SUPPxx, FAxx, CO, RELREC) relate back to split parent domains, IDVAR should generally be --SEQ. When IDVAR is a value other than --SEQ (e.g., --GRPID, --REFID, --SPID), care should be used to ensure that the parent records across the split datasets have unique values for the variable specified in IDVAR, so that related children records do not accidentally join back to incorrect parent records.
5) Variables of the same name in separate datasets should have the same SAS Length attribute to avoid any difficulties if the sponsor or FDA should decide to append datasets together.
6) Permissible variables included in one split dataset need not be included in all split datasets. Should the datasets be appended in SAS, permissible variables not used in some split datasets will have null values in the appended datasets. Care is advised, however, when considering variable order. Should a permissible variable used in one (or more) split datasets not be included in the first dataset used in a SAS Set statement, the order of variables could be compromised.
7) Split dataset names can be up to four characters in length. For example, if splitting by --CAT, then dataset names would be the domain name plus up to two additional characters (e.g., QS36 for SF-36). If splitting Findings About by parent domain, then the dataset name would be the domain name plus the two-character domain code describing the parent domain code (e.g., FACM). The four-character dataset-name limitation allows the use of a Supplemental Qualifier dataset associated with the split dataset.
8) Supplemental Qualifier datasets for split domains would also be split. The nomenclature would include the additional one-to-two characters used to identify the split dataset (e.g., SUPPQS36, SUPPFACM). The value of RDOMAIN in the SUPP-- datasets would be the two-character domain code (e.g., QS, FA).

9) In RELREC, if a dataset-level relationship is defined for a split Findings About domain, then RDOMAIN may contain the four-character dataset name, as shown in the following example.

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
ABC	CM		CMSPID		ONE	1
ABC	FACM		FASPID		MANY	1

10) See the SDTM Metadata Implementation Guide for guidance on how to represent the metadata for a set of split domain datasets in the define.xml.

Note that submission of split SDTM domains may be subject to additional dataset splitting conventions as defined by regulators via technical specifications (e.g., Study Data Specifications) and/or as negotiated with regulatory reviewers.

4.1.1.7.1 EXAMPLE OF SPLITTING QUESTIONNAIRES

This example shows the split QS domain data into three datasets: Clinical Global Impression (QSCG), Cornell Scale for Depression in Dementia (QSCS) and Mini Mental State Examination (QSMM). Each dataset represents a subset of the QS domain data and has only one value of QSCAT.

QS Domains

qscg.xpt (Clinical Global Impressions)

Row	STUDYID	DOMAIN	USUBJID	QSSEQ	QSSPID	QSTESTCD	QSTEST	QSCAT
1	CDISC01	QS	CDISC01.100008	1	CGI-CGI-I	CGIGLOB	Global Improvement	Clinical Global Impressions
2	CDISC01	QS	CDISC01.100008	2	CGI-CGI-I	CGIGLOB	Global Improvement	Clinical Global Impressions
3	CDISC01	QS	CDISC01.100014	1	CGI-CGI-I	CGIGLOB	Global Improvement	Clinical Global Impressions
4	CDISC01	QS	CDISC01.100014	2	CGI-CGI-I	CGIGLOB	Global Improvement	Clinical Global Impressions

Row	QSORRES	QSSTRESC	QSSTRESN	QSBLFL	VISITNUM	VISIT	VISITDY	QSDTC	QSDY
1 (cont)	No change	4	4		3	WEEK 2	15	2003-05-13	15
2 (cont)	Much Improved	2	2		10	WEEK 24	169	2003-10-13	168
3 (cont)	Minimally Improved	3	3		3	WEEK 2	15	2003-10-31	17
4 (cont)	Minimally Improved	3	3		10	WEEK 24	169	2004-03-30	168

qscs.xpt (Cornell Scale for Depression in Dementia)

Row	STUDYID	DOMAIN	USUBJID	QSSEQ	QSSPID	QSTESTCD	QSTEST	QSCAT
1	CDISC01	QS	CDISC01.100008	3	CSDD-01	CSDD01	Anxiety	Cornell Scale for Depression in Dementia
2	CDISC01	QS	CDISC01.100008	23	CSDD-01	CSDD01	Anxiety	Cornell Scale for Depression in Dementia
3	CDISC01	QS	CDISC01.100014	3	CSDD-01	CSDD01	Anxiety	Cornell Scale for Depression in Dementia
4	CDISC01	QS	CDISC01.100014	28	CSDD-06	CSDD06	Retardation	Cornell Scale for Depression in Dementia

Row	QSORRES	QSSTRESC	QSSTRESN	QSBLFL	VISITNUM	VISIT	VISITDY	QSDTC	QSDY
1 (cont)	Severe	2	2		1	SCREEN	-13	2003-04-15	-14
2 (cont)	Severe	2	2	Y	2	BASELINE	1	2003-04-29	1
3 (cont)	Severe	2	2		1	SCREEN	-13	2003-10-06	-9
4 (cont)	Mild	1	1	Y	2	BASELINE	1	2003-10-15	1

qsmm.xpt (Mini Mental State Examination)

Row	STUDYID	DOMAIN	USUBJID	QSSEQ	QSSPID	QSTESTCD	QSTEST	QSCAT
1	CDISC01	QS	CDISC01.100008	81	MMSE-A.1	MMSEA1	Orientation Time Score	Mini Mental State Examination
2	CDISC01	QS	CDISC01.100008	88	MMSE-A.1	MMSEA1	Orientation Time Score	Mini Mental State Examination
3	CDISC01	QS	CDISC01.100014	81	MMSE-A.1	MMSEA1	Orientation Time score	Mini Mental State Examination
4	CDISC01	QS	CDISC01.100014	88	MMSE-A.1	MMSEA1	Orientation Time score	Mini Mental State Examination

Row	QSORRES	QSSTRESC	QSSTRESN	QSBLFL	VISITNUM	VISIT	VISITDY	QSDTC	QSDY
1 (cont)	4	4	4		1	SCREEN	-13	2003-04-15	-14
2 (cont)	3	3	3	Y	2	BASELINE	1	2003-04-29	1
3 (cont)	2	2	2		1	SCREEN	-13	2003-10-06	-9
4 (cont)	2	2	2	Y	2	BASELINE	1	2003-10-15	1

SUPPQS Domains

suppqscg.xpt: Supplemental Qualifiers for QSCG

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	CDISC01	QS	CDISC01.100008	QSCAT	Clinical Global Impressions	QSLANG	Questionnaire Language	GERMAN	CRF	
2	CDISC01	QS	CDISC01.100014	QSCAT	Clinical Global Impressions	QSLANG	Questionnaire Language	FRENCH	CRF	

suppqscs.xpt: Supplemental Qualifiers for QSCS

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	CDISC01	QS	CDISC01.100008	QSCAT	Cornell Scale for Depression in Dementia	QSLANG	Questionnaire Language	GERMAN	CRF	
2	CDISC01	QS	CDISC01.100014	QSCAT	Cornell Scale for Depression in Dementia	QSLANG	Questionnaire Language	FRENCH	CRF	

suppqsmm.xpt: Supplemental Qualifiers for QSMM

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	CDISC01	QS	CDISC01.100008	QSCAT	Mini Mental State Examination	QSLANG	Questionnaire Language	GERMAN	CRF	
2	CDISC01	QS	CDISC01.100014	QSCAT	Mini Mental State Examination	QSLANG	Questionnaire Language	FRENCH	CRF	

4.1.1.8 ORIGIN METADATA

4.1.1.8.1 ORIGIN METADATA FOR VARIABLES

The Origin column of the define.xml is used to indicate where the data originated. Its purpose is to unambiguously communicate to the reviewer whether data was collected on a CRF (and thus should be traceable to an annotated CRF), derived (and thus traceable to some derivation algorithm), or assigned by some subjective process (and thus traceable to some external evaluator). The SDTMIG defines the following controlled terms for specifying Origin:

CRF: The designation of ”CRF” (along with a reference) as an origin in the define.xml means that data was collected as part of a CRF and that there is an annotated CRF associated with the variable. Sponsors may specify additional details about the origin that may be helpful to the Reviewer (e.g., electronic diary) in the Comments section of the define.xml. An origin of “CRF” includes information that is preprinted on the CRF (e.g., “RESPIRATORY SYSTEM DISORDERS” for MHCAT).

eDT: The designation of "eDT" as an origin in the define.xml means that the data are received via an electronic Data Transfer (eDT) and usually does not have associated annotations. An origin of eDT refers to data collected via data streams such as laboratory, ECG, or IVRS. Sponsors may specify additional details about the origin that may be helpful to the Reviewer in the Comments section of the define.xml.

Derived: Derived data are not directly collected on the CRF but are calculated by an algorithm or reproducible rule, which is dependent upon other data values. This algorithm is applied across all values and may reference other SDTM datasets. The derivation is assumed to be performed by the Sponsor. This does not apply to derived lab test results performed directly by labs (or by devices).

Examples illustrating the distinction between collected and derived values include the following:

- A value derived by an eCRF system from other entered fields has an origin of "Derived, " since the sponsor controls the derivation.
- A value derived from collected data by the sponsor, or a CRO working on their behalf, has an origin of "Derived."
- A value derived by an investigator and written/entered on a CRF has an origin of "CRF" (along with a reference) rather than “derived”.
- A value derived by a vendor (e.g., a central lab) according to their procedures is considered collected rather than derived, and would have an origin of “eDT”.

Assigned: A value that is determined by individual judgment (by an evaluator other than the subject or investigator), rather than collected as part of the CRF or derived based on an algorithm. This may include third party attributions by an adjudicator. Coded terms that are supplied as part of a coding process (as in --DECOD) are considered to have an Origin of “Assigned”. Values that are set independently of any subject-related data values in order to complete SDTM fields such as DOMAIN and --TESTCD are considered to have an Origin of “Assigned”.

Protocol: A value that is defined as part of the Trial Design preparation (see Section 7). An example would be VSPOS (Vital Signs Position), which may be specified only in the protocol and not appear on a CRF.

The term “Sponsor Defined” was used in earlier versions of the SDTMIG to advise the Sponsor to supply the appropriate Origin value in the metadata. The text “Sponsor Defined” was not intended to be used in the define.xml and is no longer used in V3.1.2 and later.

4.1.1.8.2 ORIGIN METADATA FOR RECORDS

Sponsors are cautioned to recognize that an Origin of “Derived” means that all values for that variable were derived, and that “CRF” (along with a reference) means that all were collected. In some cases, both collected and derived values may be reported in the same field. For example, some records in a Findings dataset such as QS contain values collected from the CRF and other records may contain derived values such as a total score. When both derived and collected values are reported in a field, the value-level metadata origin will indicate at the test level if the value is “Derived” or “CRF” and the variable-level metadata origin will list all types for that variable separated by commas (e.g., “Derived, CRF”).

4.1.1.9 ASSIGNING NATURAL KEYS IN THE METADATA

Section 3.2 indicates that a sponsor should include in the metadata the variables that contribute to the natural key for a domain. The following examples are illustrations of how to do this, and include a case where a Supplemental Qualifier variable is referenced because it forms part of the natural key.

Physical Examination (PE) domain example:
Sponsor A chooses the following natural key for the PE domain:

STUDYID, USUBJID, VISTNUM, PETESTCD

Sponsor B collects data in such a way that the location (PELOC) and method (PEMETHOD) variables need to be included in the natural key to identify a unique row, but they do not collect a visit variable; instead they use the visit date (PEDTC) to sequence the data. Sponsor B then defines the following natural key for the PE domain.

STUDYID, USUBJID, PEDTC, PETESTCD, PELOC, PEMETHOD

In certain instances a Supplemental Qualifier variable (i.e., a QNAM value, see Section 8.4) might also contribute to the natural key of a record, and therefore needs to be referenced as part of the natural key for a domain. The important concept here is that a domain is not limited by physical structure. A domain may be comprised of more than one physical dataset, for example the main domain dataset and its associated Supplemental Qualifiers dataset. Supplemental Qualifiers variables should be referenced in the natural key by using a two-part name. The word QNAM must be used as the first part of the name to indicate that the contributing variable exists in a dataset (and this can be either a domain-specific SUPP-- dataset or the general SUPPQUAL dataset) and the second part is the

value of QNAM that ultimately becomes a column reference (e.g., QNAM.XVAR when the SUPP-- record has a QNAM of "XVAR") when the SUPPQUAL records are joined on to the main domain dataset.

Continuing with the PE domain example above, Sponsor B might have used ultrasound as a method of measurement and might have collected additional information such as the makes and models of ultrasound equipment employed. The sponsor considers the make and model information to be essential data that contributes to the uniqueness of the test result, and so creates Supplemental Qualifier variables for make (QNAM=PEMAKE) and model (QNAM=PEMODEL). The natural key is then defined as follows:

STUDYID, USUBJID, PEDTC, PETESTCD, PELOC, PEMETHOD, QNAM.PEMAKE, QNAM.PEMODEL

This approach becomes very useful in a Findings domain when a sponsor might choose to employ generic --TESTCD values rather than compound --TESTCD values. The use of generic test codes helps to create distinct lists of manageable controlled terminology for --TESTCD. In studies where multiple repetitive tests or measurements are being made, for example in a rheumatoid arthritis study where repetitive measurements of bone erosion in the hands and wrists might be made using both X-ray and MRI equipment, one approach to recording this data might be to create an individual --TESTCD value for each measurement. Taking just the phalanges, a sponsor might want to express the following in a test code in order to make it unique:

- Left or Right hand
- Phalange position (proximal / distal / middle)
- Rotation of the hand
- Method of measurement (X-ray / MRI)
- Machine Make
- Machine Model

Trying to encapsulate all of this information within a unique value of a --TESTCD is not a recommended approach for the following reasons:

- It results in the creation of a potentially large number of test codes
- The eight-character values of --TESTCD becoming less intuitively meaningful
- Multiple test codes are essentially representing the same test or measurement simply to accommodate attributes of a test within the --TESTCD value itself (e.g., to represent a body location at which a measurement was taken).

As a result, the preferred approach would be to use a generic (or simple) test code that requires associated qualifier variables to fully express the test detail. Using this approach in the above example, a generic --TESTCD value might be "EROSION" and the additional components of the compound test codes discussed above would be represented in a number of distinct qualifier variables. These may include domain variables (--LOC, --METHOD, etc.) and Supplemental Qualifier variables (QNAM.MAKE, QNAM.MODEL, etc.). Expressing the natural key becomes very important in this situation in order to communicate the variables that contribute to the uniqueness of a test.

If a generic --TESTCD was used the following variables would be used to fully describe the test. The test is "EROSION", the location is "Left MCP I", the method of measurement is "Ultrasound", the make of the ultrasound machine is "ACME" and the model of the ultrasound machine is "u 2.1". This domain includes both domain variables and Supplemental Qualifier variables that contribute to the natural key of each row and to describe the uniqueness of the test.

--TESTCD	--TEST	--LOC	--METHOD	QNAM.MAKE	QNAM.MODEL
EROSION	EROSION	LEFT MCP I	ULTRASOUND	ACME	U 2.1

4.1.2 GENERAL VARIABLE ASSUMPTIONS

4.1.2.1 VARIABLE-NAMING CONVENTIONS

SDTM variables are named according to a set of conventions, using fragment names (defined in Appendix D). Variables with names ending in "CD" are "short" versions of associated variables that do not include the "CD" suffix (e.g., --TESTCD is the short version of --TEST).

Values of --TESTCD must be limited to 8 characters, and cannot start with a number, nor can they contain characters other than letters, numbers, or underscores. This is to avoid possible incompatibility with SAS V5 Transport files. This limitation will be in effect until the use of other formats (such as XML) becomes acceptable to regulatory authorities.

QNAM serves the same purpose as --TESTCD within supplemental qualifier datasets, and so values of QNAM are subject to the same restrictions as values of --TESTCD.

Values of other "CD" variables are not subject to the same restrictions as --TESTCD.

- ETCD (the companion to ELEMENT) and TSPARMCD (the companion to TSPARM) are limited to 8 characters and do not have special character restrictions. These values should be short for ease of use in programming, but it is not expected that they will need to serve as variable names.
- ARMCD is limited to 20 characters and does not have special character restrictions. The maximum length of ARMCD is longer than for other "short" variables to accommodate the kind of values that are likely to be needed for crossover trials. For example, if ARMCD values for a seven-period crossover were constructed using two-character abbreviations for each treatment and separating hyphens, the length of ARMCD values would be 20.

Variable descriptive names (labels), up to 40 characters, should be provided as data variable labels.

Use of variable names (other than domain prefixes), formats, decodes, terminology, and data types for the same type of data (even for custom domains and Supplemental Qualifiers) should be consistent within and across studies within a submission. Sponsors must use the predefined SDTM-standard labels in all standard domains.

4.1.2.2 TWO-CHARACTER DOMAIN IDENTIFIER

In order to minimize the risk of difficulty when merging/joining domains for reporting purposes, the two-character Domain Identifier is used as a prefix in most variable names.

Special-Purpose domains (see Section 5), Standard domains (see Section 6), Trial Design domains (see Section 7) and Relationship datasets (see Section 8) already specify the complete variable names, so no action is required. When creating custom domains based on the General Observation Classes, sponsors must replace the -- (two hyphens) prefix in the General Observation Class, Timing, and Identifier variables with the two-character Domain Identifier (DOMAIN) variable value for that domain/dataset. The two-character domain code is limited to A to Z for the first character, and A-Z, 0 to 9 for the 2nd character. No special characters are allowed for compatibility with SAS version 5 transport files, and with file naming for the Electronic Common Technical Document (eCTD).

The philosophy applied to determine which variable names use a prefix was that all variable names are prefixed with the Domain Identifier in which they originate except the following:

a. Required Identifiers (STUDYID, DOMAIN, USUBJID)
b. Commonly used grouping and merge Keys (VISIT, VISITNUM, VISITDY), and many of the variables in trial design (such as ELEMENT and ARM)
c. All Demographics domain (DM) variables other than DMDTC and DMDY
d. All variables in RELREC and SUPPQUAL, and some variables in Comments and Trial Design datasets.

Required Identifiers are not prefixed because they are usually used as keys when merging/joining observations. The --SEQ and the optional Identifiers --GRPID and --REFID are prefixed because they may be used as keys when relating observations across domains.

4.1.2.3 USE OF "SUBJECT" AND USUBJID

"Subject" should be used where applicable to generically refer to both "patients" and "healthy volunteers" in order to be consistent with the recommendation in FDA guidance. The term "Subject" should be used consistently in all labels and comments. To identify a subject uniquely across all studies for all applications or submissions involving the product, a unique identifier (USUBJID) should be assigned and included in all datasets.

The unique subject identifier (USUBJID) is required in all datasets containing subject-level data. USUBJID values must be unique for each trial participant (subject) across all trials in the submission. This means that no two (or more) subjects, across all trials in the submission, may have the same USUBJID. Additionally, the same person who participates in multiple clinical trials (when this is known) must be assigned the same USUBJID value in all trials.

Sample Rows from individual study dm.xpt files for a same subject that participates first in ACME01 study, then ACME14 study. Note that this is only one example of the possible values for USUBJID. CDISC does not recommend any specific format for the values of USUBJID, only that the values need to be unique for all subjects in the submission, and across multiple submissions for the same compound. Many sponsors concatenate values for the Study, Site and Subject into USUBJID, but this is not a requirement. It is acceptable to use any format for USUBJID, as long as the values are unique across all subjects per FDA guidance.

Study ACME01 dm.xpt

STUDYID	DOMAIN	USUBJID	SUBJID	SITEID	INVNAM
ACME01	DM	ACME01-05-001	001	05	John Doe

Study ACME14 dm.xpt

STUDYID	DOMAIN	USUBJID	SUBJID	SITEID	INVNAM
ACME14	DM	ACME01-05-001	017	14	Mary Smith

4.1.2.4 CASE USE OF TEXT IN SUBMITTED DATA

It is recommended that text data be submitted in upper case text. Exceptions may include long text data (such as comment text); values of --TEST in Findings datasets (which may be more readable in title case if used as labels in transposed views); and certain controlled terminology (see Section 4.1.3.2) that are already in mixed case. The Sponsor's define.xml may indicate as a general note or assumption whether case sensitivity applies to text data for any or all variables in the dataset.

4.1.2.5 CONVENTION FOR MISSING VALUES

Missing values for individual data items should be represented by nulls. This is a change from previous versions of the SDTMIG, which allowed sponsors to define their conventions for missing values. Conventions for representing observations not done using the SDTM --STAT and --REASND variables are addressed in Section 4.1.5.1.2 and the individual domain models.

4.1.2.6 GROUPING VARIABLES AND CATEGORIZATION

Grouping variables are Identifiers and Qualifiers that group records in the SDTM domains/datasets such as the --CAT (Category) and --SCAT (Subcategory) variables assigned by sponsors to categorize topic-variable values. For example, a lab record with LBTEST = "SODIUM" might have LBCAT = "CHEMISTRY" and LBSCAT = "ELECTROLYTES". Values for --CAT and --SCAT should not be redundant with the domain name or dictionary classification provided by --DECOD and --BODSYS.

1. Hierarchy of Grouping Variables

STUDYID
DOMAIN
--CAT
--SCAT
USUBJID
--GRPID

2. How Grouping Variables Group Data

A. For the subject

1. All records with the same USUBJID value are a group of records that describe that subject.

B. Across subjects (records with different USUBJID values)

1. All records with the same STUDYID value are a group of records that describe that study
2. All records with the same DOMAIN value are a group of records that describe that domain
3. --CAT (Category) and --SCAT (Sub-category) values further subset groups within the domain. Generally, --CAT/--SCAT values have meaning within a particular domain. However, it is possible to use the same values for --CAT/--SCAT in related domains (e.g., MH and AE). When values are used across domains, the meanings should be the same. Examples of where --CAT/--SCAT may have meaning across domains/datasets:
    a. Some limited cases where they will have meaning across domains within the same general observation class, because those domains contain similar conceptual information. Adverse Events (AE), Medical History (MH) and Clinical Events (CE), for example, are conceptually the same data, the only differences being when the event started relative to the study start and whether the event is considered a regulatory reportable adverse event in the study. Neurotoxicities collected in Oncology trials both as separate Medical History CRFs (MH domain) and Adverse Event CRFs (AE domain) could both identify/collect "Paresthesia of the left Arm." In both domains, the --CAT variable could have the value of NEUROTOXICITY.
    b. Cases where multiple datasets are necessary to capture data in the same domain. As an example, perhaps the existence, start and stop date of "Paresthesia of the left Arm" is reported as an Adverse Event (AE domain), but the severity of the event is captured at multiple visits and recorded as Findings About (FA dataset). In both cases the --CAT variable could have a value of NEUROTOXICITY.
    c. Cases where multiple domains are necessary to capture data that was collected together and have an implicit relationship, perhaps identified in the Related Records (RELREC) special purpose dataset. Stress Test data collection, for example, may capture the following:
        i. Information about the occurrence, start, stop, and duration of the test in an Events or Interventions custom general observation class dataset
        ii. Vital Signs recorded during the stress test (VS domain)
        iii. Treatments (e.g., oxygen) administered during the stress test (in an Interventions domain).

    In such cases, the data collected during the stress tests recorded in three separate domains may all have --CAT/--SCAT values (STRESS TEST) that identify this data was collected during the stress test.

C. Within subjects (records with the same USUBJID values)

1. --GRPID values further group (subset) records within USUBJID. All records in the same domain with the same --GRPID value are a group of records within USUBJID. Unlike --CAT and --SCAT, --GRPID values are not intended to have any meaning across subjects and are usually assigned during or after data collection.
2. Although --SPID and --REFID are Identifier variables, usually not considered to be grouping variables, they may have meaning across domains.

3. Differences between Grouping Variables

A. The primary distinctions between --CAT/--SCAT and --GRPID are:

- --CAT/--SCAT are known (identified) about the data before it is collected
- --CAT/--SCAT values group data across subjects
- --CAT/--SCAT may have some controlled terminology
- --GRPID is usually assigned during or after data collection at the discretion of the Sponsor
- --GRPID groups data only within a subject
- --GRPID values are sponsor-defined, and will not be subject to controlled terminology.

Therefore, data that would be the same across subjects is usually more appropriate in --CAT/--SCAT, and data that would vary across subjects is usually more appropriate in --GRPID. For example, a Concomitant Medication administered as part of a known combination therapy for all subjects (Mayo Clinic Regimen for example) would more appropriately use --CAT/--SCAT to identify the medication as part of that regimen. Groups of medications taken to treat an SAE, recorded in/on the SAE collection, and could be part of a different grouping of medications for each subject would more appropriately use --GRPID.

In domains based on the Findings general observation class, the --RESCAT variable can be used to categorize results after the fact. --CAT and --SCAT by contrast, are generally pre-defined by the Sponsor or used by the investigator at the point of collection, not after assessing the value of Findings results.

4.1.2.7 SUBMITTING FREE TEXT FROM THE CRF

Sponsors often collect free text data on a CRF to supplement a standard field. This often occurs as part of a list of choices accompanied by "Other, specify." The manner in which these data are submitted will vary based on their role.

4.1.2.7.1 "SPECIFY" VALUES FOR NON-RESULT QUALIFIER VARIABLES

When free-text information is collected to supplement a standard non-result Qualifier field, the free-text value should be placed in the SUPP-- dataset described in Section 8.4. When applicable, controlled terminology should be used for SUPP-- field names (QNAM) and their associated labels (QLABEL) (see Section 8.4 and Appendix C5). For example, when a description of "Other Medically Important Serious Adverse Event" category is collected on a CRF, the free text description should be stored in the SUPPAE dataset.

- AESMIE=Y
- SUPPAE QNAM=AESOSP, QLABEL= Other Medically Important SAE, QVAL=HIGH RISK FOR ADDITIONAL THROMBOSIS

Another example is a CRF that collects reason for dose adjustment with additional free-text description:

Reason for Dose Adjustment (EXADJ)	Describe
□ Adverse event	_____
□ Insufficient response	_____
□ Non-medical reason	_____

The free text description should be stored in the SUPPEX dataset.

- EXADJ=NONMEDICAL REASON
- SUPPEX QNAM=EXADJDSC, QLABEL= Reason For Dose Adjustment, QVAL=PATIENT MISUNDERSTOOD INSTRUCTIONS
  - Note that QNAM references the "parent" variable name with the addition of "OTH, " one of the standard variable naming fragments for "Other" (see Appendix D). Likewise, the label is a modification of the parent variable label.

When the CRF includes a list of values for a qualifier field that includes "Other" and the "Other" is supplemented with a "Specify" free text field, then the manner in which the free text "Specify" value is submitted will vary based on the sponsor's coding practice and analysis requirements. For example, consider a CRF that collects the anatomical location of administration (EXLOC) of a study drug given as an injection:

Location of Injection

Right Arm	Left Arm
Right Thigh	Left Thigh

Other, Specify: _____

An investigator has selected “OTHER” and specified “UPPER RIGHT ABDOMEN”. Several options are available for submission of this data:

1) If the sponsor wishes to maintain controlled terminology for the EXLOC field and limit the terminology to the 5 pre-specified choices, then the free text is placed in SUPPEX.

EXLOC
OTHER

QNAM	QLABEL	QVAL
EXLOCOTH	Other Location of Dose Administration	UPPER RIGHT ABDOMEN

2) If the sponsor wishes to maintain controlled terminology for EXLOC but will expand the terminology based on values seen in the specify field, then the value of EXLOC will reflect the sponsor’s coding decision and SUPPEX could be used to store the verbatim text.

EXLOC
ABDOMEN

QNAM	QLABEL	QVAL
EXLOCOTH	Other Location of Dose Administration	UPPER RIGHT ABDOMEN

Note that the sponsor might choose a different value for EXLOC (e.g., UPPER ABDOMEN, TORSO) depending on the sponsor's coding practice and analysis requirements.

3) If the sponsor does not require that controlled terminology be maintained and wishes for all responses to be stored in a single variable, then EXLOC will be used and SUPPEX is not required.

EXLOC
UPPER RIGHT ABDOMEN

4.1.2.7.2 “SPECIFY” VALUES FOR RESULT QUALIFIER VARIABLES

When the CRF includes a list of values for a result field that includes "Other" and the "Other" is supplemented with a "Specify" free text field, then the manner in which the free text "Specify" value is submitted will vary based on the sponsor's coding practice and analysis requirements. For example, consider a CRF where the sponsor requests the subject's eye color:

Eye Color

Brown	Black
Blue	Green

Other, specify: _____

An investigator has selected "OTHER" and specified "BLUEISH GRAY." As in the above discussion for non-result Qualifier values, the sponsor has several options for submission:

1) If the sponsor wishes to maintain controlled terminology in the standard result field and limit the terminology to the 5 pre-specified choices, then the free text is placed in --ORRES and the controlled terminology in --STRESC.
   - SCTEST=Eye Color, SCORRES=BLUEISH GRAY, SCSTRESC=OTHER

2) If the sponsor wishes to maintain controlled terminology in the standard result field, but will expand the terminology based on values seen in the specify field, then the free text is placed in --ORRES and the value of --STRESC will reflect the sponsor's coding decision.
   - SCTEST=Eye Color, SCORRES=BLUEISH GRAY, SCSTRESC=GRAY

3) If the sponsor does not require that controlled terminology be maintained, the verbatim value will be copied to --STRESC.
   - SCTEST=Eye Color, SCORRES=BLUEISH GRAY, SCSTRESC=BLUEISH GRAY

Note that rules for the use of "Other, Specify" for the Result Qualifier variable, --OBJ, is discussed in Section 6.4.3.

4.1.2.7.3 "SPECIFY" VALUES FOR TOPIC VARIABLES

Interventions: If a list of specific treatments is provided along with "Other, Specify", --TRT should be populated with the name of the treatment found in the specified text. If the sponsor wishes to distinguish between the pre-specified list of treatments and those recorded under "Other, Specify, " the --PRESP variable could be used. For example:

Indicate which of the following concomitant medications was used to treat the subject's headaches:
Acetaminophen
Aspirin
Ibuprofen
Naproxen
Other: _____

If ibuprofen and diclofenac were reported, the CM dataset would include the following:

- CMTRT=IBUPROFEN, CMPRESP=Y
- CMTRT=DICLOFENAC, CMPRESP is null.

Events: "Other, Specify" for Events may be handled similarly to Interventions. --TERM should be populated with the description of the event found in the specified text and --PRESP could be used to distinguish between pre-specified and free text responses.

Findings: "Other, Specify" for tests may be handled similarly to Interventions. --TESTCD and --TEST should be populated with the code and description of the test found in the specified text. If specific tests are not prespecified on the CRF and the investigator has the option of writing free text for tests, then the name of the test would have to be coded to ensure that all --TESTCD and --TEST values are controlled terminology and are not free text. For example, a lab CRF has tests of Hemoglobin, Hematocrit and "Other, specify". The value the investigator wrote for "Other, specify" is Prothrombin time with an associated result and units. The sponsor would submit the controlled terminology for this test which is LBTESTCD = PT and LBTEST = Prothrombin Time.

4.1.2.8 MULTIPLE VALUES FOR A VARIABLE

4.1.2.8.1 MULTIPLE VALUES FOR AN INTERVENTION OR EVENT TOPIC VARIABLE

If multiple values are reported for a topic variable (i.e., --TRT in an Interventions general-observation-class dataset or --TERM in an Events general-observation-class dataset), it is assumed that the sponsor will split the values into multiple records or otherwise resolve the multiplicity as per the sponsor's standard data management procedures. For example, if an adverse event term of "Headache and Nausea" or a concomitant medication of "Tylenol and Benadryl" is reported, sponsors will often split the original report into separate records and/or query the site for clarification. By the time of submission, the datasets should be in conformance with the record structures described in the SDTMIG. Note that the Disposition dataset (DS) is an exception to the general rule of splitting multiple topic values into separate records. For DS, one record for each disposition or protocol milestone is permitted according to the domain structure. For cases of multiple reasons for discontinuation see Section 6.2.2.1, Assumption 5 for additional information.

4.1.2.8.2 MULTIPLE VALUES FOR A FINDINGS RESULT VARIABLE

If multiple result values (--ORRES) are reported for a test in a Findings class dataset, multiple records should be submitted for that --TESTCD. Example:

- EGTESTCD=RHYRATE, EGTEST=Rhythm and Rate, EGORRES=ATRIAL FIBRILLATION
- EGTESTCD=RHYRATE, EGTEST=Rhythm and Rate, EGORRES=ATRIAL FLUTTER

Note that in this case, the sponsor's operational database may have a result-sequence variable as part of the natural key. Some sponsors may elect to keep this variable in a Supplemental Qualifier record, while others may decide to use --SPID or --SEQ to replace it. Dependent variables such as result Qualifiers should never be part of the natural key.

4.1.2.8.3 MULTIPLE VALUES FOR A NON-RESULT QUALIFIER VARIABLE

The SDTM permits one value for each Qualifier variable per record. If multiple values exist (e.g., due to a "Check all that apply" instruction on a CRF), then the value for the Qualifier variable should be "MULTIPLE" and SUPP-- should be used to store the individual responses. It is recommended that the SUPP-- QNAM value reference the corresponding standard domain variable with an appended number or letter. In some cases, the standard variable name will be shortened to meet the 8 character variable name requirement or it may be clearer to append a meaningful character string as shown in the 2nd AE example below where the 1st 3 characters of the drug name are appended. Likewise the QLABEL value should be similar to the standard label. The values stored in QVAL should be consistent with the controlled terminology associated with the standard variable. See Section 8.4 for additional guidance on maintaining appropriately unique QNAM values. The following example includes selected variables from the ae.xpt and suppae.xpt datasets for a rash whose locations are the face, neck, and chest.

AE Dataset

AETERM	AELOC
RASH	MULTIPLE

SUPPAE Dataset

QNAM	QLABEL	QVAL
AELOC1	Location of the Reaction 1	FACE
AELOC2	Location of the Reaction 2	NECK
AELOC3	Location of the Reaction 3	CHEST

In some cases, values for QNAM and QLABEL more specific than those above may be needed. For example, a sponsor might conduct a study with two study drugs (e.g., open-label study of Abcicin + Xyzamin), and may require the investigator assess causality and describe action taken for each drug for the rash:

AE Dataset

AETERM	AEREL	AEACN
RASH	MULTIPLE	MULTIPLE

SUPPAE Dataset

QNAM	QLABEL	QVAL
AERELABC	Causality of Abcicin	POSSIBLY RELATED
AERELXYZ	Causality of Xyzamin	UNLIKELY RELATED
AEACNABC	Action Taken with Abcicin	DOSE REDUCED
AEACNXYZ	Action Taken with Xyzamin	DOSE NOT CHANGED

In each of the above examples, the use of SUPPAE should be documented in the metadata and the annotated CRF. The controlled terminology used should be documented as part of value-level metadata.

If the sponsor has clearly documented that one response is of primary interest (e.g., in the CRF, protocol, or analysis plan), the standard domain variable may be populated with the primary response and SUPP-- may be used to store the secondary response(s). For example, if Abcicin is designated as the primary study drug in the example above:

AE Dataset

AETERM	AEREL	AEACN
RASH	POSSIBLY RELATED	DOSE REDUCED

SUPPAE Dataset

QNAM	QLABEL	QVAL
AERELX	Causality of Xyzamin	UNLIKELY RELATED
AEACNX	Action Taken with Xyzamin	DOSE NOT CHANGED

Note that in the latter case the label for standard variables AEREL and AEACN will have no indication that they pertain to Abcicin. This association must be clearly documented in the metadata and annotated CRF.

4.1.3 CODING AND CONTROLLED TERMINOLOGY ASSUMPTIONS

PLEASE NOTE: Examples provided in the column "CDISC Notes" are only examples and not intended to imply controlled terminology. Please check current controlled terminology at this link:
http://www.cancer.gov/cancertopics/terminologyresources/CDISC

4.1.3.1 TYPES OF CONTROLLED TERMINOLOGY

For SDTMIG V3.1.1 the presence of a single asterisk (*) or a double asterisk (**) in the "Controlled Terms or Format" column indicated that a discrete set of values (controlled terminology) was expected for the variable. This set of values was sponsor-defined in cases where standard vocabularies had not yet been defined (represented by *) or from an external published source such as MedDRA (represented by **). For V3.1.2, controlled terminology is now represented one of three ways:

- A single asterisk when there is no specific CT available at the current time, but the SDS Team expects that sponsors may have their own CT and/or the CDISC Controlled Terminology Team may be developing CT.
- A list of controlled terms for the variable when values are not yet maintained externally
- The name of an external codelist whose values can be found via the hyperlinks in either the domain or Appendix C.

In addition, the "Controlled Terms or Format" column has been used to indicate a common format such as ISO 8601.

4.1.3.2 CONTROLLED TERMINOLOGY TEXT CASE

It is recommended that controlled terminology be submitted in upper case text for all cases other than those described as exceptions below. Deviations to this rule should be described in the define.xml.

a. If the external reference for the controlled terminology is not in upper case then the data should conform to the case prescribed in the external reference (e.g., MedDRA and LOINC).
b. Units, which are considered symbols rather than abbreviated text (e.g., mg/dL).

4.1.3.3 CONTROLLED TERMINOLOGY VALUES

The controlled terminology or a link to the controlled terminology should be included in the define.xml wherever applicable. All values in the permissible value set for the study should be included, whether they are represented in the submitted data or not. Note that a null value should not be included in the permissible value set. A null value is implied for any list of controlled terms unless the variable is "Required" (see Section 4.1.1.5).

4.1.3.4 USE OF CONTROLLED TERMINOLOGY AND ARBITRARY NUMBER CODES

Controlled terminology or decoded text should be used instead of arbitrary number codes in order to reduce ambiguity for submission reviewers. For example, for concomitant medications, the verbatim term and/or dictionary term should be presented, rather than numeric codes. Separate code values may be submitted as Supplemental Qualifiers and may be necessary in analysis datasets.

4.1.3.5 STORING CONTROLLED TERMINOLOGY FOR SYNONYM QUALIFIER VARIABLES

- For events such as AEs and Medical History, populate --DECOD with the dictionary's preferred term and populate --BODSYS with the preferred body system name. If a dictionary is multi-axial, the value in --BODSYS should represent the system organ class (SOC) used for the sponsor's analysis and summary tables, which may not necessarily be the primary SOC.
- For concomitant medications, populate CMDECOD with the drug's generic name and populate CMCLAS with the drug class used for the sponsor's analysis and summary tables. If coding to multiple classes, follow assumption 4.1.2.8.1 or omit CMCLAS.

In either case, no other intermediate levels (e.g., MedDRA LLT, HLT, HLGT) or relationships should be stored in the dataset. These may be provided in a Supplemental Qualifiers dataset (see Section 8.4 and Appendix C5 for more information). By knowing the dictionary and version used, the reviewer will be able to obtain intermediate levels in a hierarchy (as in MedDRA), or a drug's ATC codes (as in WHO Drug). The sponsor is expected to provide the dictionary name and version used to map the terms by utilizing the define.xml external codelist attributes.

4.1.3.6 STORING TOPIC VARIABLES FOR GENERAL DOMAIN MODELS

The topic variable for the Interventions and Events general-observation-class models is often stored as verbatim text. For an Events domain, the topic variable is --TERM. For an Interventions domain, the topic variable is --TRT. For a Findings domain, the topic variable, --TESTCD, should use Controlled Terminology (e.g., SYSBP for Systolic Blood Pressure). If CDISC standard controlled terminology exists, it should be used; otherwise sponsors should define their own controlled list of terms. If the verbatim topic variable in an Interventions or Event domain is modified to facilitate coding, the modified text is stored in --MODIFY. In most cases (other than PE), the dictionary-coded text is derived into --DECOD. Since the PEORRES variable is modified instead of the topic variable for PE, the dictionary-derived text would be placed in PESTRESC. The variables used in each of the defined domains are:

Domain	Original Verbatim	Modified Verbatim	Standardized Value
AE	AETERM	AEMODIFY	AEDECOD
DS	DSTERM		DSDECOD
CM	CMTRT	CMMODIFY	CMDECOD
MH	MHTERM	MHMODIFY	MHDECOD
PE	PEORRES	PEMODIFY	PESTRESC

4.1.3.7 USE OF "YES" AND "NO" VALUES

Variables where the response is "Yes" or "No" ("Y" or "N") should normally be populated for both "Y" and "N" responses. This eliminates confusion regarding whether a blank response indicates "N" or is a missing value. However, some variables are collected or derived in a manner that allows only one response, such as when a single check box indicates "Yes". In situations such as these, where it is unambiguous to only populate the response of interest, it is permissible to only populate one value ("Y" or "N") and leave the alternate value blank. An example of when it would be acceptable to use only a value of "Y" would be for Baseline Flag (--BLFL) variables, where "N" is not necessary to indicate that a value is not a baseline value.

Note: Permissible values for variables with controlled terms of "Y" or "N" may be extended to include "U" or "NA" if it is the sponsor's practice to explicitly collect or derive values indicating "Unknown" or "Not Applicable" for that variable.

4.1.4 ACTUAL AND RELATIVE TIME ASSUMPTIONS

Timing variables (Table 2.2.5 of the SDTM) are an essential component of all SDTM subject-level domain datasets. In general, all domains based on the three general observation classes should have at least one Timing variable. In the Events or Interventions general observation class this could be the start date of the event or intervention. In the Findings observation class where data are usually collected at multiple visits, at least one Timing variable must be used.

The SDTMIG requires dates and times of day to be stored according to the international standard ISO 8601 (http://www.iso.org). ISO 8601 provides a text-based representation of dates and/or times, intervals of time, and durations of time.

4.1.4.1 FORMATS FOR DATE/TIME VARIABLES

An SDTM DTC variable may include data that is represented in ISO 8601 format as a complete date/time, a partial date/time, or an incomplete date/time.

The SDTMIG template uses ISO 8601 for calendar dates and times of day, which are expressed as follows:

- YYYY-MM-DDThh:mm:ss

where:

- [YYYY] = four-digit year
- [MM] = two-digit representation of the month (01-12, 01=January, etc.)
- [DD] = two-digit day of the month (01 through 31)
- [T] = (time designator) indicates time information follows
- [hh] = two digits of hour (00 through 23) (am/pm is NOT allowed)
- [mm] = two digits of minute (00 through 59)
- [ss] = two digits of second (00 through 59)

Other characters defined for use within the ISO 8601 standard are:

- [-] (hyphen): to separate the time Elements "year" from "month" and "month" from "day" and to represent missing date components.
- [:] (colon): to separate the time Elements "hour" from "minute" and "minute" from "second"
- [/] (solidus): to separate components in the representation of date/time intervals
- [P] (duration designator): precedes the components that represent the duration
- NOTE: Spaces are not allowed in any ISO 8601 representations

Key aspects of the ISO 8601 standard are as follows:

- ISO 8601 represents dates as a text string using the notation YYYY-MM-DD.
- ISO 8601 represents times as a text string using the notation hh:mm:ss.
- The SDTM and SDTMIG require use of the ISO 8601 Extended format, which requires hyphen delimiters for date components and colon delimiters for time components. The ISO 8601 basic format, which does not require delimiters, should not be used in SDTM datasets.
- When a date is stored with a time in the same variable (as a date/time), the date is written in front of the time and the time is preceded with “T” using the notation YYYY-MM-DDThh:mm:ss (e.g. 2001-12-26T00:00:01).

Implementation of the ISO 8601 standard means that date/time variables are character/text data types. The SDS fragment employed for date/time character variables is DTC.

4.1.4.2 DATE/TIME PRECISION

The concept of representing date/time precision is handled through use of the ISO 8601 standard. According to ISO 8601, precision (also referred to by ISO 8601 as "completeness" or "representations with reduced accuracy") can be inferred from the presence or absence of components in the date and/or time values. Missing components are represented by right truncation or a hyphen (for intermediate components that are missing). If the date and time values are completely missing the SDTM date field should be null. Every component except year is represented as two digits. Years are represented as four digits; for all other components, one-digit numbers are always padded with a leading zero.

The table below provides examples of ISO 8601 representation complete date and truncated date/time values using ISO 8601 "appropriate right truncations" of incomplete date/time representations. Note that if no time component is represented, the [T] time designator (in addition to the missing time) must be omitted in ISO 8601 representation.

	Date and Time as Originally Recorded	Precision	ISO 8601 Date/Time
1	December 15, 2003 13:14:17	Complete date/time	2003-12-15T13:14:17
2	December 15, 2003 13:14	Unknown seconds	2003-12-15T13:14
3	December 15, 2003 13	Unknown minutes and seconds	2003-12-15T13
4	December 15, 2003	Unknown time	2003-12-15
5	December, 2003	Unknown day and time	2003-12
6	2003	Unknown month, day, and time	2003

This date and date/time model also provides for imprecise or estimated dates, such as those commonly seen in Medical History. To represent these intervals while applying the ISO 8601 standard, it is recommended that the sponsor concatenate the date/time values (using the most complete representation of the date/time known) that describe the beginning and the end of the interval of uncertainty and separate them with a solidus as shown in the table below:

	Interval of Uncertainty	ISO 8601 Date/Time
1	Between 10:00 and 10:30 on the Morning of December 15, 2003	2003-12-15T10:00/2003-12-15T10:30
2	Between the first of this year (2003) until "now" (February 15, 2003)	2003-01-01/2003-02-15
3	Between the first and the tenth of December, 2003	2003-12-01/2003-12-10
4	Sometime in the first half of 2003	2003-01-01/2003-06-30

Other uncertainty intervals may be represented by the omission of components of the date when these components are unknown or missing. As mentioned above, ISO 8601 represents missing intermediate components through the use of a hyphen where the missing component would normally be represented. This may be used in addition to "appropriate right truncations" for incomplete date/time representations. When components are omitted, the expected delimiters must still be kept in place and only a single hyphen is to be used to indicate an omitted component. Examples of this method of omitted component representation are shown in the table below:

	Date and Time as Originally Recorded	Level of Uncertainty	ISO 8601 Date/Time
1	December 15, 2003 13:15:17	Complete date	2003-12-15T13:15:17
2	December 15, 2003 ??:15	Unknown hour with known minutes	2003-12-15T-:15
3	December 15, 2003 13:??:17	Unknown minutes with known date, hours, and seconds	2003-12-15T13:-:17
4	The 15th of some month in 2003, time not collected	Unknown month and time with known year and day	2003---15
5	December 15, but can't remember the year, time not collected	Unknown year with known month and day	--12-15
6	7:15 of some unknown date	Unknown date with known hour and minute	-----T07:15

Note that Row 6 above where a time is reported with no date information represents a very unusual situation. Since most data is collected as part of a visit, when only a time appears on a CRF, it is expected that the date of the visit would usually be used as the date of collection.

Using a character-based data type to implement the ISO 8601 date/time standard will ensure that the date/time information will be machine and human readable without the need for further manipulation, and will be platform and software independent.

4.1.4.3 INTERVALS OF TIME AND USE OF DURATION FOR --DUR VARIABLES

4.1.4.3.1 INTERVALS OF TIME AND USE OF DURATION FOR --DUR VARIABLES

As defined by ISO 8601, an interval of time is the part of a time axis, limited by two time "instants" such as the times represented in SDTM by the variables --STDTC and --ENDTC. These variables represent the two instants that bound an interval of time, while the duration is the quantity of time that is equal to the difference between these time points.

ISO 8601 allows an interval to be represented in multiple ways. One representation, shown below, uses two dates in the format:

YYYY-MM-DDThh:mm:ss/YYYY-MM-DDThh:mm:ss

While the above would represent the interval (by providing the start date/time and end date/time to "bound" the interval of time), it does not provide the value of the duration (the quantity of time).

Duration is frequently used during a review; however, the duration timing variable (--DUR) should generally be used in a domain if it was collected in lieu of a start date/time (--STDTC) and end date/time (--ENDTC). If both --STDTC and --ENDTC are collected, durations can be calculated by the difference in these two values, and need not be in the submission dataset.

Both duration and duration units can be provided in the single --DUR variable, in accordance with the ISO 8601 standard. The values provided in --DUR should follow one of the following ISO 8601 duration formats:

PnYnMnDTnHnMnS or PnW

where:

- [P] (duration designator): precedes the alphanumeric text string that represents the duration. NOTE: The use of the character P is based on the historical use of the term "period" for duration.
- [n] represents a positive -number or zero
- [W] is used as week designator, preceding a data Element that represents the number of calendar weeks within the calendar year (e.g., P6W represents 6 weeks of calendar time).

The letter "P" must precede other values in the ISO 8601 representation of duration. The “n” preceding each letter represents the number of Years, Months, Days, Hours, Minutes, Seconds, or the number of Weeks. As with the date/time format, “T” is used to separate the date components from time components.

Note that weeks cannot be mixed with any other date/time components such as days or months in duration expressions.

As is the case with the date/time representation in --DTC, --STDTC, or --ENDTC only the components of duration that are known or collected need to be represented. Also, as is the case with the date/time representation, if no time component is represented, the [T] time designator (in addition to the missing time) must be omitted in ISO 8601 representation.

ISO 8601 also allows that the "lowest-order components" of duration being represented may be represented in decimal format. This may be useful if data are collected in formats such as "one and one-half years", "two and one-half weeks", "one-half a week" or "one quarter of an hour" and the sponsor wishes to represent this "precision" (or

lack of precision) in ISO 8601 representation. Remember that this is ONLY allowed in the lowest-order (right-most) component in any duration representation.

The table below provides some examples of ISO-8601-compliant representations of durations:

Duration as originally recorded	ISO 8601 Duration
2 Years	P2Y
10 weeks	P10W
3 Months 14 days	P3M14D
3 Days	P3D
6 Months 17 Days 3 Hours	P6M17DT3H
14 Days 7 Hours 57 Minutes	P14DT7H57M
42 Minutes 18 Seconds	PT42M18S
One-half hour	PT0.5H
5 Days 12¼ Hours	P5DT12.25H
4 ½ Weeks	P4.5W

Note that a leading zero is required with decimal values less than one.

4.1.4.3.2 INTERVAL WITH UNCERTAINTY

When an interval of time is an amount of time (duration) following an event whose start date/time is recorded (with some level of precision, i.e. when one knows the start date/time and the duration following the start date/time), the correct ISO 8601 usage to represent this interval is as follows:

YYYY-MM-DDThh:mm:ss/PnYnMnDTnHnMnS

where the start date/time is represented before the solidus [/], the "Pn…", following the solidus, represents a "duration", and the entire representation is known as an "interval". NOTE: This is the recommended representation of elapsed time, given a start date/time and the duration elapsed.

When an interval of time is an amount of time (duration) measured prior to an event whose start date/time is recorded (with some level of precision, i.e. where one knows the end date/time and the duration preceding that end date/time), the syntax is:

PnYnMnDTnHnMnS/YYYY-MM-DDThh:mm:ss

where the duration, "Pn…", is represented before the solidus [/], the end date/time is represented following the solidus, and the entire representation is known as an "interval".

4.1.4.4 USE OF THE "STUDY DAY" VARIABLES

The permissible Study Day variables (--DY, --STDY, and --ENDY) describe the relative day of the observation starting with the reference date as Day 1. They are determined by comparing the date portion of the respective date/time variables (--DTC, --STDTC, and --ENDTC) to the date portion of the Subject Reference Start Date (RFSTDTC from the Demographics domain).

The Subject Reference Start Date (RFSTDTC) is designated as Study Day 1. The Study Day value is incremented by 1 for each date following RFSTDTC. Dates prior to RFSTDTC are decremented by 1, with the date preceding RFSTDTC designated as Study Day -1 (there is no Study Day 0). This algorithm for determining Study Day is consistent with how people typically describe sequential days relative to a fixed reference point, but creates problems if used for mathematical calculations because it does not allow for a Day 0. As such, Study Day is not suited for use in subsequent numerical computations, such as calculating duration. The raw date values should be used rather than Study Day in those calculations.

All Study Day values are integers. Thus, to calculate Study Day:

--DY = (date portion of --DTC) - (date portion of RFSTDTC) + 1 if --DTC is on or after RFSTDTC
--DY = (date portion of --DTC) - (date portion of RFSTDTC) if --DTC precedes RFSTDTC
This algorithm should be used across all domains.

4.1.4.5 CLINICAL ENCOUNTERS AND VISITS

All domains based on the three general observation classes should have at least one timing variable. For domains in the Events or Interventions observations classes, and for domains in the Findings observation class for which data are collected only once during the study, the most appropriate timing variable may be a date (e.g., --DTC, --STDTC) or some other timing variable. For studies that are designed with a prospectively defined schedule of visit-based activities, domains for data that are to be collected more than once per subject (e.g., Labs, ECG, Vital Signs) are expected to include VISITNUM as a timing variable.

Clinical encounters are described by the CDISC Visit variables. For planned visits, values of VISIT, VISITNUM, and VISITDY must be those defined in the Trial Visits dataset, see Section 7.4. For planned visits:

- Values of VISITNUM are used for sorting and should, wherever possible, match the planned chronological order of visits. Occasionally, a protocol will define a planned visit whose timing is unpredictable (e.g., one planned in response to an adverse event, a threshold test value, or a disease event), and completely chronological values of VISITNUM may not be possible in such a case.
- There should be a one-to-one relationship between values of VISIT and VISITNUM.
- For visits that may last more than one calendar day, VISITDY should be the planned day of the start of the visit.

Sponsor practices for populating visit variables for unplanned visits may vary across sponsors.

- VISITNUM should generally be populated, even for unplanned visits, as it is expected in many Findings domains, as described above. The easiest method of populating VISITNUM for unplanned visits is to assign the same value (e.g., 99) to all unplanned visits, but this method provides no differentiation between the unplanned visits and does not provide chronological sorting. Methods that provide a one-to-one relationship between visits and values of VISITNUM, that are consistent across domains, and that assign VISITNUM values that sort chronologically require more work and must be applied after all of a subject's unplanned visits are known.
- VISIT may be left null or may be populated with a generic value (e.g., "Unscheduled") for all unplanned visits, or individual values may be assigned to different unplanned visits.
- VISITDY should not be populated for unplanned visits, since VISITDY is, by definition, the planned study day of visit, and since the actual study day of an unplanned visit belongs in a --DY variable.

The following table shows an example of how the visit identifiers might be used for lab data:

USUBJID	VISIT	VISITNUM	VISITDY	LBDY
001	Week 1	2	7	7
001	Week 2	3	14	13
001	Week 2 Unscheduled	3.1		17

4.1.4.6 REPRESENTING ADDITIONAL STUDY DAYS

The SDTM allows for --DTC values to be represented as study days (--DY) relative to the RFSTDTC reference start date variable in the DM dataset, as described above in Section 4.1.4.4. The calculation of additional study days within subdivisions of time in a clinical trial may be based on one or more sponsor-defined reference dates not represented by RFSTDTC. In such cases, the Sponsor may define Supplemental Qualifier variables and the define.xml should reflect the reference dates used to calculate such study days. If the sponsor wishes to define “day within element” or “day within epoch,” the reference date/time will be an element start date/time in the Subject Elements dataset (Section 5.3.1).

4.1.4.7 USE OF RELATIVE TIMING VARIABLES

--STRF and --ENRF

The variables --STRF and --ENRF represent the timing of an observation relative to the sponsor-defined reference period when information such as "BEFORE", "PRIOR","ONGOING"", or "CONTINUING" is collected in lieu of a date and this collected information is in relation to the sponsor-defined reference period. The sponsor-defined reference period is the continuous period of time defined by the discrete starting point (RFSTDTC) and the discrete ending point (RFENDTC) for each subject in the Demographics dataset.

--STRF is used to identify the start of an observation relative to the sponsor-defined reference period.

--ENRF is used to identify the end of an observation relative to the sponsor-defined reference period.

Allowable values for --STRF and --ENRF are "BEFORE", "DURING", "DURING/AFTER", "AFTER", and "U" (for unknown).

As an example, a CRF checkbox that identifies concomitant medication use that began prior to the study treatment period would translate into CMSTRF = "BEFORE" if selected. Note that in this example, the information collected is with respect to the start of the concomitant medication use only and therefore the collected data corresponds to variable CMSTRF, not CMENRF. Note also that the information collected is relative to the study treatment period, which meets the definition of CMSTRF.

Some sponsors may wish to derive --STRF and --ENRF for analysis or reporting purposes even when dates are collected. Sponsors are cautioned that doing so in conjunction with directly collecting or mapping data such as "BEFORE", "PRIOR", etc. to --STRF and --ENRF will blur the distinction between collected and derived values within the domain. Sponsors wishing to do such derivations are instead encouraged to use supplemental variables or analysis datasets for this derived data.

In general, sponsors are cautioned that representing information using variables --STRF and --ENRF may not be as precise as other methods, particularly because information is often collected relative to a point in time or to a period of time other than the one defined as the study reference period. SDTMIG V3.1.2 has attempted to address these limitations by the addition of four new relative timing variables, which are described in the following paragraph. Sponsors should use the set of variables that allows for accurate representation of the collected data. In many cases, this will mean using these new relative timing variables in place of --STRF and --ENRF.

--STRTPT, --STTPT, --ENRTPT, and --ENTPT

While the variables --STRF and --ENRF are useful in the case when relative timing assessments are made coincident with the start and end of the study reference period, these may not be suitable for expressing relative timing assessments such as "Prior" or "Ongoing" that are collected at other times of the study. As a result, four new timing variables have been added in V3.1.2 to express a similar concept at any point in time. The variables --STRTPT and --ENRTPT contain values similar to --STRF and --ENRF, but may be anchored with any timing description or date/time value expressed in the respective --STTPT and --ENTPT variables, and not be limited to the study reference period. Unlike the variables --STRF and --ENRF, which for all domains are defined relative to one study reference period, the timing variables --STRTPT, --STTPT, --ENRTPT, and --ENTPT are defined to be unique within a domain only. Allowable values for --STRTPT and --ENRTPT are as follows:

If the reference time point corresponds to the date of collection or assessment:

- Start values: an observation can start BEFORE that time point, can start COINCIDENT with that time point, or it is unknown (U) when it started
- End values: an observation can end BEFORE that time point, can end COINCIDENT with that time point, can be known that it didn't end but was ONGOING, or it is unknown (U) at all when it ended or if it was ongoing.
- AFTER is not a valid value in this case because it would represent an event after the date of collection.

If the reference time point is prior to the date of collection or assessment:

- Start values: an observation can start BEFORE the reference point, can start COINCIDENT with the reference point, can start AFTER the reference point, or it may not be known (U) when it started
- End values: an observation can end BEFORE the reference point, can end COINCIDENT with the reference point, can end AFTER the reference point, can be known that it didn't end but was ONGOING, or it is unknown (U) when it ended or if it was ongoing.

Examples of --STRTPT, --STTPT, --ENRTPT, and --ENTPT

1. **Medical History**

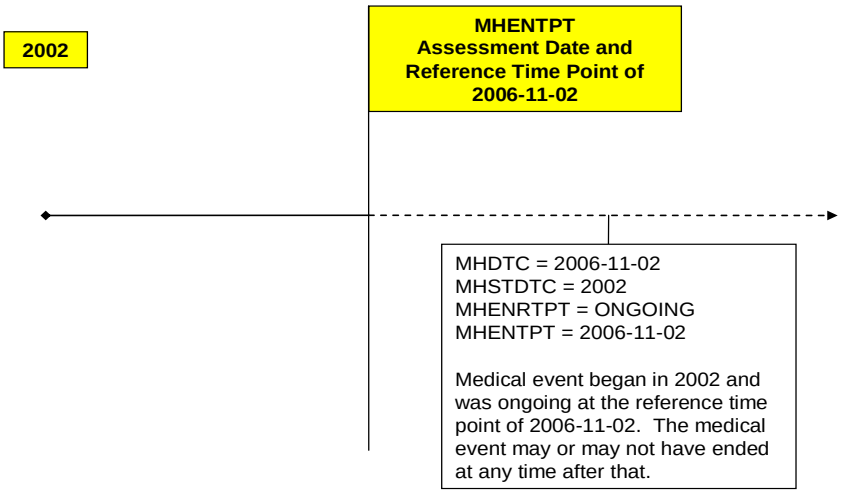
Assumptions:

- CRF contains "Year Started" and check box for "Active"
- "Date of Assessment" is collected

Example when "Active" is checked:

MHDTC = date of assessment value, ex. "2006-11-02"
MHSTDTC = year of condition start, e.g., "2002"
MHENRTPT = "ONGOING"
MHENTPT = date of assessment value, e.g., "2006-11-02"

Figure 4.1.4.7 Example of --ENRTPT and --ENTPT for Medical History



Prior and Concomitant Medications

Assumptions:

- CRF contains "Start Date", "Stop Date", and check boxes for "Prior" if unknown or uncollected Start Date, and "Continuing" if no Stop Date was collected. Prior refers to screening visit and Continuing refers to final study visit.

Example when both "Prior" and "Continuing" are checked:

CMSTDTC = [null]
CMENDTC = [null]
CMSTRTPT = "BEFORE"
CMSTTPT = screening date, e.g., "2006-10-21"
CMENRTPT = "ONGOING"
CMENTPT = final study visit date, e.g., "2006-11-02"

2. **Adverse Events**

Assumptions:

- CRF contains "Start Date", "Stop Date", and "Outcome" with check boxes including "Continuing" and "Unknown" (Continuing and Unknown are asked at the end of the subject's study participation)
- No assessment date or visit information is collected

Example when "Unknown" is checked:

AESTDTC = start date, e.g., "2006-10-01"
AEENDTC = [null]
AEENRTPT = "U"
AEENTPT = final subject contact date, e.g., "2006-11-02"

4.1.4.8 DATE AND TIME REPORTED IN A DOMAIN BASED ON FINDINGS

When the date/time of collection is reported in any domain, the date/time should go into the --DTC field (e.g., EGDTC for Date/Time of ECG). For any domain based on the Findings general observation class, such as lab tests which are based on a specimen, the collection date is likely to be tied to when the specimen or source of the finding was captured, not necessarily when the data was recorded. In order to ensure that the critical timing information is always represented in the same variable, the --DTC variable is used to represent the time of specimen collection. For example, in the LB domain the LBDTC variable would be used for all single-point blood collections or spot urine collections. For timed lab collections (e.g., 24-hour urine collections) the LBDTC variable would be used for the start date/time of the collection and LBENDTC for the end date/time of the collection. This approach will allow the single-point and interval collections to use the same date/time variables consistently across all datasets for the Findings general observation class. The table below illustrates the proper use of these variables. Note that --STDTC is not used for collection dates over an interval, so is blank in the following table.

Collection Type	--DTC	--STDTC	--ENDTC
Single-Point Collection	X		
Interval Collection	X		X

4.1.4.9 USE OF DATES AS RESULT VARIABLES

Dates are generally used only as timing variables to describe the timing of an event, intervention, or collection activity, but there may be occasions when it may be preferable to model a date as a result (--ORRES) in a Findings dataset. Note that using a date as a result to a Findings question is unusual and atypical, and should be approached with caution, but this situation may occasionally occur when a) a group of questions (each of which has a date response) is asked and analyzed together; or b) the Event(s) and Intervention(s) in question are not medically significant (often the case when included in questionnaires). Consider the following cases:

- Calculated due date
- Date of last day on the job
- Date of high school graduation

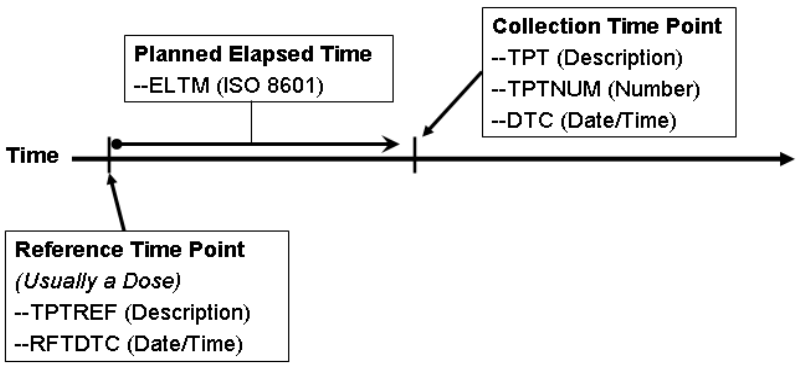
One approach to modeling these data would be to place the text of the question in --TEST and the response to the question, a date represented in ISO 8601 format, in --ORRES and --STRESC as long as these date results do not contain the dates of medically significant events or interventions.

Again, use extreme caution when storing dates as the results of Findings. Remember, in most cases, these dates should be timing variables associated with a record in an Intervention or Events dataset.

4.1.4.10 REPRESENTING TIME POINTS

Time points can be represented using the time point variables, --TPT, --TPTNUM, --ELTM, and the time point anchors, --TPTREF (text description) and --RFTDTC (the date/time). Note that time-point data will usually have an associated --DTC value. The interrelationship of these variables is shown in Figure 4.1.4.10 below.

Figure 4.1.4.10



Values for these variables for Vital Signs measurements taken at 30, 60, and 90 minutes after dosing would look like the following.

VSTPTNUM	VSTPT	VSELTM	VSTPTREF	VSRFTDTC	VSDTC
1	30 MIN	PT30M	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-01T08:30
2	60 MIN	PT1H	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-01T09:01
3	90 MIN	PT1H30M	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-01T09:32

*Note that the **actual** elapsed time is not an SDTM variable, but can be derived by an algorithm representing VSDTC-VSRFTDTC.*

Values for these variables for Urine Collections taken pre-dose, and from 0-12 hours and 12-24 hours after dosing would look like the following.

LBTPTNUM	LBTPT	LBELTM	LBTPTREF	LBRFTDTC	LBDTC
1	15 MIN PRE-DOSE	-PT15M	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-01T08:30
2	0-12 HOURS	PT12H	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-01T20:35
3	12-24 HOURS	PT24H	DOSE ADMINISTRATION	2006-08-01T08:00	2006-08-02T08:40

Note that the value in LBELTM represents the end of the interval at which the collection ends.

When time points are used, --TPTNUM is expected. Time points may or may not have an associated --TPTREF. Sometimes, --TPTNUM may be used as a key for multiple values collected for the same test within a visit; as such, there is no dependence upon an anchor such as --TPTREF, but there will be a dependency upon the VISITNUM. In such cases, VISITNUM will be required to confer uniqueness to values of --TPTNUM.

If the protocol describes the scheduling of a dose using a reference intervention or assessment, then --TPTREF should be populated, even if it does not contribute to uniqueness. The fact that time points are related to a reference time point, and what that reference time point is, are important for interpreting the data collected at the time point.

Not all time points will require all three variables to provide uniqueness. In fact, in some cases a time point may be uniquely identified without the use of VISIT, or without the use of --TPTREF, or, rarely, without the use of either one. For instance:

- A trial might have time points only within one visit, so that the contribution of VISITNUM to uniqueness is trivial.
- A trial might have time points that do not relate to any visit, such as time points relative to a dose of drug self-administered by the subject at home.
- A trial may have only one reference time point per visit, and all reference time points may be similar, so that only one value of --TPTREF (e.g., "DOSE") is needed.
- A trial may have time points not related to a reference time point. For instance, --TPTNUM values could be used to distinguish first, second, and third repeats of a measurement scheduled without any relationship to dosing.

For trials with many time points, the requirement to provide uniqueness using only VISITNUM, --TPTREF, and --TPTNUM may lead to a scheme where multiple natural keys are combined into the values of one of these variables. For instance, in a crossover trial with multiple doses on multiple days within each period, either of the following options could be used. VISITNUM might be used to designate period, --TPTREF might be used to designate the day and the dose, and --TPTNUM might be used to designate the timing relative to the reference time point. Alternatively, VISITNUM might be used to designate period and day within period, --TPTREF might be used to designate the dose within the day, and --TPTNUM might be used to designate the timing relative to the reference time point.

Option 1

VISIT	VISITNUM	--TPT	--TPTNUM	--TPTREF
PERIOD 1	3	PRE-DOSE	1	DAY 1, AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	DAY 1, PM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	DAY 5, AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	DAY 5, PM DOSE
		1H	2	
		4H	3	
PERIOD 2	4	PRE-DOSE	1	DAY 1, AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	DAY 1, PM DOSE
		1H	2	
		4H	3	

Option 2

VISIT	VISITNUM	--TPT	--TPTNUM	--TPTREF
PERIOD 1, DAY 1	3	PRE-DOSE	1	AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	PM DOSE
		1H	2	
		4H	3	
PERIOD 1, DAY 5	4	PRE-DOSE	1	AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	PM DOSE
		1H	2	
		4H	3	
PERIOD 2, DAY 1	5	PRE-DOSE	1	AM DOSE
		1H	2	
		4H	3	
		PRE-DOSE	1	PM DOSE
		1H	2	
		4H	3	

Within the context that defines uniqueness for a time point, which may include domain, visit, and reference time point, there must be a one-to-relationship between values of --TPT and --TPTNUM. In other words, if domain, visit, and reference time point uniquely identify subject data, then if two subjects have records with the same values of DOMAIN, VISITNUM, --TPTREF, and --TPTNUM, then these records may not have different time point descriptions in --TPT.

Within the context that defines uniqueness for a time point, there is likely to be a one-to-one relationship between most values of --TPT and --ELTM. However, since --ELTM can only be populated with ISO 8601 periods of time (as described in Section 4.1.4.3), --ELTM may not be populated for all time points. For example, --ELTM is likely to be null for time points described by text such as "pre-dose" or "before breakfast." When --ELTM is populated, if two

subjects have records with the same values of DOMAIN, VISITNUM, --TPTREF, and --TPTNUM, then these records may not have different values in --ELTM.

When the protocol describes a time point with text such as "4-6 hours after dose" or "12 hours +/- 2 hours after dose" the sponsor may choose whether and how to populate --ELTM. For example, a time point described as "4-6 hours after dose" might be associated with an --ELTM value of PT4H. A time point described as "12 hours +/- 2 hours after dose" might be associated with an --ELTM value of PT12H. Conventions for populating --ELTM should be consistent (the examples just given would probably not both be used in the same trial). It would be good practice to indicate the range of intended timings by some convention in the values used to populate --TPT.

Sponsors may, of course, use more stringent requirements for populating --TPTNUM, --TPT, and --ELTM. For instance, a sponsor could decide that all time points with a particular --ELTM value would have the same values of --TPTNUM and --TPT, across all visits, reference time points, and domains.

4.1.5 OTHER ASSUMPTIONS

4.1.5.1 ORIGINAL AND STANDARDIZED RESULTS OF FINDINGS AND TESTS NOT DONE

4.1.5.1.1 ORIGINAL AND STANDARDIZED RESULTS

The --ORRES variable contains the result of the measurement or finding as originally received or collected. --ORRES is an expected variable and should always be populated, with two exceptions:

- When --STAT = "NOT DONE"
- --ORRES should generally not be populated for derived records

Derived records are flagged with the --DRVFL variable. When the derived record comes from more than one visit, the sponsor must define the value for VISITNUM, addressing the correct temporal sequence. If a new record is derived for a dataset, and the source is not eDT, then that new record should be flagged as derived. For example in ECG data, if QTc Intervals are derived in-house by the sponsor, then the derived flag is set to "Y". If the QTc Intervals are received from a vendor the derived flag is not populated.

When --ORRES is populated, --STRESC must also be populated, regardless of whether the data values are character or numeric. The variable, --STRESC, is derived either by the conversion of values in --ORRES to values with standard units, or by the assignment of the value of --ORRES (as in the PE Domain, where --STRESC could contain a dictionary-derived term). A further step is necessary when --STRESC contains numeric values. These are converted to numeric type and written to --STRESN. Because --STRESC may contain a mixture of numeric and character values, --STRESN may contain null values, as shown in the flowchart below.

When the original measurement or finding is a selection from a defined codelist, in general, the --ORRES and --STRESC variables contain results in decoded format, that is, the textual interpretation of whichever code was selected from the codelist. In some cases where the code values in the codelist are statistically meaningful standardized values or scores, which are defined by sponsors or by valid methodologies such as SF36 questionnaires, the --ORRES variables will contain the decoded format, whereas, the --STRESC variables as well as the --STRESN variables will contain the standardized values or scores.

Occasionally data that are intended to be numeric are collected with characters attached that cause the character-to-numeric conversion to fail. For example, numeric cell counts in the source data may be specified with a greater than (>) or less than (<) sign attached (e.g. >10, 000 or <1). In these cases the value with the greater than (>) or less than (<) sign attached should be moved to the --STRESC variable, and --STRESN should be null. The rules for modifying the value for analysis purposes should be defined in the analysis plan and only changed in the ADaM datasets. If the value in --STRESC has different units, the greater than (>) or less than (<) sign should be maintained. An example is included in Section 4.1.5.1.3, Rows 11 and 12.

4.1.5.1.2 TESTS NOT DONE

When an entire examination (Laboratory draw, ECG, Vital Signs, or Physical Examination), or a group of tests (hematology or urinalysis), or an individual test (glucose, PR interval, blood pressure, or hearing) is not done, and this information is explicitly captured on the CRF with a yes/no or done/not done question, this information should be presented in the dataset. The reason for the missing information may or may not have been collected. A sponsor has two options; one is to submit individual records for each test not done or to submit one record for a group of tests that were not done. See the examples below for submitting groups of tests not done.

If the data on the CRF is missing and yes/no or done/not done was not explicitly captured a record should not be created to indicate that the data was not collected.

If a group of tests were not done:

- --TESTCD should be --ALL
- --TEST should be <Name of the Module>
- --CAT should be <Name of Group of Tests>
- --ORRES should be null
- --STAT should be "NOT DONE"
- --REASND, if collected, might be "Specimen lost"

For example, if urinalysis is not done then:

- LBTESTCD should be "LBALL"
- LBTEST should be "Labs Data"
- LBCAT should be "URINALYSIS"
- LBORRES should be NULL
- LBSTAT should be "NOT DONE"
- LBREASND, if collected, might be "Subject could not void"

4.1.5.1.3 EXAMPLES OF ORIGINAL AND STANDARD UNITS AND TEST NOT DONE

The following examples are meant to illustrate the use of Findings results variables, and are not meant as comprehensive domain examples. Certain required and expected variables are omitted, and the samples may represent data for more than one subject.

Lab Data Examples

- Numeric values that have been converted (Row 1) or copied (Row 3).
- A character result that has been copied (Row 2).
- A result of "TRACE" shows "TRACE" in LBSTRESC and LBSTRESN is null (Row 4).
- Value of 1+ in LBORRES, 1+ in LBSTRESC and LBSTRESN is null (Row 5).
- A result of "BLQ" was collected. That value was copied to LBSTRESC and LBSTRESN is null. Note that the standard units are populated by sponsor decision, but could be left null. (Row 6).
- A result is missing because the observation was "NOT DONE", as reflected in the --STAT variable; neither LBORRES nor LBSTRESC are populated (Row 7).
- A result is derived from multiple records such as an average of baseline measurements for a baseline value, so LBDRVFL = Y (Row 8). Note that the original collected data are not shown in this example.
- None of the scheduled tests were completed as planned (Row 9).
- A category of tests was not completed as planned (Row 10).
- Shows when LBSTRESC has been standardized and the less than (<) sign has been maintained (Row 11).
- Shows when LBSTRESC has been standardized and the less than (<) sign has been maintained (Row 12).

Row	LBTESTCD	LBCAT	LBORRES	LBORRESU	LBSTRESC	LBSTRESN	LBSTRESU	LBSTAT	LBDRVFL
1	GLUC	CHEMISTRY	6.0	mg/dL	60.0	60.0	mg/L		
2	BACT	URINALYSIS	MODERATE		MODERATE				
3	ALT	CHEMISTRY	12.1	mg/L	12.1	12.1	mg/L		
4	RBC	URINALYSIS	TRACE		TRACE				
5	WBC	URINALYSIS	1+		1+				
6	KETONES	CHEMISTRY	BLQ	mg/L	BLQ		mg/L		
7	HCT	HEMATOLOGY						NOT DONE	
8	MCHC	HEMATOLOGY			33.8	33.8	g/dL		Y
9	LBALL							NOT DONE	
10	LBALL	HEMATOLOGY						NOT DONE	
11	WBC	HEMATOLOGY	<4, 000	/mm3	<4,000		/mm3		
12	BILI	CHEMISTRY	<0.1	mg/dL	<1.71		umol/L		

The SDS Team realizes that for rows 4, 5, and 6, this change is not backward compatible, but the example has been modified to reflect harmonization with ADaM and comments received during the review period. The changes are directed at decreasing the amount of sponsor subjectivity in converting original results to standard results.

ECG Examples:

- Numeric and character values that have been converted (Rows 2 and 3) or copied (Rows 1 and 4).
- A result is missing because the test was "NOT DONE", as reflected in the EGSTAT variable; neither EGORRES nor EGSTRESC is populated (Row 5).
- The overall interpretation is included as a new record (Row 6)
- The entire ECG was not done (Row 7)

Row	EGTESTCD	EGORRES	EGORRESU	EGSTRESC	EGSTRESN	EGSTRESU	EGSTAT	EGDRVFL
1	QRSDUR	0.362	sec	0.362	0.362	sec		
2	QTMEAN	221	msec	.221	.221	sec		
3	QTCB	412	msec	.412	.412	sec		
4	RHYMRATE	ATRIAL FLUTTER		ATRIAL FLUTTER				
5	PRMEAN						NOT DONE	
6	INTP	ABNORMAL		ABNORMAL				
7	EGALL						NOT DONE	

Vital Signs Example:

- Numeric values that have converted (Rows 1 and 2).
- A result is missing because the Vital Signs test was "NOT DONE", as reflected in the VSSTAT variable; neither VSORRES nor VSSTRESC is populated (Row 3).
- The result is derived by having multiple records for one measurement (Rows 4 and 5), and the derived value is recorded in a new row with the derived record flagged. (Row 6).
- The entire examination was not done (Row 7).

Row	VSTESTCD	VSORRES	VSORRESU	VSSTRESC	VSSTRESN	VSSTRESU	VSSTAT	VSDRVFL
1	HEIGHT	60	IN	152	152	cm		
2	WEIGHT	110	LB	50	50	kg		
3	HR						NOT DONE	
4	SYSBP	96	mmHg	96	96	mmHg		
5	SYSBP	100	mmHg	100	100	mmHg		
6	SYSBP			98	98	mmHg		Y
7	VSALL						NOT DONE	

Questionnaire Example:

- Note that this is for a standard instrument for which no subjectivity is involved in representing the original result as a numeric value.
- A Character value that has been converted to a standard score (Rows 1, 5, and 6).
- A result is derived from multiple records (Row 2). The records for the original collected results are not shown in this example.
- A result is missing because the observation was "NOT DONE", as reflected in the QSSTAT variable; neither QSORRES nor QSSTRESC is populated (Row 3).
- The entire questionnaire was not done (Row 4).
- Shows when a summary score in Row 7 is derived from the data in Rows 5 and 6 and QSORRES should not be populated because the character values cannot be added to give a meaningful result (Rows 5, 6, and 7).

Row	QSTESTCD	QSTEST	QSORRES	QSSTRESC	QSSTRESN	QSSTAT	QSDRVFL
1	QS1	Health	VERY GOOD	4.4	4.4		
2	QS2	Health Perceptions (0-100)		82	82		Y
3	QS1	Health				NOT DONE	
4	QSALL	Questionnaire				NOT DONE	
5	QSP10	Healthy As Anyone	MOSTLY TRUE	4	4		
6	QSP11	Expect Health To Get Better	DEFINITELY TRUE	5	5		
7	QSPSUM	Total of Scores		9	9		Y

4.1.5.2 LINKING OF MULTIPLE OBSERVATIONS

See Section 8 for guidance on expressing relationships among multiple observations.

4.1.5.3 TEXT STRINGS THAT EXCEED THE MAXIMUM LENGTH FOR GENERAL-OBSERVATION-CLASS DOMAIN VARIABLES

4.1.5.3.1 TEST NAME (--TEST) GREATER THAN 40 CHARACTERS

Sponsors may have test descriptions (--TEST) longer than 40 characters in their operational database. Since the --TEST variable is meant to serve as a label for a --TESTCD when a Findings dataset is transposed to a more horizontal format, the length of --TEST is normally limited to 40 characters to conform to the limitations of the SAS V5 Transport format currently used for submission datasets. Therefore, sponsors have the choice to either insert the first 40 characters or a text string abbreviated to 40 characters in --TEST. Sponsors should include the full description for these variables in the study metadata in one of two ways:

- If the annotated CRF contains the full text, provide a link to the annotated CRF page containing the full test description in the define.xml Origin column for --TEST.
- If the annotated CRF does not specify the full text, then create a pdf document to store full-text descriptions. In the define.xml Comments column for --TEST insert a link to the full test description in the pdf.

The convention above should also be applied to the Qualifier Value Label (QLABEL) in Supplemental Qualifiers (SUPP--) datasets. IETEST values in IE and TI are exceptions to the above 40-character rule and are limited to 200 characters since they are not expected to be transformed to a column labels. Values of IETEST that exceed 200 characters should be described in study metadata as per the convention above. For further details see IE domain Section 6.3.2.1 Assumption 4 and TI domain Section 7.5.2 Assumption 5.

4.1.5.3.2 TEXT STRINGS> 200 CHARACTERS IN OTHER VARIABLES

Some sponsors may collect data values longer than 200 characters for some variables. Because of the current requirement for Version 5 SAS transport file format, it will not be possible to store those long text strings using only one variable. Therefore, the SDTMIG has defined a convention for storing a long text string by using a combination of the standard domain dataset and the Supplemental Qualifiers (SUPP--) datasets, which applies to all domains based on a general observation class. Note that the Comments domain is not based on a general observation class and has different rules. See Section 5.2 for information on handling comment text more than 200 characters long.

The first 200 characters of text should be stored in the standard domain variable and each additional 200 characters of text should be stored as a record in the SUPP-- dataset (see Section 8.4). In this dataset, the value for QNAM should contain a sequential variable name, which is formed by appending a one-digit integer, beginning with 1, to the original standard domain variable name. When splitting a text string into several records, the text should be split between words to improve readability.

As an example, if there was a verbatim response for a Medical History Reported Term (MHTERM) of 500 characters in length, the sponsor would put the first 200 characters of text in the standard domain variable and dataset (MHTERM in MH), the next 200 characters of text as a first supplemental record in the SUPPMH dataset, and the final 100 characters of text as a second record in the SUPPMH dataset (see Example 1 below). Variable QNAM would have the values MHTERM1 and MHTERM2 for these two records in SUPPMH, respectively, for this one particular text string. Sponsors should place the text itself into variable QVAL and the label of the original standard domain variable into variable QLABEL. In this case, IDVAR and IDVARVAL should be used in SUPPMH to relate the associated supplemental text records to the parent record containing the first 200 characters of text in the standard domain.

In cases where the standard domain variable name is already 8 characters in length, sponsors should replace the last character with a digit when creating values for QNAM. As an example, for Other Action Taken in Adverse Events (AEACNOTH), values for QNAM for the SUPPAE records would have the values AEACNOT1, AEACNOT2, and so on.

Example 1: MHTERM with 500 characters.
suppmh.xpt

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
12345	MH	99-123	MHSEQ	6	MHTERM1	Reported Term for the Medical History	2nd 200 chars of text	CRF	
12345	MH	99-123	MHSEQ	6	MHTERM2	Reported Term for the Medical History	last 100 chars of text	CRF	

Example 2: AEACN with 400 characters.
suppae.xpt

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
12345	AE	99-123	AESEQ	4	AEACNOT1	Other Action Taken	2nd 200 chars of text	CRF	

The only exceptions to the above rules are Comments (CO) and TS (Trial Summary). Please see section 5.2.1.1 for Comments and Section 7.6.1 for Trial Summary. **NOTE:** Only the Comments (CO) and Trial Summary (TS) domains are allowed to add variables for the purpose of handling text exceeding 200 characters. All other domains must use SUPPQUAL variables as noted in the examples above.

4.1.5.4 EVALUATORS IN THE INTERVENTIONS AND EVENTS OBSERVATION CLASSES

The observations recorded in the Findings class include the --EVAL qualifier because the observation may originate from more than one source (e.g., an Investigator or Central Reviewer). For the Interventions and Events observation classes, which do not include the --EVAL variable, all data are assumed to be attributed to the Principal Investigator. The QEVAL variable can be used to describe the evaluator for any data item in a SUPP-- dataset (Section 8.4.1), but is not required when the data are objective. For observations that have primary and supplemental evaluations of specific qualifier variables, sponsors should put data from the primary evaluation into the standard domain dataset and data from the supplemental evaluation into the Supplemental Qualifier datasets (SUPP--). Within each SUPP-- record, the value for QNAM should be formed by appending a "1" to the corresponding standard domain variable name. In cases where the standard domain variable name is already eight characters in length, sponsors should replace the last character with a "1" (incremented for each additional attribution). The following is an example of how to represent the case where an adjudication committee evaluates an adverse event in SUPPAE. See Section 8.4 for additional details on how to use SUPP--.

Note that QNAM takes on the value AERELNS1, as the corresponding standard domain variable AERELNST is already eight characters in length. The adverse event data as determined by the primary investigator would reside in the standard AE dataset.

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
12345	AE	99-123	AESEQ	3	AESEV1	Severity/ Intensity	MILD	CRF	ADJUDICATION COMMITTEE
12345	AE	99-123	AESEQ	3	AEREL1	Causality	POSSIBLY RELATED	CRF	ADJUDICATION COMMITTEE
12345	AE	99-123	AESEQ	3	AERELNS1	Relationship to Non-Study Treatment	Possibly related to aspirin use	CRF	ADJUDICATION COMMITTEE

4.1.5.5 CLINICAL SIGNIFICANCE FOR FINDINGS OBSERVATION CLASS DATA

For assessments of clinical significance when the overall interpretation is a record in the domain, use Supplemental Qualifier (SUPP--) record (with QNAM = --CLSIG) linked to the record that contains the overall interpretation or a particular result. An example would be a QNAM value of EGCLSIG in SUPPEG with a value of "Y", indicating that an ECG result of ATRIAL FIBRILLATION was clinically significant.

Separate from clinical significance are results of NORMAL or ABNORMAL, or lab values which are out of range. Examples of the latter include the following:

- An ECG test with EGTESTCD=INTP addresses the ECG as a whole should have a result or of NORMAL or ABNORMAL. A record for EGTESTCD=INTP may also have a record in SUPPEG indicating whether the result is clinically significant.
- A record for a vital signs measurement (e.g., systolic blood pressure) or a lab test (e.g., hematocrit) that contains a measurement may have a normal range and a normal range indicator. It could also have a SUPP-- record indicating whether the result was clinically significant.

4.1.5.6 SUPPLEMENTAL REASON VARIABLES

The SDTM general observation classes include the --REASND variable to submit the reason an observation was not collected. However, sponsors sometimes collect the reason that something was done. For the Interventions general observation class, --INDC and --ADJ are available to indicate the reason for the intervention or for the dose adjustment. For the Findings general observation class, if the sponsor collects the reason for performing a test or examination, it should be placed in the SUPP-- dataset as described in Section 8.4.1. The standard SUPP-- QNAM value of --REAS should be used as described in Appendix C5. If multiple reasons are reported, refer to Section 4.1.2.8.3.

For example, if the sponsor collects the reason that extra lab tests were done, the SUPP-- record might be populated as follows:

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG
12345	LB	99-123	LBSEQ	3	LBREAS	Reason Test or Examination was Performed	ORIGINAL SAMPLE LOST	CRF

4.1.5.7 PRESENCE OR ABSENCE OF PRE-SPECIFIED INTERVENTIONS AND EVENTS

Interventions (e.g., concomitant medications) and Events (e.g., medical history) can generally be collected in two different ways, by recording either verbatim free text or the responses to a pre-specified list of treatments or terms. Since the method of solicitation for information on treatments and terms may affect the frequency at which they are reported, whether they were pre-specified may be of interest to reviewers. The --PRESP variable is used to indicate whether a specific intervention (--TRT) or event (--TERM) was solicited. The --PRESP variable has controlled terminology of Y (for "Yes") or a null value. It is a permissible variable, and should only be used when the topic variable values come from a pre-specified list. Questions such as "Did the subject have any concomitant medications?" or "Did the subject have any medical history?" should not have records in SDTM domain because 1)

these are not valid values for the respective topic variables of CMTRT and MHTERM, and 2) records whose sole purpose is to indicate whether or not a subject had records are not meaningful.

The --OCCUR variable is used to indicate whether a pre-specified intervention or event occurred or did not occur. It has controlled terminology of Y and N (for "Yes" and "No"). It is a permissible variable and may be omitted from the dataset if no topic-variable values were pre-specified.

If a study collects both pre-specified interventions and events as well as free-text events and interventions, the value of --OCCUR should be "Y" or "N" for all pre-specified interventions and events, and null for those reported as free-text.

The --STAT and --REASND variables can be used to provide information about pre-specified interventions and events for which there is no response (e.g., investigator forgot to ask). As in Findings, --STAT has controlled terminology of NOT DONE.

Situation	Value of --PRESP	Value of --OCCUR	Value of --STAT
Spontaneously reported event occurred			
Pre-specified event occurred	Y	Y	
Pre-specified event did not occur	Y	N	
Pre-specified event has no response	Y		NOT DONE

Refer to the standard domains in the Events and Interventions General Observation Classes for additional assumptions and examples.

5 Models for Special-Purpose Domains

5.1 DEMOGRAPHICS

5.1.1 DEMOGRAPHICS — DM

dm.xpt, Demographics — Version 3.1.2. One record per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	DM	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product. This must be a unique number, and could be a compound identifier formed by concatenating STUDYID-SITEID-SUBJID.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
SUBJID	Subject Identifier for the Study	Char		Topic	Subject identifier, which must be unique within the study. Often the ID of the subject as recorded on a CRF.	Req	
RFSTDTC	Subject Reference Start Date/Time	Char	ISO 8601	Record Qualifier	Reference Start Date/time for the subject in ISO 8601 character format. Usually equivalent to date/time when subject was first exposed to study treatment. Required for all randomized subjects; will be null for all subjects who did not meet the milestone the date requires, such as screen failures or unassigned subjects.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1
RFENDTC	Subject Reference End Date/Time	Char	ISO 8601	Record Qualifier	Reference End Date/time for the subject in ISO 8601 character format. Usually equivalent to the date/time when subject was determined to have ended the trial, and often equivalent to date/time of last exposure to study treatment. Required for all randomized subjects; null for screen failures or unassigned subjects.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1
SITEID	Study Site Identifier	Char		Record Qualifier	Unique identifier for a site within a study.	Req	
INVID	Investigator Identifier	Char		Record Qualifier	An identifier to describe the Investigator for the study. May be used in addition to SITEID. Not needed if SITEID is equivalent to INVID.	Perm	
INVNAM	Investigator Name	Char		Synonym Qualifier	Name of the investigator for a site.	Perm	
BRTHDTC	Date/Time of Birth	Char	ISO 8601	Record Qualifier	Date/time of birth of the subject.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
AGE	Age	Num		Record Qualifier	Age expressed in AGEU. May be derived from RFSTDTC and BRTHDTC, but BRTHDTC may not be available in all cases (due to subject privacy concerns).	Exp	
AGEU	Age Units	Char	(AGEU)	Variable Qualifier	Units associated with AGE.	Exp	
SEX	Sex	Char	(SEX)	Record Qualifier	Sex of the subject.	Req	
RACE	Race	Char	(RACE)	Record Qualifier	Race of the subject. Sponsors should refer to "Collection of Race and Ethnicity Data in Clinical Trials" (FDA, September 2005) for guidance regarding the collection of race (http://www.fda.gov/cder/guidance/5656fnl.htm) See Assumption below regarding RACE.	Exp	
ETHNIC	Ethnicity	Char	(ETHNIC)	Record Qualifier	The ethnicity of the subject. Sponsors should refer to "Collection of Race and Ethnicity Data in Clinical Trials" (FDA, September 2005) for guidance regarding the collection of ethnicity (http://www.fda.gov/cder/guidance/5656fnl.htm).	Perm	
ARMCD	Planned Arm Code	Char	*	Record Qualifier	ARMCD is limited to 20 characters and does not have special character restrictions. The maximum length of ARMCD is longer than for other "short" variables to accommodate the kind of values that are likely to be needed for crossover trials. For example, if ARMCD values for a seven-period crossover were constructed using two-character abbreviations for each treatment and separating hyphens, the length of ARMCD values would be 20.	Req	SDTMIG 4.1.2.1
ARM	Description of Planned Arm	Char	*	Synonym Qualifier	Name of the Arm to which the subject was assigned.	Req	SDTMIG 4.1.2.1, SDTMIG 4.1.2.4
COUNTRY	Country	Char	(COUNTRY) ISO 3166	Record Qualifier	Country of the investigational site in which the subject participated in the trial.	Req	
DMDTC	Date/Time of Collection	Char	ISO 8601	Timing	Date/time of demographic data collection.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1
DMDY	Study Day of Collection	Num		Timing	Study day of collection measured as integer days.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

5.1.1.1 ASSUMPTIONS FOR DEMOGRAPHICS DOMAIN MODEL

1. Investigator and site identification: Companies use different methods to distinguish sites and investigators. CDISC assumes that SITEID will always be present, with INVID and INVNAM used as necessary. This should be done consistently and the meaning of the variable made clear in the define.xml.

2. Every subject in a study must have a subject identifier (SUBJID). In some cases a subject may participate in more than one study. To identify a subject uniquely across all studies for all applications or submissions involving the product, a unique identifier (USUBJID) must be included in all datasets. Subjects occasionally change sites during the course of a clinical trial. The sponsor must decide how to populate variables such as USUBJID, SUBJID and SITEID based on their operational and analysis needs, but only one DM record should be submitted for the subject. The Supplemental Qualifiers dataset may be used if appropriate to provide additional information.

3. Concerns for subject privacy suggest caution regarding the collection of variables like BRTHDTC. This variable is included in the Demographics model in the event that a sponsor intends to submit it; however, sponsors should follow regulatory guidelines and guidance as appropriate.

4. The values of ARM and ARMCD in DM must match entries in the Trial Arms (TA) dataset, except for subjects who were not fully assigned to an Arm. Subjects who did not receive the treatments to which they were assigned will still have the values of ARM and ARMCD to which they were assigned. SE/DM Examples 1 and 2 in section 5.3.1.2 show examples of subjects whose actual treatment did not match their planned treatment.

   Some subjects may leave the trial before they can be assigned to an Arm, or, in the case of trials where Arm is assigned by two or more successive allocation processes, may leave before the last of these processes. Such subjects will not be assigned to one of the planned Arms described in the Trial Arms dataset, and must have special values of ARM and ARMCD assigned.

   - Data for screen failure subjects, if submitted, should be included in the Demographics dataset, with ARMCD = “SCRNFAIL" and ARM = “Screen Failure”. Sponsors may include a record in the Disposition dataset indicating when the screen failure event occurred. DM/SE Example 6 shows an example of data submitted for a screen failure subject.

   - Some trial designs include Elements after screening but before Arm assignments are made, and so may have subjects who are not screen failures, but are not assigned to an Arm. Subjects withdrawn from a trial before assignment to an Arm, if they are not screen failures, should have ARMCD = "NOTASSGN" and ARM = "Not Assigned". Example Trial 1 in Section 7.2.3.1, which includes a screening Epoch and a run-in Epoch before randomization, is an example of such a trial; data for a subject who passed screening but was not randomized in this trial are shown in DM/SE Example 6.

   - In trials where Arm assignment is done by means of two or more allocation processes at separate points in time, subjects who drop out after the first allocation process but before the last allocation process, should be assigned values of ARMCD that reflect only the allocation processes they underwent. Example Trial 3, Section 7.2.3.3, is such a trial. DM/SE Example 7 shows sample data for subjects in this trial.

5. When study population flags are included in SDTM, they are treated as Supplemental Qualifiers (see Section 8.4) to DM and placed in the SUPPDM dataset. Controlled terms for these subject-level population flags, (e.g., COMPLT, SAFETY, ITT and PPROT) are listed in Appendix C5. See ICH E9 for more information and definitions. Note that the ADaM subject-level analysis dataset (ADSL) includes population flags; consult the ADaM Implementation Guide for more information about these variables.

6. Submission of multiple race responses should be represented in the Demographics domain and Supplemental Qualifiers (SUPPDM) dataset as described in assumption 4.1.2.8.3, Multiple Responses for a Non-Result Qualifier. If multiple races are collected then the value of RACE should be “MULTIPLE” and the additional information will be included in the Supplemental Qualifiers dataset. Controlled terminology for RACE should be used in both DM and SUPPDM so that consistent values are available for summaries regardless of whether the data are found in a column or row. If multiple races were collected and one was designated as primary, RACE in DM should be the primary race and additional races should be reported in SUPPDM. When

additional free text information is reported about subject's RACE using "Other, Specify", Sponsors should refer to Section 4.1.2.7.1. If the race was collected via an "Other, Specify" field and the sponsor chooses not to map the value as described in the current FDA guidance (see CDISC Notes for RACE) then the value of RACE should be "OTHER". If a subject refuses to provide race information, the value of RACE could be "UNKNOWN". Examples are provided below in Section 5.1.1.2.

7. RFSTDTC, RFENDTC, and BRTHDTC represent date/time values, but they are considered to have a Record Qualifier role in DM. They are not considered to be Timing Variables because they are not intended for use in the general observation classes.

8. Additional Permissible Identifier, Qualifier and Timing Variables
   Only the following Timing variables are permissible and may be added as appropriate: VISITNUM, VISIT, VISITDY. The Record Qualifier DMXFN (External File Name) is the only additional variable that may be added, which is adopted from the Findings general observation class, may also be used to refer to an external file, such as a patient narrative.

5.1.1.2 EXAMPLES FOR DEMOGRAPHICS DOMAIN MODEL

Examples of using the DM domain for typical scenarios are provided below. Example 1 displays the all Required and Expected variables; in examples 2 - 6, certain Required or Expected variables have been omitted in consideration of space and clarity. Example 1 is a general Demographics example showing typical data recorded for a clinical trial. Examples 2 through 5 display various scenarios for representing race and ethnicity information. Example 6 shows the handling of ARMCD for Subjects Withdrawn before Assignment to an Arm, and Example 7 shows the handling ARMCD for Subjects Withdrawn when assignment to an Arm is Incomplete.

DM Example 1 – General Demographics

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	SUBJID	RFSTDTC	RFENDTC	SITEID	INVNAM	BIRTHDTC	AGE	AGEU
1	ABC123	DM	ABC12301001	001	2006-01-12	2006-03-10	01	JOHNSON, M	1948-12-13	57	YEARS
2	ABC123	DM	ABC12301002	002	2006-01-15	2006-02-28	01	JOHNSON, M	1955-03-22	50	YEARS
3	ABC123	DM	ABC12301003	003	2006-01-16	2006-03-19	01	JOHNSON, M	1938-01-19	68	YEARS
4	ABC123	DM	ABC12301004	004			01	JOHNSON, M	1941-07-02		
5	ABC123	DM	ABC12302001	001	2006-02-02	2006-03-31	02	GONZALEZ, E	1950-06-23	55	YEARS
6	ABC123	DM	ABC12302002	002	2006-02-03	2006-04-05	02	GONZALEZ, E	1956-05-05	49	YEARS

Row	SEX	RACE	ETHNIC	ARMCD	ARM	COUNTRY
1 (cont)	M	WHITE	HISPANIC OR LATINO	A	Drug A	USA
2 (cont)	M	WHITE	NOT HISPANIC OR LATINO	P	Placebo	USA
3 (cont)	F	BLACK OR AFRICAN AMERICAN	NOT HISPANIC OR LATINO	P	Placebo	USA
4 (cont)	M	ASIAN	NOT HISPANIC OR LATINO	SCRNFAIL	Screen Failure	USA
5 (cont)	F	AMERICAN INDIAN OR ALASKA NATIVE	NOT HISPANIC OR LATINO	P	Placebo	USA
6 (cont)	F	NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDERS	NOT HISPANIC OR LATINO	A	Drug A	USA

DM Example 2 – Single Race/Single Ethnicity Choice.

Sample CRF:

Ethnicity	Check one
Hispanic or Latino	☐
Not Hispanic or Latino	☐

Race	Check one
American Indian or Alaska Native	☐
Asian	☐
Black or African American	☐
Native Hawaiian or Other Pacific Islander	☐
White	☐

Row 1: Subject 001 was Not-Hispanic and Asian.
Row 2: Subject 002 was Hispanic and White.

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	RACE	ETHNIC
1	ABC	DM	001	ASIAN	NOT HISPANIC OR LATINO
2	ABC	DM	002	WHITE	HISPANIC OR LATINO

DM Example 3 - Multiple Race Choices

In this example, the subject is permitted to check all applicable races.

Sample CRF:

Race	Check all that apply
American Indian or Alaska Native	☐
Asian	☐
Black or African American	☐
Native Hawaiian or Other Pacific Islander	☐
White	☐
Other, Specify: _____	☐

Row 1 (DM) and
Row 1 (SUPPDM): Subject 001 checked "Other, Specify:" and entered "Brazilian" as race.
Row 2 (DM) and
Rows 2, 3, 4, 5 (SUPPDM): Subject 002 checked three races, including an "Other, Specify" value. The three values are reported in SUPPDM using QNAM values RACE1 - RACE3. The specified information describing other race for is submitted in the same manner as subject 001.
Row 3 (DM): Subject 003 refused to provide information on race.
Row 4 (DM): Subject 004 checked "Asian" as their only race.

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	RACE
1	ABC	DM	001	OTHER
2	ABC	DM	002	MULTIPLE
3	ABC	DM	003	
4	ABC	DM	004	ASIAN

suppdm.xpt

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	ABC	DM	001			RACEOTH	Race, Other	BRAZILIAN	CRF	
2	ABC	DM	002			RACE1	Race 1	BLACK OR AFRICAN AMERICAN	CRF	
3	ABC	DM	002			RACE2	Race 2	AMERICAN INDIAN OR ALASKA NATIVE	CRF	
4	ABC	DM	002			RACE3	Race 3	OTHER	CRF	
5	ABC	DM	002			RACEOTH	Race, Other	ABORIGINE	CRF	

DM Example 4: Mapping Predefined Races

In this example, the sponsor has chosen to map some of the predefined races to other races, specifically Japanese and Non-Japanese to Asian. Note: Sponsors may choose not to map race data, in which case the previous examples should be followed.

Sample CRF

Race	Check One
American Indian or Alaska Native	☐
Asian	
Japanese	☐
Non-Japanese	☐
Black or African American	☐
Native Hawaiian or Other Pacific Islander	☐
White	☐

Row 1 (DM), Row 1 (SUPPDM): Subject 001 checked "Non-Japanese" which was mapped by the sponsor to "Asian".
Row 2 (DM), Row 2 (SUPPDM): Subject 002 checked "Japanese" which was mapped by the sponsor to "Asian".

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	RACE
1	ABC	DM	001	ASIAN
2	ABC	DM	002	ASIAN

suppdm.xpt

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	ABC	DM	001			RACEOR	Original Race	NON-JAPANESE	CRF	
2	ABC	DM	002			RACEOR	Original Race	JAPANESE	CRF	

DM Example 5: Mapping "Other, Specify" Races.

In this example, the sponsor has chosen to map the values entered into the "Other, Specify" field to one of the preprinted races.
Note: Sponsors may choose not to map race data, in which case the first two examples should be followed.

Sample CRF and Data:

Race	Check One
American Indian or Alaska Native	☐
Asian	☐
Black or African American	☐
Native Hawaiian or Other Pacific Islander	☐
White	☐
Other, Specify: _____	☐

Row 1 (DM), Row 1 (SUPPDM): Subject 001 checked "Other, Specify" and entered "Japanese" which was mapped to "Asian" by the sponsor.
Row 2 (DM), Row 2 (SUPPDM): Subject 002 checked "Other, Specify" and entered "Swedish" which was mapped to "White" by the sponsor.

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	RACE
1	ABC	DM	001	ASIAN
2	ABC	DM	002	WHITE

suppdm.xpt

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	ABC	DM	001			RACEOR	Original Race	JAPANESE	CRF	
2	ABC	DM	002			RACEOR	Original Race	SWEDISH	CRF	

DM/SE Example 6

The following examples illustrate values of ARMCD for subjects in Example Trial 1, described in Section 7.2.3.1. The sponsor is submitting data on screen-failure subjects.

Row 1: Subject 001 was randomized to Arm A. Rows 1-3 of SE dataset show that the subject completed all the Elements for Arm A.
Row 2: Subject 002 was randomized to Arm B. Rows 4-6 of SE dataset show that the subject completed all the Elements for Arm B.
Row 3: Subject 003 was a screen failure. Row 7 of SE dataset shows that they passed through only the Screen Element.
Row 4: Subject 004 withdrew during the Run-in Element. They were not considered a screen failure, but they were not randomized, so they have been given the special ARMCD value NOTASSGN. Rows 8-9 of the SE dataset show the two Elements (Screen and Run-in) this subject passed through.

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	ARMCD
1	ABC	DM	001	A
2	ABC	DM	002	B
3	ABC	DM	003	SCRNFAIL
4	ABC	DM	004	NOTASSGN

se.xpt

Row	STUDYID	DOMAIN	USUBJID	SESEQ	ETCD	ELEMENT	SESTDTC	SEENDTC
1	ABC	SE	001	1	SCRN	Screen	2006-06-01	2006-06-07
2	ABC	SE	001	2	RI	Run-In	2006-06-07	2006-06-21
3	ABC	SE	001	3	A	Drug A	2006-06-21	2006-07-05
4	ABC	SE	002	1	SCRN	Screen	2006-05-03	2006-05-10
5	ABC	SE	002	2	RI	Run-In	2006-05-10	2006-05-24
6	ABC	SE	002	3	B	Drug B	2006-05-24	2006-06-07
7	ABC	SE	003	1	SCRN	Screen	2006-06-27	2006-06-30
8	ABC	SE	004	1	SCRN	Screen	2006-05-14	2006-05-21
9	ABC	SE	004	2	RI	Run-In	2006-05-21	2006-05-26

DM/SE Example 7:

The following example illustrates values of ARMCD for subjects in Example Trial 3, described in Section 7.2.3.3.

Row 1: Subject 001 was randomized to Drug A. At the end of the Double Blind Treatment Epoch, they were assigned to Open Label A. Thus their ARMCD is AA. Rows 1-3 of the SE dataset show that subject passed through all three Elements for the AA Arm.

Row 2: Subject 002 was randomized to Drug A. They were lost to follow-up during the Double Blind Epoch, so never reached the Open Label Epoch, when they would have been assigned to either the Open Drug A or the Rescue Element. Their ARMCD is A. Note that A is not one of the Arm code values in the Trial Arms dataset for this trial. See Section 7.2.4.2 for more information on handling subjects who do not reach all branch points in the trial design. Rows 4-5 of the SE dataset show the two Elements (Screen and Treatment A) the subject passed through.

dm.xpt

Row	STUDYID	DOMAIN	USUBJID	ARMCD	ARM
1	DEF	DM	001	AA	A-OPEN A
2	DEF	DM	002	A	A

se.xpt

Row	STUDYID	DOMAIN	USUBJID	SESEQ	ETCD	ELEMENT	SESTDTC	SEENDTC
1	DEF	SE	001	1	SCRN	Screen	2006-01-07	2006-01-12
2	DEF	SE	001	2	DBA	Treatment A	2006-01-12	2006-04-10
3	DEF	SE	001	3	OA	Open Drug A	2006-04-10	2006-07-05
4	DEF	SE	002	1	SCRN	Screen	2006-02-03	2006-02-10
5	DEF	SE	002	2	DBA	Treatment A	2006-02-10	2006-03-24

5.2 COMMENTS

5.2.1 COMMENTS — CO

co.xpt, Comments —Version 3.1.2,One record per comment per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	CO	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
RDOMAIN	Related Domain Abbreviation	Char	*	Record Qualifier	Two-character abbreviation for the domain of the parent record(s). Null for comments collected on a general comments or additional information CRF page.	Perm	
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
COSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
IDVAR	Identifying Variable	Char	*	Record Qualifier	Identifying variable in the parent dataset that identifies the record(s) to which the comment applies. Examples AESEQ or CMGRPID. Used only when individual comments are related to domain records. Null for comments collected on separate CRFs.	Perm	
IDVARVAL	Identifying Variable Value	Char		Record Qualifier	Value of identifying variable of the parent record(s). Used only when individual comments are related to domain records. Null for comments collected on separate CRFs.	Perm	
COREF	Comment Reference	Char		Record Qualifier	Sponsor-defined reference associated with the comment. May be the CRF page number (e.g. 650), or a module name (e.g. DEMOG), or a combination of information that identifies the reference (e.g. 650-VITALS-VISIT 2).	Perm	
COVAL	Comment	Char		Topic	The text of the comment. Text over 200 characters can be added to additional columns COVAL1-COVALn. See assumption 5.2.1.1.3.	Req	
COEVAL	Evaluator	Char	*	Record Qualifier	Used to describe the originator of the comment. Examples: CENTRAL, REVIEWER, ADJUDICATION COMMITTEE, PRINCIPAL INVESTIGATOR.	Perm	
CODTC	Date/Time of Comment	Char	ISO 8601	Timing	Date/time of comment on dedicated comment form. Should be null if this is a child record of another domain or if comment date was not collected.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

5.2.1.1 ASSUMPTIONS FOR COMMENTS DOMAIN MODEL

1. The Comments special-purpose domain provides a solution for submitting free-text comments related to data in one or more SDTM domains (as described in Section 8.5) or collected on a separate CRF page dedicated to comments. Comments are generally not responses to specific questions; instead, comments usually consist of voluntary, free-text or unsolicited observations.

2. The CO dataset accommodates three sources of comments:
   a. Those unrelated to a specific domain or parent record(s), in which case the values of the variables RDOMAIN, IDVAR and IDVARVAL are null. CODTC should be populated if captured. See example, Rows 1.
   b. Those related to a domain but not to specific parent record(s), in which case the value of the variable RDOMAIN is set to the DOMAIN code of the parent domain and the variables IDVAR and IDVARVAL are null. CODTC should be populated if captured. See example, Row 2.
   c. Those related to a specific parent record or group of parent records, in which case the value of the variable RDOMAIN is set to the DOMAIN code of the parent record(s) and the variables IDVAR and IDVARVAL are populated with the key variable name and value of the parent record(s). Assumptions for populating IDVAR and IDVARVAL are further described in Section 8.5. CODTC should be null because the timing of the parent record(s) is inherited by the comment record. See example, Rows 3-5.

3. When the comment text is longer than 200 characters, the first 200 characters of the comment will be in COVAL, the next 200 in COVAL1, and additional text stored as needed to COVALn. See example, Rows 3-4.

4. Additional information about how to relate comments to parent SDTM records is provided in Section 8.5.

5. The variable COREF may be null unless it is used to identify the source of the comment. See example, Rows 1 and 5.

6. Only following Identifier and Timing variables that are permissible and may be added as appropriate when comments are not related to other domain records: COGRPID, COREFID, COSPID, VISIT, VISITNUM, VISITDY, TAETORD, CODY, COTPT, COTPTNUM, COELTM, COTPTREF, CORFTDTC.

5.2.1.2 EXAMPLES FOR COMMENTS DOMAIN MODEL

In the example below:

- **Row 1:** Shows a comment unrelated to any specific domain or record, because it was collected on a separate comments page...
- **Row 2:** Shows a comment related to a specific domain (PE in this example), but not to any specific record because it was collected on the bottom of the PE page without any indication of specific records it applies to. COREF is populated with the text "VISIT 7" to show this comment came from the VISIT 7 PE page.
- **Rows 3-5:** Show comments related to parent records in the AE, EX and VS domains.
  - Row 3 shows a comment related to a single AE record having it's AESEQ=7.
  - Row 4 shows a comment related to multiple EX records having their EXGRPID="COMBO1".
  - Row 5 shows a comment related to multiple VS records having their VSGRPID="VS2"
- **Rows 6-8:** Show three options for representing a comment unrelated to any specific general observation class record(s) because it was collected on a separate comments page, but the page was associated with a specific visit.
  - Row 6 shows the comment related to the Subject Visit record in SV. The RDOMAIN variable is populated with SV (the Subject Visits domain) and the variables IDVAR and IDVARVAL are populated with the key variable name and value of the parent Subject-Visit record.
  - Row 7 shows the comment unrelated to any parent records, RDOMAIN, IDVAR and IDVARVAL are not populated. COREF is populated to indicate that the comment reference is "VISIT 4"
  - Row 8 also shows the comment unrelated to any parent records, but instead of populating COREF, the VISIT Timing variable was added to the CO dataset and populated with 4 to indicate Visit 4.

Row	STUDYID	DOMAIN	USUBJID	COSEQ	RDOMAIN	IDVAR	IDVARVAL	COREF	COVAL	COVAL1	COVAL2	COEVAL	VISIT	CODTC
1	1234	CO	AB-99	1					Comment text			PRINCIPAL INVESTIGATOR		2003-11-08
2	1234	CO	AB-99	2	PE			VISIT 7	Comment text			PRINCIPAL INVESTIGATOR		2004-01-14
3	1234	CO	AB-99	3	AE	AESEQ	7	PAGE 650	First 200 characters	Next 200 characters	Remaining text	PRINCIPAL INVESTIGATOR		
4	1234	CO	AB-99	4	EX	EXGRPID	COMBO1	PAGE 320-355	First 200 characters	Remaining text		PRINCIPAL INVESTIGATOR		
5	1234	CO	AB-99	5	VS	VSGRPID	VS2		Comment text			PRINCIPAL INVESTIGATOR		
6	1234	CO	AB-99	6	SV	VISITNUM	4		Comment Text			PRINCIPAL INVESTIGATOR		
7	1234	CO	AB-99	7				VISIT 4	Comment Text			PRINCIPAL INVESTIGATOR		
8	1234	CO	AB-99	8					Comment Text			PRINCIPAL INVESTIGATOR	4	

5.3 SUBJECT ELEMENTS AND VISITS

The Trial Elements, Trial Arms, and Trial Visits datasets in the Trial Design model describe the planned design of the study (see Section 7.3, Section 7.2 and Section 7.4), but it is also necessary to collect the corresponding actual data. Subject assignment to an Arm is reported in the ARM variable in Demographics. Actual Elements and Visits data for each subject are described in two additional datasets:

- The Subject Elements dataset (Table 5.3.1)
- The Subject Visits dataset (Table 5.3.2).

5.3.1 SUBJECT ELEMENTS — SE

The Subject Elements dataset consolidates information about the timing of each subject's progress through the Epochs and Elements of the trial. For Elements that involve study treatments, the identification of which Element the subject passed through (e.g., Drug X vs. placebo) is likely to derive from data in the Exposure domain or another Interventions domain. The dates of a subject's transition from one Element to the next will be taken from the Interventions domain(s) and from other relevant domains, according to the definitions (TESTRL values) in the Trial Elements dataset (see Section 7.3).

The Subject Elements dataset is particularly useful for studies with multiple treatment periods, such as crossover studies. The Subject Elements dataset contains the date/times at which a subject moved from one Element to another, so when the Trial Arms (Section 7.2), Trial Elements (Section 7.3), and Subject Elements datasets are included in a submission, reviewers can relate all the observations made about a subject to that subject's progression through the trial.

- Comparison of the --DTC of a finding observation to the Element transition dates (values of SESTDTC and SEENDTC) tells which Element the subject was in at the time of the finding. Similarly, one can determine the Element during which an event or intervention started or ended.
- "Day within Element" or "day within Epoch" can be derived. Such variables relate an observation to the start of an Element or Epoch in the same way that study day (--DY) variables relate it to the reference start date (RFSTDTC) for the study as a whole. See Section 4.1.4.4
- Having knowledge of Subject Element start and end dates can be helpful in the determination of baseline values.

se.xpt, Subject Elements — Version 3.1.2. One record per actual Element per subject.

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	SE	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
SESEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. Should be assigned to be consistent chronological order.	Req	SDTM 2.2.4
ETCD	Element Code	Char	*	Topic	1. ETCD (the companion to ELEMENT) is limited to 8 characters and does not have special character restrictions. These values should be short for ease of use in programming, but it is not expected that ETCD will need to serve as a variable name. 2. If an encountered Element differs from the planned Element to the point that it is considered a new Element, then use "UNPLAN" as the value for ETCD to represent this Element.	Req	SDTMIG 4.1.2.1
ELEMENT	Description of Element	Char	*	Synonym Qualifier	The name of the Element. If ETCD has a value of "UNPLAN" then ELEMENT should be Null.	Perm	SDTMIG 4.1.2.1, SDTMIG 4.1.2.4
SESTDTC	Start Date/Time of Element	Char	ISO 8601	Timing	Start date/time for an Element for each subject.	Req	SDTM 2.2.5, SDTMIG 4.1.4.1
SEENDTC	End Date/Time of Element	Char	ISO 8601	Timing	End date/time for an Element for each subject.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1
TAETORD	Planned Order of Elements within Arm	Num		Timing	Number that gives the planned order of the Element within the subject's assigned ARM.	Perm	
EPOCH	Epoch	Char	*	Timing	Epoch associated with the Element in the planned sequence of Elements for the ARM to which the subject was assigned	Perm	SDTM 2.2.5, SDTMIG 7.1.2
SEUPDES	Description of Unplanned Element	Char		Synonym Qualifier	Description of what happened to the subject during this unplanned Element. Used only if ETCD has the value of "UNPLAN".	Perm	

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

5.3.1.1 ASSUMPTIONS FOR SUBJECT ELEMENTS DOMAIN MODEL

1. Submission of the Subject Elements dataset is strongly recommended, as it provides information needed by reviewers to place observations in context within the study. The Trial Elements and Trial Arms datasets should also be submitted, as they define the design and the terms referenced by the Subject Elements dataset.

2. The Subject Elements domain allows the submission of data on the timing of the trial Elements a subject actually passed through in their participation in the trial. Please read Section 7.3, on the Trial Elements dataset and Section 7.2, on the Trial Arms dataset, as these datasets define a trial's planned Elements, and describe the planned sequences of Elements for the Arms of the trial.

3. For any particular subject, the dates in the subject Elements table are the dates when the transition events identified in the Trial Elements table occurred. Judgment may be needed to match actual events in a subject's experience with the definitions of transition events (the events that mark the starts of new Elements) in the Trial Elements table, since actual events may vary from the plan. For instance, in a single dose PK study, the transition events might correspond to study drug doses of 5 and 10 mg. If a subject actually received a dose of 7 mg when they were scheduled to receive 5 mg, a decision will have to be made on how to represent this in the SE domain.
4. If the date/time of a transition Element was not collected directly, the method used to infer the Element start date/time should be explained in the Comments column of the define.xml.
5. Judgment will also have to be used in deciding how to represent a subject's experience if an Element does not proceed or end as planned. For instance, the plan might identify a trial Element which is to start with the first of a series of 5 daily doses and end after 1 week, when the subject transitions to the next treatment Element. If the subject actually started the next treatment Epoch (see Section 7.1.2) after 4 weeks, the sponsor will have to decide whether to represent this as an abnormally long Element, or as a normal Element plus an unplanned non-treatment Element.
6. If the sponsor decides that the subject's experience for a particular period of time cannot be represented with one of the planned Elements, then that period of time should be represented as an unplanned Element. The value of ETCD for an unplanned Element is "UNPLAN" and SEUPDES should be populated with a description of the unplanned Element.
7. The values of SESTDTC provide the chronological order of the actual subject Elements. SESEQ should be assigned to be consistent with the chronological order. Note that the requirement that SESEQ be consistent with chronological order is more stringent than in most other domains, where --SEQ values need only be unique within subject.
8. When TAETORD is included in the SE domain, it represents the planned order of an Element in an Arm. This should not be confused with the actual order of the Elements, which will be represented by their chronological order and SESEQ. TAETORD will not be populated for subject Elements that are not planned for the Arm to which the subject was assigned. Thus, TAETORD will not be populated for any Element with an ETCD value of "UNPLAN". TAETORD will also not be populated if a subject passed through an Element that, although defined in the TE dataset, was out of place for the Arm to which the subject was assigned. For example, if a subject in a parallel study of Drug A vs. Drug B was assigned to receive Drug A, but received Drug B instead, then TAETORD would be left blank for the SE record for their Drug B Element. If a subject was assigned to receive the sequence of Elements A, B, C, D, and instead received A, D, B, C, then the sponsor would have to decide for which of these subject Element records TAETORD should be populated. The rationale for this decision should be documented in the Comments column of the define.xml.
9. For subjects who follow the planned sequence of Elements for the Arm to which they were assigned, the values of EPOCH in the SE domain will match those associated with the Elements for the subject's Arm in the Trial Arms dataset. The sponsor will have to decide what value, if any, of EPOCH to assign SE records for unplanned Elements and in other cases where the subject's actual Elements deviate from the plan. The sponsor's methods for such decisions should be documented in the define.xml, in the row for EPOCH in the SE dataset table.
10. Since there are, by definition, no gaps between Elements, the value of SEENDTC for one Element will always be the same as the value of SESTDTC for the next Element.
11. Note that SESTDTC is required, although --STDTC is not required in any other subject-level dataset. The purpose of the dataset is to record the Elements a subject actually passed through. We assume that if it is known that a subject passed through a particular Element, then there must be some information on when it started, even if that information is imprecise. Thus, SESTDTC may not be null, although some records may not have all the components (e.g., year, month, day, hour, minute) of the date/time value collected.
12. The following Identifier variables are permissible and may be added as appropriate: --GRPID, --REFID, --SPID.
13. Care should be taken in adding additional Timing variables:

- The purpose of --DTC and --DY in other domains with start and end dates (Event and Intervention Domains) is to record the date and study day on which data was collected. The starts and ends of elements are generally "derived" in the sense that they are a secondary use of data collected elsewhere, and it is not generally useful to know when those date/times were recorded.
- --DUR could be added only if the duration of an element was collected, not derived.
- It would be inappropriate to add the variables that support time points (--TPT, --TPTNUM, --ELTM, --TPTREF, and --RFTDTC), since the topic of this dataset is Elements.

5.3.1.2 EXAMPLES FOR SUBJECT ELEMENTS DOMAIN MODEL

STUDYID and DOMAIN, which are required in the SE and DM domains, have not been included in the following examples, to improve readability.

Example 1

This example shows data for two subjects for a crossover trial with four Epochs.

Row 1: The record for the SCREEN Element for subject 789. Note that only the date of the start of the SCREEN Element was collected, while for the end of the Element, which corresponds to the start of IV dosing, both date and time were collected.

Row 2: The record for the IV Element for subject 789. The IV Element started with the start of IV dosing and ended with the start of oral dosing, and full date/times were collected for both.

Row 3: The record for the ORAL Element for subject 789. Only the date, and not the time, of start of Follow-up was collected.

Row 4: The FOLLOWUP Element for subject 789 started and ended on the same day. Presumably, the Element had a positive duration, but no times were collected.

Rows 5-8: Subject 790 was treated incorrectly, as shown by the fact that the values of SESEQ and TAETORD do not match. This subject entered the IV Element before the Oral Element, but the planned order of Elements for this subject was ORAL, then IV. The sponsor has assigned EPOCH values for this subject according to the actual order of Elements, rather than the planned order. The correct order of Elements is the subject's ARMCD, shown in Row 2 of the DM dataset.

se.xpt

Row	USUBJID	SESEQ	ETCD	SESTDTC	SEENDTC	SEUPDES	TAETORD	EPOCH
1	789	1	SCREEN	2006-06-01	2006-06-03T10:32		1	SCREEN
2	789	2	IV	2006-06-03T10:32	2006-06-10T09:47		2	FIRST TREATMENT
3	789	3	ORAL	2006-06-10T09:47	2006-06-17		3	SECOND TREATMENT
4	789	4	FOLLOWUP	2006-06-17	2006-06-17		4	FOLLOW-UP
5	790	1	SCREEN	2006-06-01	2006-06-03T10:14		1	SCREEN
6	790	2	IV	2006-06-03T10:14	2006-06-10T10:32		3	FIRST TREATMENT
7	790	3	ORAL	2006-06-10T10:32	2006-06-17		2	SECOND TREATMENT
8	790	4	FOLLOWUP	2006-06-17	2006-06-17		4	FOLLOW-UP

dm.xpt

Row	USUBJID	SUBJID	RFSTDTC	RFENDTC	SITEID	INVNAM	BIRTHDTC	AGE	AGEU	SEX	RACE	ETHNIC	ARMCD	ARM	COUNTRY
1	789	001	2006-06-03	2006-06-17	01	SMITH, J	1948-12-13	57	YEARS	M	WHITE	HISPANIC OR LATINO	IO	IV-ORAL	USA
2	790	002	2006-06-03	2006-06-17	01	SMITH, J	1955-03-22	51	YEARS	M	WHITE	NOT HISPANIC OR LATINO	OI	ORAL-IV	USA

Example 2

The data below represent two subjects enrolled in Example Trial 3, described in Section 7.2.3.3.

Rows 1-2: Subject 123 completed only two Elements of the trial. The double-blind treatment Epoch starts with the start of dosing, but in this trial only the date, and not the time, of the start of dosing has been collected. Note that, for this subject, events that occurred on, or data collected on, 2006-06-03 cannot be assigned to an Element or an Epoch on the basis of dates alone. When sponsors choose to collect only dates, they must deal with such ambiguity in the algorithms they use to assign data to Elements or Epochs. Row 1 of the Demographics dataset shows that this subject has an ARMCD value of A. See DM/SE Example 6 in Section 5.1.1.2 for other examples of ARM and ARMCD values for this trial.

Rows 3-6: Subject 456 completed the trial, but received the wrong drug for the last 2 weeks of the double-blind treatment period. This has been represented by treating the period when the subject received the wrong drug as an unplanned Element. Note that TAETORD, which represents the planned order of Elements within an Arm, has not been populated for this unplanned Element. However, even though this Element was unplanned, the sponsor assigned a value of DOUBLE BLIND TREATMENT to EPOCH. Row 2 of the Demographics dataset shows that the values of ARM and ARMCD for this subject reflect their planned treatment, and are not affected by the fact that their treatment deviated from plan.

se.xpt

Row	USUBJID	SESEQ	ETCD	SESTDTC	SEENDTC	SEUPDES	TAETORD	EPOCH
1	123	1	SCRN	2006-06-01	2006-06-03		1	SCREEN
2	123	2	DBA	2006-06-03	2006-06-10		2	DOUBLE-BLIND TREATMENT
3	456	1	SCRN	2006-05-01	2006-05-03		1	SCREEN
4	456	2	DBA	2006-05-03	2006-05-31		2	DOUBLE-BLIND TREATMENT
5	456	3	UNPLAN	2006-05-31	2006-06-13	Drug B dispensed in error		DOUBLE-BLIND TREATMENT
6	456	4	RSC	2006-06-13	2006-07-30		3	OPEN-LABEL TREATMENT

dm.xpt

Row	USUBJID	SUBJID	RFSTDTC	RFENDTC	SITEID	INVNAM	BIRTHDTC	AGE	AGEU	SEX	RACE	ETHNIC	ARMCD	ARM	COUNTRY
1	123	012	2006-06-03	2006-06-10	01	JONES, D	1943-12-08	62	YEARS	M	ASIAN	HISPANIC OR LATINO	A	A	USA
2	456	103	2006-05-03	2006-07-30	01	JONES, D	1950-05-15	55	YEARS	F	WHITE	NOT HISPANIC OR LATINO	AR	A-Rescue	USA

5.3.2 SUBJECT VISITS — SV

The Subject Visits domain consolidates information about the timing of subject visits that is otherwise spread over domains that include the visit variables (VISITNUM and possibly VISIT and/or VISITDY). Unless the beginning and end of each visit is collected, populating the Subject Visits dataset will involve derivations. In a simple case, where, for each subject visit, exactly one date appears in every such domain, the Subject Visits dataset can be created easily, by populating both SVSTDTC and SVENDTC with the single date for a visit. When there are multiple dates and/or date/times for a visit for a particular subject, the derivation of values for SVSTDTC and SVENDTC may be more complex. The method for deriving these values should be consistent with the visit definitions in the Trial Visits dataset (see Section 7.4). For some studies, a visit may be defined to correspond with a clinic visit that occurs within one day, while for other studies, a visit may reflect data collection over a multi-day period.

The Subject Visits dataset provides reviewers with a summary of a subject's Visits. Comparison of an individual subject's SV dataset with the TV dataset (Section 7.4), which describes the planned Visits for the trial, quickly identifies missed Visits and "extra" Visits. Comparison of the values of STVSDY and SVENDY to VISIT and/or VISITDY can often highlight departures from the planned timing of Visits.

sv.xpt, Subject Visits — Version 3.1.2,. One record per subject per actual visit.

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	SV	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
VISITNUM	Visit Number	Num		Topic	1. Clinical encounter number. (Decimal numbering may be useful for inserting unplanned visits.) 2. Numeric version of VISIT, used for sorting.	Req	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Synonym Qualifier	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY as a text description of the clinical encounter.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the start of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
SVSTDTC	Start Date/Time of Visit	Char	ISO 8601	Timing	Start date/time for a Visit.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1
SVENDTC	End Date/Time of Visit	Char	ISO 8601	Timing	End date/time of a Visit.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1
SVSTDY	Study Day of Start of Visit	Num		Timing	Study day of start of visit relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4
SVENDY	Study Day of End of Visit	Num		Timing	Study day of end of visit relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4
SVUPDES	Description of Unplanned Visit	Char		Synonym Qualifier	Description of what happened to the subject during an unplanned visit.	Perm	

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

5.3.2.1 ASSUMPTIONS FOR SUBJECT VISITS DOMAIN MODEL

1. The Subject Visits domain allows the submission of data on the timing of the trial visits a subject actually passed through in their participation in the trial. Please read Section 7.4 on the Trial Visits dataset, as the Trial Visits dataset defines the planned visits for the trial.
2. The identification of an actual visit with a planned visit sometimes calls for judgment. In general, data collection forms are prepared for particular visits, and the fact that data was collected on a form labeled with a planned visit is sufficient to make the association. Occasionally, the association will not be so clear, and the sponsor will need to make decisions about how to label actual visits. The sponsor's rules for making such decisions should be documented in the define.xml document.
3. Records for unplanned visits should be included in the SV dataset. For unplanned visits, SVUPDES should be populated with a description of the reason for the unplanned visit. Some judgment may be required to determine what constitutes an unplanned visit. When data are collected outside a planned visit, that act of collecting data may or may not be described as a "visit." The encounter should generally be treated as a visit if data from the encounter are included in any domain for which VISITNUM is included, since a record with a missing value for VISITNUM is generally less useful than a record with VISITNUM populated. If the occasion is considered a visit, its date/times must be included in the SV table and a value of VISITNUM must be assigned. See Section 4.1.4.5 for information on the population of visit variables for unplanned visits.
4. VISITDY is the Planned Study Day of a visit. It should not be populated for unplanned visits.
5. If SVSTDY is included, it is the actual study day corresponding to SVSTDTC. In studies for which VISITDY has been populated, it may be desirable to populate SVSTDY, as this will facilitate the comparison of planned (VISITDY) and actual (SVSTDY) study days for the start of a visit.
6. If SVENDY is included, it is the actual day corresponding to SVENDTC.
7. For many studies, all visits are assumed to occur within one calendar day, and only one date is collected for the Visit. In such a case, the values for SVENDTC duplicate values in SVSTDTC. However, if the data for a visit is actually collected over several physical visits and/or over several days, then SVSTDTC and SVENDTC should reflect this fact. Note that it is fairly common for screening data to be collected over several days, but for the data to be treated as belonging to a single planned screening visit, even in studies for which all other visits are single-day visits.
8. Differentiating between planned and unplanned visits may be challenging if unplanned assessments (e.g., repeat labs) are performed during the time period of a planned visit.
9. Algorithms for populating SVSTDTC and SVENDTC from the dates of assessments performed at a visit may be particularly challenging for screening visits since baseline values collected at a screening visit are sometimes historical data from tests performed before the subject started screening for the trial
10. The following Identifier variables are permissible and may be added as appropriate: --SEQ, --GRPID, --REFID, and --SPID.
11. Care should be taken in adding additional Timing variables:
    - If TAETORD and/or EPOCH are added, then the values must be those at the start of the visit.
    - The purpose of --DTC and --DY in other domains with start and end dates (Event and Intervention Domains) is to record the data on which data was collected. It seems unnecessary to record the date on which the start and end of a visit were recorded.
    - --DUR could be added if the duration of a visit was collected.

- It would be inappropriate to add the variables that support time points (--TPT, --TPTNUM, --ELTM, --TPTREF, and --RFTDTC), since the topic of this dataset is visits.
- --STRF and --ENRF could be used to say whether a visit started and ended before, during, or after the study reference period, although this seems unnecessary.
- --STRTPT, --STTPT, --ENRTPT, and --ENTPT could be used to say that a visit started or ended before or after particular dates, although this seems unnecessary.

5.3.2.2 EXAMPLES FOR SUBJECT VISITS DOMAIN MODEL

The data below represents the visits for a single subject.

Row 1: Data for the screening visit was actually gathered over the course of six days.
Row 2: The visit called DAY 1 actually started and ended as planned, on Day 1.
Row 3: The visit scheduled for Day 8 occurred one day early, on Day 7.
Row 4: The visit called WEEK 2 actually started and ended as planned, on Day 15,
Row 5: Shows an unscheduled visit. SVUPDES provides the information that this visit dealt with evaluation of an adverse event. Since this visit was not planned, VISITDY was not populated. The sponsor chose not to populate VISIT. VISITNUM was populated, probably because the data collected at this encounter is in a Findings domain such as EG, LB, or VS, in which VISIT is treated as an important timing variable.
Row 6: This subject had their last visit, a follow-up visit on study Day 26, eight days after the unscheduled visit, but well before the scheduled visit day of 71.

Row	STUDYID	DOMAIN	USUBJID	VISITNUM	VISIT	VISITDY	SVSTDTC	SVENDTC	SVSTDY	SVENDY	SVUPDES
1	123456	SV	101	1	SCREEN	-7	2006-01-15	2006-01-20	-6	-1	
2	123456	SV	101	2	DAY 1	1	2006-01-21	2006-01-21	1	1	
3	123456	SV	101	3	WEEK 1	8	2006-01-27	2006-01-27	7	7	
4	123456	SV	101	4	WEEK 2	15	2006-02-04	2006-02-04	15	15	
5	123456	SV	101	4.1			2006-02-07	2006-02-07	18	18	Evaluation of AE
6	123456	SV	101	8	FOLLOW-UP	71	2006-02-15	2006-02-15	26	26	

6 Domain Models Based on the General Observation Classes

6.1 INTERVENTIONS

6.1.1 CONCOMITANT MEDICATIONS — CM

cm.xpt, Concomitant Medications — Interventions, Version 3.1.2,. One record per recorded intervention occurrence or constant-dosing interval per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	CM	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
CMSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
CMGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4 SDTMIG 4.1.2.6
CMSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Examples: a number pre-printed on the CRF as an explicit line identifier or record identifier defined in the sponsor's operational database. Example: line number on a concomitant medication page.	Perm	SDTM 2.2.4
CMTRT	Reported Name of Drug, Med, or Therapy	Char		Topic	Verbatim medication name that is either pre-printed or collected on a CRF.	Req	SDTM 2.2.1
CMMODIFY	Modified Reported Name	Char		Synonym Qualifier	If CMTRT is modified to facilitate coding, then CMMODIFY will contain the modified text.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.6
CMDECOD	Standardized Medication Name	Char	*	Synonym Qualifier	Standardized or dictionary-derived text description of CMTRT or CMMODIFY. Equivalent to the generic medication name in WHO Drug. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes. If an intervention term does not have a decode value in the dictionary then CMDECOD will be left blank.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.6

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
CMCAT	Category for Medication	Char	*	Grouping Qualifier	Used to define a category of medications/treatments. Examples: PRIOR, CONCOMITANT, ANTI-CANCER MEDICATION, or GENERAL CONMED.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
CMSCAT	Subcategory for Medication	Char	*	Grouping Qualifier	A further categorization of medications/ treatment. Examples: CHEMOTHERAPY, HORMONAL THERAPY, ALTERNATIVE THERAPY.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
CMPRESP	CM Pre-Specified	Char	(NY)	Record Qualifier	Used to indicate whether (Y/null) information about the use of a specific medication was solicited on the CRF.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.7, SDTMIG 4.1.5.7
CMOCCUR	CM Occurrence	Char	(NY)	Record Qualifier	When the use of specific medications is solicited, CMOCCUR is used to indicate whether or not (Y/N) use of the medication occurred. Values are null for medications not specifically solicited.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.7
CMSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that a question about a pre-specified medication was not answered. Should be null or have a value of NOT DONE.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
CMREASND	Reason Medication Not Collected	Char		Record Qualifier	Describes the reason concomitant medication was not collected. Used in conjunction with CMSTAT when value is NOT DONE.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
CMINDC	Indication	Char		Record Qualifier	Denotes why a medication was taken or administered. Examples: NAUSEA, HYPERTENSION.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.6
CMCLAS	Medication Class	Char	*	Variable Qualifier	Drug class. May be obtained from coding. When coding to a single class, populate with class value. If using a dictionary and coding to multiple classes, then follow assumption 4.1.2.8.3 or omit CMCLAS.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.5
CMCLASCD	Medication Class Code	Char	*	Variable Qualifier	Class code corresponding to CMCLAS. Drug class. May be obtained from coding. When coding to a single class, populate with class code. If using a dictionary and coding to multiple classes, then follow assumption 4.1.2.8.3 or omit CMCLASCD.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.5
CMDOSE	Dose per Administration	Num		Record Qualifier	Amount of CMTRT taken.	Perm	SDTM 2.2.1
CMDOSTXT	Dose Description	Char		Record Qualifier	Dosing amounts or a range of dosing information collected in text form. Units may be stored in CMDOSU. Example: 200-400, 15-20.	Perm	SDTM 2.2.1
CMDOSU	Dose Units	Char	(UNIT)	Variable Qualifier	Units for CMDOSE, CMDOSTXT, and CMDOSTOT. Examples: ng, mg, or mg/kg.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.2
CMDOSFRM	Dose Form	Char	(FRM)	Record Qualifier	Dose form for CMTRT. Examples: TABLET, LOTION.	Perm	SDTM 2.2.1
CMDOSFRQ	Dosing Frequency per Interval	Char	(FREQ)	Variable Qualifier	Usually expressed as the number of repeated administrations of CMDOSE within a specific time period. Examples: BID (twice daily), Q12H (every 12 hours).	Perm	SDTM 2.2.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
CMDOSTOT	Total Daily Dose	Num		Record Qualifier	Total daily dose of CMTRT using the units in CMDOSU. Total dose over a period other than day could be recorded in a separate Supplemental Qualifier variable. CMDOSTOT should be used in addition to CMDOSE, and not in place of it.	Perm	SDTM 2.2.1
CMDOSRGM	Intended Dose Regimen	Char		Variable Qualifier	Text description of the (intended) schedule or regimen for the Intervention. Examples: TWO WEEKS ON, TWO WEEKS OFF.	Perm	SDTM 2.2.1
CMROUTE	Route of Administration	Char	(ROUTE)	Variable Qualifier	Route of administration for CMTRT. Examples: ORAL, INTRAVENOUS.	Perm	SDTM 2.2.1
CMSTDTC	Start Date/Time of Medication	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
CMENDTC	End Date/Time of Medication	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
CMSTDY	Study Day of Start of Medication	Num		Timing	Study day of start of medication relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
CMENDY	Study Day of End of Medication	Num		Timing	Study day of end of medication relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
CMDUR	Duration of Medication	Char	ISO 8601	Timing	Collected duration for a treatment episode. Used only if collected on the CRF and not derived from start and end date/times.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3
CMSTRF	Start Relative to Reference Period	Char	(STENRF)	Timing	Describes the start of the medication relative to sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics). If information such as "PRIOR", "ONGOING", or "CONTINUING" was collected, this information may be translated into CMSTRF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CMENRF	End Relative to Reference Period	Char	(STENRF)	Timing	Describes the end of the medication relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics). If information such as "PRIOR", "ONGOING", or "CONTINUING" was collected, this information may be translated into CMENRF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CMSTRTPT	Start Relative to Reference Time Point	Char	BEFORE, COINCIDENT, AFTER, U	Timing	Identifies the start of the medication as being before or after the reference time point defined by variable CMSTTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CMSTTPT	Start Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by CMSTRTPT. Examples: "2003-12-15" or "VISIT 1".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
CMENRTPT	End Relative to Reference Time Point	Char	BEFORE, COINCIDENT, AFTER, ONGOING, U	Timing	Identifies the end of the medication as being before or after the reference time point defined by variable CMENTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CMENTPT	End Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by CMENRTPT. Examples: "2003-12-25" or "VISIT 2".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.1.1.1 ASSUMPTIONS FOR CONCOMITANT MEDICATIONS DOMAIN MODEL

1. CM Definition and Structure
   a. CRF data that captures the Concomitant and Prior Medications/Therapies used by the subject. Examples are the Concomitant Medications/Therapies given on an as-needed basis and the usual and background medications/therapies given for a condition.
   b. The structure of the CM domain is one record per medication intervention episode, constant-dosing interval, or pre-specified medication assessment per subject. It is the sponsor's responsibility to define an intervention episode. This definition may vary based on the sponsor's requirements for review and analysis. The submission dataset structure may differ from the structure used for collection. One common approach is to submit a new record when there is a change in the dosing regimen. Another approach is to collapse all records for a medication to a summary level with either a dose range or the highest dose level. Other approaches may also be reasonable as long as they meet the sponsor's evaluation requirements.

2. Concomitant Medications Description and Coding
   a. CMTRT captures the name of the Concomitant Medications/Therapy and it is the topic variable. It is a required variable and must have a value. CMTRT should only include the medication/therapy name and should not include dosage, formulation, or other qualifying information. For example, “ASPIRIN 100MG TABLET” is not a valid value for CMTRT. This example should be expressed as CMTRT= “ASPIRIN”, CMDOSE= “100”, CMDOSU= “MG”, and CMDOSFRM= “TABLET”.
   b. CMMODIFY should be included if the sponsor’s procedure permits modification of a verbatim term for coding.
   c. CMDECOD is the standardized medication/therapy term derived by the sponsor from the coding dictionary. It is expected that the reported term (CMTRT) or the modified term (CMMODIFY) will be coded using a standard dictionary. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes.

3. Pre-specified Terms; Presence or Absence of Concomitant Medications
   a. Information on concomitant medications is generally collected in two different ways, either by recording free text or using a pre-specified list of terms. Since the solicitation of information on specific concomitant medications may affect the frequency at which they are reported, the fact that a specific medication was solicited may be of interest to reviewers. CMPRESP and CMOCCUR are used together to indicate whether the intervention in CMTRT was pre-specified and whether it occurred , respectively.
   b. CMOCCUR is used to indicate whether a pre-specified medication was used. A value of Y indicates that the medication was used and N indicates that it was not.

c. If a medication was not pre-specified the value of CMOCCUR should be null. CMPRESP and CMOCCUR is a permissible fields and may be omitted from the dataset if all medications were collected as free text. Values of CMOCCUR may also be null for pre-specified medications if no Y/N response was collected; in this case, CMSTAT = NOT DONE, and CMREASND could be used to describe the reason the answer was missing.

4. Additional Timing Variables
   a. CMSTRTPT, CMSTTPT, CMENRTPT and CMENTPT may be populated as necessary to indicate when a medication was used relative to specified time points. For example, assume a subject uses birth control medication. The subject has used the same medication for many years and continues to do so. The date the subject began using the medication (or at least a partial date) would be stored in CMSTDTC. CMENDTC is null since the end date is unknown (it hasn't happened yet). This fact can be recorded by setting CMENTPT="2007-04-30" (the date the assessment was made) and CMENRTPT="ONGOING".

5. Additional Permissible Interventions Qualifiers
   a. Any additional Qualifiers from the Interventions Class may be added to this domain.

6.1.1.2 EXAMPLES FOR CONCOMITANT MEDICATIONS DOMAIN MODEL

Example 1: Spontaneous concomitant medications with dosing information

Sponsors collect the timing of concomitant medication use with varying specificity, depending on the pattern of use; the type, purpose, and importance of the medication; and the needs of the study. It is often unnecessary to record every unique instance of medication use, since the same information can be conveyed with start and end dates and frequency of use. If appropriate, medications taken as needed (intermittently or sporadically over a time period) may be reported with a start and end date and a frequency of "PRN".

The example below shows three subjects who took the same medication on the same day.

Rows 1-6: For the first subject (USUBJID=ABC-0001, each instance is recorded separately, and frequency (CMDOSFRQ) is ONCE.
Rows 7-9: For the second subject (USUBJID=ABC-0002, the second record (CMSEQ=2) shows that aspirin was taken twice on January 7th, so the frequency is BID. The frequency is also included for the other daily records to avoid confusion.
Row 10: Records for the third subject are collapsed (this is shown as an example only, not as a recommendation) into a single entry that spans the relevant time period, with a frequency of PRN. This approach assumes that knowing exactly when aspirin was used is not important for evaluating safety and efficacy in this study.

Row	STUDYID	DOMAIN	USUBJID	CMSEQ	CMTRT	CMDOSE	CMDOSU	CMDOSFRQ	CMSTDTC	CMENDTC
1	ABC	CM	ABC-0001	1	ASPIRIN	100	MG	ONCE	2004-01-01	2004-01-01
2	ABC	CM	ABC-0001	2	ASPIRIN	100	MG	ONCE	2004-01-02	2004-01-02
3	ABC	CM	ABC-0001	3	ASPIRIN	100	MG	ONCE	2004-01-03	2004-01-03
4	ABC	CM	ABC-0001	4	ASPIRIN	100	MG	ONCE	2004-01-07	2004-01-07
5	ABC	CM	ABC-0001	5	ASPIRIN	100	MG	ONCE	2004-01-07	2004-01-07
6	ABC	CM	ABC-0001	6	ASPIRIN	100	MG	ONCE	2004-01-09	2004-01-09
7	ABC	CM	ABC-0002	1	ASPIRIN	100	MG	Q24H	2004-01-01	2004-01-03
8	ABC	CM	ABC-0002	2	ASPIRIN	100	MG	BID	2004-01-07	2004-01-07
9	ABC	CM	ABC-0002	3	ASPIRIN	100	MG	Q24H	2004-01-09	2004-01-09
10	ABC	CM	ABC-0003	1	ASPIRIN	100	MG	PRN	2004-01-01	2004-01-09

Example 2: Spontaneous concomitant medications without dosing information

The example below is for a study that has a particular interest in whether subjects use any anticonvulsant medications. The medication history, dosing, etc. are not of interest; the study only asks for the anticonvulsants to which subjects are being exposed.

Row	STUDYID	DOMAIN	USUBJID	CMSEQ	CMTRT	CMCAT
1	ABC123	CM	1	1	LITHIUM	ANTI-CONVULSANT
2	ABC123	CM	2	1	VPA	ANTI-CONVULSANT

Example 3: Pre-specified concomitant medications using CMPRESP, CMOCCUR, CMSTAT, and CMREASND

Sponsors often are interested in whether subjects are exposed to specific concomitant medications, and collect this information using a checklist. The example below is for a study that has a particular interest in the antidepressant medications that subjects use. For the study's purposes, the absence is just as important as the presence of a medication. This can be clearly shown by using CMOCCUR.

In this example, CMPRESP shows that the subjects were specifically asked if they use any of three antidepressants (Zoloft, Prozac, or Paxil). The value of CMOCCUR indicates the response to the pre-specified medication question. CMSTAT indicates whether the response was missing for a pre-specified medication, and CMREASND shows the reason for missing response. The medication details (e.g., dose, frequency) were not of interest in this study.

Row 1: Medication was solicited on CRF and was taken.
Row 2: Medication use solicited in CRF and was not taken.
Row 3: Medication use solicited in CRF but data was not collected.

Row	STUDYID	DOMAIN	USUBJID	CMSEQ	CMTRT	CMPRESP	CMOCCUR	CMSTAT	CMREASND
1	ABC123	CM	1	1	ZOLOFT	Y	Y		
2	ABC123	CM	1	2	PROZAC	Y	N		
3	ABC123	CM	1	3	PAXIL	Y		NOT DONE	Didn't ask due to interruption

6.1.2 EXPOSURE — EX

ex.xpt, Exposure — Interventions, Version 3.1.2. One record per constant dosing interval per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	EX	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
EXSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
EXGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4 SDTMIG 4.1.2.6
EXSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a CRF Page.	Perm	SDTM 2.2.4
EXTRT	Name of Actual Treatment	Char		Topic	Name of the intervention treatment — usually the verbatim name of the investigational treatment given during the dosing period for the observation.	Req	SDTM 2.2.1
EXCAT	Category for Treatment	Char	*	Grouping Qualifier	Used to define a category of related records. Example: COMPARATOR CLASS.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
EXSCAT	Subcategory for Treatment	Char	*	Grouping Qualifier	A further categorization of treatment.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
EXDOSE	Dose per Administration	Num		Record Qualifier	Amount of EXTRT administered or given.	Exp	SDTM 2.2.1
EXDOSTXT	Dose Description	Char		Record Qualifier	Dosing amounts or a range of dosing information collected in text form. Example: 200-400.	Perm	SDTM 2.2.1
EXDOSU	Dose Units	Char	(UNIT)	Variable Qualifier	Units for EXDOSE and EXDOSTOT. Examples: ng, mg, or mg/kg.	Exp	SDTM 2.2.1, SDTMIG 4.1.3.2
EXDOSFRM	Dose Form	Char	(FRM)	Record Qualifier	Dose form for EXTRT. Examples: TABLET, LOTION.	Exp	SDTM 2.2.1
EXDOSFRQ	Dosing Frequency per Interval	Char	(FREQ)	Variable Qualifier	Usually expressed as the number of repeated administrations of EXDOSE within a specific time period. Examples: BID (twice daily), Q4S (once every four weeks), BIS (twice a week).	Perm	SDTM 2.2.1
EXDOSTOT	Total Daily Dose	Num		Record Qualifier	Total daily dose of EXTRT using the units in EXDOSU. Total dose over a period other than day could be recorded in a separate Supplemental Qualifier variable.	Perm	SDTM 2.2.1
EXDOSRGM	Intended Dose Regimen	Char		Variable Qualifier	Text description of the (intended) schedule or regimen for the Intervention. Examples: TWO WEEKS ON, TWO WEEKS OFF.	Perm	SDTM 2.2.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
EXROUTE	Route of Administration	Char	(ROUTE)	Variable Qualifier	Route of administration for EXTRT. Examples: ORAL, INTRAVENOUS.	Perm	SDTM 2.2.1
EXLOT	Lot Number	Char		Record Qualifier	Lot Number of the EXTRT product.	Perm	SDTM 2.2.1
EXLOC	Location of Dose Administration	Char	(LOC)	Record Qualifier	Specifies location of administration. Example: LEFT ARM for a topical application.	Perm	SDTM 2.2.1
EXTRTV	Treatment Vehicle	Char	*	Record Qualifier	Describes vehicle used for treatment. Example: SALINE.	Perm	SDTM 2.2.1
EXVAMT	Treatment Vehicle Amount	Num		Variable Qualifier	Amount administered of the treatment vehicle indicated by EXTRTV	Perm	SDTM 2.2.1
EXVAMTU	Treatment Vehicle Amount Units	Char	(UNIT)	Variable Qualifier	Units of the treatment vehicle amount indicated by EXVAMT	Perm	SDTM 2.2.1
EXADJ	Reason for Dose Adjustment	Char	*	Record Qualifier	Describes reason or explanation of why a dose is adjusted – used only when an adjustment is represented in EX.	Perm	SDTM 2.2.1
TAETORD	Order of Element within Arm	Num		Timing	Number that gives the order of the Element within the Arm.	Perm	SDTM 2.2.5, SDTMIG 5.3.1
EPOCH	Epoch	Char	*	Timing	Trial Epoch of the Exposure record. Examples: SCREENING, TREATMENT PHASE, FOLLOW-UP	Perm	SDTM 2.2.5, SDTMIG 7.1.2
EXSTDTC	Start Date/Time of Treatment	Char	ISO 8601	Timing	The time when administration of the treatment indicated by EXTRT and EXDOSE began.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
EXENDTC	End Date/Time of Treatment	Char	ISO 8601	Timing	The time when administration of the treatment indicated by EXTRT and EXDOSE ended.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
EXSTDY	Study Day of Start of Treatment	Num		Timing	Study day of start of treatment relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
EXENDY	Study Day of End of Treatment	Num		Timing	Study day of end of treatment relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
EXDUR	Duration of Treatment	Char	ISO 8601	Timing	Collected duration and unit of a treatment. Used only if collected on the CRF and not derived from start and end date/times.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3
EXTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when a dose should be given. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See EXTPTNUM and EXTPTREF. Examples: Start or 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
EXTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of EXTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
EXELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned elapsed time (in ISO 8601 format) relative to the planned fixed reference (EXTPTREF). This variable is useful where there are repetitive measures. Not a clock time. Represented as an ISO duration.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
EXTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by EXELTM, EXTPTNUM, and EXTPT. Examples: PREVIOUS DOSE, PREVIOUS MEAL.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

- ** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.1.2.1 ASSUMPTIONS FOR EXPOSURE DOMAIN MODEL

1. EX Definition
   a. The Exposure domain model records the details of a subject's exposure to protocol-specified study treatment. Study treatment may be any intervention that is prospectively defined as a test material within a study, and is typically but not always supplied to the subject. Examples include but are not limited to placebo, active comparators, and investigational products. Treatments that are not protocol-specified should be recorded in the Concomitant Medication (CM) domain.
   b. This domain should contain one record per constant dosing interval per subject. "Constant dosing interval" is sponsor-defined, and may include any period of time that can be described in terms of a known treatment given at a consistent dose and frequency. For example, for a study with once-a-week administration of a standard dose for 6 weeks, exposure may be represented as one of the following:
      - If information about each dose is not collected, there would be a single record per subject, spanning the entire treatment phase
      - If the sponsor monitors each treatment administration and deviations in treatment or dose occur, there could be up to six records (one for each weekly administration).

   c. The Exposure domain is required for all studies that include investigational product. Exposure information may be directly or indirectly determined. Regardless of how it is known, it must be represented using the Exposure domain, and the metadata should explain how it was populated. Common methods for determining exposure (from most direct to least direct) include the following:
      1) Actual observation of the administration of drug by the investigator
      2) Automated dispensing device which records administrations
      3) Subject recall (e.g., via diary)
      4) Derived from drug accountability data (e.g., pill counts)
      5) Derived from the protocol

2. Categorization and Grouping
   a. EXCAT and EXSCAT may be used when appropriate to categorize treatments into categories and subcategories. For example, if a study contains several active comparator medications, EXCAT may be set to "ACTIVE COMPARATOR." Such categorization may not be useful in most studies, so these variables are permissible but not expected.

3. Exposure Treatment Description
   a. EXTRT captures the name of the investigational treatment and it is the topic variable. It is a required variable and must have a value. EXTRT should only include the treatment name and should not include dosage, formulation or other qualifying information. For example, "ASPIRIN 100MG TABLET" is not a valid value for EXTRT. This example should be expressed as EXTRT= "ASPIRIN", EXDOSE= "100", EXDOSU= "mg", and EXDOSFRM= "TABLET".
   b. Doses of placebo should be represented as per Exposure Example 5 below.

4. Timing Variables
   a. The timing of exposure to study treatment is captured by the start/end date and start/end time of each constant dosing interval. If the subject is only exposed to study medication within a clinical encounter (e.g., if an injection is administered at the clinic), VISITNUM may be added to the domain as an additional timing variable. VISITDY and VISIT would then also be permissible Qualifiers. However if the beginning and end of a constant dosing interval is not confined within the time limits of a clinical encounter (e.g., if a subjects takes pills at home), then it is not appropriate to include VISITNUM in the EX domain. This is because EX is designed to capture the timing of exposure to treatment, not the timing of dispensing treatment. Furthermore, VISITNUM should not be used to indicate that treatment began at a particular visit and continued for a period of time. The SDTM does not have any provision for recording "start visit" and "end visit" since such information is redundant with start date/time and end date/time.

5. Additional Interventions Qualifiers
   b. The variables --PRESP, --OCCUR, --STAT, and --REASND from the Interventions general observation class would not generally be used in the EX domain because EX should only contain medications received.
   c. Other additional Qualifiers from the SDTM Interventions Class may be added to this domain.

6.1.2.2 EXAMPLES FOR EXPOSURE DOMAIN MODEL

Example 1:

This is an example of an Exposure dataset for a parallel-design study. In this example, subjects were randomized to one of three treatment groups: Drug A 40 mg Q24H, Drug A 20 mg Q24H, or Drug B 150 mg BID. Drug C was assigned as supplemental therapy for the three groups. The study included 8 weeks of treatment, with subjects remaining on the same treatment throughout the study. With respect to timing of doses, the sponsor only collected the start and stop dates of uninterrupted periods of treatment. Note below that Subject 12345003 missed taking study medications on Study Days 23 and 24.

Row	STUDYID	DOMAIN	USUBJID	EXSEQ	EXTRT	EXDOSE	EXDOSU	EXDOSFRM	EXDOSFRQ	EXDOSTOT	EXROUTE	EXSTDTC	EXENDTC	EXSTDY	EXENDY
1	12345	EX	12345001	1	DRUG A	40	mg	TABLET	Q24H	40	ORAL	2002-01-10	2002-03-08	1	58
2	12345	EX	12345001	2	DRUG C	30	mg	CAPSULE	BID	60	ORAL	2002-01-10	2002-03-08	1	58
3	12345	EX	12345002	1	DRUG A	20	mg	TABLET	Q24H	20	ORAL	2002-01-10	2002-03-07	1	57
4	12345	EX	12345002	2	DRUG C	30	mg	CAPSULE	BID	60	ORAL	2002-01-10	2002-03-07	1	57
5	12345	EX	12345003	1	DRUG C	30	mg	CAPSULE	BID	60	ORAL	2002-01-11	2002-02-01	1	22
6	12345	EX	12345003	2	DRUG B	150	mg	TABLET	BID	300	ORAL	2002-01-11	2002-02-01	1	22
7	12345	EX	12345003	3	DRUG C	30	mg	CAPSULE	BID	60	ORAL	2002-02-04	2002-03-06	25	55
8	12345	EX	12345003	4	DRUG B	150	mg	TABLET	BID	300	ORAL	2002-02-04	2002-03-06	25	55

Example 2:
This is an example of an Exposure dataset for a single crossover study comparing once daily oral administration of Drug A 20 mg capsules with Drug B 30 mg coated tablets. Study drug was taken for 3 consecutive mornings 30 minutes prior to a standardized breakfast. There was a 6-day washout period between treatments.

Row	STUDYID	DOMAIN	USUBJID	EXSEQ	EXGRPID	EXTRT	EXDOSE	EXDOSU	EXDOSFRM	EXDOSFRQ
1	56789	EX	56789001	1	1	DRUG A	20	mg	CAPSULE	Q24H
2	56789	EX	56789001	2	1	DRUG A	20	mg	CAPSULE	Q24H
3	56789	EX	56789001	3	1	DRUG A	20	mg	CAPSULE	Q24H
4	56789	EX	56789001	4	2	DRUG B	30	mg	TABLET, COATED	Q24H
5	56789	EX	56789001	5	2	DRUG B	30	mg	TABLET, COATED	Q24H
6	56789	EX	56789001	6	2	DRUG B	30	mg	TABLET, COATED	Q24H
7	56789	EX	56789003	1	1	DRUG B	30	mg	TABLET, COATED	Q24H
8	56789	EX	56789003	2	1	DRUG B	30	mg	TABLET, COATED	Q24H
9	56789	EX	56789003	3	1	DRUG B	30	mg	TABLET, COATED	Q24H
10	56789	EX	56789003	4	2	DRUG A	20	mg	CAPSULE	Q24H
11	56789	EX	56789003	5	2	DRUG A	20	mg	CAPSULE	Q24H
12	56789	EX	56789003	6	2	DRUG A	20	mg	CAPSULE	Q24H

Row	EXDOSTOT	EXROUTE	EXSTDTC	EXENDTC	EXSTDY	EXENDY	EXTPT	EXTPTREF
1 (cont)	20	ORAL	2002-07-01T07:30	2002-07-01T07:30	1	1	30 MINUTES PRIOR	STD BREAKFAST
2 (cont)	20	ORAL	2002-07-02T07:30	2002-07-02T07:30	2	2	30 MINUTES PRIOR	STD BREAKFAST
3 (cont)	20	ORAL	2002-07-03T07:32	2002-07-03T07:32	3	3	30 MINUTES PRIOR	STD BREAKFAST
4 (cont)	30	ORAL	2002-07-09T07:30	2002-07-09T07:30	9	9	30 MINUTES PRIOR	STD BREAKFAST
5 (cont)	30	ORAL	2002-07-10T07:30	2002-07-10T07:30	10	10	30 MINUTES PRIOR	STD BREAKFAST
6 (cont)	30	ORAL	2002-07-11T07:34	2002-07-11T07:34	11	11	30 MINUTES PRIOR	STD BREAKFAST
7 (cont)	30	ORAL	2002-07-03T07:30	2002-07-03T07:30	1	1	30 MINUTES PRIOR	STD BREAKFAST
8 (cont)	30	ORAL	2002-07-04T07:24	2002-07-04T07:24	2	2	30 MINUTES PRIOR	STD BREAKFAST
9 (cont)	30	ORAL	2002-07-05T07:24	2002-07-05T07:24	3	3	30 MINUTES PRIOR	STD BREAKFAST
10 (cont)	20	ORAL	2002-07-11T07:30	2002-07-11T07:30	9	9	30 MINUTES PRIOR	STD BREAKFAST
11 (cont)	20	ORAL	2002-07-12T07:43	2002-07-12T07:43	10	10	30 MINUTES PRIOR	STD BREAKFAST
12 (cont)	20	ORAL	2002-07-13T07:38	2002-07-13T07:38	11	11	30 MINUTES PRIOR	STD BREAKFAST

Example 3:
This is an example of an Exposure dataset for an open-label study examining the tolerability of different doses of Drug A. Study drug was taken daily for three months. Dose adjustments were allowed as needed in response to tolerability or efficacy issues.

Row	STUDYID	DOMAIN	USUBJID	EXSEQ	EXTRT	EXDOSE	EXDOSU	EXDOSFRM	EXADJ	EXSTDTC	EXENDTC
1	37841	EX	37841001	1	DRUG A	20	mg	TABLET		2002-07-01	2002-10-01
2	37841	EX	37841002	1	DRUG A	20	mg	TABLET		2002-04-02	2002-04-21
3	37841	EX	37841002	2	DRUG A	15	mg	TABLET	Reduced due to toxicity	2002-04-22	2002-07-01
4	37841	EX	37841003	1	DRUG A	20	mg	TABLET		2002-05-09	2002-06-01
5	37841	EX	37841003	2	DRUG A	25	mg	TABLET	Increased due to suboptimal efficacy	2002-06-02	2002-07-01
6	37841	EX	37841003	3	DRUG A	30	mg	TABLET	Increased due to suboptimal efficacy	2002-07-02	2002-08-01

Example 4:
This is an example of a titration Exposure dataset for a study that gradually increases dosage while simultaneously evaluating efficacy and toleration of the treatment regimen. The schedule specifies that Drug A be administered twice daily starting with 100 mg for 3 days, then increase to 200 mg daily for 3 days, then increase further in 100-mg increments every three days until signs of intolerance are noted or no improvement in efficacy is observed.

Row	STUDYID	DOMAIN	USUBJID	EXSEQ	EXGRPID	EXTRT	EXDOSE	EXDOSU	EXDOSFRM	EXDOSFRQ
1	70912	EX	23301996	1	1	DRUG A	100	mg	CAPSULE	BID
2	23301	EX	23301996	2	1	DRUG A	100	mg	CAPSULE	BID
3	23301	EX	23301996	3	1	DRUG A	100	mg	CAPSULE	BID
4	23301	EX	23301996	4	2	DRUG A	200	mg	CAPSULE	BID
5	23301	EX	23301996	5	2	DRUG A	200	mg	CAPSULE	BID
6	23301	EX	23301996	6	2	DRUG A	200	mg	CAPSULE	BID
7	23301	EX	23301996	7	1	DRUG A	300	mg	CAPSULE	BID
8	23301	EX	23301996	8	1	DRUG A	300	mg	CAPSULE	BID
9	23301	EX	23301996	9	1	DRUG A	300	mg	CAPSULE	BID
10	23301	EX	23301996	10	2	DRUG A	400	mg	CAPSULE	BID
11	23301	EX	23301996	11	2	DRUG A	400	mg	CAPSULE	BID
12	23301	EX	23301996	12	2	DRUG A	400	mg	CAPSULE	BID

Row	EXDOSTOT	EXROUTE	EXSTDTC	EXENDTC	EXSTDY	EXENDY
1 (cont)	200	ORAL	2004-07-01T07:30	2004-07-01T07:30	1	1
2 (cont)	200	ORAL	2004-07-02T07:30	2004-07-02T07:30	2	2
3 (cont)	200	ORAL	2004-07-03T07:32	2004-07-03T07:32	3	3
4 (cont)	400	ORAL	2004-07-09T07:30	2004-07-09T07:30	9	9
5 (cont)	400	ORAL	2004-07-10T07:30	2004-07-10T07:30	10	10
6 (cont)	400	ORAL	2004-07-11T07:34	2004-07-11T07:34	11	11
7 (cont)	600	ORAL	2004-07-01T07:30	2004-07-01T07:30	1	1
8 (cont)	600	ORAL	2004-07-02T07:30	2004-07-02T07:30	2	2
9 (cont)	600	ORAL	2004-07-03T07:32	2004-07-03T07:32	3	3
10 (cont)	800	ORAL	2004-07-09T07:30	2004-07-09T07:30	9	9
11 (cont)	800	ORAL	2004-07-10T07:30	2004-07-10T07:30	10	10
12 (cont)	800	ORAL	2004-07-11T07:34	2004-07-11T07:34	11	11

Example 5:
The table below presents data for a study comparing low dose aspirin to placebo. Two rows are shown: one for a subject receiving active study drug and one for a subject receiving placebo.

USUBJID	EXSEQ	EXTRT	EXDOSE	EXDOSU	EXDOSEFRM	EXDOSFRQ
2008-039-001	1	Aspirin	81	mg	TABLET	QD
2008-039-002	1	Placebo	0	mg	TABLET	QD

6.1.3 SUBSTANCE USE — SU

su.xpt, Substance Use — Interventions, Version 3.1.2. One record per substance type per reported occurrence per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	SU	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
SUSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
SUGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4 SDTMIG 4.1.2.6
SUSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a Tobacco & Alcohol use CRF page.	Perm	SDTM 2.2.4
SUTRT	Reported Name of Substance	Char		Topic	Substance name. Examples: Cigarettes, Coffee.	Req	SDTM 2.2.1
SUMODIFY	Modified Substance Name	Char		Synonym Qualifier	If SUTRT is modified, then the modified text is placed here.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.6
SUDECOD	Standardized Substance Name	Char	*	Synonym Qualifier	Standardized or dictionary-derived text description of SUTRT or SUMODIFY if the sponsor chooses to code the substance use. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.6
SUCAT	Category for Substance Use	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: TOBACCO, ALCOHOL, or CAFFEINE.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
SUSCAT	Subcategory for Substance Use	Char	*	Grouping Qualifier	A further categorization of substance use. Examples: CIGARS, CIGARETTES, BEER, WINE	Perm	SDTM 2.2.1, SDTMIG 4.1.2.6
SUPRESP	SU Pre-Specified	Char	(NY)	Record Qualifier	Used to indicate whether (Y/null) information about the use of a specific substance was solicited on the CRF.	Perm	SDTM 2.2.1, SDTMIG 4.1.2.7.3, SDTMIG 4.1.5.7
SUOCCUR	SU Occurrence	Char	(NY)	Record Qualifier	When the use of specific substances is solicited, SUOCCUR is used to indicate whether or not (Y/N) a particular pre-specified substance was used. Values are null for substances not specifically solicited.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.7

Variable Name	Variable Label	Type	Controlled Terms or Format	Role	CDISC Notes	Core	References
SUSTAT	Completion Status	Char	(ND)	Record Qualifier	When the use of pre-specified substances is solicited, the completion status indicates that there was no response to the question about the pre-specified substance. When there is no pre-specified list on the CRF, then the completion status indicates that substance use was not assessed for the subject.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
SUREASND	Reason Substance Use Not Collected	Char		Record Qualifier	Describes the reason substance use was not collected. Used in conjunction with SUSTAT when value of SUSTAT is NOT DONE.	Perm	SDTM 2.2.1, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
SUCLAS	Substance Use Class	Char	*	Variable Qualifier	Substance use class. May be obtained from coding. When coding to a single class, populate with class value. If using a dictionary and coding to multiple classes, then follow assumption 4.1.2.8.3 or omit SUCLAS.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.5
SUCLASCD	Substance Use Class Code	Char	*	Variable Qualifier	Code corresponding to SUCLAS. May be obtained from coding.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.5
SUDOSE	Substance Use Consumption	Num		Record Qualifier	Amount of SUTRT consumed.	Perm	SDTM 2.2.1
SUDOSTXT	Substance Use Consumption Text	Char		Record Qualifier	Substance use consumption amounts or a range of consumption information collected in text form.	Perm	SDTM 2.2.1
SUDOSU	Consumption Units	Char	(UNIT)	Variable Qualifier	Units for SUDOSE, SUDOSTXT, and SUDOSTOT. Examples: OUNCES, CIGARETTE EQUIVALENTS, or GRAMS.	Perm	SDTM 2.2.1, SDTMIG 4.1.3.2
SUDOSFRM	Dose Form	Char	*	Record Qualifier	Dose form for SUTRT. Examples: INJECTABLE, LIQUID, or POWDER.	Perm	SDTM 2.2.1
SUDOSFRQ	Use Frequency Per Interval	Char	(FREQ)	Variable Qualifier	Usually expressed as the number of repeated administrations of SUDOSE within a specific time period. Example: Q24H (every day)	Perm	SDTM 2.2.1
SUDOSTOT	Total Daily Consumption	Num		Record Qualifier	Total daily use of SUTRT using the units in SUDOSU. If sponsor needs to aggregate the data over a period other than daily, then the aggregated total could be recorded in a Supplemental Qualifier variable.	Perm	SDTM 2.2.1
SUROUTE	Route of Administration	Char	(ROUTE)	Variable Qualifier	Route of administration for SUTRT. Examples: ORAL, INTRAVENOUS.	Perm	SDTM 2.2.1
SUSTDTC	Start Date/Time of Substance Use	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
SUENDTC	End Date/Time of Substance Use	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.3
SUSTDY	Study Day of Start of Substance Use	Num		Timing	Study day of start of substance use relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
SUENDY	Study Day of End of Substance Use	Num		Timing	Study day of end of substance use relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

Variable Name	Variable Label	Type	Controlled Terms or Format	Role	CDISC Notes	Core	References
SUDUR	Duration of Substance Use	Char	ISO 8601	Timing	Collected duration of substance use in ISO 8601 format. Used only if collected on the CRF and not derived from start and end date/times.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3
SUSTRF	Start Relative to Reference Period	Char	(STENRF)	Timing	Describes the start of the substance use relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics). If information such as "PRIOR", "ONGOING", or "CONTINUING" was collected, this information may be translated into SUSTRF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
SUENRF	End Relative to Reference Period	Char	(STENRF)	Timing	Describes the end of the substance use with relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics). If information such as "PRIOR", "ONGOING", or "CONTINUING" was collected, this information may be translated into SUENRF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
SUSTRTPT	Start Relative to Reference Time Point	Char	BEFORE, COINCIDENT, AFTER, U	Timing	Identifies the start of the substance as being before or after the reference time point defined by variable SUSTTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
SUSTTPT	Start Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by SUSTRTPT. Examples: "2003-12-15" or "VISIT 1".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
SUENRTPT	End Relative to Reference Time Point	Char	BEFORE, COINCIDENT, AFTER, ONGOING, U	Timing	Identifies the end of the substance as being before or after the reference time point defined by variable SUENTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
SUENTPT	End Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by SUENRTPT. Examples: "2003-12-25" or "VISIT 2".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.1.3.1 ASSUMPTIONS FOR SUBSTANCE USE DOMAIN MODEL

1. The intent of the domain is to capture substance use information that may be used to assess the efficacy and/or safety of therapies that look to mitigate the effects of chronic substance use, or that could be used as covariates in other efficacy and/or safety analyses.

2. SU Definition
   a. This information may be independent of planned study evaluations, or may be a key outcome (e.g., planned evaluation) of a clinical trial.
   b. In many clinical trials, detailed substance use information as provided for in the domain model above may not be required (e.g., the only information collected may be a response to the question "Have you ever smoked tobacco?"); in such cases, many of the Qualifier variables would not be submitted.
   c. SU may contain responses to questions about use of pre-specified substances as well as records of substance use collected as free text.

3. Substance Use Description and Coding
   a. SUTRT captures the verbatim or the pre-specified text collected for the substance. It is the topic variable for the SU dataset. SUTRT is a required variable and must have a value.
   b. SUMODIFY is a permissible variable and should be included if coding is performed and the sponsor's procedure permits modification of a verbatim substance use term for coding. The modified term is listed in SUMODIFY. The variable may be populated as per the sponsor's procedures.
   c. SUDECOD is the preferred term derived by the sponsor from the coding dictionary if coding is performed. It is a permissible variable. Where deemed necessary by the sponsor, the verbatim term (SUTRT) should be coded using a standard dictionary such as WHO Drug. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes.

4. Additional Categorization and Grouping
   a. SUCAT and SUSCAT should not be redundant with the domain code or dictionary classification provided by SUDECOD, or with SUTRT. That is, they should provide a different means of defining or classifying SU records. For example, a sponsor may be interested in identifying all substances that the investigator feels might represent opium use, and to collect such use on a separate CRF page. This categorization might differ from the categorization derived from the coding dictionary.
   b. SUGRPID may be used to link (or associate) different records together to form a block of related records within SU at the subject level (see Section 4.1.2.6). It should not be used in place of SUCAT or SUSCAT.

5. Timing Variables
   a. SUSTDTC and SUENDTC may be populated as required.
   b. If substance use information is collected more than once within the CRF (indicating that the data are visit-based) then VISITNUM would be added to the domain as an additional timing variable. VISITDY and VISIT would then be permissible variables.

6. Additional Permissible Interventions Qualifiers
   a. Any additional Qualifiers from the Interventions Class may be added to this domain.

6.1.3.2 EXAMPLE FOR SUBSTANCE USE DOMAIN MODEL

The example below illustrates how typical substance use data could be populated. Here, the CRF collected smoking data (smoking status: previous, current, never; if a current or past smoker, how many packs per day; if a former smoker, what year did the subject quit) and current caffeine use (what caffeine drinks have been consumed today; how many cups today). SUCAT allows the records to be grouped into smoking-related data and caffeine-related data. In this example, the treatments are pre-specified on the CRF page so SUTRT does not require a standardized SUDECOD equivalent.

Row 1: Subject 1234005 is a 2-pack/day current smoker. "Current" implies that smoking started sometime before the time the question was asked (SUSTTPT = 2006-01-01, SUSTRTPT = BEFORE) and will end sometime after that date (SUENRTPT = ONGOING). See Section 4.1.4.7 for the use of these variables. Both the beginning and ending reference time points for this question are the date of the assessment.

Row 2: The same subject drank three cups of coffee on the day of the assessment.

Row 3: Subject 1234006 is a former smoker. The date the subject began smoking is unknown but we know that it was sometime before the assessment date. This is shown by the values of SUSTTPT and SUSTRTPT (taken from the timing variables for all classes). The end date of smoking was collected so SUENTPT and SUENRTPT are not populated. Instead, the end date is in SUENDTC.

Rows 4-5: The same subject drank tea (Row 4) and coffee (Row 5) on the day of the assessment.

Row 6: Subject 1234007 has missing data for the smoking questions. This is indicated by SUSTAT=NOT DONE. The reason is in SUREASND.

Row 7: The same subject also had missing data for all of the caffeine questions.

Not shown: Subject 1234008 has never smoked, so does not have a tobacco record. Alternatively, a row for the subject could have been included with SUOCCUR=N and not populating the dosing and timing fields; the interpretation would be the same. The subject did not drink any caffeinated drinks on the day of the assessment so does not have any caffeine records. Therefore this subject does not appear in the data.

Row	STUDYID	DOMAIN	USUBJID	SUSEQ	SUTRT	SUCAT	SUSTAT	SUREASND	SUDOSE	SUDOSU	SUDOSFRQ
1	1234	SU	1234005	1	CIGARETTES	TOBACCO			2	PACK	PER DAY
2	1234	SU	1234005	2	COFFEE	CAFFEINE			3	CUP	PER DAY
3	1234	SU	1234006	1	CIGARETTES	TOBACCO			1	PACK	PER DAY
4	1234	SU	1234006	2	TEA	CAFFEINE			1	CUP	PER DAY
5	1234	SU	1234006	3	COFFEE	CAFFEINE			2	CUP	PER DAY
6	1234	SU	1234007	1	CIGARETTES	TOBACCO	NOT DONE	Subject left office before CRF was completed			
7	1234	SU	1234007	2	CAFFEINE	CAFFEINE	NOT DONE	Subject left office before CRF was completed			

Row	SUSTDTC	SUENDTC	SUSTTPT	SUSTRTPT	SUENTPT	SUENRTPT
1 (cont)			2006-01-01	BEFORE	2006-01-01	ONGOING
2 (cont)	2006-01-01	2006-01-01				
3 (cont)		2003	2006-03-15	BEFORE		
4 (cont)	2006-03-15	2006-03-15				
5 (cont)	2006-03-15	2006-03-15				
6 (cont)						
7 (cont)						

6.2 EVENTS

6.2.1 ADVERSE EVENTS — AE

ae.xpt, Adverse Events — Events, Version 3.1.2,. One record per adverse event per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	AE	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4 SDTMIG 4.1.2.3
AESEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
AEGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4
AEREFID	Reference ID	Char		Identifier	Internal or external identifier such as a serial number on an SAE reporting form	Perm	SDTM 2.2.4
AESPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined identifier. It may be pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on an Adverse Events page.	Perm	SDTM 2.2.4
AETERM	Reported Term for the Adverse Event	Char		Topic	Verbatim name of the event.	Req	SDTM 2.2.2, SDTMIG 4.1.3.6
AEMODIFY	Modified Reported Term	Char		Synonym Qualifier	If AETERM is modified to facilitate coding, then AEMODIFY will contain the modified text.	Perm	SDTM 2.2.2, SDTMIG 4.1.3.6
AEDECOD	Dictionary-Derived Term	Char	*	Synonym Qualifier	Dictionary-derived text description of AETERM or AEMODIFY. Equivalent to the Preferred Term (PT in MedDRA). The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Req	SDTM 2.2.2, SDTMIG 4.1.3.5 SDTMIG 4.1.3.6
AECAT	Category for Adverse Event	Char	*	Grouping Qualifier	Used to define a category of related records. Example: BLEEDING, NEUROPSYCHIATRIC.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
AESCAT	Subcategory for Adverse Event	Char	*	Grouping Qualifier	A further categorization of adverse event. Example: NEUROLOGIC.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
AEPRESP	Pre-Specified Adverse Event	Char	(NY)	Record Qualifier	A value of "Y" indicates that this adverse event was pre-specified on the CRF. Values are null for spontaneously reported events (i.e., those collected as free-text verbatim terms)	Perm	SDTM 2.2.2, SDTMIG 4.1.2.7 SDTMIG 4.1.5.7

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
AEBODSYS	Body System or Organ Class	Char	*	Record Qualifier	Dictionary derived. Body system or organ class used by the sponsor from the coding dictionary (e.g., MedDRA). When using a multi-axial dictionary such as MedDRA, this should contain the SOC used for the sponsor's analyses and summary tables which may not necessarily be the primary SOC.	Exp	SDTM 2.2.2, SDTMIG 4.1.3.5
AELOC	Location of Event	Char	(LOC)	Record Qualifier	Describes anatomical location relevant for the event (e.g., LEFT ARM for skin rash).	Perm	SDTM 2.2.2
AESEV	Severity/Intensity	Char	(AESEV)	Record Qualifier	The severity or intensity of the event. Examples: MILD, MODERATE, SEVERE.	Perm	SDTM 2.2.2
AESER	Serious Event	Char	(NY)	Record Qualifier	Is this a serious event?	Exp	SDTM 2.2.2
AEACN	Action Taken with Study Treatment	Char	(ACN)	Record Qualifier	Describes changes to the study treatment as a result of the event. AEACN is specifically for the relationship to study treatment. AEACNOTH is for actions unrelated to dose adjustments of study treatment. Examples of AEACN values include ICH E2B values: DRUG WITHDRAWN, DOSE REDUCED, DOSE INCREASED, DOSE NOT CHANGED, UNKNOWN or NOT APPLICABLE	Exp	SDTM 2.2.2
AEACNOTH	Other Action Taken	Char		Record Qualifier	Describes other actions taken as a result of the event that are unrelated to dose adjustments of study treatment. Usually reported as free text. Example: "TREATMENT UNBLINDED. PRIMARY CARE PHYSICIAN NOTIFIED."	Perm	SDTM 2.2.2
AEREL	Causality	Char	*	Record Qualifier	Records the investigator's opinion as to the causality of the event to the treatment. ICH E2A and E2B examples include NOT RELATED, UNLIKELY RELATED, POSSIBLY RELATED, RELATED. Controlled Terminology may be defined in the future. Check with regulatory authority for population of this variable	Exp	SDTM 2.2.2
AERELNST	Relationship to Non-Study Treatment	Char		Record Qualifier	Records the investigator's opinion as to whether the event may have been due to a treatment other than study drug. May be reported as free text. Example: "MORE LIKELY RELATED TO ASPIRIN USE.".	Perm	SDTM 2.2.2
AEPATT	Pattern of Adverse Event	Char	*	Record Qualifier	Used to indicate the pattern of the event over time. Examples: INTERMITTENT, CONTINUOUS, SINGLE EVENT.	Perm	SDTM 2.2.2
AEOUT	Outcome of Adverse Event	Char	(OUT)	Record Qualifier	Description of the outcome of an event.	Perm	SDTM 2.2.2
AESCAN	Involves Cancer	Char	(NY)	Record Qualifier	Was the serious event associated with the development of cancer?	Perm	SDTM 2.2.2
AESCONG	Congenital Anomaly or Birth Defect	Char	(NY)	Record Qualifier	Was the serious event associated with congenital anomaly or birth defect?	Perm	SDTM 2.2.2
AESDISAB	Persist or Signif Disability/Incapacity	Char	(NY)	Record Qualifier	Did the serious event result in persistent or significant disability/incapacity?	Perm	SDTM 2.2.2

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
AESDTH	Results in Death	Char	(NY)	Record Qualifier	Did the serious event result in death?	Perm	SDTM 2.2.2
AESHOSP	Requires or Prolongs Hospitalization	Char	(NY)	Record Qualifier	Did the serious event require or prolong hospitalization?	Perm	SDTM 2.2.2
AESLIFE	Is Life Threatening	Char	(NY)	Record Qualifier	Was the serious event life threatening?	Perm	SDTM 2.2.2
AESOD	Occurred with Overdose	Char	(NY)	Record Qualifier	Did the serious event occur with an overdose?	Perm	SDTM 2.2.2
AESMIE	Other Medically Important Serious Event	Char	(NY)	Record Qualifier	Do additional categories for seriousness apply?	Perm	SDTM 2.2.2
AECONTRT	Concomitant or Additional Trtmnt Given	Char	(NY)	Record Qualifier	Was another treatment given because of the occurrence of the event?	Perm	SDTM 2.2.2
AETOXGR	Standard Toxicity Grade	Char	*	Record Qualifier	Toxicity grade according to a standard toxicity scale such as Common Terminology Criteria for Adverse Events v3.0 (CTCAE). Sponsor should specify name of the scale and version used in the metadata (see Section 6.2.1.1, Assumption 6d). If value is from a numeric scale, represent only the number (e.g., “2” and not “Grade 2”).	Perm	SDTM 2.2.2
AESTDTC	Start Date/Time of Adverse Event	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2
AEENDTC	End Date/Time of Adverse Event	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1; SDTMIG 4.1.4.2
AESTDY	Study Day of Start of Adverse Event	Num		Timing	Study day of start of adverse event relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4
AEENDY	Study Day of End of Adverse Event	Num		Timing	Study day of end of event relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4
AEDUR	Duration of Adverse Event	Char	ISO 8601	Timing	Collected duration and unit of an adverse event. Used only if collected on the CRF and not derived from start and end date/times. Example: P1DT2H (for 1 day, 2 hours).	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3
AEENRF	End Relative to Reference Period	Char	(STENRF)	Timing	Describes the end of the event relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point (RFSTDTC) and a discrete ending point (RFENDTC) of the trial.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
AEENRTPT	End Relative to Reference Time Point	Char	BEFORE, AFTER, COINCIDENT, ONGOING, U	Timing	Identifies the end of the event as being before or after the reference time point defined by variable AEENTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
AEENTPT	End Reference Time Point	Char		Timing	Description of date/time in ISO 8601 character format of the reference point referred to by AEENRTPT. Examples: "2003-12-25" or "VISIT 2".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.2.1.1 ASSUMPTIONS FOR ADVERSE EVENT DOMAIN MODEL

1. AE Definition
   The Adverse Events dataset includes clinical data describing "any untoward medical occurrence in a patient or clinical investigation subject administered a pharmaceutical product and which does not necessarily have to have a causal relationship with this treatment" (ICH E2A). In consultation with regulatory authorities, sponsors may extend or limit the scope of adverse event collection (e.g., collecting pre-treatment events related to trial conduct, not collecting events that are assessed as efficacy endpoints). The events included in the AE dataset should be consistent with the protocol requirements. Adverse events may be captured either as free text or via a pre-specified list of terms.

2. Adverse Event Description and Coding
   a. AETERM captures the verbatim term collected for the event. It is the topic variable for the AE dataset. AETERM is a required variable and must have a value.
   b. AEMODIFY is a permissible variable and should be included if the sponsor's procedure permits modification of a verbatim term for coding. The modified term is listed in AEMODIFY. The variable should be populated as per the sponsor's procedures.
   c. AEDECOD is the preferred term derived by the sponsor from the coding dictionary. It is a required variable and must have a value. It is expected that the reported term (AETERM) will be coded using a standard dictionary such as MedDRA. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes.
   d. AEBODSYS is the system organ class from the coding dictionary associated with the adverse event by the sponsor. This value may differ from the primary system organ class designated in the coding dictionary's standard hierarchy. It is expected that this variable will be populated.
   e. Sponsors may include the values of additional levels from the coding dictionary's hierarchy (i.e., High-Level Group Term, High-Level Term, Lower-Level Term) in the SUPPAE dataset as described in Appendix C5 (standard Supplemental Qualifier name codes) and Section 8.4.

3. Additional Categorization and Grouping
   a. AECAT and AESCAT should not be redundant with the domain code or dictionary classification provided by AEDECOD and AEBODSYS (i.e., they should provide a different means of defining or classifying AE records). AECAT and AESCAT are intended for categorizations that are defined in advance. For example, a sponsor may have a separate CRF page for AEs of special interest and then another page for all other AEs. AECAT and AESCAT should not be used for after-the-fact categorizations such as clinically significant. In cases where a category of AEs of special interest resembles a part of the dictionary hierarchy (e.g., "CARDIAC EVENTS"), the categorization represented by AECAT and AESCAT may differ from the categorization derived from the coding dictionary.
   b. AEGRPID may be used to link (or associate) different records together to form a block of related records at the subject level within the AE domain. See Section 4.1.2.6 for discussion of grouping variables.

4. Pre-Specified Terms; Presence or Absence of Events
   a. Adverse events are generally collected in two different ways, either by recording free text or using a pre-specified list of terms. In the latter case, the solicitation of information on specific adverse events may affect the frequency at which they are reported; therefore, the fact that a specific adverse event was solicited may be of interest to reviewers. An AEPRESP value of "Y" is used to indicate that the event in AETERM was pre-specified on the CRF.

b. If it is important to know which adverse events from a pre-specified list were not reported as well as those that did occur, these data should be submitted in a Findings class dataset such as Findings About Events and Interventions (FA, Section 6.4). A record should be included in that Findings dataset for each pre-specified adverse-event term. Records for adverse events that actually occurred should also exist in the AE dataset with AEPRESP set to "Y."
c. If a study collects both pre-specified adverse events as well as free-text events, the value of AEPRESP should be "Y" for all pre-specified events and null for events reported as free-text. AEPRESP is a permissible field and may be omitted from the dataset if all adverse events were collected as free text.

d. When adverse events are collected with the recording of free text, a record may be entered into the sponsor's data management system to indicate "no adverse events" for a specific subject. For these subjects, do not include a record in the AE submission dataset to indicate that there were no events. Records should be included in the submission AE dataset only for adverse events that have actually occurred.

5. Timing Variables
   a. Relative timing assessment "Ongoing" is common in the collection of Adverse Event information. AEENRF may be used when this relative timing assessment is made coincident with the end of the study reference period for the subject represented in the Demographics dataset (RFENDTC). AEENRTPT with AEENTPT may be used when "Ongoing" is relative to another date such as the final safety follow-up visit date. See Section 4.1.4.7.
   b. Additional timing variables (such as AEDTC) may be used when appropriate.

6. Other Qualifier Variables
   a. If categories of serious events are collected secondarily to a leading question, as in the example below, the values of the variables that capture reasons an event is considered serious (i.e., AESCAN, AESCONG, etc.) may be null. For example, if Serious is answered "No, " the values for these variables may be null. However, if Serious is answered "Yes, " at least one of them will have a "Y" response. Others may be N or null, according to the sponsor's convention.

      Serious? [ ] Yes [ ] No
      If yes, check all that apply: [ ] Fatal [ ] Life-threatening [ ] Inpatient hospitalization… [ ] etc.
      On the other hand, if the CRF is structured so that a response is collected for each seriousness category, all category variables (e.g., AESDTH, AESHOSP) would be populated and AESER would be derived.
   b. The serious categories "Involves cancer" (AESCAN) and "Occurred with overdose" (AESOD) are not part of the ICH definition of a serious adverse event, but these categories are available for use in studies conducted under guidelines that existed prior to the FDA's adoption of the ICH definition.
   c. When a description of Other Medically Important Serious Adverse Events category is collected on a CRF, sponsors should place the description in the SUPPAE dataset using the standard supplemental qualifier name code AESOSP as described in Section 8.4 and Appendix C5.
   d. In studies using toxicity grade according to a standard toxicity scale such as Common Terminology Criteria for Adverse Events v3.0 (CTCAE), published by the NCI (National Cancer Institute) at http://ctep.cancer.gov/reporting/ctc.html)), AETOXGR should be used instead of AESEV. In most cases, either AESEV or AETOXGR is populated but not both. There may be cases when a sponsor may need to populate both variables. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes

   e. AE Structure
      The structure of the AE domain is one record per adverse event per subject. It is the sponsor's responsibility to define an event. This definition may vary based on the sponsor's requirements for characterizing and reporting product safety and is usually described in the protocol. For example, the

sponsor may submit one record that covers an adverse event from start to finish. Alternatively, if there is a need to evaluate AEs at a more granular level, a sponsor may submit a new record when severity, causality, or seriousness changes or worsens. By submitting these individual records, the sponsor indicates that each is considered to represent a different event. The submission dataset structure may differ from the structure at the time of collection. For example, a sponsor might collect data at each visit in order to meet operational needs, but submit records that summarize the event and contain the highest level of severity, causality, seriousness, etc. Examples of dataset structure:

1. One record per adverse event per subject for each unique event. Multiple adverse event records reported by the investigator are submitted as summary records "collapsed" to the highest level of severity, causality, seriousness, and the final outcome.
2. One record per adverse event per subject. Changes over time in severity, causality, or seriousness are submitted as separate events. Alternatively, these changes may be submitted in a separate dataset based on the Findings About Events and Interventions model (see Section 6.4).
3. Other approaches may also be reasonable as long as they meet the sponsor's safety evaluation requirements and each submitted record represents a unique event. The domain-level metadata (See Section 3.2) should clarify the structure of the dataset.

7. Use of EPOCH and TAETORD

   When EPOCH is included in the Adverse Event domain, it should be the epoch of the start of the adverse event. In other words, it should be based on AESTDTC, rather than AEENDTC. The computational method for EPOCH in the define.xml should describe any assumptions made to handle cases where an adverse event starts on the same day that a subject starts an epoch, if AESTDTC and SESTDTC are not captured with enough precision to determine the epoch of the onset of the adverse event unambiguously. Similarly, if TAETORD is included in the Adverse Events domain, it should be the value for the start of the adverse event, and the computational method in the define.xml should describe any assumptions.

8. Additional Events Qualifiers

   The following Qualifiers would not be used in AE: --OCCUR, --STAT, and--REASND. They are the only Qualifiers from the SDTM Events Class not in the AE domain. They are not permitted because the AE domain contains only records for adverse events that actually occurred. See Assumption 4b above for information on how to deal with negative responses or missing responses to probing questions for pre-specified adverse events.

6.2.1.2 EXAMPLES FOR ADVERSE EVENTS DOMAIN MODEL

Example 1

This is an example of data from an AE CRF that collects AE terms as free text. The first study drug was administered to the subject on October 13, 2006 at 12:00. Three AEs were reported. AEs were coded using MedDRA, and the sponsor's procedures include the possibility of modifying the reported term to aid in coding. The CRF is structured so that seriousness category variables (e.g., AESDTH, AESHOSP) are checked only when AESER is answered "Y."

Rows 1 and 2 Show the following:

-an example of modifying the reported term for coding purposes. The modified value is in AEMODIFY.

-an example of the overall seriousness question AESER answered with an "N" and corresponding seriousness category variables (e.g., AESDTH, AESHOSP) left blank.

Row 3 Shows an example of the overall seriousness question AESER answered with a "Y" and the relevant corresponding seriousness category variables (AESHOSP and AESLIFE) answered with a "Y". The other seriousness category variables are left blank. This row also shows an example of AEENRF being populated because the AE was marked as "Continuing" as of the end of the study reference period for the subject (see Section 4.1.4.7).

Row	STUDYID	DOMAIN	USUBJID	AESEQ	AETERM	AESTDTC	AEENDTC	AEMODIFY	AEDECOD
1	ABC123	AE	123101	1	POUNDING HEADACHE	2005-10-12	2005-10-12	HEADACHE	Headache
2	ABC123	AE	123101	2	BACK PAIN FOR 6 HOURS	2005-10-13T13:05	2005-10-13T19:00	BACK PAIN	Back pain
3	ABC123	AE	123101	3	PULMONARY EMBOLISM	2005-10-21			Pulmonary embolism

Row	AEBODSYS	AESEV	AESER	AEACN	AEREL
1 (cont)	Nervous system disorders	SEVERE	N	NOT APPLICABLE	DEFINITELY NOT RELATED
2 (cont)	Musculoskeletal and connective tissue disorders	MODERATE	N	DOSE REDUCED	PROBABLY RELATED
3 (cont)	Vascular disorders	MODERATE	Y	DOSE REDUCED	PROBABLY NOT RELATED

Row	AEOUT	AESCONG	AESDISAB	AESDTH	AESHOSP	AESLIFE	AESMIE	AESTDY	AEENDY	AEENRF
1 (cont)	RECOVERED/RESOLVED							-1	-1	
2 (cont)	RECOVERED/RESOLVED							1	1	
3 (cont)	RECOVERING/RESOLVING				Y	Y		9		AFTER

Example 2

In this example, a CRF module occurring at several visits asks whether or not nausea, vomiting, or diarrhea occurred. The responses to the probing questions (Yes, No, or Not done) will be represented in the Findings About (FA) domain (see Section 6.4). If "Yes " the investigator is instructed to complete the Adverse Event CRF. In the Adverse Events dataset, data on AEs solicited by means of pre-specified on the CRF will have an AEPRESP value of Y. For AEs solicited by a general question, AEPRESP will be null. RELREC may be used to relate AE records with FA records.

Rows 1 and 2 Show that nausea and vomiting were pre-specified on a CRF, as indicated by AEPRESP = "Y". The subject did not experience diarrhea, so no record for that term exists in the AE dataset.

Row 3 Shows an example of an AE (headache) that is not pre-specified on a CRF as indicated by a blank for AEPRESP

Row	STUDYID	DOMAIN	USUBJID	AESEQ	AETERM	AEDECOD	AEPRESP	AEBODSYS	AESEV		AESER
1	ABC123	AE	123101	1	NAUSEA	Nausea	Y	Gastrointestinal disorders	SEVERE		N
2	ABC123	AE	123101	2	VOMITING	Vomiting	Y	Gastrointestinal disorders	MODERATE		N
3	ABC123	AE	123101	3	HEADACHE	Headache		Nervous system disorders	MILD		N

Row	AEACN	AEREL	AEOUT	AESTDTC	AEENDTC	AESTDY	AEENDY
1 (cont)	DOSE REDUCED	RELATED	RECOVERED/RESOLVED	2005-10-12	2005-10-13	2	3
2 (cont)	DOSE REDUCED	RELATED	RECOVERED/RESOLVED	2005-10-13T13:00	2005-10-13T19:00	3	3
3 (cont)	DOSE NOT CHANGED	POSSIBLY RELATED	RECOVERED/RESOLVED	2005-10-21	2005-10-21	11	11

Example 3

In this example, a CRF module occurs only once and asks whether or not nausea, vomiting, or diarrhea occurred. In the context of this study, the conditions that occurred are reportable as Adverse Events. No additional data about these events is collected. No other adverse event information is collected via general questions. The responses to the probing questions (Yes, No, or Not done) will be represented in the Findings About (FA) domain (see Section 6.4). Since all adverse events must be submitted in AE dataset, this represents an unusual case; the AE dataset will be populated with the term and the flag indicating that it was pre-specified, but timing information is limited to the date of collection, and other expected Qualifiers are not available. RELREC may be used to relate AE records with FA records.

Rows 1 and 2 Subject was found to have experienced nausea and vomiting by means of the probing questions. The subject did not experience diarrhea, so no record for that term exists in the AE dataset

Row	STUDYID	DOMAIN	USUBJID	AESEQ	AETERM	AEDECOD	AEPRESP	AEBODSYS	AESER	AEACN	AEREL	AESTDTC	AEENDTC	AEDTC	AEDY
1	ABC123	AE	123101	1	NAUSEA	Nausea	Y	Gastrointestinal disorders						2005-10-29	19
2	ABC123	AE	123101	2	VOMITING	Vomiting	Y	Gastrointestinal disorders						2005-10-29	19

Example 4

In this example, the investigator was instructed to create a new adverse-event record each time the severity of an adverse event changes. AEGRPID can be used to identify the group of records related to a single event for a subject.

Row 1 Shows an adverse event of nausea, whose severity was moderate.
Rows 2-6 Show how AEGRPID can be used to identify the group of records related to a single event for a subject.

Row	STUDYID	DOMAIN	USUBJID	AESEQ	AEGRPID	AETERM	AEBODSYS	AESEV
1	ABC123	AE	123101	1		NAUSEA	Gastrointestinal disorders	MODERATE
2	ABC123	AE	123101	2	1	VOMITING	Gastrointestinal disorders	MILD
3	ABC123	AE	123101	3	1	VOMITING	Gastrointestinal disorders	SEVERE
4	ABC123	AE	123101	4	1	VOMITING	Gastrointestinal disorders	MILD
5	ABC123	AE	123101	5	2	DIARRHEA	Gastrointestinal disorders	SEVERE
6	ABC123	AE	123101	6	2	DIARRHEA	Gastrointestinal disorders	MODERATE

Row	AESER	AEACN	AEREL	AESTDTC	AEENDTC
1 (cont'd)	N	DOSE NOT CHANGED	RELATED	2005-10-13	2005-10-14
2 (cont'd)	N	DOSE NOT CHANGED	POSSIBLY RELATED	2005-10-14	2005-10-16
3 (cont'd)	N	DOSE NOT CHANGED	POSSIBLY RELATED	2005-10-16	2005-10-17
4 (cont'd)	N	DOSE NOT CHANGED	POSSIBLY RELATED	2005-10-17	2005-10-20
5 (cont'd)	N	DOSE NOT CHANGED	POSSIBLY RELATED	2005-10-16	2005-10-17
6 (cont'd)	N	DOSE NOT CHANGED	POSSIBLY RELATED	2005-10-17	2005-10-21

6.2.2 DISPOSITION — DS

ds.xpt, Disposition — Events, Version 3.1.2. One record per disposition status or protocol milestone per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	DS	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4 SDTMIG 4.1.2.3
DSSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
DSGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTMIG 4.1.2.6 SDTM 2.2.4
DSREFID	Reference ID	Char		Identifier	Internal or external identifier.	Perm	SDTM 2.2.4
DSSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a Disposition page.	Perm	SDTM 2.2.4
DSTERM	Reported Term for the Disposition Event	Char		Topic	Verbatim name of the event or protocol milestone. Some terms in DSTERM will match DSDECOD, but others, such as "Subject moved" will map to controlled terminology in DSDECOD, such as "LOST TO FOLLOW-UP."	Req	SDTM 2.2.2, SDTMIG 4.1.3.6
DSDECOD	Standardized Disposition Term	Char	(NCOMPLT)	Synonym Qualifier	Controlled terminology for the name of disposition event or protocol milestone. Examples of protocol milestones: INFORMED CONSENT OBTAINED, RANDOMIZED	Req	SDTM 2.2.2, SDTMIG 4.1.3.5
DSCAT	Category for Disposition Event	Char	(DSCAT)	Grouping Qualifier	Used to define a category of related records. DSCAT is now an "Expected" variable. DSCAT was permissible in SDTMIG 3.1.1 and earlier versions. The change from "permissible" to "expected" is based on the requirement to distinguish protocol milestones and/or other events from disposition events. DSCAT may be null if there are only "disposition events"; however, it is recommended that DSCAT always be populated.	Exp	SDTM 2.2.2, SDTMIG 4.1.2.6
DSSCAT	Subcategory for Disposition Event	Char	*	Grouping Qualifier	A further categorization of disposition event.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
EPOCH	Epoch	Char	*	Timing	EPOCH may be used when DSCAT = "DISPOSITION EVENT". Examples: SCREENING, TREATMENT PHASE, FOLLOW-UP	Perm	SDTM 2.2.5, SDTMIG 7.1.2
DSDTC	Date/Time of Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1
DSSTDTC	Start Date/Time of Disposition Event	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
DSSTDY	Study Day of Start of Disposition Event	Num		Timing	Study day of start of event relative to the sponsor-defined RFSTDTC.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.2.2.1 ASSUMPTIONS FOR DISPOSITION DOMAIN MODEL

1. DS Definition
   The Disposition dataset provides an accounting for all subjects who entered the study and may include protocol milestones, such as randomization, as well as the subject's completion status or reason for discontinuation for the entire study or each phase or segment of the study, including screening and post-treatment follow-up. Sponsors may choose which disposition events and milestones to submit for a study. See ICH E3, Section 10.1 for information about disposition events.

2. Categorization
   a. DSCAT is used to distinguish between disposition events, protocol milestones and other events. The controlled terminology for DSCAT consists of "DISPOSITION EVENT," "PROTOCOL MILESTONE," and "OTHER EVENT."

   b. A "DISPOSITION EVENT" describes whether a subject completed the study or portion of a study (Epoch) or the reason they did not complete. The subject's disposition is often described for each study Epoch (e.g., screening, initial treatment, washout, cross-over treatment, follow-up).

   c. A "PROTOCOL MILESTONE" is a protocol-specified, "point-in-time" event. The most common protocol milestones are "INFORMED CONSENT OBTAINED" and "RANDOMIZED."

   d. Other important events that occur during a trial, but are not driven by protocol requirements and are not captured in another Events or Interventions class dataset, are classified as "OTHER EVENT." "TREATMENT UNBLINDED" is an example of "OTHER EVENT."

3. DS Description and Coding
   a. DSTERM and DSDECOD are required. DSDECOD values are drawn from sponsor-defined controlled terminology. The controlled terminology will depend on the value of DSCAT. When DSCAT="DISPOSITION EVENT", DSTERM contains either "COMPLETE" or, if the subject did not complete, specific verbatim information about the disposition event.

   b. When DSTERM = "COMPLETED", DSDECOD = "COMPLETED". When DSTERM contains verbatim text, DSDECOD will contain a standard term from a controlled terminology list. For example, DSTERM = "Subject moved" might map to "LOST TO FOLLOW-UP" in the sponsor's controlled terminology.

   c. A sponsor may collect one disposition event for the trial as a whole, or they may collect disposition for each Epoch of the trial. When disposition is collected for each Epoch, the variable EPOCH should be included in the DS dataset. When EPOCH is populated for disposition events (records with DSCAT = DISPOSITION EVENT), EPOCH is the name of the Epoch for the disposition event described in the record. This is a subtly different meaning from that of EPOCH when it is used in other general-observation-class domains, where EPOCH, as a Timing variable, is the name of the Epoch during which --STDTC or --DTC falls. The values of EPOCH are drawn from the Trial Arms domain, Section 7.2.

d. When DSCAT="PROTOCOL MILESTONE", DSTERM and DSDECOD will contain the same value drawn from the sponsor's controlled terminology. Examples of controlled terms include "INFORMED CONSENT OBTAINED" and "RANDOMIZED." EPOCH should not be populated when DSCAT = "PROTOCOL MILESTONE".

e. Events that are not disposition or milestone related are classified as an "OTHER EVENT" (see Assumption 2d above). If a reason for the OTHER EVENT was collected, then the reason is in DSTERM. For example, treatment was unblinded due to investigator error. DSTERM = INVESTIGATOR ERROR and DSDECOD = TREATMENT UNBLINDED. IF no reason was collected then DSTERM = DSDECOD.

4. Timing Variables
   a. DSSTDTC is expected and is used for the date/time of the disposition event. Disposition events do not have start and end dates since disposition events do not span an interval (e.g. randomization date) but occur at a single date/time (e.g., randomization date).
   b. DSSTDTC documents the date/time that a protocol milestone, disposition event, or other event occurred. In the case of a disposition event, the reason for not completing the referenced study Epoch may be related to an event or intervention reported in another dataset. DSSTDTC is the date/time that the Epoch was completed and is not necessarily the same as the start or end date/time of the event or intervention that led to discontinuation. For example, a subject reported severe vertigo on June 1, 2006 (AESTDTC). After ruling out other possible causes, the investigator decided to discontinue study treatment on June 6, 2006 (DSSTDTC). The subject reported that the vertigo had resolved on June 8, 2006 (AEENDTC).

5. Reasons for Termination
   a. ICH E3, Section 10.1 indicates that "the specific reason for discontinuation" should be presented, and that summaries should be "grouped by treatment and by major reason." The CDISC SDS Team interprets this guidance as requiring one standardized disposition term (DSDECOD) per disposition event. If multiple reasons are reported, the sponsor should identify a primary reason and use that to populate DSTERM and DSDECOD. Additional reasons should be submitted in SUPPDS. Example:

DSTERM= SEVERE NAUSEA
DSDECOD=ADVERSE EVENT

SUPPDS QNAM=DSTERM1
SUPPDS QLABEL= Reported Term for Disposition Event 1
SUPPDS QVAL=SUBJECT REFUSED FURTHER TREATMENT

SUPPDS QNAM=DSDECOD1
SUPPDS QLABEL= Standardized Disposition Term 1
SUPPDS QVAL=WITHDREW CONSENT

6. Additional Event Qualifiers
   The following Qualifiers would generally not be used in DS: --PRESP, --OCCUR, --STAT, --REASND, --BODSYS, --LOC, --SEV, --SER, --ACN, --ACNOTH, --REL, --RELNST, --PATT, --OUT, --SCAN, --SCONG, --SDISAB, --SDTH, --SHOSP, --SLIFE, --SOD, --SMIE, --CONTRT, --TOXGR.

6.2.2.2 EXAMPLES FOR DISPOSITION DOMAIN MODEL

Example 1

In this example, a DS CRF collected multiple disposition events at different time points in the study indicated by EPOCH. There are also several protocol milestones which are indicated by DSCAT = "PROTOCOL MILESTONE". DSTERM is populated with controlled terminology with the same value as DSDECOD except in the case when there is free text for DSTERM such as "Subject moved". In this case, the controlled terminology is only in DSDECOD (LOST TO FOLLOW-UP).

Rows 1-21: There are multiple disposition events and protocol milestones per subject. EPOCH is populated when DSCAT has a value of DISPOSITION EVENT and null when DSCAT has value of PROTOCOL MILESTONE.

Rows 2, 4, 5: Subject 123101 has 3 records to indicate the completion of 3 stages of the study, which are screening, treatment phase, and follow-up. The study also collected the protocol milestones of INFORMED CONSENT and RANDOMIZATION.

Row 7: Subject 123102 is a screen drop (also known as a screen failure). Screen drops are identified by a DSDECOD that is not equal to "COMPLETED" for the SCREENING stage. This is an example of the submission of the verbatim reason for discontinuation in DSTERM. Also note that although DSDECOD is "PROTOCOL VIOLATION", this record represents the disposition event for the SCREENING stage and documents the reason for not completing ("SUBJECT DENIED MRI PROCEDURE") and the corresponding date of discontinuation (DSSTDTC). A record describing the protocol deviation event itself should appear in the DV dataset.

Rows 9, 11: Subject 123103 completed the screening stage but did not complete the treatment stage.

Row 11: The verbatim reason the subject dropped is in DSTERM (SUBJECT MOVED) and the controlled term is in DSDECOD (LOST TO FOLLOW-UP).

Row 16: Subject 123104 died in an automobile accident on October 29, 2003 (see DSSTDTC) after the completion of treatment, but prior to the completion of follow-up. Note that the date of collection of the event information (DSDTC = October 31, 2003) was different from the date of the disposition event.

Rows 20, 21: Subject 123105 discontinued study treatment due to an AE, but went on to complete the follow-up phase of the trial.

Row	STUDYID	DOMAIN	USUBJID	DSSEQ	DSTERM	DSDECOD	DSCAT	EPOCH	DSDTC	DSSTDTC
1	ABC123	DS	123101	1	INFORMED CONSENT OBTAINED	INFORMED CONSENT OBTAINED	PROTOCOL MILESTONE		2003-09-21	2003-09-21
2	ABC123	DS	123101	2	COMPLETED	COMPLETED	DISPOSITION EVENT	SCREENING	2003-09-29	2003-09-29
3	ABC123	DS	123101	3	RANDOMIZED	RANDOMIZED	PROTOCOL MILESTONE		2003-09-30	2003-09-30
4	ABC123	DS	123101	4	COMPLETED	COMPLETED	DISPOSITION EVENT	TREATMENT PHASE	2003-10-31	2003-10-31
5	ABC123	DS	123101	5	COMPLETED	COMPLETED	DISPOSITION EVENT	FOLLOW-UP	2003-11-15	2003-11-15
6	ABC123	DS	123102	1	INFORMED CONSENT OBTAINED	INFORMED CONSENT OBTAINED	PROTOCOL MILESTONE		2003-11-21	2003-11-21
7	ABC123	DS	123102	2	SUBJECT DENIED MRI PROCEDURE	PROTOCOL VIOLATION	DISPOSITION EVENT	SCREENING	2003-11-22	2003-11-20
8	ABC123	DS	123103	1	INFORMED CONSENT OBTAINED	INFORMED CONSENT OBTAINED	PROTOCOL MILESTONE		2003-09-15	2003-09-15
9	ABC123	DS	123103	2	COMPLETED	COMPLETED	DISPOSITION EVENT	SCREENING	2003-09-22	2003-09-22
10	ABC123	DS	123103	3	RANDOMIZED	RANDOMIZED	PROTOCOL MILESTONE		2003-09-30	2003-09-30
11	ABC123	DS	123103	4	SUBJECT MOVED	LOST TO FOLLOW-UP	DISPOSITION EVENT	TREATMENT PHASE	2003-10-31	2003-10-31
12	ABC123	DS	123104	1	INFORMED CONSENT OBTAINED	INFORMED CONSENT OBTAINED	PROTOCOL MILESTONE		2003-09-15	2003-09-15
13	ABC123	DS	123104	2	COMPLETED	COMPLETED	DISPOSITION EVENT	SCREENING	2003-09-22	2003-09-22
14	ABC123	DS	123104	3	RANDOMIZED	RANDOMIZED	PROTOCOL MILESTONE		2003-09-30	2003-09-30
15	ABC123	DS	123104	4	COMPLETED	COMPLETED	DISPOSITION EVENT	TREATMENT PHASE	2003-10-15	2003-10-15
16	ABC123	DS	123104	5	AUTOMOBILE ACCIDENT	DEATH	DISPOSITION EVENT	FOLLOW-UP	2003-10-31	2003-10-29
17	ABC123	DS	123105	1	INFORMED CONSENT OBTAINED	INFORMED CONSENT OBTAINED	PROTOCOL MILESTONE		2003-09-28	2003-09-28
18	ABC123	DS	123105	2	COMPLETED	COMPLETED	DISPOSITION EVENT	SCREENING	2003-10-02	2003-10-02
19	ABC123	DS	123105	3	RANDOMIZED	RANDOMIZED	PROTOCOL MILESTONE		2003-10-02	2003-10-02
20	ABC123	DS	123105	4	ANEMIA	ADVERSE EVENT	DISPOSITION EVENT	TREATMENT PHASE	2003-10-17	2003-10-17
21	ABC123	DS	123105	5	COMPLETED	COMPLETED	DISPOSITION EVENT	FOLLOW-UP	2003-11-02	2003-11-02

Example 2

In this example, the sponsor has chosen to simply submit whether or not the subject completed the study, so there is only one record per subject.

Row 1: Subject who completed the study

Rows 2, 3: Subjects who discontinued.

Row	STUDYID	DOMAIN	USUBJID	DSSEQ	DSTERM	DSDECOD	DSCAT	DSSTDTC
1	ABC456	DS	456101	1	COMPLETED	COMPLETED	DISPOSITION EVENT	2003-09-21
2	ABC456	DS	456102	1	SUBJECT TAKING STUDY MED ERRATICALLY	PROTOCOL VIOLATION	DISPOSITION EVENT	2003-09-29
3	ABC456	DS	456103	1	LOST TO FOLLOW-UP	LOST TO FOLLOW-UP	DISPOSITION EVENT	2003-10-15

Example 3

Rows 1, 2: Subject completed the treatment and follow-up phase

Rows 3, 5: Subject did not complete the treatment phase but did complete the follow-up phase.

Row 4: Subject's treatment is unblinded. The date of the unblinding is represented in DSSTDTC. Maintaining the blind as per protocol is not considered to be an event since there is no change in the subject's state.

Row	STUDYID	DOMAIN	USUBJID	DSSEQ	DSTERM	DSDECOD	DSCAT	EPOCH	DSSTDTC
1	ABC789	DS	789101	1	COMPLETED	COMPLETED	DISPOSITION EVENT	TREATMENT PHASE	2004-09-12
2	ABC789	DS	789101	2	COMPLETED	COMPLETED	DISPOSITION EVENT	FOLLOW-UP	2004-12-20
3	ABC789	DS	789102	1	SKIN RASH	ADVERSE EVENT	DISPOSITION EVENT	TREATMENT PHASE	2004-09-30
4	ABC789	DS	789102	2	SUBJECT HAD SEVERE RASH	TREATMENT UNBLINDED	OTHER EVENT	TREATMENT PHASE	2004-10-01
5	ABC789	DS	789102	3	COMPLETED	COMPLETED	DISPOSITION EVENT	FOLLOW-UP	2004-12-28

Example 4

In this example, the CRF documents a link between the DS record and the AE record. This relationship is documented in the RELREC dataset.

Disposition (DS) Dataset

Row 1: Shows that Subject died of heart failure.

Row	STUDYID	DOMAIN	USUBJID	DSSEQ	DSTERM	DSDECOD	DSCAT	EPOCH	DSDTC	DSSTDTC
1	ABC123	DS	123102	1	Heart Failure	DEATH	DISPOSITION EVENT	TREATMENT PHASE	2003-09-29	2003-09-29

Adverse Event (AE) Dataset:

Row 1: Shows that Subject died due to heart failure.

Row	STUDYID	DOMAIN	USUBJID	AESEQ	AETERM	AESTDTC	AEENDTC	AEDECOD	AEBODSYS	AESEV	AESER	AEACN
1	ABC123	AE	123102	1	Heart Failure	2003-09-29	2003-09-29	HEART FAILURE	CARDIOVASCULAR SYSTEM	SEVERE	Y	NOT APPLICABLE

Row	AEREL	AEOUT	AESCAN	AESCONG	AESDISAB	AESDTH	AESHOSP	AESLIFE	AESOD	AESMIE
1 (cont)	DEFINITELY NOT RELATED	FATAL	N	N	N	Y	N	N	N	N

RELREC Dataset

Rows 1, 2: Show that the subject's disposition status that is related to the AE record.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	ABC123	DS	123102	DSSEQ	1		1
2	ABC123	AE	123102	AESEQ	1		1

6.2.3 MEDICAL HISTORY — MH

mh.xpt, Medical History — Events, Version 3.1.2. One record per medical history event per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	MH	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4 SDTMIG 4.1.2.3
MHSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
MHGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTMIG 4.1.2.6, SDTM 2.2.4
MHREFID	Reference ID	Char		Identifier	Internal or external medical history identifier.	Perm	SDTM 2.2.4
MHSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a Medical History page.	Perm	SDTM 2.2.4
MHTERM	Reported Term for the Medical History	Char		Topic	Verbatim or preprinted CRF term for the medical condition or event.	Req	SDTM 2.2.2, SDTMIG 4.1.3.6
MHMODIFY	Modified Reported Term	Char		Synonym Qualifier	If MHTERM is modified to facilitate coding, then MHMODIFY will contain the modified text.	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
MHDECOD	Dictionary-Derived Term	Char	*	Synonym Qualifier	Dictionary-derived text description of MHTERM or MHMODIFY. Equivalent to the Preferred Term (PT in MedDRA). The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
MHCAT	Category for Medical History	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: CARDIAC or GENERAL	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
MHSCAT	Subcategory for Medical History	Char	*	Grouping Qualifier	A further categorization of the condition or event.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
MHPRESP	Medical History Event Pre-Specified	Char	(NY)	Record Qualifier	A value of "Y" indicates that this medical history event was pre-specified on the CRF. Values are null for spontaneously reported events (i.e., those collected as free-text verbatim terms)	Perm	SDTM 2.2.2, SDTMIG 4.1.2.7 SDTMIG 4.1.5.7
MHOCCUR	Medical History Occurrence	Char	(NY)	Record Qualifier	Used when the occurrence of specific medical history conditions is solicited to indicate whether or not (Y/N) a medical condition (MHTERM) had ever occurred. Values are null for spontaneously reported events.	Perm	SDTM 2.2.2, SDTMIG 4.1.5.7
MHSTAT	Completion Status	Char	(ND)	Record Qualifier	The status indicates that the pre-specified question was not answered.	Perm	SDTM 2.2.2, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MHREASND	Reason Medical History Not Collected	Char		Record Qualifier	Describes the reason data for a pre-specified condition was not collected. Used in conjunction with MHSTAT when value is NOT DONE.	Perm	SDTM 2.2.2 SDTMIG 4.1.5.1 SDTMIG 4.1.5.7
MHBODSYS	Body System or Organ Class	Char	*	Record Qualifier	Dictionary-derived. Body system or organ class that is involved in an event or measurement from a standard hierarchy (e.g., MedDRA). When using a multi-axial dictionary such as MedDRA, this should contain the SOC used for the sponsor's analyses and summary tables which may not necessarily be the primary SOC.	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
MHDTC	Date/Time of History Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5 SDTMIG 4.1.4.1
MHSTDTC	Start Date/Time of Medical History Event	Char	ISO 8601	Timing		Perm	SDTM 2.2.5 SDTMIG 4.1.4.1
MHENDTC	End Date/Time of Medical History Event	Char	ISO 8601	Timing		Perm	SDTM 2.2.5 SDTMIG 4.1.4.1
MHDY	Study Day of History Collection	Num		Timing	1. Study day of medical history collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5 SDTMIG 4.1.4.4
MHENRF	End Relative to Reference Period	Char	(STENRF)	Timing	Describes the end of the event relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics)	Perm	SDTM 2.2.5 SDTMIG 4.1.4.7
MHENRTPT	End Relative to Reference Time Point	Char	BEFORE, AFTER, COINCIDENT, ONGOING, U	Timing	Identifies the end of the event as being before or after the reference time point defined by variable MHENTPT.	Perm	SDTM 2.2.5 SDTMIG 4.1.4.7
MHENTPT	End Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by MHENRTPT. Examples: "2003-12-25" or "VISIT 2".	Perm	SDTM 2.2.5 SDTMIG 4.1.4.7

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.2.3.1 ASSUMPTIONS FOR MEDICAL HISTORY DOMAIN MODEL

1. MH Definition
   a. The Medical History dataset generally includes the subject's prior and concomitant conditions at the start of the trial. Examples of subject medical history information could include general medical history and gynecological history. Note that prior and concomitant medications should be submitted in an appropriate dataset from the Interventions class (e.g., CM).

2. Medical History Description and Coding
   a. MHTERM captures the verbatim term collected for the condition or event. It is the topic variable for the MH dataset. MHTERM is a required variable and must have a value.
   b. MHMODIFY is a permissible variable and should be included if the sponsor's procedure permits modification of a verbatim term for coding. The modified term is listed in MHMODIFY. The variable should be populated as per the sponsor's procedures; null values are permitted.
   c. If the sponsor codes the reported term (MHTERM) using a standard dictionary, then MHDECOD will be populated with the preferred term derived from the dictionary. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes
   d. MHBODSYS is the system organ class from the coding dictionary associated with the adverse event by the sponsor. This value may differ from the primary system organ class designated in the coding dictionary's standard hierarchy.
   e. Sponsors may include the values of additional levels from the coding dictionary's hierarchy (e.g., High Level Group Term, High Level Term, Lower Level Term) in the SUPPMH dataset as described in Section 8.4. See Appendix C5 for standard Supplemental Qualifier name codes.
   f. If a CRF collects medical history by pre-specified body systems and the sponsor also codes reported terms using a standard dictionary, then MHDECOD and MHBODSYS are populated using the standard dictionary. MHCAT and MHSCAT should be used for the pre-specified body systems.

3. Additional Categorization and Grouping
   a. MHCAT and MHSCAT may be populated with the sponsor's pre-defined categorization of medical history events, which are often pre-specified on the CRF. Note that even if the sponsor uses the body system terminology from the standard dictionary, MHBODSYS and MHCAT may differ, since MHBODSYS is derived from the coding system, while MHCAT is effectively assigned when the investigator records a condition under the pre-specified category.
      i. This categorization should not group all records (within the MH Domain) into one generic group such as "Medical History" or "General Medical History" because this is redundant information with the domain code. If no smaller categorization can be applied, then it is not necessary to include or populate this variable.
      ii. Examples of MHCAT could include "General Medical History" (see above assumption since if "General Medical History" is an MHCAT value then there should be other MHCAT values), "Allergy Medical History, " and "Reproductive Medical History."
   b. MHGRPID may be used to link (or associate) different records together to form a block of related records at the subject level within the MH domain. It should not be used in place of MHCAT or MHSCAT, which are used to group data across subjects. For example, if a group of syndromes reported for a subject were related to a particular disease then the MHGRPID variable could be populated with the appropriate text.

4. Pre-Specified Terms; Presence or Absence of Events
   a. Information on medical history is generally collected in two different ways, either by recording free text or using a pre-specified list of terms. The solicitation of information on specific medical history events may affect the frequency at which they are reported; therefore, the fact that a specific medical history event was solicited may be of interest to reviewers. MHPRESP and MHOCCUR are used together to indicate whether the condition in MHTERM was pre-specified and whether it occurred, respectively. A value of "Y" in MHPRESP indicates that the term was pre-specified.

b. MHOCCUR is used to indicate whether a pre-specified medical condition occurred; a value of Y indicates that the event occurred and N indicates that it did not.
c. If a medical history event was reported using free text, the values of MHPRESP and MHOCCUR should be null. MHPRESP and MHOCCUR are permissible fields and may be omitted from the dataset if all medical history events were collected as free text.
d. MHSTAT and MHREASND provide information about pre-specified medical history questions for which no response was collected. MHSTAT and MHREASND are permissible fields and may be omitted from the dataset if all medications were collected as free text or if all pre-specified conditions had responses in MHOCCUR.

Situation	Value of MHPRESP	Value of MHOCCUR	Value of MHSTAT
Spontaneously reported event occurred			
Pre-specified event occurred	Y	Y	
Pre-specified event did not occur	Y	N	
Pre-specified event has no response	Y		NOT DONE

e. When medical history events are collected with the recording of free text, a record may be entered into the data management system to indicate "no medical history" for a specific subject or pre-specified body system category (e.g., Gastrointestinal). For these subjects or categories within subject, do not include a record in the MH dataset to indicate that there were no events.

5. Timing Variables
   a. Relative timing assessments such as "Ongoing" or "Active" are common in the collection of Medical History information. MHENRF may be used when this relative timing assessment is coincident with the start of the study reference period for the subject represented in the Demographics dataset (RFSTDTC). MHENRTPT and MHENTPT may be used when "Ongoing" is relative to another date such as the screening visit date. See examples below and Section 4.1.4.7.
   b. Additional timing variables (such as MHSTRF) may be used when appropriate.
6. Additional Events Qualifiers
   The following Qualifiers would generally not be used in MH: --SER, --ACN, --ACNOTH, --REL, --RELNST, --OUT, --SCAN, --SCONG, --SDISAB, --SDTH, --SHOSP, --SLIFE, --SOD, --SMIE.

6.2.3.2 EXAMPLES FOR MEDICAL HISTORY DOMAIN MODEL

Example 1

In this example, a General Medical History CRF collects verbatim descriptions of conditions and events by body system (e.g., Endocrine, Metabolic) and asks whether or not the conditions were ongoing at the time of the visit. Another CRF page is used for Cardiac history events and for primary diagnosis; this page does not include the ongoing question.

Rows 1-3: MHSCAT displays the body systems specified on the General Medical History CRF. The reported events are coded using a standard dictionary. MHDECOD and MHBODSYS display the preferred term and body system assigned through the coding process.

Rows 1-3: MHENRTPT has been populated based on the response to the "Ongoing " question on the General Medical History CRF. MHENTPT displays the reference date for MHENRTPT - that is, the date the information was collected. If "Yes" is specified for Ongoing, MHENRTPT="ONGOING" if "No" is checked, MHENRTPT="BEFORE." See Section 4.1.4.7 for further guidance.

Row 4: MHCAT indicates that this record displays the primary diagnosis, "ISCHEMIC STROKE". This term was not coded.

Row 5: MHCAT indicates that this term was reported on the Cardiac Medical History page.

Row	STUDYID	DOMAIN	USUBJID	MHSEQ	MHTERM	MHDECOD	MHCAT	MHSCAT	MHBODSYS	MHSTDTC	MHENRTPT	MHENTPT
1	ABC123	MH	123101	1	ASTHMA	Asthma	GENERAL MEDICAL HISTORY	RESPIRATORY	Respiratory system disorders		ONGOING	2004-09-18
2	ABC123	MH	123101	2	FREQUENT HEADACHES	Headache	GENERAL MEDICAL HISTORY	CNS	Central and peripheral nervous system disorders		ONGOING	2004-09-18
3	ABC123	MH	123101	3	BROKEN LEG	Bone fracture	GENERAL MEDICAL HISTORY	OTHER	Musculoskeletal system disorders		BEFORE	2004-09-18
4	ABC123	MH	123101	4	ISCHEMIC STROKE		PRIMARY DIAGNOSIS			2004-09-17T07:30		
5	ABC123	MH	123101	5	CHF	Cardiac failure congestive	CARDIAC MEDICAL HISTORY		Cardiac disorders	2004-06		

Example 2

This is an example of a medical history CRF where the history of specific (prespecified) conditions is solicited. The conditions are not coded using a standard dictionary. The data are collected as part of the Screening visit.

Rows 1-10 MHPRESP values of "Y" indicate that each condition was pre-specified on the CRF. The presence or absence of a condition is documented with MHOCCUR. The data are collected as part of the Screening visit.

Rows 1-3, 7, 9: The absence of a condition is documented with MHOCCUR.

Rows 4-6, 8: The presence of a condition is documented with MHOCCUR.

Row 10: The question regarding ASTHMA was not asked. MHSTAT is used to indicate this and MHOCCUR is null.

Row	STUDYID	DOMAIN	USUBJID	MHSEQ	MHTERM	MHPRESP	MHOCCUR	MHSTAT	MHREASND	VISIT	VISITNUM	MHDTC	MHDY
1	ABC123	MH	101002	1	HISTORY OF EARLY CORONARY ARTERY DISEASE (<55 YEARS OF AGE)	Y	N			SCREEN	1	2006-04-22	-5
2	ABC123	MH	101002	2	CONGESTIVE HEART FAILURE	Y	N			SCREEN	1	2006-04-22	-5
3	ABC123	MH	101002	3	PERIPHERAL VASCULAR DISEASE	Y	N			SCREEN	1	2006-04-22	-5
4	ABC123	MH	101002	4	TRANSIENT ISCHEMIC ATTACK	Y	Y			SCREEN	1	2006-04-22	-5
5	ABC123	MH	101002	5	ASTHMA	Y	Y			SCREEN	1	2006-04-22	-5
6	ABC123	MH	101003	1	HISTORY OF EARLY CORONARY ARTERY DISEASE (<55 YEARS OF AGE)	Y	Y			SCREEN	1	2006-05-03	-3
7	ABC123	MH	101003	2	CONGESTIVE HEART FAILURE	Y	N			SCREEN	1	2006-05-03	-3
8	ABC123	MH	101003	3	PERIPHERAL VASCULAR DISEASE	Y	Y			SCREEN	1	2006-05-03	-3
9	ABC123	MH	101003	4	TRANSIENT ISCHEMIC ATTACK	Y	N			SCREEN	1	2006-05-03	-3
10	ABC123	MH	101003	5	ASTHMA	Y		NOT DONE	FORGOT TO ASK	SCREEN	1	2006-05-03	-3

Example 3

In this example, three CRFs related to medical history are collected:

- A General Medical History CRF collects descriptions of conditions and events by body system (e.g., Endocrine, Metabolic) and asks whether or not the conditions were ongoing at study start. The reported events are coded using a standard dictionary.
- A second CRF collects Stroke History.
- A third CRF asks whether or not the subject had any of a list of 4 specific risk factors, with space for the investigator to write in other risk factors.

MHCAT is used to indicate the CRF from which the medical condition came.

Rows 1-3: MHSCAT displays the body systems specified on the General Medical History CRF. The reported events are coded using a standard dictionary.
Rows 1-3: MHENRF has been populated based on the response to the "Ongoing at Study Start" question on the General Medical History CRF. If "Yes" is specified, MHENRF="DURING/AFTER;" if "No" is checked, MHENRF="BEFORE" See Section 4.1.4.7 for further guidance on using --STRF and --ENRF.
Row 4: MHCAT indicates that this record displays Stroke History. This term is not coded.
Rows 1-4: MHPRESP and MHOCCUR are null for the conditions, which are not prespecified.
Rows 5-9: MHCAT indicates that these terms were reported on the RISK FACTORS page. These terms are not coded.
Rows 5-8: MHPRESP values of "Y" indicate that each risk factor was pre-specified on the CRF. MHOCCUR is populated with Y or N corresponding to the CRF response to the questions for the 4 pre-specified risk factors.
Row 9: MHPRESP and MHOCCUR are null for the other risk factor written in by the investigator as free text.

Row	STUDYID	DOMAIN	USUBJID	MHSEQ	MHTERM	MHDECOD	MHCAT	MHSCAT	MHPRESP
1	ABC123	MH	123101	1	ASTHMA	Asthma	GENERAL MEDICAL HISTORY	RESPIRATORY	
2	ABC123	MH	123101	2	FREQUENT HEADACHES	Headache	GENERAL MEDICAL HISTORY	CNS	
3	ABC123	MH	123101	3	BROKEN LEG	Bone fracture	GENERAL MEDICAL HISTORY	OTHER	
4	ABC123	MH	123101	4	ISCHEMIC STROKE		STROKE HISTORY		
5	ABC123	MH	123101	5	DIABETES		RISK FACTORS		Y
6	ABC123	MH	123101	6	HYPERCHOLESTEROLEMIA		RISK FACTORS		Y
7	ABC123	MH	123101	7	HYPERTENSION		RISK FACTORS		Y
8	ABC123	MH	123101	8	TIA		RISK FACTORS		Y
9	ABC123	MH	123101	9	MATERNAL FAMILY HX OF STROKE		RISK FACTORS		

Row	MHOCCUR	MHBODSYS	MHSTDTC	MHENRF
1 (cont'd)		Respiratory system disorders		DURING/AFTER
2 (cont'd)		Central and peripheral nervous system disorders		DURING/AFTER
3 (cont'd)		Musculoskeletal system disorders		BEFORE
4 (cont'd)			2004-09-17T07:30	
5 (cont'd)	Y			
6 (cont'd)	Y			
7 (cont'd)	Y			
8 (cont'd)	N			
9 (cont'd)				

6.2.4 PROTOCOL DEVIATIONS — DV

dv.xpt, Protocol Deviations — Events, Version 3.1.2. One record per protocol deviation per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	DV	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4 SDTMIG 4.1.2.3
DVSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
DVREFID	Reference ID	Char		Identifier	Internal or external identifier.	Perm	SDTM 2.2.4
DVSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a CRF page.	Perm	SDTM 2.2.4
DVTERM	Protocol Deviation Term	Char		Topic	Verbatim name of the protocol deviation criterion. Example: IVRS PROCESS DEVIATION - NO DOSE CALL PERFORMED. The DVTERM values will map to the controlled terminology in DVDECOD, such as TREATMENT DEVIATION.	Req	SDTM 2.2.2, SDTMIG 4.1.3.6
DVDECOD	Protocol Deviation Coded Term	Char	*	Synonym Qualifier	Controlled terminology for the name of the protocol deviation. Examples: SUBJECT NOT WITHDRAWN AS PER PROTOCOL, SELECTION CRITERIA NOT MET, EXCLUDED CONCOMITANT MEDICATION, TREATMENT DEVIATION.	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
DVCAT	Category for Protocol Deviation	Char	*	Grouping Qualifier	Category of the protocol deviation criterion.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
DVSCAT	Subcategory for Protocol Deviation	Char	*	Grouping Qualifier	A further categorization of the protocol deviation.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
EPOCH	Epoch	Char	*	Timing	Epoch associated with the start date/time of the deviation. Examples: TREATMENT PHASE, SCREENING, and FOLLOW-UP.	Perm	SDTM 2.2.5 SDTMIG 7.1.2
DVSTDTC	Start Date/Time of Deviation	Char	ISO 8601	Timing	Start date/time of deviation represented in ISO 8601 character format.	Perm	SDTM 2.2.5 SDTMIG 4.1.4.1
DVENDTC	End Date/Time of Deviation	Char	ISO 8601	Timing	End date/time of deviation represented in ISO 8601 character format.	Perm	SDTM 2.2.5 SDTMIG 4.1.4.1

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.2.4.1 ASSUMPTIONS FOR PROTOCOL DEVIATIONS DOMAIN MODEL

1. The DV domain is an Events model for collected protocol deviations and not for derived protocol deviations that are more likely to be part of analysis. Events typically include what the event was, captured in --TERM (the topic variable), and when it happened (captured in its start and/or end dates). The intent of the domain model is to capture protocol deviations that occurred during the course of the study (see ICH E3, Section 10.2). Usually these are deviations that occur after the subject has been randomized or received the first treatment.
2. This domain should not be used to collect entry criteria information. Violated inclusion/exclusion criteria are stored in IE. The Deviations domain is for more general deviation data. A protocol may indicate that violating an inclusion/exclusion criterion during the course of the study (after first dose) is a protocol violation. In this case, this information would go into DV.
3. Additional Events Qualifiers
   The following Qualifiers would generally not be used in DV: --PRESP, --OCCUR, --STAT, --REASND, --BODSYS, --LOC, --SEV, --SER, --ACN, --ACNOTH, --REL, --RELNST, --PATT, --OUT, --SCAN, --SCONG, --SDISAB, --SDTH, --SHOSP, --SLIFE, --SOD, --SMIE, --CONTRT, --TOXGR.

6.2.4.2 EXAMPLES FOR PROTOCOL DEVIATIONS DOMAIN MODEL

Example 1

This is an example of data that was collected on a protocol-deviations CRF. The DVDECOD column is for controlled terminology whereas the DVTERM is free text.

Rows 1 and 3: Show examples of a TREATMENT DEVIATION type of protocol deviation.

Row 2: Shows an example of a deviation due to the subject taking a prohibited concomitant mediation.

Rows 4: Shows an example of a medication that should not be taken during the study.

Row	STUDYID	DOMAIN	USUBJID	DVSEQ	DVTERM	DVDECOD	EPOCH	DVSTDTC
1	ABC123	DV	123101	1	IVRS PROCESS DEVIATION - NO DOSE CALL PERFORMED.	TREATMENT DEVIATION	TREATMENT PHASE	2003-09-21
2	ABC123	DV	123103	1	DRUG XXX ADMINISTERED DURING STUDY TREATMENT PERIOD	EXCLUDED CONCOMITANT MEDICATION	TREATMENT PHASE	2003-10-30
3	ABC123	DV	123103	2	VISIT 3 DOSE <15 MG	TREATMENT DEVIATION	TREATMENT PHASE	2003-10-30
4	ABC123	DV	123104	1	TOOK ASPIRIN	PROHIBITED MEDS	TREATMENT PHASE	2003-11-30

6.2.5 CLINICAL EVENTS — CE

ce.xpt, Clinical Events — Events, Version 3.1.2. One record per event per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	CE	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4 SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
CESEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
CEGRPID	Group ID	Char		Identifier	Used to tie together a block of related records for a subject within a domain.	Perm	SDTM 2.2.4 SDTMIG 2.1, SDTMIG 4.1.2.6
CEREFID	Reference ID	Char		Identifier	Internal or external identifier.	Perm	SDTM 2.2.4
CESPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a CRF page.	Perm	SDTM 2.2.4
CETERM	Reported Term for the Clinical Event	Char		Topic	Term for the medical condition or event. Most likely pre-printed on CRF.	Req	SDTM 2.2.2, SDTMIG 4.1.3.6
CEDECOD	Dictionary-Derived Term	Char	*	Synonym Qualifier	Controlled terminology for the name of the clinical event. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
CECAT	Category for Clinical Event	Char	*	Grouping Qualifier	Used to define a category of related records.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
CESCAT	Subcategory for Clinical Event	Char	*	Grouping Qualifier	A further categorization of the condition or event.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.6
CEPRESP	Clinical Event Pre-Specified	Char	(NY)	Record Qualifier	Used to indicate whether the Event in CETERM was pre-specified. Value is Y for pre-specified events, null for spontaneously reported events.	Perm	SDTM 2.2.2, SDTMIG 4.1.2.7 SDTMIG 4.1.5.7
CEOCCUR	Clinical Event Occurrence	Char	(NY)	Record Qualifier	Used when the occurrence of specific events is solicited to indicate whether or not a clinical event occurred. Values are null for spontaneously reported events.	Perm	SDTM 2.2.2, SDTMIG 4.1.5.7
CESTAT	Completion Status	Char	(ND)	Record Qualifier	The status indicates that a question from a pre-specified list was not answered.	Perm	SDTM 2.2.2, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
CEREASND	Reason Clinical Event Not Collected	Char		Record Qualifier	Describes the reason clinical event data was not collected. Used in conjunction with CESTAT when value is NOT DONE.	Perm	SDTM 2.2.2, SDTMIG 4.1.5.1 SDTMIG 4.1.5.7

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
CEBODSYS	Body System or Organ Class	Char	*	Record Qualifier	Dictionary-derived. Body system or organ class that is involved in an event or measurement from a standard hierarchy (e.g., MedDRA). When using a multi-axial dictionary such as MedDRA, this should contain the SOC used for the sponsor's analyses and summary tables which may not necessarily be the primary SOC.	Perm	SDTM 2.2.2, SDTMIG 4.1.3.5
CESEV	Severity/Intensity	Char	*	Record Qualifier	The severity or intensity of the event. Examples: MILD, MODERATE, SEVERE	Perm	SDTM 2.2.2,
CEDTC	Date/Time of Event Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1
CESTDTC	Start Date/Time of Clinical Event	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1; SDTMIG 4.1.4.2
CEENDTC	End Date/Time of Clinical Event	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1; SDTMIG 4.1.4.2
CEDY	Study Day of Event Collection	Num		Timing	1. Study day of clinical event collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4
CESTRF	Start Relative to Reference Period	Char	(STENRF)	Timing	Describes the start of the clinical event relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics).	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CEENRF	End Relative to Reference Period	Char	(STENRF)	Timing	Describes the end of the event relative to the sponsor-defined reference period. The sponsor-defined reference period is a continuous period of time defined by a discrete starting point and a discrete ending point (represented by RFSTDTC and RFENDTC in Demographics).	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CESTRTPT	Start Relative to Reference Time Point	Char	BEFORE, AFTER, COINCIDENT, U	Timing	Identifies the start of the observation as being before or after the reference time point defined by variable CESTTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CESTTPT	Start Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the sponsor-defined reference point referred to by --STRTPT. Examples: "2003-12-15" or "VISIT 1".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CEENRTPT	End Relative to Reference Time Point	Char	BEFORE, AFTER, COINCIDENT, ONGOING, U	Timing	Identifies the end of the event as being before or after the reference time point defined by variable CEENTPT.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7
CEENTPT	End Reference Time Point	Char		Timing	Description or date/time in ISO 8601 character format of the reference point referred to by CEENRTPT. Examples: "2003-12-25" or "VISIT 2".	Perm	SDTM 2.2.5, SDTMIG 4.1.4.7

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.2.5.1 ASSUMPTIONS FOR CLINICAL EVENTS DOMAIN MODEL

1. The intent of the domain model is to capture clinical events of interest that would not be classified as adverse events. The data may be data about episodes of symptoms of the disease under study (often known as signs and symptoms), or about events that do not constitute adverse events in themselves, though they might lead to the identification of an adverse event. For example, in a study of an investigational treatment for migraine headaches, migraine headaches may not be considered to be adverse events per protocol. The occurrence of migraines or associated signs and symptoms might be reported in CE. Other studies might track the occurrence of specific events as efficacy endpoints. For example, in a study of an investigational treatment for prevention of ischemic stroke, all occurrences of TIA, stroke and death might be captured as clinical events and assessed as to whether they meet endpoint criteria. Note that other information about these events may also be reported in other datasets. For example, the event leading to death would be reported in AE and death would also be a reason for study discontinuation in DS.

2. CEOCCUR and CEPRESP are used together to indicate whether the event in CETERM was pre-specified, and whether it occurred. CEPRESP can be used to separate records that correspond to probing questions for pre-specified events from those that represent spontaneously reported events, while CEOCCUR contains the responses to such questions. The table below shows how these variables are populated in various situations.

Situation	Value of CEPRESP	Value of CEOCCUR	Value of CESTAT
Spontaneously reported event occurred			
Pre-specified event occurred	Y	Y	
Pre-specified event did not occur	Y	N	
Pre-specified event has no response	Y		NOT DONE

3. The collection of write-in events on a Clinical Events CRF should be considered with caution. Sponsors must ensure that all adverse events are recorded in the AE domain.

4. Timing Variables
   a. Relative timing assessments "Prior" or “Ongoing” are common in the collection of Clinical Event information. CESTRF or CEENRF may be used when this timing assessment is relative to the study reference period for the subject represented in the Demographics dataset (RFENDTC). CESTRTPT with CESTTPT, and/or CEENRTPT with CEENTPT may be used when "Prior" or "Ongoing" are relative to specific dates other than the start and end of the study reference period. See Section 4.1.4.7.
   b. Additional Timing variables may be used when appropriate.

5. Additional Events Qualifiers
   The following Qualifiers would generally not be used in CE: --SER, --ACN, --ACNOTH, --REL, --RELNST, --OUT, --SCAN, --SCONG, --SDISAB, --SDTH, --SHOSP, --SLIFE, --SOD, --SMIE.

6.2.5.2 EXAMPLES FOR CLINICAL EVENTS DOMAIN MODEL

Example 1

Assumptions:

- CRF data are collected about pre-specified events that, in the context of this study, are not reportable as Adverse Events.
- The data being collected includes "event-like" timing and other Qualifiers.
- Data are collected about pre-specified clinical events in a log independent of visits, rather than in a visit-based CRF module.
- Note that data collected is the start date of the event, which is "event-like" data.
- No "yes/no" data on the occurrence of the event is collected.

CRF:

Record start dates of any of the following signs that occur.	
Clinical Sign	**Start Date**
Rash	
Wheezing	
Edema	
Conjunctivitis	

Data:

Rows 1-3: Show records for clinical events for which start dates were recorded. Since conjunctivitis was not observed, no start date was recorded and there is no CE record.

Row	STUDYID	DOMAIN	USUBJID	CESEQ	CETERM	CEPRESP	CEOCCUR	CESTDTC
1	ABC123	CE	123	1	Rash	Y	Y	2006-05-03
2	ABC123	CE	123	2	Wheezing	Y	Y	2006-05-03
3	ABC123	CE	123	3	Edema	Y	Y	2006-05-06

Example 2

Assumptions:

- CRF includes both questions about pre-specified clinical events (events not reportable as AEs in the context of this study) and spaces for the investigator to write in additional clinical events.
- Note that data being collected are start and end dates, which are "event-like, " and severity, which is a Qualifier in the Events general observation class.

CRF:

Event	Yes	No	Date Started	Date Ended	Severity
Nausea	☐	☐			
Vomit	☐	☐			
Diarrhea	☐	☐			
Other, Specify					

Data:

Row 1: Shows a record for a response to the pre-specified clinical event "Nausea." The CEPRESP value of "Y" indicates that there was a probing question, and the response to the probe (CEOCCUR) was "Yes."

Row 2: Shows a record for a response to the pre-specified clinical event "Vomit." The CEPRESP value of "Y" indicates that there was a probing question, and the response to the question (CEOCCUR) was "No".

Row 3: Shows a record for the pre-specified clinical event "Diarrhea." A value of Y for CEPRESP indicates it was pre-specified. The CESTAT value of NOT DONE indicates that there was either 1) no probing question (investigator error) or a probing question with no response.

Row 4: Shows a record for a write-in Clinical Event recorded in the "Other, Specify" space. Because this event was not pre-specified, CEPRESP and CEOCCUR are null (Section 4.1.2.7 further information on populating the Topic variable when "Other, specify" is used on the CRF).

Row	STUDYID	DOMAIN	USUBJID	CESEQ	CETERM	CEPRESP	CEOCCUR	CESTAT	CESEV	CESTDTC	CEENDTC
1	ABC123	CE	123	1	NAUSEA	Y	Y		MODERATE	2005-10-12	2005-10-15
2	ABC123	CE	123	2	VOMIT	Y	N				
3	ABC123	CE	123	3	DIARRHEA	Y		NOT DONE			
4	ABC123	CE	123	4	SEVERE HEAD PAIN				SEVERE	2005-10-09	2005-10-11

6.3 FINDINGS

6.3.1 ECG TEST RESULTS — EG

eg.xpt, ECG — Findings, Version 3.1.2. One record per ECG observation per time point per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	EG	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
EGSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
EGGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
EGREFID	ECG Reference ID	Char		Identifier	Internal or external ECG identifier. Example: UUID.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
EGSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number from the ECG page.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
EGTESTCD	ECG Test or Examination Short Name	Char	(EGTESTCD)	Topic	Short name of the measurement, test, or examination described in EGTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in EGTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g., “1TEST”). EGTESTCD cannot contain characters other than letters, numbers, or underscores. Examples :PRMEAN, QTMEAN	Req	SDTM 2.2.3, SDTMIG 4.1.1.9, SDTMIG 4.1.2.1, SDTMIG 4.1.5.5 SDTMIG Appendix C1
EGTEST	ECG Test or Examination Name	Char	(EGTEST)	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. The value in EGTEST cannot be longer than 40 characters. Examples: Summary (Mean) PR Duration, Summary (Mean) QT Duration	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1, SDTMIG Appendix C1
EGCAT	Category for ECG	Char	*	Grouping Qualifier	Used to categorize ECG observations across subjects. Examples: MEASUREMENT, FINDING, INTERVAL	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
EGSCAT	Subcategory for ECG	Char	*	Grouping Qualifier	A further categorization of the ECG.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
EGPOS	ECG Position of Subject	Char	(POSITION)	Record Qualifier	Position of the subject during a measurement or examination. Examples: SUPINE, STANDING, SITTING.	Perm	SDTM 2.2.3

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
EGORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the ECG measurement or finding as originally received or collected. Examples of expected values are 62 or 0.151 when the result is an interval or measurement, or "ATRIAL FIBRILLATION" or "QT PROLONGATION" when the result is a finding.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
EGORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for EGORRES. Examples: sec or msec.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
EGSTRESC	Character Result/Finding in Std Format	Char	(EGSTRESC)	Result Qualifier	Contains the result value for all findings, copied or derived from EGORRES in a standard format or standard units. EGSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in EGSTRESN. For example, if a test has results of "NONE", "NEG", and "NEGATIVE" in EGORRES and these results effectively have the same meaning, they could be represented in standard format in EGSTRESC as "NEGATIVE". For other examples, see general assumptions. Additional examples of result data: SINUS BRADYCARDIA, ATRIAL FLUTTER, ATRIAL FIBRILLATION.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.6, SDTMIG 4.1.5.1
EGSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from EGSTRESC. EGSTRESN should store all numeric test results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
EGSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for EGSTRESC or EGSTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
EGSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate an ECG was not done, or an ECG measurement was not taken. Should be null if a result exists in EGORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
EGREASND	Reason ECG Not Performed	Char		Record Qualifier	Describes why a measurement or test was not performed. Examples: BROKEN EQUIPMENT or SUBJECT REFUSED. Used in conjunction with EGSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
EGXFN	ECG External File Name	Char		Record Qualifier	File name and path for the external ECG Waveform file.	Perm	SDTM 2.2.3
EGNAM	Vendor Name	Char		Record Qualifier	Name or identifier of the laboratory or vendor who provided the test results.	Perm	SDTM 2.2.3
EGLOC	Lead Location Used for Measurement	Char	(LOC)	Record Qualifier	The lead used for the measurement, examples, V1, V6, aVR, I, II, III.	Perm	SDTM 2.2.3, SDTMIG 4.1.1.9
EGMETHOD	Method of ECG Test	Char	(EGMETHOD)	Record Qualifier	Method of the ECG test. Examples: 12 LEAD STANDARD.	Perm	SDTM 2.2.3, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
EGBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be "Y" or null.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
EGDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records which represent the average of other records, or that do not come from the CRF, or are not as originally collected or received are examples of records that would be derived for the submission datasets. If EGDRVFL=Y, then EGORRES could be null, with EGSTRESC, and (if numeric) EGSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1
EGEVAL	Evaluator	Char	*	Record Qualifier	Role of the person who provided the evaluation. Used only for results that are subjective (e.g., assigned by a person or a group). Should be null for records that contain collected or derived data. Examples: INVESTIGATOR, ADJUDICATION COMMITTEE, VENDOR.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.4
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
EGDTC	Date/Time of ECG	Char	ISO 8601	Timing	Date of ECG.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2, SDTMIG 4.1.4.8
EGDY	Study Day of ECG	Num		Timing	1. Study day of the ECG, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
EGTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when measurement should be taken. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See EGTPTNUM and EGTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
EGTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of EGTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
EGELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned elapsed time (in ISO 8601) relative to a fixed time point reference (EGTPTREF). Not a clock time or a date time variable. Represented as an ISO 8601 duration. Examples: "-PT15M" to represent the period of 15 minutes prior to the reference point indicated by EGTPTREF, or "PT8H" to represent the period of 8 hours after the reference point indicated by EGTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3 SDTMIG 4.1.4.10

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
EGTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by EGELTM, EGTPTNUM, and EGTPT. Examples: PREVIOUS DOSE, PREVIOUS MEAL.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
EGRFTDTC	Date/Time of Reference Time Point	Char	ISO 8601	Timing	Date/time of the reference time point, EGTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.1.1 ASSUMPTIONS FOR ECG TEST RESULTS DOMAIN MODEL

1. EG Definition: CRF data that captures interval measurements and summary information from an ECG. This domain captures ECG data collected on the CRF or received from a central provider or vendor.
2. EGREFID is intended to store an identifier (e.g., UUID) for the associated ECG tracing. EGFXN is intended to store the name of and path to the ECG waveform file when it is submitted.
3. The method for QT interval correction is specified in the test name by controlled terminology: EGTESTCD = QTCF and EGTEST = QTcF for Fridericia's Correction Formula; EGTESTCD=QTCB and EGTEST = QTcB for Bazett's Correction Formula.
4. EGNRIND can be added to indicate where a result falls with respect to reference range defined by EGORNRLO and EGORNRHI. Examples: HIGH, LOW. Clinical significance would be represented as described in Section 4.1.5.5 as a record in SUPPEG with a QNAM of EGCLSIG (see also ECG Example 1 below).
5. When QTCF and QTCB are derived by the sponsor, the derived flag (EGDRVFL) is set to Y. However, when the QTCF or QTCB is received from a central provider or vendor, the value would go into EGORRES and EGDRVFL would be null (See Section 4.1.1.8.1).
6. The following Qualifiers would not generally be used in EG: --MODIFY, --BODSYS, --SPEC, --SPCCND, --FAST, --SEV. It is recommended that --LOINC not be used.

6.3.1.2 EXAMPLES FOR ECG TEST RESULTS DOMAIN MODEL

Example 1

Rows 1-6: Show how ECG measurements are represented.

Row 1: Shows a measurement of ventricular rate. The Supplemental Qualifier record related to this EG record, Row 1 in the SUPPEG dataset, has QNAM = EGCLSIG and QVAL = "N". This indicates that the ventricular rate of 62 bpm was assessed as not being clinically significant. See Section 4.1.5.5 for more on clinical significance.

Rows 2-4: Show the data in original units of measure in EGORRES, EGSTRESC, and EGSTRESN. See Section 4.1.5.1 for additional examples for the population of Result Qualifiers.

Row 2: The TEST " Summary (Mean) PR Duration "has a result of 0.15 sec. The Supplemental Qualifier record related to this EG record, Row 2 in the SUPPEG dataset, has QNAM = CLSIG and QVAL = "Y". This indicates that the PR interval of 0.15 sec was assessed as being clinically significant. See Section 4.1.5.5 for more on clinical significance.

Rows 2-10: Show how EGCAT could be used to group the intervals and the findings.

Rows 5-6: Show QTCB and QTCF. The data shows a "Y" in the EGDRVFL column since these results are derived by the sponsor in this example. Note that EGORRES is null for these derived records.

Rows 7-10: Show how ECG findings are represented.

Row 11: Shows a way of representing technical problems that are important to the overall understanding of the ECG, but which are not truly findings or interpretations.

Row 12: The TEST "Interpretation" (i.e., the interpretation of the ECG strip as a whole), is "ABNORMAL ".

eg.xpt

Row	STUDYID	DOMAIN	USUBJID	EGSEQ	EGCAT	EGREFID	EGTESTCD	EGTEST	EGPOS	EGORRES	EGORRESU
1	XYZ	EG	XYZ-US-701-002	1	MEASUREMENT	334PT89	HRMEAN	Summary (Mean) Heart Rate	SUPINE	62	BEATS/MIN
2	XYZ	EG	XYZ-US-701-002	2	INTERVAL	334PT89	PRMEAN	Summary (Mean) PR Duration	SUPINE	0.15	sec
3	XYZ	EG	XYZ-US-701-002	3	INTERVAL	334PT89	QRSDUR	Summary (Mean) QRS Duration	SUPINE	0.103	sec
4	XYZ	EG	XYZ-US-701-002	4	INTERVAL	334PT89	QTMEAN	Summary (Mean) QT Duration	SUPINE	0.406	sec
5	XYZ	EG	XYZ-US-701-002	5	INTERVAL	334PT89	QTCB	QTcB – Bazett's Correction Formula	SUPINE		
6	XYZ	EG	XYZ-US-701-002	6	INTERVAL	334PT89	QTCF	QTcF – Fridericia's Correction Formula	SUPINE		
7	XYZ	EG	XYZ-US-701-002	7	FINDING	334PT89	RHYRATE	Rhythm and Rate	SUPINE	ATRIAL FIBRILLATION	
8	XYZ	EG	XYZ-US-701-002	8	FINDING	334PT89	RHYRATE	Rhythm and Rate	SUPINE	ATRIAL FLUTTER	
9	XYZ	EG	XYZ-US-701-002	9	FINDING	334PT89	QTABN	QT Abnormalities	SUPINE	PROLONGED QT	
10	XYZ	EG	XYZ-US-701-002	10	FINDING	334PT89	VCABN	Ventricular Conduction Abnormalities	SUPINE	LEFT VENTRICULAR HYPERTROPHY	
11	XYZ	EG	XYZ-US-701-002	11		334PT89	TECHPROB	Technical Problems	SUPINE	INCORRECT ELECTRODE PLACEMENT	
12	XYZ	EG	XYZ-US-701-002	12		334PT89	INTP	Interpretation	SUPINE	ABNORMAL	

Row	EGSTRESC	EGSTRESN	EGSTRESU	EGXFN	EGNAM	EGDRVFL	EGEVAL	VISITNUM	VISIT	EGDTC	EGDY
1 (cont)	62	62	BEATS/MIN	PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
2 (cont)	150	150	msec	PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
3 (cont)	103	103	msec	PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
4 (cont)	406	406	msec	PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
5 (cont)	469	469	msec	PQW436789-07.xml	Test Lab	Y		1	Screening 1	2003-04-15T11:58	-36
6 (cont)	446	446	msec	PQW436789-07.xml	Test Lab	Y		1	Screening 1	2003-04-15T11:58	-36
7 (cont)	ATRIAL FIBRILLATION			PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
8 (cont)	ATRIAL FLUTTER			PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
9 (cont)	PROLONGED QT			PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36

Row	EGSTRESC	EGSTRESN	EGSTRESU	EGXFN	EGNAM	EGDRVFL	EGEVAL	VISITNUM	VISIT	EGDTC	EGDY
10 (cont)	LEFT VENTRICULAR HYPERTROPHY			PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
11 (cont)	INCORRECT ELECTRODE PLACEMENT			PQW436789-07.xml	Test Lab			1	Screening 1	2003-04-15T11:58	-36
12 (cont)	ABNORMAL						PRINCIPAL INVESTIGATOR	1	Screening 1	2003-04-15T11:58	-36

suppeg.xpt

Row 1: Shows that the record in the EG dataset with value of EGSEQ of 1 has Supplemental Qualifier record indicating that the ventricular rate of 62 bpm was assessed as not being clinically significant.

Row 2: Shows that the record in the EG dataset with value of EGSEQ of 2 has Supplemental Qualifier record indicating that the PR interval of 0.15 sec was assessed as being clinically significant.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	XYZ	EG	XYZ-US-701-002	EGSEQ	1	EGCLSIG	Clinically Significant	N	CRF	
2	XYZ	EG	XYZ-US-701-002	EGSEQ	2	EGCLSIG	Clinically Significant	Y	CRF	

Example 2

Example 2 shows results for one subject across multiple visits where only the overall assessment was collected. In addition the ECG done at Visit 4 was read by the principal investigator and a cardiologist. In this example the EGGRPID is the same number and the EGSEQ increments by one.

Rows 1-5: Show that when an interpretation is collected the evaluator is stored in EGEVAL.

Row 2: Shows the record selected as Baseline.

Row 3: Shows a date/time in ISO 8601 representation where both the date and time were collected.

Rows 4-5: Show where EGGRPID is used to group related results.

Row	STUDYID	DOMAIN	USUBJID	EGSEQ	EGGRPID	EGTESTCD	EGTEST	EGPOS	EGORRES	EGSTRESC	EGSTRESN
1	ABC	EG	ABC-99-CA-456	1	1	INTP	Interpretation	SUPINE	NORMAL	NORMAL	
2	ABC	EG	ABC-99-CA-456	2	2	INTP	Interpretation	SUPINE	ABNORMAL	ABNORMAL	
3	ABC	EG	ABC-99-CA-456	3	3	INTP	Interpretation	SUPINE	ABNORMAL	ABNORMAL	
4	ABC	EG	ABC-99-CA-456	4	4	INTP	Interpretation	SUPINE	ABNORMAL	ABNORMAL	
5	ABC	EG	ABC-99-CA-456	5	4	INTP	Interpretation	SUPINE	ABNORMAL	ABNORMAL	

Row	EGBLFL	EGEVAL	VISITNUM	VISIT	VISITDY	EGDTC	EGDY
1 (cont)		PRINCIPAL INVESTIGATOR	1	SCREEN I	-2	2003-11-26	-2
2 (cont)	Y	PRINCIPAL INVESTIGATOR	2	SCREEN II	-1	2003-11-27	-1
3 (cont)		PRINCIPAL INVESTIGATOR	3	DAY 10	10	2003-12-07T09:02	10
4 (cont)		PRINCIPAL INVESTIGATOR	4	DAY 15	15	2003-12-12	15
5 (cont)		CARDIOLOGIST	4	DAY 15	15	2003-12-12	15

6.3.2 INCLUSION/EXCLUSION CRITERIA NOT MET — IE

ie.xpt, Inclusion/Exclusion Criteria Not Met — Findings, Version 3.1.2. One record per inclusion/exclusion criterion not met per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	IE	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
IESEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
IESPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Inclusion or Exclusion criteria number from CRF.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
IETESTCD	Inclusion/Exclusion Criterion Short Name	Char	*	Topic	Short name of the criterion described in IETEST. The value in IETESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). IETESTCD cannot contain characters other than letters, numbers, or underscores. Examples: IN01, EX01.	Req	SDTM 2.2.3, SDTMIG 4.1.1.9 SDTMIG 4.1.2.1
IETEST	Inclusion/Exclusion Criterion	Char		Synonym Qualifier	Verbatim description of the inclusion or exclusion criterion that was the exception for the subject within the study. IETEST cannot be longer than 200 characters.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
IECAT	Inclusion/Exclusion Category	Char	(IECAT)	Grouping Qualifier	Used to define a category of related records across subjects.	Req	SDTM 2.2.3, SDTMIG 4.1.2.6, SDTMIG Appendix C1
IESCAT	Inclusion/Exclusion Subcategory	Char	*	Grouping Qualifier	A further categorization of the exception criterion. Can be used to distinguish criteria for a sub-study or for to categorize as a major or minor exceptions. Examples: MAJOR, MINOR.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
IEORRES	I/E Criterion Original Result	Char	(NY)	Result Qualifier	Original response to Inclusion/Exclusion Criterion question. Inclusion or Exclusion criterion met?	Req	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG Appendix C1
IESTRESC	I/E Criterion Result in Std Format	Char	(NY)	Result Qualifier	Response to Inclusion/Exclusion criterion result in standard format.	Req	SDTM 2.2.3, SDTMIG 4.1.3.6, SDTMIG 4.1.5.1, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
IEDTC	Date/Time of Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2, SDTMIG 4.1.4.8
IEDY	Study Day of Collection	Num		Timing	1. Study day of collection of the inclusion/exclusion exceptions, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.2.1 ASSUMPTIONS FOR INCLUSION/EXCLUSION CRITERIA NOT MET DOMAIN MODEL

1. IE Definition:
   CRF data that captures inclusion and exclusion criteria exceptions per subject. All inclusion or exclusion criteria that are violated, should be stored here, even if a sponsor has granted a waiver or if the subject was admitted by mistake. In cases where a CRF may allow a response of "Not Applicable" and this is checked, no criteria were violated, so these records would not be in IE.
2. The intent of the domain model is to collect responses to only those criteria that the subject did not meet, and not the responses to all criteria. The complete list of Inclusion/Exclusion criteria can be found in the TI trial inclusion/exclusion criteria dataset described in Section 7.5.
3. This domain should be used to document the exceptions to inclusion or exclusion criteria at the time that eligibility for study entry is determined (e.g., at the end of a run-in period or immediately before randomization). This domain should not be used to collect protocol deviations/violations incurred during the course of the study, typically after randomization or start of study medication. See Section 6.2.4.1 for the DV events domain model that is used to submit protocol deviations/violations.
4. IETEST is to be used only for the verbatim description of the inclusion or exclusion criteria. If the text is ≤200 characters, it goes in IETEST; if the text is > 200 characters, put meaningful text in IETEST and describe the full text in the study metadata. See section 4.1.5.3.2 for further information.

5. The following Qualifiers would not generally be used in IE: --MODIFY, --POS, --BODSYS, --ORRESU, --ORNRLO, --ORNRHI, --STRESN, --STRESU, --STNRLO, --STNRHI, --STNRC, --NRIND, --RESCAT, --XFN, --NAM, --LOINC, --SPEC, --SPCCND, --LOC, --METHOD, --BLFL, --FAST, --DRVFL, --TOX, --TOXGR, --SEV, --STAT.

6.3.2.2 EXAMPLES FOR INCLUSION/EXCLUSION NOT MET DOMAIN MODEL

This example shows records for three subjects; one with 2 inclusion/exclusion exceptions, and the others with one exception each. Subject XYZ-0007 failed exclusion criterion number 17 and inclusion criterion 3, but was included in the trial. The other two subjects each failed inclusion criterion number 3, but were also included in the trial.

Row	STUDYID	DOMAIN	USUBJID	IESEQ	IESPID	IETESTCD	IETEST	IECAT	IEORRES	IESTRESC
1	XYZ	IE	XYZ-0007	1	17	EXCL17	Ventricular Rate	EXCLUSION	Y	Y
2	XYZ	IE	XYZ-0007	2	3	INCL03	Acceptable mammogram from local radiologist?	INCLUSION	N	N
3	XYZ	IE	XYZ-0047	1	3	INCL03	Acceptable mammogram from local radiologist?	INCLUSION	N	N
4	XYZ	IE	XYZ-0096	1	3	INCL03	Acceptable mammogram from local radiologist?	INCLUSION	N	N

Row	VISITNUM	VISIT	VISITDY	IEDTC	IEDY
1 (cont)	1	WEEK -8	-56	1999-01-10	-58
2 (cont)	1	WEEK -8	-56	1999-01-10	-58
3 (cont)	1	WEEK -8	-56	1999-01-12	-56
4 (cont)	1	WEEK -8	-56	1999-01-13	-55

6.3.3 LABORATORY TEST RESULTS — LB

lb.xpt, Labs — Findings, Version 3.1.2. One record per lab test per time point per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	LB	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
LBSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
LBGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
LBREFID	Specimen ID	Char		Identifier	Internal or external specimen identifier. Example: Specimen ID.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
LBSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on the Lab page.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
LBTESTCD	Lab Test or Examination Short Name	Char	(LBTESTCD)	Topic	Short name of the measurement, test, or examination described in LBTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in LBTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). LBTESTCD cannot contain characters other than letters, numbers, or underscores. Examples: ALT, LDH.	Req	SDTM 2.2.3, SDTMIG 4.1.1.9 SDTMIG 4.1.2.1, SDTMIG Appendix C1
LBTEST	Lab Test or Examination Name	Char	(LBTEST)	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. Note any test normally performed by a clinical laboratory is considered a lab test. The value in LBTEST cannot be longer than 40 characters. Examples: Alanine Aminotransferase, Lactate Dehydrogenase.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1 SDTMIG Appendix C1
LBCAT	Category for Lab Test	Char	*	Grouping Qualifier	Used to define a category of related records across subjects. Examples: such as HEMATOLOGY, URINALYSIS, CHEMISTRY.	Exp	SDTM 2.2.3, SDTMIG 4.1.2.6
LBSCAT	Subcategory for Lab Test	Char	*	Grouping Qualifier	A further categorization of a test category such as DIFFERENTIAL, COAGULATON, LIVER FUNCTION, ELECTROLYTES.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
LBORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the measurement or finding as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
LBORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for LBORRES. Example: g/L.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
LBORNRLO	Reference Range Lower Limit in Orig Unit	Char		Variable Qualifier	Lower end of reference range for continuous measurements in original units. Should be populated only for continuous results.	Exp	SDTM 2.2.3
LBORNRHI	Reference Range Upper Limit in Orig Unit	Char		Variable Qualifier	Upper end of reference range for continuous measurements in original units. Should be populated only for continuous results.	Exp	SDTM 2.2.3
LBSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from LBORRES in a standard format or standard units. LBSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in LBSTRESN. For example, if a test has results "NONE", "NEG", and "NEGATIVE" in LBORRES and these results effectively have the same meaning, they could be represented in standard format in LBSTRESC as "NEGATIVE". For other examples, see general assumptions.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
LBSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from LBSTRESC. LBSTRESN should store all numeric test results or findings.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
LBSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for LBSTRESC or LBSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
LBSTNRLO	Reference Range Lower Limit-Std Units	Num		Variable Qualifier	Lower end of reference range for continuous measurements for LBSTRESC/LBSTRESN in standardized units. Should be populated only for continuous results.	Exp	SDTM 2.2.3
LBSTNRHI	Reference Range Upper Limit-Std Units	Num		Variable Qualifier	Upper end of reference range for continuous measurements in standardized units. Should be populated only for continuous results.	Exp	SDTM 2.2.3
LBSTNRC	Reference Range for Char Rslt-Std Units	Char		Variable Qualifier	For normal range values that are character in ordinal scale or if categorical ranges were supplied (e.g., "-1 to +1", "NEGATIVE TO TRACE").	Perm	SDTM 2.2.3
LBNRIND	Reference Range Indicator	Char	*	Variable Qualifier	1. Indicates where the value falls with respect to reference range defined by LBORNRLO and LBORNRHI, LBSTNRLO and LBSTNRHI, or by LBSTNRC. Examples: NORMAL, ABNORMAL, HIGH, LOW. 2. Sponsors should specify in the study metadata (Comments column in the define.xml) whether LBNRIND refers to the original or standard reference ranges and results. 3. Should not be used to indicate clinical significance.	Exp	SDTM 2.2.3
LBSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate exam not done. Should be null if a result exists in LBORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
LBREASND	Reason Test Not Done	Char		Record Qualifier	Describes why a measurement or test was not performed such as BROKEN EQUIPMENT, SUBJECT REFUSED, or SPECIMEN LOST. Used in conjunction with LBSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
LBNAM	Vendor Name	Char		Record Qualifier	The name or identifier of the laboratory that performed the test.	Perm	SDTM 2.2.3
LBLOINC	LOINC Code	Char	*	Synonym Qualifier	1. Dictionary-derived LOINC Code for LBTEST. 2. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2
LBSPEC	Specimen Type	Char	*	Record Qualifier	Defines the type of specimen used for a measurement. Examples: SERUM, PLASMA, URINE.	Perm	SDTM 2.2.3
LBSPCCND	Specimen Condition	Char	*	Record Qualifier	Free or standardized text describing the condition of the specimen e.g. HEMOLYZED, ICTERIC, LIPEMIC etc.	Perm	SDTM 2.2.3
LBMETHOD	Method of Test or Examination	Char	*	Record Qualifier	Method of the test or examination. Examples: EIA (Enzyme Immunoassay), ELECTROPHORESIS, DIPSTICK	Perm	SDTM 2.2.3
LBBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be “Y” or null.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
LBFAST	Fasting Status	Char	(NY)	Record Qualifier	Indicator used to identify fasting status such as Y, N, U, or null if not relevant.	Perm	SDTM 2.2.3, SDTMIG Appendix C1
LBDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records that represent the average of other records, or do not come from the CRF, or are not as originally received or collected are examples of records that might be derived for the submission datasets. If LBDRVFL=Y, then LBORRES may be null, with LBSTRESC, and (if numeric) LBSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1
LBTOX	Toxicity	Char	*	Variable Qualifier	Description of toxicity quantified by LBTOXGR. The sponsor is expected to provide the name of the scale and version used to map the terms, utilizing the define.xml external codelist attributes.	Perm	SDTM 2.2.3
LBTOXGR	Standard Toxicity Grade	Char	*	Variable Qualifier	Records toxicity grade value using a standard toxicity scale (such as the NCI CTCAE). If value is from a numeric scale, represent only the number (e.g., “2” and not “Grade 2”).	Perm	SDTM 2.2.3

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter 2. May be used in addition to VISITNUM and/or VISITDY	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
LBDTC	Date/Time of Specimen Collection	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2 SDTMIG 4.1.4.8
LBENDTC	End Date/Time of Specimen Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
LBDY	Study Day of Specimen Collection	Num		Timing	1. Study day of specimen collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
LBTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when specimen should be taken. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See LBTPTNUM and LBTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
LBTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of LBTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
LBELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned Elapsed time (in ISO 8601) relative to a planned fixed reference (LBTPTREF). This variable is useful where there are repetitive measures. Not a clock time or a date time variable. Represented as an ISO 8601 duration. Examples: "-PT15M" to represent the period of 15 minutes prior to the reference point indicated by LBTPTREF, or "PT8H" to represent the period of 8 hours after the reference point indicated by LBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3, SDTMIG 4.1.4.10
LBTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by LBELTM, LBTPTNUM, and LBTPT. Examples: PREVIOUS DOSE, PREVIOUS MEAL.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
LBRFTDTC	Date/Time of Reference Time Point	Char	ISO 8601	Timing	Date/time of the reference time point, LBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.3.1 ASSUMPTIONS FOR LABORATORY TEST RESULTS DOMAIN MODEL

1. LB Definition: This domain captures laboratory data collected on the CRF or received from a central provider or vendor
2. For lab tests that do not have continuous numeric results (e.g., urine protein as measured by dipstick, descriptive tests such as urine color), LBSTNRC could be populated either with normal range values that are character in an ordinal scale (e.g., "NEGATIVE to TRACE') or a delimited set of values that are considered to be normal (e.g., "YELLOW", "AMBER"). LBORNRLO, LBORNRHI, LBSTNRLO, and LBSTNRHI should be null for these types of tests.
3. LBNRIND can be added to indicate where a result falls with respect to reference range defined by LBORNRLO and LBORNRHI. Examples: HIGH, LOW. Clinical significance would be represented as described in Section 4.1.5.5 as a record in SUPPLB with a QNAM of LBCLSIG (see also LB Example 1 below).
4. For lab tests where the specimen is collected over time, i.e., 24-hour urine collection, the start date/time of the collection goes into LBDTC and the end date/time of collection goes into LBENDTC. See Assumption 4.1.4.8.
5. The following Qualifiers would not generally be used in LB: --BODSYS, --SEV.
6. A value derived by a central lab according to their procedures is considered collected rather than derived. See Section 4.1.1.8.1.

6.3.3.2 EXAMPLES FOR LABORATORY TEST RESULTS DOMAIN MODEL

Example 1:

Row 1:	Shows a value collected in one unit, but converted to selected standard unit. See Section 4.1.5.1 for additional examples for the population of Result Qualifiers.
Rows 2-4:	Show two records (rows 2 and 3) for Alkaline Phosphatase done at the same visit, one day apart. Row 4 shows how to create a derived record (average of the records 2 and 3) and flagged derived (LBDRVFL = "Y") and as the record to use as baseline (LBBLFL = "Y").
Rows 6 and 7:	Show a suggested use of the LBSCAT variable. It could be used to further classify types of tests within a laboratory panel (i.e., "DIFFERENTIAL").
Row 9:	Shows the proper use of the LBSTAT variable to indicate "NOT DONE", where a reason was collected when a test was not done.
Row 10:	The subject had cholesterol measured. The normal range for this test is <200 mg/dL. Note that the sponsor has decided to make LBSTNRHI =199 however another sponsor may have chosen a different value.
Row 12:	Shows use of LBSTNRC for Urine Protein that is not reported as a continuous numeric result.

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Row	STUDYID	DOMAIN	USUBJID	LBSEQ	LBTESTCD	LBTEST	LBCAT	LBSCAT	LBORRES	LBORRESU	LBORNRLO	LBORNRHI	LBSTRESC	LBSTRESN
1	ABC	LB	ABC-001-001	1	ALB	Albumin	CHEMISTRY		30	g/L	35	50	3.0	3.0
2	ABC	LB	ABC-001-001	2	ALP	Alkaline Phosphatase	CHEMISTRY		398	IU/L	40	160	398	398
3	ABC	LB	ABC-001-001	3	ALP	Alkaline Phosphatase	CHEMISTRY		350	IU/L	40	160	350	350
4	ABC	LB	ABC-001-001	4	ALP	Alkaline Phosphatase	CHEMISTRY						374	374
5	ABC	LB	ABC-001-001	5	WBC	Leukocytes	HEMATOLOGY		5.9	10^9/L	4	11	5.9	5.9
6	ABC	LB	ABC-001-001	6	LYMLE	Lymphocytes	HEMATOLOGY	DIFFERENTIAL	6.7	%	25	40	6.7	6.7
7	ABC	LB	ABC-001-001	7	NEUT	Neutrophils	HEMATOLOGY	DIFFERENTIAL	5.1	10^9/L	2	8	5.1	5.1
8	ABC	LB	ABC-001-001	8	PH	pH	URINALYSIS		7.5		5.0	9.0	7.5	
9	ABC	LB	ABC-001-001	9	ALB	Albumin	CHEMISTRY							
10	ABC	LB	ABC-001-001	10	CHOL	Cholesterol	CHEMISTRY		229	mg/dL	0	<200	229	229
11	ABC	LB	ABC-001-001	11	WBC	Leukocytes	HEMATOLOGY		5.9	10^9/L	4	11	5.9	5.9
12	ABC	LB	ABC-001-001	12	PROT	Protein	URINALYSIS		MODERATE				MODERATE	

Note that the use of 10^9 as a unit is not a standard representation.

Row	LBSTRESU	LBSTNRLO	LBSTNRHI	LBSTRNRC	LBNRIND	LB STAT	LBREASND	LBBLFL	LBFAST	LBDRVFL	VISITNUM	VISIT	LBDTC
1 (cont)	g/dL	3.5	5		LOW			Y	Y		1	Week 1	1999-06-19
2 (cont)	units/L	40	160						Y		1	Week 1	1999-06-19
3 (cont)	units/L	40	160						Y		1	Week 1	1999-06-20
4 (cont)	units/L	40	160					Y	Y	Y	1	Week 1	1999-06-19
5 (cont)	10^3/uL	4	11					Y	Y		1	Week 1	1999-06-19
6 (cont)	%	25	40		LOW			Y	Y		1	Week 1	1999-06-19
7 (cont)	10^9/L	2	8					Y	Y		1	Week 1	1999-06-19
8 (cont)		5.00	9.00					Y	Y		1	Week 1	1999-06-19
9 (cont)						NOT DONE	INSUFFICIENT SAMPLE				2	Week 2	1999-07-21
10 (cont)	mg/dL	0	199								2	Week 2	1999-07-21
11 (cont)	10^3/uL	4	11						Y		2	Week 2	1999-07-21
12 (cont)				NEGATIVE to TRACE	ABNORMAL						2	Week 2	1999-07-21

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Row 1, 6: The SUPPLB dataset example shows clinical significance assigned by the investigator for test results where LBNRIND (reference range indicator) is populated.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	ABC	LB	ABC-001-001	LBSEQ	1	LBCLSIG	Clinical Significance	N	CRF	INVESTIGATOR
2	ABC	LB	ABC-001-001	LBSEQ	6	LBCLSIG	Clinical Significance	N	CRF	INVESTIGATOR

Example 2

Rows 1: Shows an example of a pre-dose urine collection interval (from 4 hours prior to dosing until 15 minutes prior to dosing) with a negative value for LBELTM that reflects the end of the interval in reference to the fixed reference LBTPTREF, the date of which is recorded in LBRFTDTC.

Rows 2 and 3: Show an example of post-dose urine collection intervals with values for LBELTM that reflect the end of the intervals in reference to the fixed reference LBTPTREF, the date of which is recorded in LBRFTDTC.

	STUDYID	DOMAIN	USUBJID	LBSEQ	LBTESTCD	LBTEST	LBCAT	LBORRES	LBORRESU	LBORNRLO	LBORNRHI
Row 1	ABC	LB	ABC-001-001	1	GLUCOSE	Glucose	URINALYSIS	7	mg/dL	1	15
Row 2	ABC	LB	ABC-001-001	2	GLUCOSE	Glucose	URINALYSIS	11	mg/dL	1	15
Row 3	ABC	LB	ABC-001-001	3	GLUCOSE	Glucose	URINALYSIS	9	mg/dL	1	15

	LBSTRESC	LBSTRESN	LBSTRESU	LBSTNRLO	LBSTNRHI	LBNRIND	VISIT	VISITNUM
Row 1 (cont)	0.38	0.38	mmol/L	0.1	0.8	NORMAL	INITIAL DOSING	2
Row 2 (cont)	0.61	0.61	mmol/L	0.1	0.8	NORMAL	INITIAL DOSING	2
Row 3 (cont)	0.5	0.5	mmol/L	0.1	0.8	NORMAL	INITIAL DOSING	2

	LBDTC	LBENDTC	LBTPT	LBTPTNUM	LBELTM	LBTPTREF	LBRFTDTC
Row 1 (cont)	1999-06-19T04:00	1999-06-19T07:45	Pre-dose	1	-PT15M	Dosing	1999-06-19T08:00
Row 2 (cont)	1999-06-19T08:00	1999-06-19T16:00	0-8 hours after dosing	2	PT8H	Dosing	1999-06-19T08:00
Row 3 (cont)	1999-06-19T16:00	1999-06-20T00:00	8-16 hours after dosing	3	PT16H	Dosing	1999-06-19T08:00

Example 3:

This is an example of pregnancy test records, one with a result and one with no result because the test was not performed due to the subject being male.

Row 1: Shows an example of a pregnancy test record that returns a result of "-" (negative sign) in LBORRES and is standardized to the text value "NEGATIVE" in LBSTRESC

Row 2: Show an example of a pregnancy test that was not performed because the subject was male, and the sponsor felt it was necessary to report a record documenting the reason why the test was not performed, rather then simply excluding the record.

Row	STUDYID	DOMAIN	USUBJID	LBSEQ	LBTESTCD	LBTEST	LBCAT	LBORRES	LBORRESU
1	ABC	LB	ABC-001-001	1	HCG	Choriogonadotropin Beta	CHEMISTRY	-	
2	ABC	LB	ABC-001-002	1	HCG	Choriogonadotropin Beta	CHEMISTRY		

Row	LBORNRLO	LBORNRHI	LBSTRESC	LBSTRESN	LBSTRESU	LBSTNRLO	LBSTRNHI	LBNRIND
1 (cont)			NEGATIVE					
2 (cont)								

Row	LBSTAT	LBREASND	VISIT	VISITNUM	LBDTC
1 (cont)			BASELINE	1	1999-06-19T04:00
2 (cont)	NOT DONE	NOT APPLICABLE (SUBJECT MALE)	BASELINE	1	1999-06-24T08:00

6.3.4 PHYSICAL EXAMINATION — PE

pe.xpt, Physical Examination — Findings, Version 3.1.2. One record per body system or abnormality per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	PE	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
PESEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
PEGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PESPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a CRF.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PETESTCD	Body System Examined Short Name	Char	*	Topic	Short name of the measurement, test, or examination described in PETEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in PETESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). PETESTCD cannot contain characters other than letters, numbers, or underscores.	Req	SDTM 2.2.3, SDTMIG 4.1.1.9, SDTMIG 4.1.2.1
PETEST	Body System Examined	Char	*	Synonym Qualifier	Verbatim term part of the body examined. The value in PETEST cannot be longer than 40 characters. Examples: Cardiovascular and Respiratory. For subject-level exam, value should be "Physical Examination".	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
PEMODIFY	Modified Reported Term	Char		Synonym Qualifier	If PEORRES is modified as part of a defined procedure, then PEMODIFY will contain the modified text.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.6
PECAT	Category for Examination	Char	*	Grouping Qualifier	Used to define a category of examination. Examples: GENERAL, NEUROLOGICAL.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
PESCAT	Subcategory for Examination	Char	*	Grouping Qualifier	A further categorization of the examination. Used if needed to add further detail to PECAT.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
PEBODSYS	Body System or Organ Class	Char		Result Qualifier	1. Body system or organ class (MedDRA SOC) that is involved in a measurement from the standard hierarchy (e.g., MedDRA).	Perm	SDTM 2.2.3, SDTMIG 4.1.3.5

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
PEORRES	Verbatim Examination Finding	Char		Result Qualifier	Text description of any abnormal findings. If the examination was completed and there were no abnormal findings, the value should be NORMAL. If the examination was not performed on a particular body system, or at the subject level, then the value should be null, and NOT DONE should appear in PESTAT.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.6
PEORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for PEORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2
PESTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	If there are findings for a body system, then either the dictionary preferred term (if findings are coded using a dictionary) or PEORRES (if findings are not coded) should appear here. If PEORRES is null, PESTRESC should be null	Exp	SDTM 2.2.3, SDTMIG 4.1.3.6, SDTMIG 4.1.5.1
PESTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate exam not done. Should be null if a result exists in PEORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
PEREASND	Reason Not Examined	Char		Record Qualifier	Describes why an examination was not performed or why a body system was not examined. Example: SUBJECT REFUSED. Used in conjunction with STAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
PELOC	Location of Physical Exam Finding	Char	(LOC)	Record Qualifier	Can be used to specify where a physical exam finding occurred. Example: LEFT ARM for skin rash.	Perm	SDTM 2.2.3 SDTMIG 4.1.1.9
PEMETHOD	Method of Test or Examination	Char	*	Record Qualifier	Method of the test or examination. Examples: XRAY, MRI.	Perm	SDTM 2.2.3
PEEVAL	Evaluator	Char	*	Record Qualifier	Role of the person who provided the evaluation. Used only for results that are subjective (e.g., assigned by a person or a group). Should be null for records that contain collected or derived data. Examples: INVESTIGATOR, ADJUDICATION COMMITTEE, VENDOR.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.4
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5 SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
PEDTC	Date/Time of Examination	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
PEDY	Study Day of Examination	Num		Timing	1. Study day of physical exam, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.4.1 ASSUMPTIONS FOR PHYSICAL EXAMINATION DOMAIN MODEL

1. PE Definition: Data that captures findings about physical exams. This could be information about which body systems that were examined and specific abnormalities were collected.
2. The PE domain provides an example where the result, PEORRES, is coded. This is in contrast to Events and Interventions domains (e.g., AE, CM, and MH), in which the topic variable (AETERM, CMTRT, and EXTRT, respectively) is the one coded.
3. The following Qualifiers would not generally be used in PE: --XFN, --NAM, --LOINC, --FAST, --TOX, --TOXGR.

6.3.4.2 EXAMPLES FOR PHYSICAL EXAMINATION DOMAIN MODEL

The example shows data for one subject collected at two different visits. In all of the records except 8 and 13 the data comes from the general physical examination. In this case PECAT is "GENERAL". Additional data collected about an ophthalmologic examination is also added to this domain.

Row 1: Shows how PESTRESC is populated if result is "NORMAL".

Row 2: Shows the proper use of the --STAT variable to indicate "NOT DONE", and when PEREASND is used to indicate why a body system (PETEST) was not examined.

Rows 4-6: Show how PESPID is used to show the sponsor-defined identifier, which in this case is a CRF sequence number used for identifying abnormalities within a body system.

Rows 4-7: Show how PESTRESC is populated if abnormality is dictionary coded.

Rows 8, 13: Show how the PECAT variable can be used to indicate a different type of physical examination. In this case, the ophthalmologic examination may have been collected in a separate dataset in the operational database.

Row	STUDYID	DOMAIN	USUBJID	PESEQ	PESPID	PETESTCD	PETEST	PECAT	PELOC	PEBODSYS
1	ABC	PE	ABC-001-001	1	1	HEAD	Head	GENERAL		
2	ABC	PE	ABC-001-001	2	1	RESP	Respiratory	GENERAL		
3	ABC	PE	ABC-001-001	3	1	ENT	Ear/nose/throat	GENERAL		
4	ABC	PE	ABC-001-001	4	1	SKIN	Skin	GENERAL	FACE	SKIN
5	ABC	PE	ABC-001-001	5	2	SKIN	Skin	GENERAL	HANDS	SKIN
6	ABC	PE	ABC-001-001	6	3	SKIN	Skin	GENERAL	LEFT ARM	SKIN
7	ABC	PE	ABC-001-001	7	1	CV	Cardiovascular	GENERAL		CARDIOVASCULAR
8	ABC	PE	ABC-001-001	8	1	FUNDOSCP	Fundoscopic	OPHTHAMOLOGIC		
9	ABC	PE	ABC-001-001	9	1	RESP	Respiratory	GENERAL		
10	ABC	PE	ABC-001-001	10	1	ENT	Ear/nose/throat	GENERAL		
11	ABC	PE	ABC-001-001	11	1	NECK	Neck	GENERAL		
12	ABC	PE	ABC-001-001	12	1	CARDIO	Cardiovascular	GENERAL		
13	ABC	PE	ABC-001-001	13	1	FUNDOSCP	Fundoscopic	OPHTHAMOLOGIC		

Row	PEORRES	PESTRESC	PESTAT	PEREASND	VISITNUM	VISIT	VISITDY	PEDTC	PEDY
1 (cont)	NORMAL	NORMAL			1	BASELINE	1	1999-06-06	-3
2 (cont)			NOT DONE	INVESTIGATOR ERROR	1	BASELINE	1	1999-06-06	-3
3 (cont)	NORMAL	NORMAL			1	BASELINE	1	1999-06-06	-3
4 (cont)	ACNE	ACNE NOS			1	BASELINE	1	1999-06-06	-3
5 (cont)	ALLERGIC REACTION	DERMATITIS			1	BASELINE	1	1999-06-06	-3
6 (cont)	SKINRASH	RASH			1	BASELINE	1	1999-06-06	-3
7 (cont)	HEART MURMUR	CARDIAC MURMUR			1	BASELINE	1	1999-06-06	-3
8 (cont)	NORMAL	NORMAL			1	BASELINE	1	1999-06-06	-3
9 (cont)	NORMAL	NORMAL			2	VISIT 1	45	1999-07-21	45
10 (cont)	NORMAL	NORMAL			2	VISIT 1	45	1999-07-21	45
11 (cont)	NORMAL	NORMAL			2	VISIT 1	45	1999-07-21	45
12 (cont)	NORMAL	NORMAL			2	VISIT 1	45	1999-07-21	45
13 (cont)	NORMAL	NORMAL			2	VISIT 1	45	1999-07-21	45

6.3.5 QUESTIONNAIRE — QS

qs.xpt, Questionnaires — Findings, Version 3.1.2. One record per questionnaire per question per time point per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	QS	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
QSSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
QSGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
QSSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Question number on a questionnaire.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
QSTESTCD	Question Short Name	Char	*	Topic	Topic variable for QS. Short name for the value in QSTEST, which can be used as a column name when converting the dataset from a vertical format to a horizontal format. The value in QSTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). QSTESTCD cannot contain characters other than letters, numbers, or underscores. Examples: COG01, GH1, PF1.	Req	SDTM 2.2.3, SDTMIG 4.1.1.9 SDTMIG 4.1.2.1
QSTEST	Question Name	Char		Synonym Qualifier	Verbatim name of the question or group of questions used to obtain the measurement or finding. The value in QSTEST cannot be longer than 40 characters. Example: In General, How is Your Health?	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
QSCAT	Category of Question	Char	*	Grouping Qualifier	Used to define a category of related records that will be meaningful to the Reviewer. Examples: HAMILTON DEPRESSION SCALE, SF36, ADAS.	Req	SDTM 2.2.3, SDTMIG 4.1.2.6
QSSCAT	Subcategory for Question	Char	*	Grouping Qualifier	A further categorization of the questions within the category. Examples: MENTAL HEALTH DOMAIN, DEPRESSION DOMAIN, WORD RECALL.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
QSORRES	Finding in Original Units	Char		Result Qualifier	Finding as originally received or collected (e.g. RARELY, SOMETIMES). When sponsors apply codelist to indicate the code values are statistically meaningful standardized scores, which are defined by sponsors or by valid methodologies such as SF36 questionnaires, QSORRES will contain the decode format, and QSSTRESC and QSSTRESN may contain the standardized code values or scores.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
QSORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for QSORRES, such as minutes or seconds or the units associated with a visual analog scale.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
QSSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the finding for all questions or sub-scores, copied or derived from QSORRES in a standard format or standard units. QSSTRESC should store all findings in character format; if findings are numeric, they should also be stored in numeric format in QSSTRESN. If question scores are derived from the original finding, then the standard format is the score. Examples: 0, 1. When sponsors apply codelist to indicate the code values are statistically meaningful standardized scores, which are defined by sponsors or by valid methodologies such as SF36 questionnaires, QSORRES will contain the decode format, and QSSTRESC and QSSTRESN may contain the standardized code values or scores.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
QSSTRESN	Numeric Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric findings in standard format; copied in numeric format from QSSTRESC. QSSTRESN should store all numeric results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
QSSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for QSSTRESC or QSSTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
QSSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate a questionnaire or response to a questionnaire was not done. Should be null if a result exists in QSORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
QSREASND	Reason Not Performed	Char		Record Qualifier	Describes why a question was not answered. Used in conjunction with QSSTAT when value is NOT DONE. Example: SUBJECT REFUSED.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
QSBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be “Y” or null.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
QSDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records that represent the average of other records or questionnaire sub-scores that do not come from the CRF are examples of records that would be derived for the submission datasets. If QSDRVFL=Y, then QSORRES may be null with QSSTRESC and (if numeric) QSSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
QSDTC	Date/Time of Finding	Char	ISO 8601	Timing	Date of questionnaire.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2 SDTMIG 4.1.4.8
QSDY	Study Day of Finding	Num		Timing	1. Study day of finding collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
QSTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when questionnaire should be administered. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See QSTPTNUM and QSTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
QSTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of QSTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
QSELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned Elapsed time (in ISO 8601) relative to a planned fixed reference (QSTPTREF). This variable is useful where there are repetitive measures. Not a clock time or a date time variable. Represented as an ISO 8601 duration. Examples: “-PT15M” to represent the period of 15 minutes prior to the reference point indicated by QSTPTREF, or “PT8H” to represent the period of 8 hours after the reference point indicated by QSTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3, SDTMIG 4.1.4.10
QSTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by QSELTM, QSTPTNUM, and QSTPT. Examples: PREVIOUS DOSE, PREVIOUS MEAL.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
QSRFTDTC	Date/Time of Reference Time Point	Char	ISO 8601	Timing	Date/time of the reference time point, LBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
QSEVLINT	Evaluation Interval	Char	ISO 8601	Timing	Evaluation Interval associated with a QSTEST question represented in ISO 8601 character format. Example: "-P2Y" to represent an interval of 2 years in the question "Have you experienced any episodes in the past 2 years?"	Perm	SDTM 2.2.5

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.5.1 ASSUMPTIONS FOR QUESTIONNAIRE DOMAIN MODEL

1. QS Definition: A written or electronic survey instrument comprised of a series of questions, designed to measure a specific item or set of items. Questionnaires are research instruments that usually have a documented method of administration, a standard format for data collection, and documented methods for scoring, analysis, and interpretation of results. A questionnaire is often analyzed by applying a numeric scoring system to question responses, where each question response is assigned a specific numeric "score" that can be totaled to give an overall score (and possibly sectional sub-scores). Questionnaire data may include, but are not limited to subject reported outcomes and validated or non-validated questionnaires. The QS domain is not intended for use in submitting a set of questions grouped on the CRF for convenience of data capture. Some diaries are vehicles for collecting data for a validated questionnaire while others may simply facilitate capture of routine study data. When objective numeric data with result Qualifiers are collected in a questionnaire or diary format, the sponsor should consider whether this data actually belongs in a separate (new or existing) domain. For example, if the subject records the number of caffeinated beverages consumed each day in a diary, this information might be more appropriate for the Substance Use domain. The names of the questionnaires should be described under the variable QSCAT in the questionnaire domain. These could be either abbreviations or longer names, at the sponsor's discretion until controlled terminology is developed. For example, Alzheimer's Disease Assessment Scale (ADAS), SF-36 Health Survey (SF36), Positive and Negative Syndrome Scale (PANSS).
2. Names of subcategories for groups of items/questions could be described under QSSCAT.
3. Derived information such as total scores and sub scores, etc., may be stored in the QS domain as derived records with appropriate category/subcategory names (QSSCAT), item names (QSTEST), and results (QSSTRESC, QSSTRESN). Derived records should be flagged by QSDRVFL. Single score measurements or results may go into questionnaire (e.g., APACHE Score, ECOG), but the sponsor should consider if the results should go into a more appropriate domain.
4. The following Qualifiers would not generally be used in QS: --POS, --BODSYS, --ORNRLO, --ORNRHI, --STNRLO, --STNRHI, --STRNC, --NRIND, --RESCAT, --XFN, --LOINC, --SPEC, --SPCCND, --LOC, --METHOD, --FAST, --TOX, --TOXGR, --SEV.
5. The sponsor is expected to provide information about the version used for each validated questionnaire in the metadata (using the Comments column in the define.xml). This could be provided as value-level metadata for QSCAT. If more than one version of a questionnaire is used in a study, the version used for each record should be specified in the Supplemental Qualifiers datasets, as described in Section 8.4. The sponsor is expected to provide information about the scoring rules in the metadata.
6. If the verbatim question text is > 40 characters, put meaningful text in QSTEST and describe the full text in the study metadata. See section 4.1.5.3.1 for further information.

6.3.5.2 EXAMPLES FOR QUESTIONNAIRE DOMAIN MODEL

Example 1:

This is an example of data from a questionnaire from one subject at one visit with standard text answers that have an associated score. In this example the subject answered all of the questions in Rows 1-4 and Rows 7-9. The standard text (e.g., very good) translates to a score of 4.4. The value of 4.4 is populated in both QSSTRESN and QSSTRESC. Since this is the baseline data there is a flag in all records in QSBLFL. The values in Rows 5, 6, 10, and 11 are derived from previous records and are flagged with a Y in QSDRVFL. The example shows how the textual answer is handled in the QSORRES variable, while the QSSTRESC and QSSTRESN contain the standardized score value.

Rows 5, 6, 10, 11 Show derived records. Notice how QSORRES is blank for derived records because there is no corresponding text value for the numeric value shown (see Section 4.1.5.1).

Row	STUDYID	DOMAIN	USUBJID	QSSEQ	QSTESTCD	QSTEST	QSCAT	QSSCAT
1	STUDYX	QS	P0001	1	GH1	Health	SF36	GENERAL HEALTH
2	STUDYX	QS	P0001	2	GH11A	Sick a little easier	SF36	GENERAL HEALTH
3	STUDYX	QS	P0001	3	GH11B	Healthy as anybody	SF36	GENERAL HEALTH
4	STUDYX	QS	P0001	4	GH11C	Expect health to get worse	SF36	GENERAL HEALTH
5	STUDYX	QS	P0001	5	GH	SF-36 General health perceptions	SF36	GENERAL HEALTH
6	STUDYX	QS	P0001	6	GHINDEX	SF-36 General health perceptions (0-100)	SF36	GENERAL HEALTH
7	STUDYX	QS	P0001	7	RP4A	Phys. Health-cut down time spent	SF36	ROLE-PHYSICAL
8	STUDYX	QS	P0001	8	RP4B	Phys. Health-accomplished less	SF36	ROLE-PHYSICAL
9	STUDYX	QS	P0001	9	RP4C	Phys. Health-limit kind of work	SF36	ROLE-PHYSICAL
10	STUDYX	QS	P0001	10	RP	SF-36 Role-physical	SF36	ROLE-PHYSICAL
11	STUDYX	QS	P0001	11	RPINDEX	SF-36 Role-physical (0-100)	SF36	ROLE-PHYSICAL

Row	QSORRES	QSSTRESC	QSSTRESN	QSBLFL	QSDRVFL	VISITNUM	VISIT	QSDTC	QSDY
1 (cont)	VERY GOOD	4.4	4.4	Y		2	BASELINE	2001-03-28	-2
2 (cont)	MOSTLY FALSE	4	4	Y		2	BASELINE	2001-03-28	-2
3 (cont)	MOSTLY TRUE	4	4	Y		2	BASELINE	2001-03-28	-2
4 (cont)	DEFINITELY FALSE	5	5	Y		2	BASELINE	2001-03-28	-2
5 (cont)		21.4	21.4	Y	Y	2	BASELINE	2001-03-28	-2
6 (cont)		82	82	Y	Y	2	BASELINE	2001-03-28	-2
7 (cont)	NO	2	2	Y		2	BASELINE	2001-03-28	-2
8 (cont)	NO	2	2	Y		2	BASELINE	2001-03-28	-2
9 (cont)	NO	2	2	Y		2	BASELINE	2001-03-28	-2
10 (cont)		8	8	Y	Y	2	BASELINE	2001-03-28	-2
11 (cont)		100	100	Y	Y	2	BASELINE	2001-03-28	-2

Example 2:

This example shows data from one subject collected at one visit for a questionnaire with standard text answers.

Rows 1-10: Answers are not associated with a numeric score, so QSSTRESC is copied from QSORRES, and QSSTRESN is null. Notice that QSTPTNUM is used to distinguish the same question being asked at various time points on the same date where no time was collected. For more information on time points, see Section 4.1.4.10. Note that QSTPTREF is not used in the examples because QSTPTNUM is being used only to organize the results by type of question, and the timing to a reference point is not important in this study. In this study, QSTPTNUM is an arbitrary number, sponsor defined to aid in sorting

Row 11: Shows a derived record. Notice how QSORRES is blank for derived records because there is no corresponding text value for the numeric value shown (see Section 4.1.5.1). The derived record, however, does have a derived value in QSSTRESN.

Row	STUDYID	DOMAIN	USUBJID	QSSEQ	QSTESTCD	QSTEST	QSCAT	QSSCAT	QSORRES	QSSTRESC
1	STUDYX	QS	P0001	1	COG01T02	ARM	ADAS	WORD RECALL	NO	NO
2	STUDYX	QS	P0001	2	COG01T02	ARM	ADAS	WORD RECALL	NO	NO
3	STUDYX	QS	P0001	3	COG01T02	ARM	ADAS	WORD RECALL	NO	NO
4	STUDYX	QS	P0001	4	COG01T03	BUTTER	ADAS	WORD RECALL	NO	NO
5	STUDYX	QS	P0001	5	COG01T03	BUTTER	ADAS	WORD RECALL	NO	NO
6	STUDYX	QS	P0001	6	COG01T03	BUTTER	ADAS	WORD RECALL	NO	NO
7	STUDYX	QS	P0001	7	COG01T04	CABIN	ADAS	WORD RECALL	NO	NO
8	STUDYX	QS	P0001	8	COG01T04	CABIN	ADAS	WORD RECALL	NO	NO
9	STUDYX	QS	P0001	9	COG01T04	CABIN	ADAS	WORD RECALL	NO	NO
10	STUDYX	QS	P0001	10	COG01T09	GRASS	ADAS	WORD RECALL	NO	NO
11	STUDYX	QS	P0001	11	COG01X	WORD RECALL	ADAS	WORD RECALL		9

Row	QSSTRESN	QSBLFL	QSDRVFL	VISITNUM	VISIT	VISITYDY	QSDTC	QSDY	QSTPTNUM
1 (cont)				1	SCREENING	-14	2001-03-20	-10	1
2 (cont)				1	SCREENING	-14	2001-03-20	-10	2
3 (cont)				1	SCREENING	-14	2001-03-20	-10	3
4 (cont)				1	SCREENING	-14	2001-03-20	-10	1
5 (cont)				1	SCREENING	-14	2001-03-20	-10	2
6 (cont)				1	SCREENING	-14	2001-03-20	-10	3
7 (cont)				1	SCREENING	-14	2001-03-20	-10	1
8 (cont)				1	SCREENING	-14	2001-03-20	-10	2
9 (cont)				1	SCREENING	-14	2001-03-20	-10	3
10 (cont)				1	SCREENING	-14	2001-03-20	-10	1
11 (cont)	9		Y	1	SCREENING	-14	2001-03-20	-10	

6.3.6 SUBJECT CHARACTERISTICS — SC

sc.xpt, Subject Characteristics — Findings, Version 3.1.2. One record per characteristic per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	SC	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
SCSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
SCGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
SCSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
SCTESTCD	Subject Characteristic Short Name	Char	(SCCD)	Topic	Short name of the measurement, test, or examination described in SCTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in SCTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). SCTESTCD cannot contain characters other than letters, numbers, or underscores. Example: SUBJINIT, EYECD.	Req	SDTM 2.2.3, SDTMIG 4.1.1.9 SDTMIG 4.1.2.1 SDTMIG Appendix C1
SCTEST	Subject Characteristic	Char	*	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. The value in SCTEST cannot be longer than 40 characters. Examples: Subject Initials, Eye Color.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
SCCAT	Category for Subject Characteristic	Char	*	Grouping Qualifier	Used to define a category of related records.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
SCSCAT	Subcategory for Subject Characteristic	Char	*	Grouping Qualifier	A further categorization of the subject characteristic.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
SCORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the subject characteristic as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
SCORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original Unit in which the data were collected. The unit for SCORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2 SDTMIG 4.1.5.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
SCSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from SCORRES in a standard format or standard units. SCSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in SCSTRESN. For example, if a test has results "NONE", "NEG", and "NEGATIVE" in SCORRES and these results effectively have the same meaning, they could be represented in standard format in SCSTRESC as "NEGATIVE".	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
SCSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from SCSTRESC. SCSTRESN should store all numeric test results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
SCSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for SCSTRESC or SCSTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
SCSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that the measurement was not done. Should be null if a result exists in SCORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
SCREASND	Reason Not Performed	Char		Record Qualifier	Describes why the observation has no result. Example: subject refused. Used in conjunction with SCSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
SCDTC	Date/Time of Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.2 SDTMIG 4.1.4.8
SCDY	Study Day of Examination	Num		Timing	1. Study day of collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.6.1 ASSUMPTIONS FOR SUBJECT CHARACTERISTICS DOMAIN MODEL

1. SC Definition: Subject Characteristics is for data not collected in other domains that are subject-related. Examples: subject initials, eye color, childbearing status, etc.

2. The structure for demographic data is fixed and includes date of birth, age, sex, race, ethnicity and country. The structure of subject characteristics is based on the Findings general observation class and is an extension of the demographics data. Subject Characteristics consists of data that is collected once per subject (per test). SC contains data that is either not normally expected to change during the trial or whose change is not of interest after the initial collection. Sponsor should ensure that data considered for submission in SC do not actually belong in another domain.

3. The following Qualifiers would not generally be used in SC: --MODIFY, --POS, --BODSYS, --ORNRLO, --ORNRHI, --STNRLO, --STNRHI, --STNRC, --NRIND, --RESCAT, --XFN, --NAM, --LOINC, --SPEC, --SPCCND, --METHOD, --BLFL, --FAST, --DRVRL, --TOX, --TOXGR, --SEV.

6.3.6.2 EXAMPLE FOR SUBJECT CHARACTISTICS DOMAIN MODEL

The example below shows data that is collected once per subject and does not fit into the Demographics domain. For this example the eye color and initials were collected.

Row	STUDYID	DOMAIN	USUBJID	SCSEQ	SCTESTCD	SCTEST	SCORRES	SCSTRESC	SCDTC
1	ABC	SC	ABC-001-001	1	EYECD	Eye Color	BROWN	BROWN	1999-06-19
2	ABC	SC	ABC-001-001	2	SUBJINIT	Subject Initials	HLT	HLT	1999-06-19
3	ABC	SC	ABC-001-002	1	EYECD	Eye Color	BLUE	BLUE	1999-03-19
4	ABC	SC	ABC-001-002	2	SUBJINIT	Subject Initials	BAM	BAM	1999-03-19
5	ABC	SC	ABC-001-003	1	EYECD	Eye Color	GREEN	GREEN	1999-05-03
6	ABC	SC	ABC-001-003	2	SUBJINIT	Subject Initials	ALM	ALM	1999-05-03
7	ABC	SC	ABC-002-001	1	EYECD	Eye Color	HAZEL	HAZEL	1999-06-14
8	ABC	SC	ABC-002-001	2	SUBJINIT	Subject Initials	CQH	CQH	1999-06-14

6.3.7 VITAL SIGNS — VS

vs.xpt, Vital Signs — Findings, Version 3.1.2. One record per vital sign measurement per time point per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	VS	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
VSSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
VSGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
VSSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
VSTESTCD	Vital Signs Test Short Name	Char	(VSTESTCD)	Topic	Short name of the measurement, test, or examination described in VSTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in VSTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST"). VSTESTCD cannot contain characters other than letters, numbers, or underscores. Examples: SYSBP, DIABP, BMI.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8, SDTMIG 4.1.2.1, SDTMIG Appendix C1
VSTEST	Vital Signs Test Name	Char	(VSTEST)	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. The value in VSTEST cannot be longer than 40 characters. Examples: Systolic Blood Pressure, Diastolic Blood Pressure, Body Mass Index.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1, SDTMIG Appendix C1
VSCAT	Category for Vital Signs	Char	*	Grouping Qualifier	Used to define a category of related records.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
VSSCAT	Subcategory for Vital Signs	Char	*	Grouping Qualifier	A further categorization of a measurement or examination.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
VSPOS	Vital Signs Position of Subject	Char	(POSITION)	Record Qualifier	Position of the subject during a measurement or examination. Examples: SUPINE, STANDING, SITTING.	Perm	SDTM 2.2.3
VSORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the vital signs measurement as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
VSORRESU	Original Units	Char	(VSRESU)	Variable Qualifier	Original units in which the data were collected. The unit for VSORRES. Examples: IN, LB, BEATS/MIN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2 SDTMIG 4.1.5.1, SDTMIG Appendix C1
VSSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from VSORRES in a standard format or standard units. VSSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in VSSTRESN. For example, if a test has results "NONE", "NEG", and "NEGATIVE" in VSORRES and these results effectively have the same meaning, they could be represented in standard format in VSSTRESC as "NEGATIVE".	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
VSSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from VSSTRESC. VSSTRESN should store all numeric test results or findings.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
VSSTRESU	Standard Units	Char	(VSRESU)	Variable Qualifier	Standardized unit used for VSSTRESC and VSSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1
VSSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that a vital sign measurement was not done. Should be null if a result exists in VSORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
VSREASND	Reason Not Performed	Char		Record Qualifier	Describes why a measurement or test was not performed. Examples: BROKEN EQUIPMENT or SUBJECT REFUSED. Used in conjunction with VSSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
VSLOC	Location of Vital Signs Measurement	Char	(LOC)	Record Qualifier	Location relevant to the collection of Vital Signs measurement. Example: LEFT ARM for blood pressure.	Perm	SDTM 2.2.3
VSBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be "Y" or null.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
VSDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records which represent the average of other records or which do not come from the CRF are examples of records that would be derived for the submission datasets. If VSDRVFL=Y, then VSORRES may be null, with VSSTRESC and (if numeric) VSSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VSDTC	Date/Time of Measurements	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
VSDY	Study Day of Vital Signs	Num		Timing	1. Study day of vital signs measurements, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
VSTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when measurement should be taken. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See VSTPTNUM and VSTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
VSTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of VSTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
VSELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned Elapsed time (in ISO 8601) relative to a planned fixed reference (VSTPTREF). This variable is useful where there are repetitive measures. Not a clock time or a date time variable. Represented as an ISO 8601 Duration. Examples: "-PT15M" to represent the period of 15 minutes prior to the reference point indicated by VSTPTREF, or "PT8H" to represent the period of 8 hours after the reference point indicated by VSTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3, SDTMIG 4.1.4.10
VSTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by VSELTM, VSTPTNUM, and VSTPT. Examples: PREVIOUS DOSE, PREVIOUS MEAL.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
VSRFTDTC	Date/Time of Reference Time Point	Char	ISO 8601	Timing	Date/time of the reference time point, LBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.7.1 ASSUMPTIONS FOR VITAL SIGNS DOMAIN MODEL

1. VS Definition: CRF data that captures measurements such as blood pressure, height, weight, pulse, and body temperature, or derived data such as body mass index.
2. In cases where the LOINC dictionary is used for Vital Sign tests, the permissible variable VSLOINC could be used. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes
3. If a reference range is available for a vital signs test, the variables VSORNRLO,VSORNRHI, VSNRIND from the Findings observation class may be added to the domain. VSORNRLO and VSORNRHI would represent the reference range , and VSNRIND would be used to indicate where a result falls in respect to the reference range (examples: HIGH, LOW). Clinical significance would be represented as described in Section 4.1.5.5 as a record in SUPPVS with a QNAM of VSCLSIG.
4. The following Qualifiers would not generally be used in VS: --BODSYS, --XFN, --SPEC, --SPCCND, --FAST, --TOX, --TOXGR.

6.3.7.2 EXAMPLE FOR VITAL SIGNS DOMAIN MODEL

The example below shows one subject with two visits, Baseline and Visit 1, including examples of both collected and derived baseline measurements.

Rows 1,2, 4,5, 8, 9: VSTPT and VSTPTNUM are populated since more than one measurement was taken at this visit.

Rows 3, 6: Show an example of a derived value that was not considered to be an original result. In this case the sponsor derived the value in a different variable in the operational database. VSTPT and VSTPTNUM are not populated for these derived records.

Rows 8, 9: Show two temperatures taken at the baseline visit. Row 9 has a "Y" in the VSBLFL to indicate it was used as the baseline measurement.

Row 14: Shows a value collected in one unit, but converted to selected standard unit.

Row 15: Shows the proper use of the --STAT variable to indicate "NOT DONE" where a reason was collected when a test was not done.

Row	STUDYID	DOMAIN	USUBJID	VSSEQ	VSTESTCD	VSTEST	VSPOS	VSORRES	VSORRESU	VSSTRESC	VSSTRESN	VSSTRESU
1	ABC	VS	ABC-001-001	1	SYSBP	Systolic Blood Pressure	SITTING	154	mmHg	154	154	mmHg
2	ABC	VS	ABC-001-001	2	SYSBP	Systolic Blood Pressure	SITTING	152	mmHg	152	152	mmHg
3	ABC	VS	ABC-001-001	3	SYSBP	Systolic Blood Pressure	SITTING			153	153	mmHg
4	ABC	VS	ABC-001-001	4	DIABP	Diastolic Blood Pressure	SITTING	44	mmHg	44	44	mmHg
5	ABC	VS	ABC-001-001	5	DIABP	Diastolic Blood Pressure	SITTING	48	mmHg	48	48	mmHg
6	ABC	VS	ABC-001-001	6	DIABP	Diastolic Blood Pressure	SITTING			46	46	mmHg
7	ABC	VS	ABC-001-001	7	PULSE	Pulse Rate	SITTING	72	bpm	72	72	bpm
8	ABC	VS	ABC-001-001	8	TEMP	Temperature		34.7	C	34.7	34.7	C
9	ABC	VS	ABC-001-001	9	TEMP	Temperature		36.2	C	36.2	36.2	C
10	ABC	VS	ABC-001-001	10	WEIGHT	Weight	STANDING	90.5	kg	90.5	90.5	kg
11	ABC	VS	ABC-001-001	11	HEIGHT	Height	STANDING	157	cm	157	157	cm
12	ABC	VS	ABC-001-001	12	SYSBP	Systolic Blood Pressure	SITTING	95	mmHg	95	95	mmHg
13	ABC	VS	ABC-001-001	13	DIABP	Diastolic Blood Pressure	SITTING	44	mmHg	44	44	mmHg
14	ABC	VS	ABC-001-001	14	TEMP	Temperature		97.16	F	36.2	36.2	C
15	ABC	VS	ABC-001-001	15	WEIGHT	Weight						

Row	VSSTAT	VSREASND	VSLOC	VSBLFL	VSDRVFL	VISIT	VISITNUM	VISITDY	VSDTC	VSDY	VSTPT	VSTPTNUM
1 (cont)			LEFT ARM			BASELINE	1	1	1999-06-19T08:45	1	BASELINE 1	1
2 (cont)			LEFT ARM			BASELINE	1	1	1999-06-19T09:00	1	BASELINE 2	2
3 (cont)			LEFT ARM	Y	Y	BASELINE	1	1	1999-06-19	1		
4 (cont)			LEFT ARM			BASELINE	1	1	1999-06-19T08:45	1	BASELINE 1	1
5 (cont)			LEFT ARM			BASELINE	1	1	1999-06-19T09:00	1	BASELINE 2	2
6 (cont)			LEFT ARM	Y	Y	BASELINE	1	1	1999-06-19	1		
7 (cont)			LEFT ARM	Y		BASELINE	1	1	1999-06-19	1		
8 (cont)			MOUTH			BASELINE	1	1	1999-06-19T08:45	1	BASELINE 1	1
9 (cont)			MOUTH	Y		BASELINE	1	1	1999-06-19T09:00	1	BASELINE 2	2
10 (cont)				Y		BASELINE	1	1	1999-06-19	1		
11 (cont)				Y		BASELINE	1	1	1999-06-19	1		
12 (cont)			LEFT ARM			VISIT 2	2	35	1999-07-21	33		
13 (cont)			LEFT ARM			VISIT 2	2	35	1999-07-21	33		
14 (cont)			MOUTH			VISIT 2	2	35	1999-07-21	33		
15 (cont)	NOT DONE	Subject refused				VISIT 2	2	35	1999-07-21	33		

6.3.8 DRUG ACCOUNTABILITY — DA

da.xpt, Drug Accountability — Findings, Version 3.1.2. One record per drug accountability finding per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study within the submission.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	DA	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Unique subject identifier within the submission.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
DASEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
DAGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
DAREFID	Reference ID	Char		Identifier	Internal or external identifier such as label number.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
DASPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Examples: Line number on the Drug Accountability page, drug label code.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
DATESTCD	Short Name of Accountability Assessment	Char	*	Topic	Short character value for DATEST used as a column name when converting a dataset from a vertical format to a horizontal format. The short value can be up to 8 characters and cannot begin with a number or contain characters other than letters, numbers or underscores. Example: DISPAMT, RETAMT.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8 SDTMIG 4.1.2.1
DATEST	Name of Accountability Assessment	Char	*	Synonym Qualifier	Verbatim name, corresponding to the topic variable, of the test or examination used to obtain the drug accountability assessment. The value in DATEST cannot be longer than 40 characters. Example: Dispensed Amount, Returned Amount.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
DACAT	Category of Assessment	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: STUDY MEDICATION, RESCUE MEDICATION.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
DASCAT	Subcategory of Assessment	Char	*	Grouping Qualifier	Used to define a further categorization level for a group of related records.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
DAORRES	Assessment Result in Original Units	Char		Result Qualifier	Result of the Drug Accountability assessment as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
DAORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Unit for DAORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
DASTRESC	Assessment Result in Std Format	Char		Result Qualifier	Contains the result value for all Drug Accountability assessments, copied or derived from DAORRES in a standard format or in standard units. DASTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in DASTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
DASTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from DASTRESC. DASTRESN should store all numeric test results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
DASTRESU	Assessment Standard Units	Char	(UNIT)	Variable Qualifier	Standardized units used for DASTRESC and DASTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1
DASTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that a drug accountability assessment was not done. Should be null or have a value of NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
DAREASND	Reason Not Performed	Char		Record Qualifier	Reason not done. Used in conjunction with DASTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter 2. May be used in addition to VISITNUM and/or VISITDY	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
DADTC	Date/Time of Accountability Assessment	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
DADY	Study Day of Accountability Assessment	Num		Timing	1. Study day of drug accountability assessment, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

**indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.8.1 ASSUMPTIONS FOR DRUG ACCOUNTABILITY DOMAIN MODEL

1. Definition: Drug Accountability is for data regarding the accountability of study drug, such as information on receipt, dispensing, return, and packaging.

2. One way a sponsor may choose to distinguish between different types of medications (e.g., study medication, rescue medication, run-in medication) is to use DACAT.
3. DAREFID and DASPID are both available for capturing label information.
4. The following Qualifiers would not generally be used in DA: --MODIFY, --POS, --BODSYS, --ORNRLO, --ORNRHI, --STNRLO, --STNRHI, --STNRC, --NRIND, --RESCAT, --XFN, --NAM, --LOINC, --SPEC, --SPCCND, --METHOD, --BLFL, --FAST, --DRVRL, --TOX, --TOXGR, --SEV.

6.3.8.2 EXAMPLES FOR DRUG ACCOUNTABILITY DOMAIN MODEL

Example 1

Example 1 below shows drug accounting for a study with two study meds and one rescue med, all of which are measured in tablets. The sponsor has chosen to add EPOCH from the list of timing variables and to use DASPID and DAREFID for code numbers that appear on the label.

Row	STUDYID	DOMAIN	USUBJID	DASEQ	DAREFID	DASPID	DATESTCD	DATEST	DACAT	DASCAT
1	ABC	DA	ABC/01001	1	XBYCC-E990A	A375827	DISPAMT	Dispensed Amount	Study Medication	Bottle A
2	ABC	DA	ABC/01001	2	XBYCC-E990A	A375827	RETAMT	Returned Amount	Study Medication	Bottle A
3	ABC	DA	ABC/01001	3	XBYCC-E990B	A227588	DISPAMT	Dispensed Amount	Study Medication	Bottle B
4	ABC	DA	ABC/01001	4	XBYCC-E990B	A227588	RETAMT	Returned Amount	Study Medication	Bottle B
5	ABC	DA	ABC/01001	5			DISPAMT	Dispensed Amount	Rescue Medication	
6	ABC	DA	ABC/01001	6			RETAMT	Returned Amount	Rescue Medication	

Row	DAORRES	DAORRESU	DASTRESC	DASTRESN	DASTRESU	VISITNUM	DADTC	EPOCH
1 (cont)	30	TABLETS	30	30	TABLETS	1	2004-06-15	Study Med Period 1
2 (cont)	5	TABLETS	5	5	TABLETS	2	2004-07-15	Study Med Period 1
3 (cont)	15	TABLETS	15	15	TABLETS	1	2004-06-15	Study Med Period 1
4 (cont)	0	TABLETS	0	0	TABLETS	2	2004-07-15	Study Med Period 1
5 (cont)	10	TABLETS	10	10	TABLETS	1	2004-06-15	Study Med Period 1
6 (cont)	10	TABLETS	10	10	TABLETS	2	2004-07-15	Study Med Period 1

Example 2

Example 2 is for a study where drug containers, rather than their contents, are being accounted for and the sponsor did not track returns. In this case, the purpose of the accountability tracking is to verify that the containers dispensed were consistent with the randomization. The sponsor has chosen to use DASPID to record the identifying number of the container dispensed.

Row	STUDYID	DOMAIN	USUBJID	DASEQ	DASPID	DATESTCD	DATEST	DACAT	DASCAT
1	ABC	DA	ABC/01001	1	AB001	DISPAMT	Dispensed Amount	Study Medication	Drug A
2	ABC	DA	ABC/01001	2	AB002	DISPAMT	Dispensed Amount	Study Medication	Drug B

Row	DAORRES	DAORRESU	DASTRESC	DASTRESN	DASTRESU	VISITNUM	DADTC
1 (cont)	1	CONTAINER	1	1	CONTAINER	1	2004-06-15
2 (cont)	1	CONTAINER	1	1	CONTAINER	1	2004-06-15

6.3.9 MICROBIOLOGY DOMAINS — MB AND MS

6.3.9.1 MICROBIOLOGY SPECIMEN (MB) DOMAIN MODEL

mb.xpt, Microbiology Specimen — Findings, Version 3.1.2. One record per microbiology specimen finding per time point per visit per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	MB	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
MBSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
MBGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain to support relationships within the domain and between domains. In MB, used to link to findings about organisms which are stored in MS.	Exp	SDTM 2.2.4, SDTMIG 4.1.2.6
MBREFID	Reference ID	Char		Identifier	Internal or external specimen identifier. Example: Specimen ID	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
MBSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: ORGANISM IDENTIFIER. For organism identification, MBSPID would remain the same each time the same organism is identified in a new specimen.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
MBTESTCD	Microbiology Test or Finding Short Name	Char	*	Topic	Short name of the measurement, test, or finding described in MBTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in MBTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g., "1TEST"). MBTESTCD cannot contain characters other than letters, numbers, or underscores. Examples for GRAM STAIN findings: GMNROD, GMNCOC, GMSQEPCE, GMPMNLOW. Examples for CULTURE PLATE findings: ORGANISM.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8, SDTMIG 4.1.2.1
MBTEST	Microbiology Test or Finding Name	Char	*	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. The value in MBTEST cannot be longer than 40 characters. Examples: GRAM NEGATIVE RODS, GRAM NEGATIVE COCCI, SQUAMOUS EPITHELIAL CELLS, PMN PER FIELD LOW, ORGANISM PRESENT	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
MBCAT	Category for Microbiology Finding	Char	*	Grouping Qualifier	Used to define a category of related records.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MBSCAT	Subcategory for Microbiology Finding	Char	*	Grouping Qualifier	Used to define a further categorization of MBCAT.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
MBORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the Microbiology measurement or finding as originally received or collected. Examples for GRAM STAIN findings: +3 MODERATE, +2 FEW, <10. Examples for CULTURE PLATE (ORGANISM) findings: KLEBSIELLA PNEUMONIAE, STREPTOCOCCUS PNEUMONIAE PENICILLIN RESISTANT.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
MBORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original unit for MBORRES. Example: mcg/mL	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1
MBSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from MBORRES in a standard format or standard units. MBSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in MBSTRESN. For example, if a test has results "+3 MODERATE", "MOD", and "MODERATE" in MBORRES and these results effectively have the same meaning, they could be represented in standard format in MBSTRESC as "MODERATE".	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
MBSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from MBSTRESC. MBSTRESN should store all numeric test results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
MBSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for MBSTRESC and MBSTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1
MBRESCAT	Result Category	Char	*	Variable Qualifier	Used to categorize the result of a finding in a standard format. Example for ORGANISM finding: INFECTING, COLONIZER, CONTAMINANT, or NORMAL FLORA.	Exp	SDTM 2.2.3
MBSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate Microbiology was not done, or a test was not done. Should be null or have a value of NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
MBREASND	Reason Microbiology Not Performed	Char		Record Qualifier	Reason not done. Used in conjunction with MBSTAT when value is NOT DONE. Examples: BROKEN EQUIPMENT or SUBJECT REFUSED.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
MBNAM	Vendor Name	Char		Record Qualifier	Name or identifier of the laboratory or vendor who provides the test results.	Perm	SDTM 2.2.3

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MBLOINC	LOINC Code	Char	*	Synonym Qualifier	1. Dictionary-derived LOINC Code for MBTEST. 2. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2
MBSPEC	Specimen Type	Char	*	Record Qualifier	Defines the type of specimen used for a measurement. Examples: SPUTUM, BLOOD, PUS.	Perm	SDTM 2.2.3
MBSPCCND	Specimen Condition	Char		Record Qualifier	Free or standardized text describing the condition of the specimen. Example: CONTAMINATED.	Perm	SDTM 2.2.3
MBLOC	Specimen Collection Location	Char	(LOC)	Record Qualifier	Location relevant to the collection of the measurement. Examples: LUNG, VEIN, LEFT KNEE WOUND, ARM ULCER 1, RIGHT THIGH LATERAL	Perm	SDTM 2.2.3, SDTMIG Appendix C1
MBMETHOD	Method of Test or Examination	Char	*	Record Qualifier	Method of the test or examination. Examples: GRAM STAIN, CULTURE PLATE, BROTH.	Exp	SDTM 2.2.3
MBBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be “Y” or null.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
MBDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records that represent the average of other records or some other derivation, and those that do not come from the CRF, are examples of records that would be derived for the submission datasets. If MBDRVFL=Y, then MBORRES may be null with MBSTRESC and (if numeric) MBSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
MBDTC	Date/Time of Specimen Collection	Char	ISO 8601	Timing		Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
MBDY	Study Day of MB Specimen Collection	Num		Timing	1. Study day of the specimen collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MBTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when specimen should be taken. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See MBTPTNUM and MBTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
MBTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of MBTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
MBELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned elapsed time (in ISO 8601) relative to a planned fixed reference (MBTPTREF). This variable is useful where there are repetitive measures. Not a clock time or a date time variable. Represented as an ISO 8601 duration. Examples: "-PT15M" to represent the period of 15 minutes prior to the reference point indicated by MBTPTREF, or "PT8H" to represent the period of 8 hours after the reference point indicated by MBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3 SDTMIG 4.1.4.10
MBTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by MBELTM, MBTPTNUM, and MBTPT. Example: PREVIOUS DOSE.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3 SDTMIG 4.1.4.10
MBRFTDTC	Date/Time of Reference Time Point	Char	ISO 8601	Timing	Date/time of the reference time point, MBTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.9.2 ASSUMPTIONS FOR MICROBIOLOGY SPECIMEN (MB) DOMAIN MODEL

1. Definition: The MB domain is designed to store microbiology findings that include organisms found, grain stain results and organism growth status.
2. MBSPID is used to uniquely identify an organism. MBSPID would remain the same each time the same organism is identified in a new specimen. Often the original line number used to record the first occurrence of the organism is used again as an organism identifier when it is found in another specimen. For example, MBSPID is 01 at visit 10 for organism "STAPHYLOCOCCUS AUREUS". For the same organism at visit 30, MBSPID is again 01.
3. MBTESTCD value for organisms present in a specimen is "ORGANISM".
4. MBDTC can be used to record the date/time that an organism started to grow in the culture, or the date/time that the culture became positive for the organism.
5. MBGRPID is used to link to findings related to that organism in the MS domain. For example, if in Specimen 1, organism STREPTOCOCCUS PNEUMONIAE PENICILLIN RESISTANT is found with MBGRPID=1, then findings such as susceptibility tests, colony count, etc. for that organism in Specimen 1, would all have the same value of MSGRPID=1 in the MS domain. The use of GRPID to relate MS to MB greatly simplifies RELREC because only two records are needed in RELREC to describe the relationship of MB to the many related records in MS. With this method there is no need to create detailed relationships at the subject level.
6. MBRESCAT is expected in all records where a microorganism has been identified to differentiate between colonizing organisms and the one(s) that are causing the infection. It is not expected when there is "No growth" or when the results are from a gram stain.

7. The following Qualifiers would not generally be used in MB: --MODIFY, --BODSYS, --FAST, --TOX, --TOXGR --SEV.

6.3.9.3 MICROBIOLOGY SUSCEPTIBILITY (MS) DOMAIN MODEL

ms.xpt, Microbiology Susceptibility Test — Findings, Version 3.1.2. One record per microbiology susceptibility test (or other organism-related finding) per organism found in MB, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	MS	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
MSSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
MSGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain to support relationships within the domain and between domains. In MS, used to link to organism in MB.	Req	SDTM 2.2.4, SDTMIG 4.1.2.6
MSREFID	Reference ID	Char		Identifier	Internal or external specimen identifier. Example: Specimen ID.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
MSSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
MSTESTCD	Microbiology Organism Finding Short Name	Char	*	Topic	Short name of the measurement, test, or finding described in MSTEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in MSTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g."1TEST). MSTESTCD cannot contain characters other than letters, numbers, or underscores. Examples for GROWTH findings: EXTGROW, COLCOUNT. For SUSCEPTIBILITY findings, the test is the drug the organism was tested with, i.e. PENICLLN, AMOXCLLN.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.1.8
MSTEST	Organism Test or Finding Name	Char	*	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. Examples for GROWTH findings: Extent of Growth, Colony Count. Examples for SUSCEPTIBILITY findings: Amoxicillin Susceptibility, Penicillin Susceptibility	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
MSCAT	Category for Organism Findings	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: GROWTH, SUSCEPTIBILITY.	Req	SDTM 2.2.3, SDTMIG 4.1.2.6
MSSCAT	Subcategory for Organism Findings	Char	*	Grouping Qualifier	A further categorization of a test category. Examples: CULTURE, ISOLATE	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MSORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the Microbiology Organism measurement or finding as originally received or collected. Examples for GROWTH findings: GROWTH INTO 3RD QUADRANT. Examples for SUSCEPTIBLITY findings:.0080,.0023	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
MSORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for MSORRES. Example: mcg/mL	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1
MSSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from MSORRES in a standard format or standard units. MSSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in MSSTRESN. For example, if a test has results "+3 MODERATE", "MOD", and "MODERATE", and in MSORRES and these results effectively have the same meaning, they could be represented in standard format in MSSTRESC as "MODERATE".	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
MSSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from MSSTRESC. MSSTRESN should store all numeric test results or findings.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
MSSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for MSSTRESC and MSSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1 SDTMIG Appendix C1
MSRESCAT	Result Category	Char	*	Variable Qualifier	Used to categorize the result of a finding in a standard format. Example for SUSCEPTIBILITY finding: SUSCEPTIBLE, INTERMEDIATE, RESISTANT, or UNKNOWN.	Exp	SDTM 2.2.3
MSSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate a test on an organism was not done, or a test was not performed. Should be null if a result exists in MSORRES or have a value of NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
MSREASND	Reason Test Not Done	Char		Record Qualifier	Reason not done. Describes why a measurement or test was not performed. Used in conjunction with MSSTAT when value is NOT DONE. Example: SAMPLE LOST	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
MSNAM	Vendor Name	Char		Record Qualifier	Name or identifier of the laboratory or vendor that provided the test results.	Perm	SDTM 2.2.3

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MSLOINC	LOINC Code	Char	*	Synonym Qualifier	1. Dictionary-derived LOINC Code for MSTEST. 2. The sponsor is expected to provide the dictionary name and version used to map the terms utilizing the define.xml external codelist attributes	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2
MSMETHOD	Method of Test or Examination	Char	*	Record Qualifier	Method of the test or examination. Example for SUSCEPTIBILITY: ETEST, BROTH DILUTION.	Exp	SDTM 2.2.3
MSBLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be "Y" or null.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1
MSDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records that represent the average of other records or some other derivation, and those that do not come from the CRF, are examples of records that would be derived for the submission datasets. If MSDRVFL=Y, then MSORRES may be null, with MSSTRESC and (if numeric) MSSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
MSDTC	Date/Time of Test	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
MSDY	Study Day of Test	Num		Timing	1. Study day of the test, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
MSTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when test should be done. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See MSTPTNUM and MSTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
MSTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of MSTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
MSELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Elapsed time (in ISO 8601) relative to a planned fixed reference (MSTPTREF). This variable is useful where there are repetitive measures. Not a clock time or a date time variable. Examples: "-PT15M" to represent the period of 15 minutes prior to the reference point indicated by MSTPTREF, or "P8H" to represent the period of 8 hours after the reference point indicated by MSTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3, SDTMIG 4.1.4.10
MSTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point referred to by MSELTM, MSTPTNUM, and MSTPT. Example: PREVIOUS DOSE.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3 SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.9.4 ASSUMPTIONS FOR MICROBIOLOGY SUSCEPTIBILITY (MS) DOMAIN MODEL

1. Definition: The MS domain is designed to store any findings related to the organisms found and submitted in MB. This will usually consist of susceptibility testing results, but can also be other organism-related findings such as extent of growth of an organism. This domain is intended to be used in conjunction with the MB domain described above.
2. The following Qualifiers would not generally be used in MB: --MODIFY, --BODSYS, --SPEC, --SPCCND, --FAST, --TOX, --TOXGR --SEV.

6.3.9.5 EXAMPLES FOR MB AND MS DOMAIN MODELS

Example 1: MB specimen findings

Rows 1, 2: Show gram stain results for Specimen 1 (MBREFID=SP01).

Rows 3, 4: Show organisms found in specimen 1 at visit 1. The MBGRPID is used to link these organisms to findings about these organisms in MS, by MSGRPID.

Row 5: Shows the organism assigned as ORG02 is still present in Specimen 2 at Visit 2.

Row 6: Shows no organisms have grown at Visit 3. Therefore the organism recorded is "NO GROWTH".

Row 1-6: Show MBMETHOD being used for reporting the method of testing the sample, e.g. GRAM STAIN or CULTURE PLATE.

Microbiology Example 1 MB dataset

Row	STUDYID	DOMAIN	USUBJID	MBSEQ	MBGRPID	MBREFID	MBSPID	MBTESTCD	MBTEST	MBORRES
1	ABC	MB	ABC-001-001	1		SP01		GMNCOC	Gram Negative Cocci	2+ FEW
2	ABC	MB	ABC-001-001	2		SP01		GMNROD	Gram Negative Rods	2+ FEW
3	ABC	MB	ABC-001-001	3	1	SP01	ORG01	ORGANISM	Organism Present	STREPTOCOCCUS PNEUMONIAE PENICILLIN RESISTANT
4	ABC	MB	ABC-001-001	4	2	SP01	ORG02	ORGANISM	Organism Present	KLEBSIELLA PNEUMONIAE
5	ABC	MB	ABC-001-001	5	3	SP02	ORG02	ORGANISM	Organism Present	KLEBSIELLA PNEUMONIAE
6	ABC	MB	ABC-001-001	6		SP03	ORG03	ORGANISM	Organism Present	NO GROWTH

Row	MBSTRESC	MBRESCAT	MBLOC	MBSPEC	MBSPCCND	MBMETHOD	VISITNUM	MBDTC
1 (cont)	FEW		LUNG	SPUTUM	MUCOID	GRAM STAIN	1	2005-06-19T08:00
2 (cont)	FEW		LUNG	SPUTUM	MUCOID	GRAM STAIN	1	2005-06-19T08:00
3 (cont)	STREPTOCOCCUS PNEUMONIAE, PENICILLIN RESISTANT	INFECTING	LUNG	SPUTUM	MUCOID	CULTURE PLATE	1	2005-06-19T08:00
4 (cont)	KLEBSIELLA PNEUMONIAE	COLONIZER	LUNG	SPUTUM	MUCOID	CULTURE PLATE	1	2005-06-19T08:00
5 (cont)	KLEBSIELLA PNEUMONIAE	COLONIZER	LUNG	SPUTUM		CULTURE PLATE	2	2005-06-26T08:00
6 (cont)	NO GROWTH		LUNG	SPUTUM		CULTURE PLATE	3	2005-07-06T08:00

If the method of the collection of the sputum is reported (e.g., EXPECTORATION or BIOPSY), this information would go into SUPPMB, since MBMETHOD refers to the method used to obtain the results.

suppmb.xpt

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	ABC	MB	ABC-001-001	MBSEQ	1	COLMETH	Collection Method	EXPECTORATION	CRF	

Example 2: MS – Findings about organisms from Example 1, related within USUBJID, by MBGRPID=MSGRPID

Row 1: Shows extent of growth of Organism 1 found at Visit 1 in specimen 1 (MBGRPID=1, Row 3 in MB example above).

Rows 2, 3: Show results of susceptibility testing on Organism 1 found at Visit 1 in specimen 1 (MBGRPID=1, Row 3 in MB example above).

Row 4: Shows extent of growth of Organism 2 found at Visit 1 in specimen 1 (MBGRPID=2, Row 4 in MB example above).

Rows 5, 6: Show results of susceptibility testing on Organism 2 found at Visit 1 in specimen 1 (MBGRPID=2, Row 4 in MB example above).

Row 7: Shows results of susceptibility testing on Organism 2 found at Visit 1 in specimen 2 (MBGRPID=3, Row 5 in MB example above).

Row	STUDYID	DOMAIN	USUBJID	MSSEQ	MSGRPID	MSTESTCD	MSTEST	MSCAT
1	ABC	MS	ABC-001-001	1	1	EXTGROW	Extent of Growth	GROWTH
2	ABC	MS	ABC-001-001	2	1	DRUGA	Sponsor Drug	SUSCEPTIBILITY
3	ABC	MS	ABC-001-001	3	1	PENICLLN	Penicillin	SUSCEPTIBILITY
4	ABC	MS	ABC-001-001	4	2	EXTGROW	Extent of Growth	GROWTH
5	ABC	MS	ABC-001-001	5	2	DRUGA	Sponsor Drug	SUSCEPTIBILITY
6	ABC	MS	ABC-001-001	6	2	PENICLLN	Penicillin	SUSCEPTIBILITY
7	ABC	MS	ABC-001-001	7	3	PENICLLN	Penicillin	SUSCEPTIBILITY

Row	MSORRES	MSORRESU	MSSTRESC	MSSTRESN	MSSTRESU	MSRESCAT	MSMETHOD	VISITNUM
1 (cont)	IN 2ND QUADRANT		IN 2ND QUADRANT					1
2 (cont)	0.004	mcg/mL	0.004	0.004	mcg/mL	SUSCEPTIBLE	E-TEST	1
3 (cont)	0.023	mcg/mL	0.023	0.023	mcg/mL	RESISTANT	E-TEST	1
4 (cont)	>=30 COLONIES IN 2ND QUADRANT		>=30 COLONIES IN 2ND QUADRANT					1
5 (cont)	0.125	mcg/mL	0.125	0.125	mcg/mL	SUSCEPTIBLE	E-TEST	1
6 (cont)	0.023	mcg/mL	0.023	0.023	mcg/mL	INTERMEDIATE	E-TEST	1
7 (cont'd)	0.026	mcg/mL	0.026	0.026	mcg/mL	INTERMEDIATE	E-TEST	2

Example 3: MB with multiple labs

Row 1, 2: Show the same organism identified by a central and a local lab. Note that MBSPID is different for each lab, and also MBGRPID is different for each lab. This is because the organism is found and tracked separately for each lab although it came from the same specimen.

Row	STUDYID	DOMAIN	USUBJID	MBSEQ	MBGRPID	MBREFID	MBSPID	MBTESTCD	MBTEST
1	ABC	MB	ABC-001-002	1	1	SPEC01	ORG01	ORGANISM	Organism Present
2	ABC	MB	ABC-001-002	2	2	SPEC01	ORG02	ORGANISM	Organism Present

Row	MBORRES	MBSTRESC	MBRESCAT	MBNAM	MBLOC	MBSPEC	MBMETHOD	VISITNUM	MBDTC
1 (cont)	ENTEROCOCCUS FAECALIS	ENTEROCOCCUS FAECALIS	INFECTING	CENTRAL	SKIN SITE 1	FLUID	CULTURE PLATE	1	2005-07-21T08:00
2 (cont)	ENTEROCOCCUS FAECALIS	ENTEROCOCCUS FAECALIS	INFECTING	LOCAL	SKIN SITE 1	FLUID	CULTURE PLATE	1	2005-07-21T08:00

Example 4: MS – findings about organisms from Example 3, multiple labs

Rows 1, 2: Show susceptibility test results done by the central lab, for the organism identified by the central lab where MBGRPID=1 in Row 1 of Example 3 above. Note that the central lab performed only one method of susceptibility testing (the E-TEST) for the two drugs, Sponsor and Amoxicillin.

Rows 3-8: Show susceptibility test results done by the local lab, for the organism identified by the local lab where MBGRPID=2 in Row 2 of Example 3 above. Note that the local lab has performed three different methods of susceptibility testing (Broth Dilution, Zone Size, and E-TEST) for two drugs, thus providing six records for MSGRPID=2.

Row	STUDYID	DOMAIN	USUBJID	MSSEQ	MSGRPID	MSREFID	MSTESTCD	MSTEST	MSCAT
1	ABC	MS	ABC-001-002	1	1	CENTABC	DRUGA	Sponsor Drug	SUSCEPTIBILITY
2	ABC	MS	ABC-001-002	2	1	CENTABC	AMOXCLAV	Amoxicillin / Clavulanate	SUSCEPTIBILITY
3	ABC	MS	ABC-001-002	3	2	LOCXYZ	DRUGA	Sponsor Drug	SUSCEPTIBILITY
4	ABC	MS	ABC-001-002	4	2	LOCXYZ	AMOXCLAV	Amoxicillin / Clavulanate	SUSCEPTIBILITY
5	ABC	MS	ABC-001-002	5	2	LOCXYZ	DRUGA	Sponsor Drug	SUSCEPTIBILITY
6	ABC	MS	ABC-001-002	6	2	LOCXYZ	AMOXCLAV	Amoxicillin / Clavulanate	SUSCEPTIBILITY
7	ABC	MS	ABC-001-002	7	2	LOCXYZ	DRUGA	Sponsor Drug	SUSCEPTIBILITY
8	ABC	MS	ABC-001-002	8	2	LOCXYZ	AMOXCLAV	Amoxicillin / Clavulanate	SUSCEPTIBILITY

Row	MSORRES	MSORRESU	MSSTRESC	MSSTRESN	MSSTRESU	MSRESCAT	MSMETHOD	VISITNUM
1 (cont)	0.25	mcg/mL	0.25	0.25	mcg/mL	SUSCEPTIBLE	E-TEST	1
2 (cont)	1	mcg/mL	1	1	mcg/mL	RESISTANT	E-TEST	1
3 (cont)	0.5	mcg/mL	0.5	0.5	mcg/mL	SUSCEPTIBLE	BROTH DILUTION	1
4 (cont)	0.5	mcg/mL	0.5	0.5	mcg/mL	RESISTANT	BROTH DILUTION	1
5 (cont)	23	mm	23	23	mm	SUSCEPTIBLE	ZONE SIZE	1
6 (cont)	25	mm	25	25	mm	RESISTANT	ZONE SIZE	1
7 (cont)	0.25	mcg/mL	0.25	0.25	mcg/mL	SUSCEPTIBLE	E-TEST	1
8 (cont)	1	mcg/mL	1	1	mcg/mL	RESISTANT	E-TEST	1

Example 5: RELREC to relate MB and MS

Rows 1, 2: Show the one-to-many relationship between MB and MS. For any organism found in a microbiology specimen and recorded in MB, there may be multiple findings about that organism recorded in MS. The organism in MB can be linked to its findings in MS because the value assigned to MBGRPID = the value assigned to MSGRPID for any organism within a subject.

Row	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	MB		MBGRPID		ONE	A
2	MS		MSGRPID		MANY	A

6.3.10 PHARMACOKINETICS DOMAINS — PC AND PP

pc.xpt, Pharmacokinetic Concentrations — Findings, Version 3.1.2. One record per sample characteristic or time-point concentration per reference time point or per analyte per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	PC	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Unique subject identifier within the submission.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
PCSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
PCGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain to support relationships within the domain and between domains.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PCREFID	Reference ID	Char		Identifier	Internal or external specimen identifier. Example: Specimen ID.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PCSPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PCTESTCD	Pharmacokinetic Test Short Name	Char		Topic	Short name of the analyte or specimen characteristic. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in PCTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g., “1TEST”). PCTESTCD cannot contain characters other than letters, numbers, or underscores. Examples: ASA, VOL, SPG.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8, SDTMIG 4.1.2.1
PCTEST	Pharmacokinetic Test Name	Char		Synonym Qualifier	Name of the analyte or specimen characteristic. Note any test normally performed by a clinical laboratory is considered a lab test. The value in PCTEST cannot be longer than 40 characters. Examples: Acetylsalicylic Acid, Volume, Specific Gravity.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
PCCAT	Test Category	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: ANALYTE, SPECIMEN PROPERTY.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
PCSCAT	Test Subcategory	Char	*	Grouping Qualifier	A further categorization of a test category.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
PCORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the measurement or finding as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
PCORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for PCORRES. Example: mg/L.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
PCSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from PCORRES in a standard format or standard units. PCSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in PCSTRESN. For example, if a test has results "NONE", "NEG", and "NEGATIVE" in PCORRES and these results effectively have the same meaning, they could be represented in standard format in PCSTRESC as "NEGATIVE". For other examples, see general assumptions.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
PCSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from PCSTRESC. PCSTRESN should store all numeric test results or findings.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG Appendix C1
PCSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for PCSTRESC and PCSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1
PCSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate a result was not obtained. Should be null if a result exists in PCORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
PCREASND	Reason Test Not Done	Char		Record Qualifier	Describes why a result was not obtained such as SPECIMEN LOST. Used in conjunction with PCSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
PCNAM	Vendor Name	Char		Record Qualifier	Name or identifier of the laboratory or vendor who provides the test results.	Exp	SDTM 2.2.3
PCSPEC	Specimen Material Type	Char		Record Qualifier	Defines the type of specimen used for a measurement. Examples: SERUM, PLASMA, URINE.	Req	SDTM 2.2.3
PCSPCCND	Specimen Condition	Char		Record Qualifier	Free or standardized text describing the condition of the specimen e.g. HEMOLYZED, ICTERIC, LIPEMIC etc.	Perm	SDTM 2.2.3
PCMETHOD	Method of Test or Examination	Char	*	Record Qualifier	Method of the test or examination. Examples include HPLC/MS, ELISA. This should contain sufficient information and granularity to allow differentiation of various methods that might have been used within a study.	Perm	SDTM 2.2.3
PCFAST	Fasting Status	Char	(NY)	Record Qualifier	Indicator used to identify fasting status.	Perm	SDTM 2.2.3, SDTMIG Appendix C1
PCDRVFL	Derived Flag	Char	(NY)	Record Qualifier	Used to indicate a derived record. The value should be Y or null. Records that represent the average of other records, which do not come from the CRF, are examples of records that would be derived for the submission datasets. If PCDRVFL=Y, then PCORRES may be null with PCSTRESC, and (if numeric) PCSTRESN having the derived value.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG 4.1.5.1, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	Reference
PCLLOQ	Lower Limit of Quantitation	Num		Variable Qualifier	Indicates the lower limit of quantitation for an assay. Units should be those used in PCSTRESU.	Exp	SDTM 2.2.3
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter 2. May be used in addition to VISITNUM and/or VISITDY	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
PCDTC	Date/Time of Specimen Collection	Char	ISO 8601	Timing	Date/time of specimen collection represented in ISO 8601 character format. If there is no end time, then this will be the collection time.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
PCENDTC	End Date/Time of Specimen Collection	Char	ISO 8601	Timing	End date/time of specimen collection represented in ISO 8601 character format. If there is no end time, the collection time should be stored in PCDTC, and PCENDTC should be null.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
PCDY	Actual Study Day of Specimen Collection	Num		Timing	1. Study day of specimen collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6
PCTPT	Planned Time Point Name	Char		Timing	1. Text Description of time when specimen should be taken. 2. This may be represented as an elapsed time relative to a fixed reference point, such as time of last dose. See PCTPTNUM and PCTPTREF. Examples: Start, 5 min post.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
PCTPTNUM	Planned Time Point Number	Num		Timing	Numerical version of PCTPT to aid in sorting.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
PCELTM	Planned Elapsed Time from Time Point Ref	Char	ISO 8601	Timing	Planned elapsed time (in ISO 8601) relative to a planned fixed reference (PCTPTREF) such as “PREVIOUS DOSE” or “PREVIOUS MEAL”. This variable is useful where there are repetitive measures. Not a clock time or a date time variable.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.3, SDTMIG 4.1.4.10
PCTPTREF	Time Point Reference	Char		Timing	Name of the fixed reference point used as a basis for PCTPT, PCTPTNUM, and PCELTM. Example: Most Recent Dose.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
PCRFTDTC	Date/Time of Reference Point	Char	ISO 8601	Timing	Date/time of the reference time point described by PCTPTREF.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.10
PCEVLINT	Evaluation Interval	Char	ISO 8601	Timing	Evaluation Interval associated with a PCTEST record represented in ISO 8601 character format. Example: "-P2H" to represent an interval of 2 hours prior to a PCTPT.	Perm	SDTM 2.2.5

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

pp.xpt, Pharmacokinetic Parameters — Findings, Version 3.1.2,. One record per PK parameter per time-concentration profile per subject, Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	PP	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Unique subject identifier within the submission.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
PPSEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
PPGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain to support relationships within the domain and between domains.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
PPTESTCD	Parameter Short Name	Char		Topic	Short name of the pharmacokinetic parameter. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in PPTESTCD cannot be longer than 8 characters, nor can it start with a number (e.g., "1TEST"). PPTESTCD cannot contain characters other than letters, numbers, or underscores. Examples: AUC, TMAX, CMAX.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8 SDTMIG 4.1.2.1
PPTEST	Parameter Name	Char		Synonym Qualifier	Name of the pharmacokinetic parameter. The value in PPTEST cannot be longer than 40 characters. Examples: AUC, Tmax, Cmax.	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
PPCAT	Parameter Category	Char	*	Grouping Qualifier	Used to define a category of related records. For PP, this should be the name of the analyte in PPTEST whose profile the parameter is associated with.	Exp	SDTM 2.2.3, SDTMIG 4.1.2.6
PPSCAT	Parameter Subcategory	Char	*	Grouping Qualifier	Categorization of the model type used to calculate the PK parameters. Examples include COMPARTMENTAL, NON-COMPARTMENTAL.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
PPORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the measurement or finding as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
PPORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for PPORRES. Example: ng/L.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1
PPSTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from PPORRES in a standard format or standard units. PPSTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in PPSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1
PPSTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from PPSTRESC. PPSTRESN should store all numeric test results or findings.	Exp	SDTM 2.2.3, SDTMIG 4.1.5.1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
PPSTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for PPSTRESC and PPSTRESN.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1
PPSTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that a parameter was not calculated. Should be null if a result exists in PPORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
PPREASND	Reason Parameter Not Calculated	Char		Record Qualifier	Describes why a parameter was not calculated, such as INSUFFICIENT DATA. Used in conjunction with PPSTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
PPSPEC	Specimen Material Type	Char	*	Record Qualifier	Defines the type of specimen used for a measurement. If multiple specimen types are used for a calculation (e.g., serum and urine for renal clearance), then this field should be left blank. Examples: SERUM, PLASMA, URINE.	Exp	SDTM 2.2.3
PPDTC	Date/Time of Parameter Calculations	Char	ISO 8601	Timing	Nominal date/time of parameter calculations.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
PPRFTDTC	Date/Time of Reference Point	Char	ISO 8601	Timing	Date/time of the reference time point from the PC records used to calculate a parameter record. The values in PPRFTDTC should be the same as that in PCRFTDTC for related records.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.10

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.3.10.1 ASSUMPTIONS FOR PHARMACOKINETIC CONCENTRATIONS (PC) DOMAIN MODEL

1. PC Definition: Data collected about tissue (e.g., serum or plasma) concentrations of analytes (usually study drugs and/or their metabolites) as a function of time after dosing the study drug.
2. The structure is one record per concentration or sample characteristic per analyte. In addition to one record for each concentration measurement, specimen properties (e.g., volume and pH) are handled via separate records in this dataset.
3. Due to space limitations, not all expected or permissible Findings variables are included in the example.
4. The following Qualifiers would not generally be used in PC: --BODSYS, --SEV.

6.3.10.2 EXAMPLES FOR PHARMACOKINETIC CONCENTRATIONS (PC) DOMAIN MODEL

Example 1

This example shows concentration data for Drug A and metabolite of Drug A from plasma and from urine (shaded rows) samples collected pre-dose and after dosing on two different study days, Days 1 and 11.

All Rows: PCTPTREF is a text value of the description of a "zero" time (e.g. time of dosing). It should be meaningful. If there are multiple PK profiles being generated, the zero time for each will be different (e.g., a different dose such as "first dose", "second dose") and, as a result, values for PCTPTREF must be different. In this example it is required to make values of PCTPTNUM and PCTPT unique (See Section 4.1.4.10).

Rows 5, 6, 19, 20, 25, 26, 29, and 30: Specimen properties (VOLUME and PH) are submitted as values of PCTESTCD in separate rows.

Rows 3-6, 17-20, 23-30: The elapsed times for urine samples are based upon the elapsed time (from the reference time point, PCTPTREF) for the end of the specimen collection period. Elapsed time values that are the same for urine and plasma samples have been assigned the same value for PCTPT. For the urine samples, the value in PCEVLINT describes the planned evaluation (or collection) interval relative to the time point. The actual evaluation interval can be determined by subtracting PCDTC from PCENDTC.

Row	STUDYID	DOMAIN	USUBJID	PCSEQ	PCGRPID	PCREFID	PCTESTCD	PCTEST	PCCAT	PCSPEC	PCORRES	PCORRESU	PCSTRESC	PCSTRESN	PCSTRESU
1	ABC-123	PC	123-0001	1	Day 1	A554134-10	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	<0.1	ng/mL	<0.1		ng/mL
2	ABC-123	PC	123-0001	2	Day 1	A554134-10	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	<0.1	ng/mL	<0.1		ng/mL
3	ABC-123	PC	123-0001	3	Day 1	A554134-11	DRGA_MET	Drug A Metabolite	ANALYTE	URINE	<2	ng/mL	<2		ng/mL
4	ABC-123	PC	123-0001	4	Day 1	A554134-11	DRGA_PAR	Drug A Parent	ANALYTE	URINE	<2	ng/mL	<2		ng/mL
5	ABC-123	PC	123-0001	5	Day 1	A554134-11	VOLUME	Volume	SPECIMEN	URINE	3500	mL	100	100	mL
6	ABC-123	PC	123-0001	6	Day 1	A554134-11	PH	PH	SPECIMEN	URINE	5.5		5.5	5.5	
7	ABC-123	PC	123-0001	7	Day 1	A554134-12	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	5.4	ng/mL	5.4	5.4	ng/mL
8	ABC-123	PC	123-0001	8	Day 1	A554134-12	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	4.74	ng/mL	4.74	4.74	ng/mL
9	ABC-123	PC	123-0001	9	Day 1	A554134-13	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	5.44	ng/mL	5.44	5.44	ng/mL
10	ABC-123	PC	123-0001	10	Day 1	A554134-13	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	1.09	ng/mL	1.09	1.09	ng/mL
11	ABC-123	PC	123-0001	11	Day 1	A554134-14	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA					
12	ABC-123	PC	123-0001	12	Day 1	A554134-14	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	<0.1	ng/mL	<0.1		ng/mL
13	ABC-123	PC	123-0001	13	Day 11	A554134-15	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	3.41	ng/mL	3.41	3.41	ng/mL
14	ABC-123	PC	123-0001	14	Day 11	A554134-15	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	<0.1	ng/mL	<0.1		ng/mL
15	ABC-123	PC	123-0001	15	Day 11	A554134-16	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	8.74	ng/mL	8.74	8.74	ng/mL
16	ABC-123	PC	123-0001	16	Day 11	A554134-16	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	4.2	ng/mL	4.2	4.2	ng/mL
17	ABC-123	PC	123-0001	17	Day 11	A554134-17	DRGA_MET	Drug A Metabolite	ANALYTE	URINE	245	ng/mL	245	245	ng/mL
18	ABC-123	PC	123-0001	18	Day 11	A554134-17	DRGA_PAR	Drug A Parent	ANALYTE	URINE	13.1	ng/mL	13.1	13.1	ng/mL
19	ABC-123	PC	123-0001	19	Day 11	A554134-17	VOLUME	Volume	SPECIMEN	URINE	574	mL	574	574	mL
20	ABC-123	PC	123-0001	20	Day 11	A554134-17	PH	PH	SPECIMEN	URINE	5.5		5.5	5.5	
21	ABC-123	PC	123-0001	21	Day 11	A554134-18	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	9.02	ng/mL	9.02	9.02	ng/mL
22	ABC-123	PC	123-0001	22	Day 11	A554134-18	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	1.18	ng/mL	1.18	1.18	ng/mL
23	ABC-123	PC	123-0001	23	Day 11	A554134-19	DRGA_MET	Drug A Metabolite	ANALYTE	URINE	293	ng/mL	293	293	ng/mL
24	ABC-123	PC	123-0001	24	Day 11	A554134-19	DRGA_PAR	Drug A Parent	ANALYTE	URINE	7.1	ng/mL	7.1	7.1	ng/mL
25	ABC-123	PC	123-0001	25	Day 11	A554134-19	VOLUME	Volume	SPECIMEN	URINE	363	mL	363	363	mL
26	ABC-123	PC	123-0001	26	Day 11	A554134-19	PH	PH	SPECIMEN	URINE	5.5		5.5	5.5	
27	ABC-123	PC	123-0001	27	Day 11	A554134-20	DRGA_MET	Drug A Metabolite	ANALYTE	URINE	280	ng/mL	280	280	ng/mL
28	ABC-123	PC	123-0001	28	Day 11	A554134-20	DRGA_PAR	Drug A Parent	ANALYTE	URINE	2.4	ng/mL	2.4	2.4	ng/mL
29	ABC-123	PC	123-0001	29	Day 11	A554134-20	VOLUME	Volume	SPECIMEN	URINE	606	mL	606	606	mL
30	ABC-123	PC	123-0001	30	Day 11	A554134-20	PH	PH	SPECIMEN	URINE	5.5		5.5	5.5	
31	ABC-123	PC	123-0001	31	Day 11	A554134-21	DRGA_MET	Drug A Metabolite	ANALYTE	PLASMA	3.73	ng/mL	3.73	3.73	ng/mL
32	ABC-123	PC	123-0001	32	Day 11	A554134-21	DRGA_PAR	Drug A Parent	ANALYTE	PLASMA	<0.1	ng/mL	<0.1		ng/mL

(PC dataset for example 1, continued)

Row	PCSTAT	PCLLOQ	VISITNUM	VISIT	VISITDY	PCDTC	PCENDTC	PCDY	PCTPT	PCTPTNUM	PCTPTREF	PCRFTDTC	PCELTM	PCEVLINT
1 (cont)		0.10	1	DAY 1	1	2001-02-01T07:45		1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
2 (cont)		0.10	1	DAY 1	1	2001-02-01T07:45		1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
3 (cont)		2.00	1	DAY 1	1	2001-02-01T07:45	2001-02-01T07:45	1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
4 (cont)		2.00	1	DAY 1	1	2001-02-01T07:45	2001-02-01T07:45	1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
5 (cont)			1	DAY 1	1	2001-02-01T07:45	2001-02-01T07:45	1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
6 (cont)			1	DAY 1	1	2001-02-01T07:45	2001-02-01T07:45	1	PREDOSE	0	Day 1 Dose	2001-02-01T08:00	-PT15M	
7 (cont)		0.10	1	DAY 1	1	2001-02-01T09:30		1	1H30MIN	1.5	Day 1 Dose	2001-02-01T08:00	PT1H30M	
8 (cont)		0.10	1	DAY 1	1	2001-02-01T09:30		1	1H30MIN	1.5	Day 1 Dose	2001-02-01T08:00	PT1H30M	
9 (cont)		0.10	1	DAY 1	1	2001-02-01T14:00		1	6H	6	Day 1 Dose	2001-02-01T08:00	PT6H00M	
10 (cont)		0.10	1	DAY 1	1	2001-02-01T14:00		1	6H	6	Day 1 Dose	2001-02-01T08:00	PT6H	
11 (cont)	NOT DONE		2	DAY 2	2	2001-02-02T08:00		2	24H	24	Day 1 Dose	2001-02-01T08:00	PT24H	
12 (cont)		0.10	2	DAY 2	2	2001-02-02T08:00		2	24H	24	Day 1 Dose	2001-02-01T08:00	PT24H	
13 (cont)		0.10	3	DAY 11	11	2001-02-11T07:45		11	PREDOSE	0	Day 11 Dose	2001-02-11T08:00	-PT15M	
14 (cont)		0.10	3	DAY 11	11	2001-02-11T07:45		11	PREDOSE	0	Day 11 Dose	2001-02-11T08:00	-PT15M	
15 (cont)		0.10	3	DAY 11	11	2001-02-11T09:30		11	1H30MIN	1.5	Day 11 Dose	2001-02-11T08:00	PT1H30M	
16 (cont)		0.10	3	DAY 11	11	2001-02-11T09:30		11	1H30MIN	1.5	Day 11 Dose	2001-02-11T08:00	PT1H30M	
17 (cont)		2.00	3	DAY 11	11	2001-02-11T08:00	2001-02-11T14:03	11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	-PT6H
18 (cont)		2.00	3	DAY 11	11	2001-02-11T08:00	2001-02-11T14:03	11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	-PT6H
19 (cont)			3	DAY 11	11	2001-02-11T08:00	2001-02-11T14:03	11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	-PT6H
20 (cont)			3	DAY 11	11	2001-02-11T08:00	2001-02-11T14:03	11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	-PT6H
21 (cont)		0.10	3	DAY 11	11	2001-02-11T14:00		11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	
22 (cont)		0.10	3	DAY 11	11	2001-02-11T14:00		11	6H	6	Day 11 Dose	2001-02-11T08:00	PT6H	
23 (cont)		2.00	3	DAY 11	11	2001-02-11T14:03	2001-02-11T20:10	11	12H	12	Day 11 Dose	2001-02-11T08:00	PT12H	-PT6H
24 (cont)		2.00	3	DAY 11	11	2001-02-11T14:03	2001-02-11T20:10	11	12H	12	Day 11 Dose	2001-02-11T08:00	PT12H	-PT6H
25 (cont)			3	DAY 11	11	2001-02-11T14:03	2001-02-11T20:10	11	12H	12	Day 11 Dose	2001-02-11T08:00	PT12H	-PT6H
26 (cont)			3	DAY 11	11	2001-02-11T14:03	2001-02-11T20:10	11	12H	12	Day 11 Dose	2001-02-11T08:00	PT12H	-PT6H
27 (cont)		2.00	4	DAY 12	12	2001-02-11T20:03	2001-02-12T08:10	12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	-P12H
28 (cont)		2.00	4	DAY 12	12	2001-02-11T20:03	2001-02-12T08:10	12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	-P12H
29 (cont)			4	DAY 12	12	2001-02-11T20:03	2001-02-12T08:10	12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	-P12H
30 (cont)			4	DAY 12	12	2001-02-11T20:03	2001-02-12T08:10	12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	-P12H
31 (cont)		0.10	4	DAY 12	12	2001-02-12T08:00		12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	
32 (cont)		0.10	4	DAY 12	12	2001-02-12T08:00		12	24H	24	Day 11 Dose	2001-02-11T08:00	PT24H	

6.3.10.3 ASSUMPTIONS FOR PHARMACOKINETIC PARAMETERS (PP) DOMAIN MODEL

1. PP Definition: Data describing the parameters of the time-concentration curve for PC data (e.g., area under the curve, Cmax, Tmax).
2. It is recognized that PP is a derived dataset, and may be produced from an analysis dataset that might have a different structure. As a result, some sponsors may need to normalize their analysis dataset in order for it to fit into the SDTM-based PP domain.
3. The structure is one record per PK parameter per time-concentration profile per subject
4. Information pertaining to all parameters (e.g., number of exponents, model weighting) should be submitted in the SUPPPP dataset.
5. The following Qualifiers would not generally be used in PP: --BODSYS, --SEV.

6.3.10.4 EXAMPLE FOR PHARMACOKINETIC PARAMETERS (PP) DOMAIN MODEL

Example 1

This example shows PK parameters calculated from time-concentration profiles for parent drug and one metabolite in plasma and urine for one subject on Days 1 (Rows 1-14) and 8 (Rows 15-28). Note that PPRFTDTC is populated in order to link the PP records to the respective PC records. Note that PPSPEC is null for Clearance records since it is calculated from multiple specimen sources (plasma and urine).

(PP dataset for example 1)

Row	STUDYID	DOMAIN	USUBJID	PPSEQ	PPGRPID	PPTESTCD	PPTEST	PPCAT	PPORRES	PPORRESU
1	ABC-123	PP	ABC-123-0001	1	DAY1_PAR	TMAX	Time to Max Effect	DRUG A PARENT	1.87	h
2	ABC-123	PP	ABC-123-0001	2	DAY1_PAR	CMAX	Max Effect Concentration	DRUG A PARENT	44.5	ug/L
3	ABC-123	PP	ABC-123-0001	3	DAY1_PAR	AUC	Area Under Curve	DRUG A PARENT	294.7	h*mg/L
4	ABC-123	PP	ABC-123-0001	4	DAY1_PAR	THALF_1	Half-life of 1st exp phase	DRUG A PARENT	0.75	h
5	ABC-123	PP	ABC-123-0001	5	DAY1_PAR	THALF_2	Half-life of 2nd exp phase	DRUG A PARENT	4.69	h
6	ABC-123	PP	ABC-123-0001	6	DAY1_PAR	VD	Vol of Distribution	DRUG A PARENT	10.9	L
7	ABC-123	PP	ABC-123-0001	7	DAY1_PAR	CL	Clearance	DRUG A PARENT	1.68	L/h
8	ABC-123	PP	ABC-123-0001	8	DAY1_MET	TMAX	Time to Max Effect	DRUG A METABOLITE	0.94	h
9	ABC-123	PP	ABC-123-0001	9	DAY1_MET	CMAX	Max Effect Concentration	DRUG A METABOLITE	22.27	ug/L
10	ABC-123	PP	ABC-123-0001	10	DAY1_MET	AUC	Area Under Curve	DRUG A METABOLITE	147.35	h*mg/L
11	ABC-123	PP	ABC-123-0001	11	DAY1_MET	THALF_1	Half-life of 1st exp phase	DRUG A METABOLITE	0.38	h
12	ABC-123	PP	ABC-123-0001	12	DAY1_MET	THALF_2	Half-life of 2nd exp phase	DRUG A METABOLITE	2.35	h
13	ABC-123	PP	ABC-123-0001	13	DAY1_MET	VD	Vol of Distribution	DRUG A METABOLITE	5.45	L
14	ABC-123	PP	ABC-123-0001	14	DAY1_MET	CL	Clearance	DRUG A METABOLITE	0.84	L/h
15	ABC-123	PP	ABC-123-0001	15	DAY11_PAR	TMAX	Time to Max Effect	DRUG A PARENT	1.91	h
16	ABC-123	PP	ABC-123-0001	16	DAY11_PAR	CMAX	Max Effect Concentration	DRUG A PARENT	46.0	ug/L
17	ABC-123	PP	ABC-123-0001	17	DAY11_PAR	AUC	Area Under Curve	DRUG A PARENT	289.0	h*mg/L
18	ABC-123	PP	ABC-123-0001	18	DAY11_PAR	THALF_1	Half-life of 1st exp phase	DRUG A PARENT	0.77	h
19	ABC-123	PP	ABC-123-0001	19	DAY11_PAR	THALF_2	Half-life of 2nd exp phase	DRUG A PARENT	4.50	h
20	ABC-123	PP	ABC-123-0001	20	DAY11_PAR	VD	Vol of Distribution	DRUG A PARENT	10.7	L
21	ABC-123	PP	ABC-123-0001	21	DAY11_PAR	CL	Clearance	DRUG A PARENT	1.75	L/h
22	ABC-123	PP	ABC-123-0001	22	DAY11_MET	TMAX	Time to Max Effect	DRUG A METABOLITE	0.96	h
23	ABC-123	PP	ABC-123-0001	23	DAY11_MET	CMAX	Max Effect Concentration	DRUG A METABOLITE	23.00	ug/L
24	ABC-123	PP	ABC-123-0001	24	DAY11_MET	AUC	Area Under Curve	DRUG A METABOLITE	144.50	h*mg/L
25	ABC-123	PP	ABC-123-0001	25	DAY11_MET	THALF_1	Half-life of 1st exp phase	DRUG A METABOLITE	0.39	h
26	ABC-123	PP	ABC-123-0001	26	DAY11_MET	THALF_2	Half-life of 2nd exp phase	DRUG A METABOLITE	2.25	h
27	ABC-123	PP	ABC-123-0001	27	DAY8_MET	VD	Vol of Distribution	DRUG A METABOLITE	5.35	L
28	ABC-123	PP	ABC-123-0001	28	DAY8_MET	CL	Clearance	DRUG A METABOLITE	0.88	L/h

(PP dataset for example 1, continued)

Row	PPSTRESC	PPSTRESN	PPSTRESU	PPSPEC	VISITNUM	VISIT	PPDTC	PPRFTDTC
1 (cont)	1.87	1.87	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
2 (cont)	44.5	44.5	ug/L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
3 (cont)	294.7	294.7	h.mg/L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
4 (cont)	0.75	0.75	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
5 (cont)	4.69	4.69	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
6 (cont)	10.9	10.9	L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
7 (cont)	1.68	1.68	L/h		1	DAY 1	2001-03-01	2001-02-01T08:00
8 (cont)	0.94	0.94	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
9 (cont)	22.27	22.27	ug/L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
10 (cont)	147.35	147.35	h.mg/L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
11 (cont)	0.38	0.38	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
12 (cont)	2.35	2.35	h	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
13 (cont)	5.45	5.45	L	PLASMA	1	DAY 1	2001-03-01	2001-02-01T08:00
14 (cont)	0.84	0.84	L/h		1	DAY 1	2001-03-01	2001-02-01T08:00
15 (cont)	1.91	1.91	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
16 (cont)	46.0	46.0	ug/L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
17 (cont)	289.0	289.0	h.mg/L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
18 (cont)	0.77	0.77	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
19 (cont)	4.50	4.50	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
20 (cont)	10.7	10.7	L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
21 (cont)	1.75	1.75	L/h		2	DAY 11	2001-03-01	2001-02-11T08:00
22 (cont)	0.96	0.96	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
23 (cont)	23.00	23.00	ug/L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
24 (cont)	144.50	144.50	h.mg/L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
25 (cont)	0.39	0.39	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
26 (cont)	2.25	2.25	h	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
27 (cont)	5.35	5.35	L	PLASMA	2	DAY 11	2001-03-01	2001-02-11T08:00
28 (cont)	0.88	0.88	L/h		2	DAY 11	2001-03-01	2001-02-11T08:00

6.3.10.5 RELATING PP RECORDS TO PC RECORDS

It is a requirement that sponsors document the concentrations used to calculate each parameter. For many sponsors, this need is currently met via the analysis metadata. As a result of feedback received from many sponsors on the draft version of this document, sponsors may continue to document the concentrations used to calculate each parameter via the analysis datasets.

This section serves as a reference for sponsors who wish to document relationships between PK parameter records in a Pharmacokinetic Parameter (PP) dataset and specific time-point concentration records in a Pharmacokinetic Concentration (PC) dataset according to the SDTM using the RELREC table (Section 8.2 and Section 8.3).

6.3.10.5.1 RELATING DATASETS

If all time-point concentrations in PC are used to calculate all parameters for all subjects, then the relationship between the two datasets can be documented as shown in the table below.

RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
PC		PCGRPID		MANY	A
PP		PPGRPID		MANY	A

Note that incorporating the name of the analyte and the day of the collection into the value of --GRPID (or some equivalent method for assigning different values of --GRPID for all the combinations of analytes and reference time points) is necessary when there is more than one reference time point (PCRFTDTC and PPRFTDTC, which are the same for related records), and more than one analyte (PCTESTCD, copied into PPCAT to indicate the analyte with which the parameters are associated), since these variables are part of the natural key (see Section 3.2.1.1) for both datasets. In this case, --GRPID is a surrogate key (Section 3.2.1.1) used for the relationship.

6.3.10.5.2 RELATING RECORDS

Four possible examples of different types of relationships between PC and PP records for one drug (DRUG X in this case) are described. For all of these, the actual PC and PP data are the same. The only variables whose values change across the examples are the sponsor-defined PCGRPID and PPGRPID. As in the case for relating datasets above (Section 6.3.10.5.1), --GRPID values must take into account all the combinations of analytes and reference time points, since both are part of the natural key (see Section 3.2.1.1) for both datasets. To conserve space, the PC and PP domains appear only once, but with four --GRPID columns, one for each of the examples. Note that a submission dataset would contain only one --GRPID column with a set of values such as those shown in one of the four columns in the PC and PP datasets, or values defined by the sponsor. Note that --GRPID values in PC and PP do not need to be the same (e.g., examples show PC with underscores and PP without underscores). The example specifics are as follows:

Example 1: All PK time-point-concentration values in the PC dataset are used to calculate all the PK parameters in the PP dataset for both Days 1 and 8 for one subject.

Pharmacokinetic Concentrations (PC) Dataset For All Examples

Pharmacokinetic Parameters (PP) Dataset For All Examples

RELREC Example 1. All PC records used to calculate all PK parameters

- Method A (Many to many, using PCGRPID and PPGRPID)
- Method B (One to many, using PCSEQ and PPGRPID)
- Method C (Many to one, using PCGRPID and PPSEQ)
- Method D (One to one, using PCSEQ and PPSEQ)

Example 2: Two PC values were excluded from the calculation of all PK parameters for the Day 1 data. Day 8 values are related as per Example 1.

RELREC Example 2: Only some records in PC used to calculate all PK parameters

- Method A (Many to many, using PCGRPID and PPGRPID)
- Method B (One to many, using PCSEQ and PPGRPID)
- Method C (Many to one, using PCGRPID and PPSEQ)
- Method D (One to one, using PCSEQ and PPSEQ)

Example 3: Two PC values were excluded from the calculation of two PK parameters, but used in the others for Day 1. Day 8 values are related as per Example 1.

RELREC Example 3. Only some records in PC used to calculate some parameters

- Method A (Many to many, using PCGRPID and PPGRPID)
- Method B (One to many, using PCSEQ and PPGRPID)
- Method C (Many to one, using PCGRPID and PPSEQ)
- Method D (One to one, using PCSEQ and PPSEQ)

Example 4: Only Some PC records for Day 1 were used to calculate parameters: Time Point 5 was excluded from Tmax, Time Point 6 from Cmax, and Time Points 11 and 12 were excluded from AUC. Day 8 values are related as per Example 1.

RELREC Example 4: Only Some records in PC used to calculate parameters

- Method A (Many to many, using PCGRPID and PPGRPID)
- Method B (One to many omitted - see note below)
- Method C (Many to one omitted - see note below)
- Method D (One to one, using PCSEQ and PPSEQ)

For each example, PCGRPID and PPGRPID were used to group related records within each respective dataset. The values for these, as well as the values for PCSEQ and PPSEQ, were then used to populate combinations of IDVAR and IDVARVAL in the RELREC table using four methods (A-D) for Examples 1-3. Only two methods (A and D) are shown for Example 4, due to its complexity. Since the relationship between PC records and PP records for Day 8 data does not change across the examples, it is shown only for Example 1, and not repeated.

Pharmacokinetic Concentrations (PC) Dataset For All Examples

Row	STUDYID	DOMAIN	USUBJID	PCSEQ	PCGRPID	PCGRPID	PCGRPID	PCGRPID	PCREFID	PCTESTCD	PCTEST	PCCAT	PCSPEC	PCORRES	PCORRESU
					Example 1	Example 2	Example 3	Example 4							
1	ABC-123	PC	ABC-123-0001	1	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-01	DRUG X	Study Drug	ANALYTE	PLASMA	9	ug/mL
2	ABC-123	PC	ABC-123-0001	2	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-02	DRUG X	Study Drug	ANALYTE	PLASMA	20	ug/mL
3	ABC-123	PC	ABC-123-0001	3	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-03	DRUG X	Study Drug	ANALYTE	PLASMA	31	ug/mL
4	ABC-123	PC	ABC-123-0001	4	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-04	DRUG X	Study Drug	ANALYTE	PLASMA	38	ug/mL
5	ABC-123	PC	ABC-123-0001	5	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_B	123-0001-05	DRUG X	Study Drug	ANALYTE	PLASMA	45	ug/mL
6	ABC-123	PC	ABC-123-0001	6	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_C	123-0001-06	DRUG X	Study Drug	ANALYTE	PLASMA	47.5	ug/mL
7	ABC-123	PC	ABC-123-0001	7	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-07	DRUG X	Study Drug	ANALYTE	PLASMA	41	ug/mL
8	ABC-123	PC	ABC-123-0001	8	DY1_DRGX	EXCLUDE	DY1_DRGX_B	DY1_DRGX_A	123-0001-08	DRUG X	Study Drug	ANALYTE	PLASMA	35	ug/mL
9	ABC-123	PC	ABC-123-0001	9	DY1_DRGX	EXCLUDE	DY1_DRGX_B	DY1_DRGX_A	123-0001-09	DRUG X	Study Drug	ANALYTE	PLASMA	31	ug/mL
10	ABC-123	PC	ABC-123-0001	10	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_A	123-0001-10	DRUG X	Study Drug	ANALYTE	PLASMA	25	ug/mL
11	ABC-123	PC	ABC-123-0001	11	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_D	123-0001-11	DRUG X	Study Drug	ANALYTE	PLASMA	18	ug/mL
12	ABC-123	PC	ABC-123-0001	12	DY1_DRGX	DY1_DRGX	DY1_DRGX_A	DY1_DRGX_D	123-0001-12	DRUG X	Study Drug	ANALYTE	PLASMA	12	ug/mL
13	ABC-123	PC	ABC-123-0001	13	DY11_DRGX				123-0002-13	DRUG X	Study Drug	ANALYTE	PLASMA	10.0	ug/mL
14	ABC-123	PC	ABC-123-0001	14	DY11_DRGX				123-0002-14	DRUG X	Study Drug	ANALYTE	PLASMA	21.0	ug/mL
15	ABC-123	PC	ABC-123-0001	15	DY11_DRGX				123-0002-15	DRUG X	Study Drug	ANALYTE	PLASMA	32.0	ug/mL
16	ABC-123	PC	ABC-123-0001	16	DY11_DRGX				123-0002-16	DRUG X	Study Drug	ANALYTE	PLASMA	39.0	ug/mL
17	ABC-123	PC	ABC-123-0001	17	DY11_DRGX				123-0002-17	DRUG X	Study Drug	ANALYTE	PLASMA	46.0	ug/mL
18	ABC-123	PC	ABC-123-0001	18	DY11_DRGX				123-0002-18	DRUG X	Study Drug	ANALYTE	PLASMA	48.0	ug/mL
19	ABC-123	PC	ABC-123-0001	19	DY11_DRGX				123-0002-19	DRUG X	Study Drug	ANALYTE	PLASMA	40.0	ug/mL
20	ABC-123	PC	ABC-123-0001	20	DY11_DRGX				123-0002-20	DRUG X	Study Drug	ANALYTE	PLASMA	35.0	ug/mL
21	ABC-123	PC	ABC-123-0001	21	DY11_DRGX				123-0002-21	DRUG X	Study Drug	ANALYTE	PLASMA	30.0	ug/mL
22	ABC-123	PC	ABC-123-0001	22	DY11_DRGX				123-0002-22	DRUG X	Study Drug	ANALYTE	PLASMA	24.0	ug/mL
23	ABC-123	PC	ABC-123-0001	23	DY11_DRGX				123-0002-23	DRUG X	Study Drug	ANALYTE	PLASMA	17.0	ug/mL
24	ABC-123	PC	ABC-123-0001	24	DY11_DRGX				123-0002-24	DRUG X	Study Drug	ANALYTE	PLASMA	11.0	ug/mL

(PC dataset for all example, continued)

Row	PCSTRESC	PCSTRESN	PCSTRESU	PCLLOQ	VISITNUM	VISIT	VISITDY	PCDTC	PCDY	PCTPT	PCTPTNUM	PCTPTREF	PCRFTDTC	PCELTM
1 (cont)	9	9	ug/mL	1.00	1	DAY 1	1	2001-02-01T08:35	1	5 min	1	Day 1 Dose	2001-02-01T08:30	PT5M
2 (cont)	20	20	ug/mL	1.00	1	DAY 1	1	2001-02-01T08:55	1	25 min	2	Day 1 Dose	2001-02-01T08:30	PT25M
3 (cont)	31	31	ug/mL	1.00	1	DAY 1	1	2001-02-01T09:20	1	50 min	3	Day 1 Dose	2001-02-01T08:30	PT50M
4 (cont)	38	38	ug/mL	1.00	1	DAY 1	1	2001-02-01T09:45	1	75 min	4	Day 1 Dose	2001-02-01T08:30	PT1H15M
5 (cont)	45	45	ug/mL	1.00	1	DAY 1	1	2001-02-01T10:10	1	100 min	5	Day 1 Dose	2001-02-01T08:30	PT1H40M
6 (cont)	47.5	47.5	ug/mL	1.00	1	DAY 1	1	2001-02-01T10:35	1	125 min	6	Day 1 Dose	2001-02-01T08:30	PT2H5M
7 (cont)	41	41	ug/mL	1.00	1	DAY 1	1	2001-02-01T11:00	1	150 min	7	Day 1 Dose	2001-02-01T08:30	PT2H30M
8 (cont)	35	35	ug/mL	1.00	1	DAY 1	1	2001-02-01T11:50	1	200 min	8	Day 1 Dose	2001-02-01T08:30	PT3H20M
9 (cont)	31	31	ug/mL	1.00	1	DAY 1	1	2001-02-01T12:40	1	250 min	9	Day 1 Dose	2001-02-01T08:30	PT4H10M
10 (cont)	25	25	ug/mL	1.00	1	DAY 1	1	2001-02-01T14:45	1	375 min	10	Day 1 Dose	2001-02-01T08:30	PT6H15M
11 (cont)	18	18	ug/mL	1.00	1	DAY 1	1	2001-02-01T16:50	1	500 min	11	Day 1 Dose	2001-02-01T08:30	PT8H20M
12 (cont)	12	12	ug/mL	1.00	1	DAY 1	1	2001-02-01T18:30	1	600 min	12	Day 1 Dose	2001-02-01T08:30	PT10H
13 (cont)	10.0	10.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T08:35	8	5 min	1	Day 8 Dose	2001-02-08T08:30	PT5M
14 (cont)	21.0	21.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T08:55	8	25 min	2	Day 8 Dose	2001-02-08T08:30	PT25M
15 (cont)	32.0	32.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T09:20	8	50 min	3	Day 8 Dose	2001-02-08T08:30	PT50M
16 (cont)	39.0	39.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T09:45	8	75 min	4	Day 8 Dose	2001-02-08T08:30	PT1H15M
17 (cont)	46.0	46.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T10:10	8	100 min	5	Day 8 Dose	2001-02-08T08:30	PT1H40M
18 (cont)	48.0	48.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T10:35	8	125 min	6	Day 8 Dose	2001-02-08T08:30	PT2H5M
19 (cont)	40.0	40.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T11:00	8	150 min	7	Day 8 Dose	2001-02-08T08:30	PT2H30M
20 (cont)	35.0	35.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T11:50	8	200 min	8	Day 8 Dose	2001-02-08T08:30	PT3H20M
21 (cont)	30.0	30.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T12:40	8	250 min	9	Day 8 Dose	2001-02-08T08:30	PT4H10M
22 (cont)	24.0	24.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T14:45	8	375 min	10	Day 8 Dose	2001-02-08T08:30	PT6H15M
23 (cont)	17.0	17.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T16:50	8	500 min	11	Day 8 Dose	2001-02-08T08:30	PT8H20M
24 (cont)	11.0	11.0	ug/mL	1.00	2	DAY 8	8	2001-02-08T18:30	8	600 min	12	Day 8 Dose	2001-02-08T08:30	PT10H

Pharmacokinetic Parameters (PP) Dataset For All Examples

Row	STUDYID	DOMAIN	USUBJID	PPSEQ	PPDTC	PPGRPID	PPGRPID	PPGRPID	PPGRPID
						Example 1	Example 2	Example 3	Example 4
1	ABC-123	PP	ABC-123-0001	1	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_A	TMAX
2	ABC-123	PP	ABC-123-0001	2	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_A	CMAX
3	ABC-123	PP	ABC-123-0001	3	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_A	AUC
4	ABC-123	PP	ABC-123-0001	4	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_HALF	OTHER
5	ABC-123	PP	ABC-123-0001	5	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_HALF	OTHER
6	ABC-123	PP	ABC-123-0001	6	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_A	OTHER
7	ABC-123	PP	ABC-123-0001	7	2001-02-01T08:35	DY1DRGX	DY1DRGX	DY1DRGX_A	OTHER
8	ABC-123	PP	ABC-123-0001	8	2001-02-08T08:35	DY11DRGX			
9	ABC-123	PP	ABC-123-0001	9	2001-02-08T08:35	DY11DRGX			
10	ABC-123	PP	ABC-123-0001	10	2001-02-08T08:35	DY11DRGX			
11	ABC-123	PP	ABC-123-0001	11	2001-02-08T08:35	DY11DRGX			
12	ABC-123	PP	ABC-123-0001	12	2001-02-08T08:35	DY11DRGX			
13	ABC-123	PP	ABC-123-0001	13	2001-02-08T08:35	DY11DRGX			
14	ABC-123	PP	ABC-123-0001	14	2001-02-08T08:35	DY11DRGX			

Row	PPTESTCD	PPTEST	PPCAT	PPORRES	PPORRESU	PPSTRESC	PPSTRESN	PPSTRESU
1 (cont)	TMAX	Time to Max Effect	DRUG X	1.87	h	1.87	1.87	h
2 (cont)	CMAX	Max Effect Concentration	DRUG X	44.5	ug/L	44.5	44.5	ug/L
3 (cont)	AUC	Area Under Curve	DRUG X	294.7	h*mg/L	294.7	294.7	h*mg/L
4 (cont)	T1/2, 1	Half-life of 1st exp phase	DRUG X	0.75	h	0.75	0.75	h
5 (cont)	T1/2, 2	Half-life of 2nd exp phase	DRUG X	4.69	h	4.69	4.69	h
6 (cont)	VD	Volume of Distribution	DRUG X	10.9	L	10.9	10.9	L
7 (cont)	CL	Clearance	DRUG X	1.68	L/h	1.68	1.68	L/h
8 (cont)	TMAX	Time to Max Effect	DRUG X	1.91	h	1.91	1.91	h
9 (cont)	CMAX	Max Effect Concentration	DRUG X	46.0	ug/L	46.0	46.0	ug/L
10 (cont)	AUC	Area Under Curve	DRUG X	289.0	h*mg/L	289.0	289.0	h*mg/L
11 (cont)	T1/2, 1	Half-life of 1st exp phase	DRUG X	0.77	h	0.77	0.77	h
12 (cont)	T1/2, 2	Half-life of 2nd exp phase	DRUG X	4.50	h	4.50	4.50	h
13 (cont)	VD	Volume of Distribution	DRUG X	10.7	L	10.7	10.7	L
14 (cont)	CL	Clearance	DRUG X	1.75	L/h	1.75	1.75	L/h

RELREC Example 1. All PC records used to calculate all PK parameters.

Method A (Many to many, using PCGRPID and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX		1
2	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX		1
3	ABC-123	PC	ABC-123-0001	PCGRPID	DY11_DRGX		2
4	ABC-123	PP	ABC-123-0001	PPGRPID	DY11DRGX		2

* RELID 1 indicates all PC records with PCGRPID = DY1_DRGX are related to all PP records with PPGRPID = DY1DRGX.
* RELID 2 indicates all PC records with PCGRPID = DY8_DRGX are related to all PP records with PPGRPID = DY8DRGX.

Method B (One to many, using PCSEQ and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	8		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	9		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
11	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
12	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
13	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX		1
14	ABC-123	PC	ABC-123-0001	PCSEQ	13		2
15	ABC-123	PC	ABC-123-0001	PCSEQ	14		2
16	ABC-123	PC	ABC-123-0001	PCSEQ	15		2
17	ABC-123	PC	ABC-123-0001	PCSEQ	16		2
18	ABC-123	PC	ABC-123-0001	PCSEQ	17		2
19	ABC-123	PC	ABC-123-0001	PCSEQ	18		2
20	ABC-123	PC	ABC-123-0001	PCSEQ	19		2
21	ABC-123	PC	ABC-123-0001	PCSEQ	20		2
22	ABC-123	PC	ABC-123-0001	PCSEQ	21		2
23	ABC-123	PC	ABC-123-0001	PCSEQ	22		2
24	ABC-123	PC	ABC-123-0001	PCSEQ	23		2
25	ABC-123	PC	ABC-123-0001	PCSEQ	24		2
26	ABC-123	PP	ABC-123-0001	PPGRPID	DY8DRGX		2

* RELID 1 indicates records with PCSEQ values of 1-12 are related to records with PPGRPID = DY1DRGX.
* RELID 2 indicates records with PCSEQ values of 13-24 are related to records with PPGRPID = DY8DRGX.

Method C (Many to one, using PCGRPID and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX		1
2	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
3	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
4	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
5	ABC-123	PP	ABC-123-0001	PPSEQ	4		1
6	ABC-123	PP	ABC-123-0001	PPSEQ	5		1
7	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
8	ABC-123	PP	ABC-123-0001	PPSEQ	7		1
9	ABC-123	PC	ABC-123-0001	PCGRPID	DY8_DRGX		2
10	ABC-123	PP	ABC-123-0001	PPSEQ	8		2
11	ABC-123	PP	ABC-123-0001	PPSEQ	9		2
12	ABC-123	PP	ABC-123-0001	PPSEQ	10		2
13	ABC-123	PP	ABC-123-0001	PPSEQ	11		2
14	ABC-123	PP	ABC-123-0001	PPSEQ	12		2
15	ABC-123	PP	ABC-123-0001	PPSEQ	13		2
16	ABC-123	PP	ABC-123-0001	PPSEQ	14		2

* RELID 1 indicates records with a PCGRPID value of DY1_DRGX are related to records with PPSEQ values of 1-7.
* RELID 2 indicates records with a PCGRPID value of DY8_DRGX are related to records with PPSEQ values of 8-14.

Method D (One to one, using PCSEQ and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	8		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	9		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
11	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
12	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
13	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
14	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
15	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
16	ABC-123	PP	ABC-123-0001	PPSEQ	4		1
17	ABC-123	PP	ABC-123-0001	PPSEQ	5		1
18	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
19	ABC-123	PP	ABC-123-0001	PPSEQ	7		1
20	ABC-123	PC	ABC-123-0001	PCSEQ	13		2
21	ABC-123	PC	ABC-123-0001	PCSEQ	14		2
22	ABC-123	PC	ABC-123-0001	PCSEQ	15		2
23	ABC-123	PC	ABC-123-0001	PCSEQ	16		2
24	ABC-123	PC	ABC-123-0001	PCSEQ	17		2
25	ABC-123	PC	ABC-123-0001	PCSEQ	18		2
26	ABC-123	PC	ABC-123-0001	PCSEQ	19		2
27	ABC-123	PC	ABC-123-0001	PCSEQ	20		2
28	ABC-123	PC	ABC-123-0001	PCSEQ	21		2
29	ABC-123	PC	ABC-123-0001	PCSEQ	22		2
30	ABC-123	PC	ABC-123-0001	PCSEQ	23		2
31	ABC-123	PC	ABC-123-0001	PCSEQ	24		2
32	ABC-123	PP	ABC-123-0001	PPSEQ	8		2
33	ABC-123	PP	ABC-123-0001	PPSEQ	9		2
34	ABC-123	PP	ABC-123-0001	PPSEQ	10		2
35	ABC-123	PP	ABC-123-0001	PPSEQ	11		2
36	ABC-123	PP	ABC-123-0001	PPSEQ	12		2
37	ABC-123	PP	ABC-123-0001	PPSEQ	13		2
38	ABC-123	PP	ABC-123-0001	PPSEQ	14		2

* RELID 1 indicates records with PCSEQ values of 1-12 are related to records with PPSEQ values of 1-7.
* RELID 2 indicates records with PCSEQ values of 13-24 are related to records with PPSEQ values of 8-14.

RELREC Example 2: Only some records in PC used to calculate all PK parameters: Time Points 8 and 9 on Day 1 not used for any PK parameters.

Method A (Many to many, using PCGRPID and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX		1
2	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX		1

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates only PC records with PCGRPID = DY1_DRGX are related to all PP records with PPGRPID = DY1DRGX. PC records with PCGRPID = EXCLUDE were not used.
* RELID 2 indicates all PC records with PCGRPID = DY8_DRGX are related to all PP records with PPGRPID = DY8DRGX.

Method B (One to many, using PCSEQ and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
11	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX		1

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with PCSEQ values of 1-7 and 10-12 are related to records with PPGRPID = DY1DRGX.
* RELID 2 indicates records with PCSEQ values of 13-24 are related to records with PPGRPID = DY8DRGX.

Method C (Many to one, using PCGRPID and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX		1
2	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
3	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
4	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
5	ABC-123	PP	ABC-123-0001	PPSEQ	4		1
6	ABC-123	PP	ABC-123-0001	PPSEQ	5		1
7	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
8	ABC-123	PP	ABC-123-0001	PPSEQ	7		1

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with a PCGRPID value of DY1_DRGX are related to records with PPSEQ values of 1-7.

Method D (One to one, using PCSEQ and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
11	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
12	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
13	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
14	ABC-123	PP	ABC-123-0001	PPSEQ	4		1
15	ABC-123	PP	ABC-123-0001	PPSEQ	5		1
16	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
17	ABC-123	PP	ABC-123-0001	PPSEQ	7		1

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with PCSEQ values of 1-7 and 10-12 are related to records with PPSEQ values of 1-7.

RELREC Example 3. Only some records in PC used to calculate some parameters: Time Points 8 and 9 on Day 1 not used for half-life calculations, but used for other parameters.

Method A (Many to many, using PCGRPID and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_A		1
2	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_B		1
3	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX_A		1
4	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_A		2
5	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX_HALF		2

The Day 8 relationships are the same as those shown in Example 1.

* RELID of "1" Indicates that all time points on Day 1 (PCGRPID = DY1_DRGX_A and DY1_DRGX_B) were used to calculate all parameters (PPGRPID = DY1DRGX_A) except half-lives.
* RELID of "2" Indicates only the values for PCGRPID = DY1_DRGX_A were used to calculate the half-lives (PPGRPID = DY1DRGX_HALF).

Method B (One to many, using PCSEQ and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	8		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	9		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
11	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
12	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
13	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX_A		1
14	ABC-123	PC	ABC-123-0001	PCSEQ	1		2
15	ABC-123	PC	ABC-123-0001	PCSEQ	2		2
16	ABC-123	PC	ABC-123-0001	PCSEQ	3		2
17	ABC-123	PC	ABC-123-0001	PCSEQ	4		2
18	ABC-123	PC	ABC-123-0001	PCSEQ	5		2
19	ABC-123	PC	ABC-123-0001	PCSEQ	6		2
20	ABC-123	PC	ABC-123-0001	PCSEQ	7		2
21	ABC-123	PC	ABC-123-0001	PCSEQ	10		2
22	ABC-123	PC	ABC-123-0001	PCSEQ	11		2
23	ABC-123	PC	ABC-123-0001	PCSEQ	12		2
24	ABC-123	PP	ABC-123-0001	PPGRPID	DY1DRGX_HALF		2

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with PCSEQ values of 1-12 are related to records with PPGRPID = DY1DRGX_A
* RELID 2 indicates records with PCSEQ values of 1-7 and 10-12 are related to records with PPGRPID = DY1DRGX_HALF.

Method C (Many to one, using PCGRPID and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_A		1
2	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_B		1
3	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
4	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
5	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
6	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
7	ABC-123	PP	ABC-123-0001	PPSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCGRPID	DY1_DRGX_A		2
9	ABC-123	PP	ABC-123-0001	PPSEQ	4		2
10	ABC-123	PP	ABC-123-0001	PPSEQ	5		2

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with a PCGRPID value of DY1_DRGX_A and DY1_DRGX_B are related to records with PPSEQ values of 1-7.
* RELID 2 indicates records with a PCGRPID value of DAYDY1DRGX_A are related to records with PPSEQ values of 4 and 5.

Method D (One to one, using PCSEQ and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
2	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
3	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
4	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	5		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	8		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	9		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
11	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
12	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
13	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
14	ABC-123	PP	ABC-123-0001	PPSEQ	2		1
15	ABC-123	PP	ABC-123-0001	PPSEQ	3		1
16	ABC-123	PP	ABC-123-0001	PPSEQ	6		1
17	ABC-123	PP	ABC-123-0001	PPSEQ	7		1
18	ABC-123	PC	ABC-123-0001	PCSEQ	1		2
19	ABC-123	PC	ABC-123-0001	PCSEQ	2		2
20	ABC-123	PC	ABC-123-0001	PCSEQ	3		2
21	ABC-123	PC	ABC-123-0001	PCSEQ	4		2
22	ABC-123	PC	ABC-123-0001	PCSEQ	5		2
23	ABC-123	PC	ABC-123-0001	PCSEQ	6		2
24	ABC-123	PC	ABC-123-0001	PCSEQ	7		2
25	ABC-123	PC	ABC-123-0001	PCSEQ	10		2
26	ABC-123	PC	ABC-123-0001	PCSEQ	11		2
27	ABC-123	PC	ABC-123-0001	PCSEQ	12		2
28	ABC-123	PP	ABC-123-0001	PPSEQ	4		2
29	ABC-123	PP	ABC-123-0001	PPSEQ	5		2

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with PCSEQ values of 1-12 are related to records with PPSEQ values of 1-3 and 6-7.

* RELID 2 indicates records with PCSEQ values of 1-7 and 10-12 are related to records with PPSEQ values of 4 and 5.

RELREC Example 4: Only Some records in PC used to calculate parameters: Time Point 5 excluded from Tmax, 6 from Cmax, and Time Points 11 and 12 from AUC

Method A (Many to many, using PCGRPID and PPGRPID)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
1	ABC-123	PP	ABC-123-0001	PPGRPID	TMAX		1
2	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_A		1
3	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_C		1
4	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_D		1
5	ABC-123	PP	ABC-123-0001	PPGRPID	CMAX		2
6	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_A		2
7	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_B		2
8	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_D		2
9	ABC-123	PP	ABC-123-0001	PPGRPID	AUC		3
10	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_A		3
11	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_B		3
12	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_C		3
13	ABC-123	PP	ABC-123-0001	PPGRPID	OTHER		4
14	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_A		4
15	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_B		4
16	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_C		4
17	ABC-123	PC	ABC-123-0001	PCGRPID	DY1DRGX_D		4

The Day 8 relationships are the same as those shown in Example 1.
* Same RELID of "1" Indicates that Tmax used records with PCGRPID values DY1DRGX_A, DY1DRGX_C, and DY1DRGX_D.
* Same RELID of "2" Indicates that Cmax used records with PCGRPID values DY1DRGX_A, DY1DRGX_B, and DY1DRGX_D.
* Same RELID of "3" Indicates that AUC used PCGRPID values DY1DRGX_A, DY1DRGX_B, and DY1DRGX_C.
* Same RELID of "4" Indicates that all other parameters (PPGRPID = OTHER) used all PC time points: PCGRPID values DY1DRGX_A, DY1DRGX_B, DY1DRGX_C, and DY1DRGX_D.

Note that in the above RELREC table, the single records in rows 1, 3, 5, 7, and 9, represented by their --GRPIDs (TMAX, DY1DRGX_C, CMAX, DY1DRGX_B, AUC) could have been referenced by their SEQ values, since both identify the records sufficiently. At least two other hybrid approaches would have been acceptable as well: using PPSEQ and PCGRPIDs whenever possible, and using PPGRPID and PCSEQ values whenever possible. Method D below uses only SEQ values.

Method D (One to one, using PCSEQ and PPSEQ)

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID *
	ABC-123	PC	ABC-123-0001	PCSEQ	1		1
	ABC-123	PC	ABC-123-0001	PCSEQ	2		1
	ABC-123	PC	ABC-123-0001	PCSEQ	3		1
	ABC-123	PC	ABC-123-0001	PCSEQ	4		1
5	ABC-123	PC	ABC-123-0001	PCSEQ	6		1
6	ABC-123	PC	ABC-123-0001	PCSEQ	7		1
7	ABC-123	PC	ABC-123-0001	PCSEQ	8		1
8	ABC-123	PC	ABC-123-0001	PCSEQ	9		1
9	ABC-123	PC	ABC-123-0001	PCSEQ	10		1
10	ABC-123	PC	ABC-123-0001	PCSEQ	11		1
11	ABC-123	PC	ABC-123-0001	PCSEQ	12		1
12	ABC-123	PP	ABC-123-0001	PPSEQ	1		1
13	ABC-123	PC	ABC-123-0001	PCSEQ	1		2
14	ABC-123	PC	ABC-123-0001	PCSEQ	2		2
15	ABC-123	PC	ABC-123-0001	PCSEQ	3		2
16	ABC-123	PC	ABC-123-0001	PCSEQ	4		2
17	ABC-123	PC	ABC-123-0001	PCSEQ	5		2
18	ABC-123	PC	ABC-123-0001	PCSEQ	7		2
19	ABC-123	PC	ABC-123-0001	PCSEQ	8		2
20	ABC-123	PC	ABC-123-0001	PCSEQ	9		2
21	ABC-123	PC	ABC-123-0001	PCSEQ	10		2
22	ABC-123	PC	ABC-123-0001	PCSEQ	11		2
23	ABC-123	PC	ABC-123-0001	PCSEQ	12		2
24	ABC-123	PP	ABC-123-0001	PPSEQ	2		2
25	ABC-123	PC	ABC-123-0001	PCSEQ	1		3
26	ABC-123	PC	ABC-123-0001	PCSEQ	2		3
27	ABC-123	PC	ABC-123-0001	PCSEQ	3		3
28	ABC-123	PC	ABC-123-0001	PCSEQ	4		3
29	ABC-123	PC	ABC-123-0001	PCSEQ	5		3
30	ABC-123	PC	ABC-123-0001	PCSEQ	6		3
31	ABC-123	PC	ABC-123-0001	PCSEQ	7		3
32	ABC-123	PC	ABC-123-0001	PCSEQ	8		3
33	ABC-123	PC	ABC-123-0001	PCSEQ	9		3
34	ABC-123	PC	ABC-123-0001	PCSEQ	10		3
35	ABC-123	PP	ABC-123-0001	PPSEQ	3		3
36	ABC-123	PC	ABC-123-0001	PCSEQ	1		4
37	ABC-123	PC	ABC-123-0001	PCSEQ	2		4
38	ABC-123	PC	ABC-123-0001	PCSEQ	3		4
39	ABC-123	PC	ABC-123-0001	PCSEQ	4		4
40	ABC-123	PC	ABC-123-0001	PCSEQ	5		4
41	ABC-123	PC	ABC-123-0001	PCSEQ	6		4
42	ABC-123	PC	ABC-123-0001	PCSEQ	7		4
43	ABC-123	PC	ABC-123-0001	PCSEQ	8		4
44	ABC-123	PC	ABC-123-0001	PCSEQ	9		4
45	ABC-123	PC	ABC-123-0001	PCSEQ	10		4
46	ABC-123	PC	ABC-123-0001	PCSEQ	11		4
47	ABC-123	PC	ABC-123-0001	PCSEQ	12		4
48	ABC-123	PP	ABC-123-0001	PPSEQ	4		4
49	ABC-123	PP	ABC-123-0001	PPSEQ	5		4
50	ABC-123	PP	ABC-123-0001	PPSEQ	6		4
51	ABC-123	PP	ABC-123-0001	PPSEQ	7		4

The Day 8 relationships are the same as those shown in Example 1.

* RELID 1 indicates records with PCSEQ values of 1-4 and 6-12 are related to the record with a PPSEQ value of 1.
* RELID 2 indicates records with PCSEQ values of 1-5 and 7-12 are related to the record with a PPSEQ value of 2.
* RELID 3 indicates records with PCSEQ values of 1-10 are related to the record with a PPSEQ value of 3.
* RELID 4 indicates records with PCSEQ values of 1-12 are related to the records with PPSEQ values of 4-7.

6.3.10.6 Conclusions

Relating the datasets (Section 6.3.10.5.1, and as described in Section 8.3) is the simplest method; however, all time-point concentrations in PC must be used to calculate all parameters for all subjects. If datasets cannot be related, then individual subject records must be related (Section 8.2). In either case, the values of PCGRPID and PPGRPID must take into account multiple analytes and multiple reference time points, if they exist.

Method A, is clearly the most efficient in terms of having the least number of RELREC records, but it does require the assignment of --GRPID values (which are optional) in both the PC and PP datasets. Method D, in contrast, does not require the assignment of --GRPID values, instead relying on the required --SEQ values in both datasets to relate the records. Although Method D results in the largest number of RELREC records compared to the other methods, it may be the easiest to implement consistently across the range of complexities shown in the examples. Two additional methods, Methods B and C, are also shown for Examples 1-3. They represent hybrid approaches, using --GRPID values on only one dataset (PP and PC, respectively) and --SEQ values for the other. These methods are best suited for sponsors who want to minimize the number of RELREC records while not having to assign --GRPID values in both domains. Methods B and C would not be ideal, however, if one expected complex scenarios such as that shown in Example 4.

Please note that an attempt has been made to approximate real PK data; however, the example values are not intended to reflect data used for actual analysis. When certain time-point concentrations have been omitted from PP calculations in Examples 2-4, the actual parameter values in the PP dataset have not been recalculated from those in Example 1 to reflect those omissions.

6.3.10.7 Suggestions for Implementing RELREC in the Submission of PK Data

Determine which of the scenarios best reflects how PP data are related to PC data. Questions that should be considered:

1. Do all parameters for each PK profile use all concentrations for all subjects? If so, create a PPGRPID value for all PP records and a PCGRPID value for all PC records for each profile for each subject, analyte, and reference time point. Decide whether to relate datasets (Section 6.3.10.5.1) or records (Section 6.3.10.5.2, Example 1). If choosing the latter, create records in RELREC for each PCGRPID value and each PPGRPID value (Method A). Use RELID to show which PCGRPID and PPGRPID records are related. Consider RELREC Methods B, C, and D as applicable.
2. Do all parameters use the same concentrations, although maybe not all of them (Example 2)? If so, create a single PPGRPID value for all PP records, and two PCGRPID values for the PC records: a PCGRPID value for ones that were used and a PCGRPID value for those that were not used. Create records in RELREC for each PCGRPID value and each PPGRPID value (Method A). Use RELID to show which PCGRPID and PPGRPID records are related. Consider RELREC Methods B, C, and D as applicable.
3. Do any parameters use the same concentrations, but not as consistently as what is shown in Examples 1 and 2? If so, refer to Example 3. Assign a GRPID value to the PP records that use the same concentrations. More than one PPGRPID value may be necessary. Assign as many PCGRPID values in the PC domain as needed to group these records. Create records in RELREC for each PCGRPID value and each PPGRPID value (Method A). Use RELID to show which PCGRPID and PPGRPID records are related. Consider RELREC Methods B, C, and D as applicable.
4. If none of the above applies, or the data become difficult to group, then start with Example 4, and decide which RELREC method would be easiest to implement and represent.

6.4 FINDINGS ABOUT EVENTS OR INTERVENTIONS

Findings About Events or Interventions is a specialization of the Findings General Observation Class. As such, it shares all qualities and conventions of Findings observations but is specialized by the addition of the --OBJ variable.

6.4.1 WHEN TO USE FINDINGS ABOUT

It is intended, as its name implies, to be used when collected data represent ”findings about” an Event or Intervention that cannot be represented within an Event or Intervention record or as a Supplemental Qualifier to such a record. Examples include the following:

- Data or observations that have different timing from an associated Event or Intervention as a whole:
  For example, if severity of an AE is collected at scheduled time points (e.g., per visit) throughout the duration of the AE, the severities have timing that are different from that of the AE as a whole. Instead, the collected severities represent “snapshots” of the AE over time.
- Data or observations about an Event or Intervention which have Qualifiers of their own that can be represented in Findings variables (e.g., units, method):
  These Qualifiers can be grouped together in the same record to more accurately describe their context and meaning (rather than being represented by multiple Supplemental Qualifier records). For example, if the size of a rash is measured, then the result and measurement unit (e.g., centimeters or inches) can be represented in the Findings About domain in a single record, while other information regarding the rash (e.g., start and end times), if collected would appear in an Event record.
- Data or observations about an Event or Intervention for which no Event or Intervention record has been collected or created:
  For example, if details about a condition (e.g., primary diagnosis) are collected, but the condition was not collected as Medical History because it was a prerequisite for study participation, then the data can be represented as results in the Findings About domain, and the condition as the Object of the Observation (see Section 6.4.3).
- Data or information about an Event or Intervention that indicate the occurrence of related symptoms or therapies:
  Depending on the Sponsor’s definitions of reportable events or interventions and regulatory agreements, representing occurrence observations in either the Findings About domain or the appropriate Event or Intervention domain(s) is at the Sponsor’s discretion. For example, in a migraine study, when symptoms related to a migraine event are queried and their occurrence is not considered either an AE or a record to be represented in another Events domain, then the symptoms can be represented in the Findings About domain.
- Data or information that indicate the occurrence of pre-specified AEs:
  Since there is a requirement that every record in the AE domain represent an event that actually occurred, AE probing questions that are answered in the negative (e.g., did not occur, unknown, not done) cannot be stored in the AE domain. Therefore, answers to probing questions about the occurrence of pre-specified adverse events can be stored in the Findings About domain, and for each positive response (i.e., where occurrence indicates yes) there should be a record reflected in the AE domain. The Findings About record and the AE record may be linked via RELREC.

6.4.2 NAMING FINDINGS ABOUT DOMAINS

The FA domain is defined to store Findings About Events or Interventions. Sponsors may choose to split the domain into physically separate datasets following guidance described in Section 4.1.1.7. For example, if Findings About clinical events and Findings About reproductive events are collected in a study, and are considered separate and unrelated observations, then they could be split relative to their respective parent domains.

- The DOMAIN value would be "FA"
- Variables that require a prefix would use "FA"
- Variables of the same name in multiple datasets should have the same SAS Length attribute.
- The dataset names would be the domain name plus up to two additional characters indicating the parent domain (e.g., FACE for the Findings About clinical events and FARE for findings about reproductive events, where in this example, "RE" is a custom domain to store reproductive events data).
- FASEQ must be unique within USUBJID for all records across the split datasets.
- Supplemental Qualifier datasets would need to be managed at the split-file level, for example, suppface.xpt and suppfare.xpt and RDOMAIN would be defined as "FA".
- If a dataset-level RELREC is defined (e.g., between the CE and FACE datasets), then RDOMAIN may contain up to four characters to effectively describe the relationship between the CE parent records with the FACE child records.

As described above, if domain splitting is implemented then the dataset name will combine the prefix "FA" with the two-lettered domain code of the parent record. For example, dataset facm.xpt would store Findings About Concomitant Medications.

6.4.3 VARIABLES UNIQUE TO FINDINGS ABOUT

The variable, --OBJ, is unique to Findings About. In conjunction with FATESTCD, it describes what the topic of the observation is; therefore both are required to be populated for every record. FATESTCD describes the measurement/evaluation and FAOBJ describes the Event or Intervention that the measurement/evaluation is about.

When collected data fit a Qualifier variable listed in SDTM Sections 2.2.1 or 2.2.2, and are represented in the Findings About domain, then the name of the variable should be used as the value of FATESTCD. For example,

FATESTCD	FATEST
OCCUR	Occurrence
SEV	Severity/Intensity
TOXGR	Toxicity Grade

The use of the same names (e.g., SEV, OCCUR) for both Qualifier variables in the observation classes and FATESTCD is deliberate, but should not lead users to conclude that the collection of such data (e.g., severity/intensity, occurrence) must be stored in the Findings About domain. In fact, data should only be stored in the Findings About domain if they do not fit in the general-observation-class domain. If the data describe the underlying Event or Intervention as a whole and share it's timing, then the data should be stored as a qualifier of the general-observation-class record.

In general, the value in FAOBJ should match the value in --TERM or --TRT, unless the parent domain is dictionary coded or subject to controlled terminology, in which case FAOBJ should then match the value in --DECOD.

Representing collected relationships supporting Findings About data are described in Section 8.6 and are demonstrated in the examples below (Section 6.4.6).

6.4.4 FINDINGS ABOUT (FA) DOMAIN MODEL

fa.xpt, Findings About Events or Interventions — Findings Sub-Class, Version 3.1.2. One record per finding, per object, per time point, per visit per subject Tabulation

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req	SDTM 2.2.4
DOMAIN	Domain Abbreviation	Char	(FA)	Identifier	Two-character abbreviation for the domain.	Req	SDTM 2.2.4, SDTMIG 4.1.2.2, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier	Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Req	SDTM 2.2.4, SDTMIG 4.1.2.3
FASEQ	Sequence Number	Num		Identifier	Sequence Number given to ensure uniqueness of subject records within a domain. May be any valid number.	Req	SDTM 2.2.4
FAGRPID	Group ID	Char		Identifier	Used to tie together a block of related records in a single domain for a subject.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
FASPID	Sponsor-Defined Identifier	Char		Identifier	Sponsor-defined reference number. Perhaps pre-printed on the CRF as an explicit line identifier or defined in the sponsor's operational database. Example: Line number on a CRF.	Perm	SDTM 2.2.4, SDTMIG 4.1.2.6
FATESTCD	Findings About Test Short Name	Char	*	Topic	Short name of the measurement, test, or examination described in FATEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in FATESTCD cannot be longer than 8 characters, nor can it start with a number (e.g. "1TEST"). FATESTCD cannot contain characters other than letters, numbers, or underscores. Example: SEV, OCCUR.	Req	SDTM 2.2.3, SDTMIG 4.1.1.8, SDTMIG 4.1.2.1
FATEST	Findings About Test Name	Char	*	Synonym Qualifier	Verbatim name of the test or examination used to obtain the measurement or finding. The value in FATEST cannot be longer than 40 characters. Examples: Severity/Intensity, Occurrence	Req	SDTM 2.2.3, SDTMIG 4.1.2.1, SDTMIG 4.1.2.4, SDTMIG 4.1.5.3.1
FAOBJ	Object of the Observation	Char		Record Qualifier	Used to describe the object or focal point of the findings observation that is represented by --TEST. Examples: the term (such as Acne) describing a clinical sign or symptom that is being measured by a Severity test, or an event such as VOMIT where the volume of Vomit is being measured by a VOLUME test.	Req	SDTM 2.2.3.1
FACAT	Category for Findings About	Char	*	Grouping Qualifier	Used to define a category of related records. Examples: GERD, PRE-SPECIFIED AE.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6
FASCAT	Subcategory for Findings About	Char	*	Grouping Qualifier	A further categorization of FACAT.	Perm	SDTM 2.2.3, SDTMIG 4.1.2.6

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
FAORRES	Result or Finding in Original Units	Char		Result Qualifier	Result of the test as originally received or collected.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.6, SDTMIG 4.1.5.1
FAORRESU	Original Units	Char	(UNIT)	Variable Qualifier	Original units in which the data were collected. The unit for FAORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1
FASTRESC	Character Result/Finding in Std Format	Char		Result Qualifier	Contains the result value for all findings, copied or derived from FAORRES in a standard format or standard units. FASTRESC should store all results or findings in character format; if results are numeric, they should also be stored in numeric format in FASTRESN. For example, if a test has results “NONE”, “NEG”, and “NEGATIVE” in FAORRES and these results effectively have the same meaning; they could be represented in standard format in FASTRESC as “NEGATIVE”.	Exp	SDTM 2.2.3, SDTMIG 4.1.3.6, SDTMIG 4.1.5.1
FASTRESN	Numeric Result/Finding in Standard Units	Num		Result Qualifier	Used for continuous or numeric results or findings in standard format; copied in numeric format from FASTRESC. FASTRESN should store all numeric test results or findings.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1
FASTRESU	Standard Units	Char	(UNIT)	Variable Qualifier	Standardized unit used for FASTRESC and FASTRESN.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.2, SDTMIG 4.1.5.1, SDTMIG Appendix C1
FASTAT	Completion Status	Char	(ND)	Record Qualifier	Used to indicate that the measurement was not done. Should be null if a result exists in FAORRES.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7, SDTMIG Appendix C1
FAREASND	Reason Not Performed	Char		Record Qualifier	Describes why a question was not answered. Example: subject refused. Used in conjunction with FASTAT when value is NOT DONE.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.1, SDTMIG 4.1.5.7
FALOC	Location of the Finding About	Char	(LOC)	Variable Qualifier	Used to specify the location of the clinical evaluation. Example: LEFT ARM	Perm	SDTM 2.2.3, SDTMIG Appendix C1
FABLFL	Baseline Flag	Char	(NY)	Record Qualifier	Indicator used to identify a baseline value. The value should be “Y” or null.	Perm	SDTM 2.2.3, SDTMIG 4.1.3.7, SDTMIG Appendix C1

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core	References
FAEVAL	Evaluator	Char	*	Record Qualifier	Role of the person who provided the evaluation. Used only for results that are subjective (e.g., assigned by a person or a group). Should be null for records that contain collected or derived data. Examples: INVESTIGATOR, ADJUDICATION COMMITTEE, VENDOR.	Perm	SDTM 2.2.3, SDTMIG 4.1.5.4
VISITNUM	Visit Number	Num		Timing	1. Clinical encounter number. 2. Numeric version of VISIT, used for sorting.	Exp	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISIT	Visit Name	Char		Timing	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
VISITDY	Planned Study Day of Visit	Num		Timing	Planned study day of the visit based upon RFSTDTC in Demographics.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.5, SDTMIG 7.4
FADTC	Date/Time of Collection	Char	ISO 8601	Timing		Perm	SDTM 2.2.5, SDTMIG 4.1.4.1, SDTMIG 4.1.4.8
FADY	Study Day of Collection	Num		Timing	1. Study day of collection, measured as integer days. 2. Algorithm for calculations must be relative to the sponsor-defined RFSTDTC variable in Demographics. This formula should be consistent across the submission.	Perm	SDTM 2.2.5, SDTMIG 4.1.4.4, SDTMIG 4.1.4.6

- *Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

6.4.5 ASSUMPTIONS FOR FINDINGS ABOUT DOMAIN MODEL

1. The following qualifiers should generally not be used in FA: --BODSYS, --MODIFY, --SEV, --TOXGR.

6.4.6 FINDINGS ABOUT EXAMPLES

Example 1: ***Migraine Symptoms Diary***
The form shown below collects severity and symptoms data at multiple time points about a migraine event.

Migraine Symptoms Diary	
Migraine Reference Number	xx
When did the migraine start	DD-MMM-YYYY HH:MM
Answer the following **5 Minutes BEFORE Dosing**	
Severity of Migraine	○ Mild ○ Moderate ○ Severe
Associated Symptoms: Sensitivity to light Sensitivity to sound Nausea Aura	 ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes
Answer the following **30 Minutes AFTER Dosing**	
Severity of Migraine	○ Mild ○ Moderate ○ Severe
Associated Symptoms: Sensitivity to light Sensitivity to sound Nausea Aura	 ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes
Answer the following **90 Minutes AFTER Dosing**	
Severity of Migraine	○ Mild ○ Moderate ○ Severe
Associated Symptoms: Sensitivity to light Sensitivity to sound Nausea Aura	 ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes ○ No ○ Yes

The collected data below the migraine start date on the CRF meet the following Findings About criteria: 1) Data that do not describe an Event or Intervention as a whole and 2) Data that indicate the occurrence of related symptoms.

In this mock scenario, the Sponsor's conventions and/or reporting agreements consider migraine as a clinical event (as opposed to a reportable AE) and consider the pre-specified symptom responses as findings about the migraine, therefore the data are represented in the Findings About domain with FATESTCD = "OCCUR" and FAOBJ defined as the symptom description. Therefore, the mock datasets represent (1) The migraine event record in the CE domain, (2) The severity and symptoms data, per time point, in the Findings About domain, and (3) A dataset-level relationship in RELREC based on the sponsor ID (--SPID) value which was populated with a system generated identifier unique to each iteration of this form.

ce.xpt

STUDYID	DOMAIN	USUBJID	CESEQ	CESPID	CETERM	CEDECOD	CESTDTC
ABC	**CE**	**ABC-123**	**1**	**90567**	**Migraine**	**Migraine**	**2007-05-16T10:30**

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FASPID	FATESTCD	FATEST	FAOBJ	FACAT
1	ABC	FA	ABC-123	1	90567	SEV	Severity/Intensity	Migraine	MIGRAINE SYMPTOMS
2	ABC	FA	ABC-123	2	90567	OCCUR	Occurrence	Sensitivity To Light	MIGRAINE SYMPTOMS
3	ABC	FA	ABC-123	3	90567	OCCUR	Occurrence	Sensitivity To Sound	MIGRAINE SYMPTOMS
4	ABC	FA	ABC-123	4	90567	OCCUR	Occurrence	Nausea	MIGRAINE SYMPTOMS
5	ABC	FA	ABC-123	6	90567	OCCUR	Occurrence	Aura	MIGRAINE SYMPTOMS
6	ABC	FA	ABC-123	7	90567	SEV	Severity/Intensity	Migraine	MIGRAINE SYMPTOMS
7	ABC	FA	ABC-123	8	90567	OCCUR	Occurrence	Sensitivity To Light	MIGRAINE SYMPTOMS
8	ABC	FA	ABC-123	9	90567	OCCUR	Occurrence	Sensitivity To Sound	MIGRAINE SYMPTOMS
9	ABC	FA	ABC-123	10	90567	OCCUR	Occurrence	Nausea	MIGRAINE SYMPTOMS
10	ABC	FA	ABC-123	12	90567	OCCUR	Occurrence	Aura	MIGRAINE SYMPTOMS
11	ABC	FA	ABC-123	13	90567	SEV	Severity/Intensity	Migraine	MIGRAINE SYMPTOMS
12	ABC	FA	ABC-123	14	90567	OCCUR	Occurrence	Sensitivity To Light	MIGRAINE SYMPTOMS
13	ABC	FA	ABC-123	15	90567	OCCUR	Occurrence	Sensitivity To Sound	MIGRAINE SYMPTOMS
14	ABC	FA	ABC-123	16	90567	OCCUR	Occurrence	Nausea	MIGRAINE SYMPTOMS
15	ABC	FA	ABC-123	18	90567	OCCUR	Occurrence	Aura	MIGRAINE SYMPTOMS

Row	FAORRES	FASTRESC	FADTC	FATPT	FAELTM	FATPTREF
1 (cont'd)	SEVERE	SEVERE	2007-05-16	5M PRE-DOSE	-PT5M	DOSING
2 (cont'd)	Y	Y	2007-05-16	5M PRE-DOSE	-PT5M	DOSING
3 (cont'd)	N	N	2007-05-16	5M PRE-DOSE	-PT5M	DOSING
4 (cont'd)	Y	Y	2007-05-16	5M PRE-DOSE	-PT5M	DOSING
5 (cont'd)	Y	Y	2007-05-16	5M PRE-DOSE	-PT5M	DOSING
6 (cont'd)	MODERATE	MODERATE	2007-05-16	30M POST-DOSE	PT30M	DOSING
7 (cont'd)	Y	Y	2007-05-16	30M POST-DOSE	PT30M	DOSING
8 (cont'd)	N	N	2007-05-16	30M POST-DOSE	PT30M	DOSING
9 (cont'd)	N	N	2007-05-16	30M POST-DOSE	PT30M	DOSING
10 (cont'd)	Y	Y	2007-05-16	30M POST-DOSE	PT30M	DOSING
11 (cont'd)	MILD	MILD	2007-05-16	90M POST-DOSE	PT90M	DOSING
12 (cont'd)	N	N	2007-05-16	90M POST-DOSE	PT90M	DOSING
13 (cont'd)	N	N	2007-05-16	90M POST-DOSE	PT90M	DOSING
14 (cont'd)	N	N	2007-05-16	90M POST-DOSE	PT90M	DOSING
15 (cont'd)	N	N	2007-05-16	90M POST-DOSE	PT90M	DOSING

RELREC

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
ABC	CE		CESPID		ONE	1
ABC	FA		FASPID		MANY	1

Example 2: *Rash Assessment*

This CRF collects details about rash events at each visit, until resolved.

Rash Assessment	
Date of Assessment	DD-MMM-YYYY
Associated AE reference number	
Rash Size	_____ ○ cm ○ in
Lesion Type & Count	
Macules	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300
Papules	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300
Vesicles	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300
Pustules	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300
Scabs	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300
Scars	○ 0 ○ 1 to 25 ○ 26 to 100 ○ 101 to 200 ○ 201 to 300 ○ >300

The collected data meet the following Findings About criteria: 1) Data that do not describe an Event or Intervention as a whole and 2) Data ("about" an Event or Intervention) which have Qualifiers of their own that can be represented in Findings variables (e.g., units, method)

In this mock scenario, the rash event is considered a reportable AE; therefore the form design collects a reference number to the AE form where the event is captured. Data points collected on the Rash Assessment form can be represented in the Findings About domain and related to the AE via RELREC. Note, in the mock datasets below, the AE started on May 10, 2007 and the Rash assessment was conducted on May 12 and May 19, 2007. Certain Required or Expected variables have been omitted in consideration of space and clarity.

ae.xpt

STUDYID	DOMAIN	USUBJID	AESEQ	AESPID	AETERM	AEDECOD	AEBODSYS	AELOC	AESEV	AESER	AEACN	AESTDTC
XYZ	AE	XYZ-789	47869	5	Injection site rash	Injection site rash	General disorders and administration site conditions	LEFT ARM	MILD	N	NOT APPLICABLE	2007-05-10

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FASPID	FATESTCD	FATEST	FAOBJ	FAORRES	FAORRESU	VISIT	FADTC
1	XYZ	FA	XYZ-789	123451	5	SIZE	Size	Injection Site Rash	2.5	IN	VISIT 3	2007-05-12
2	XYZ	FA	XYZ-789	123452	5	COUNT	Count	Macules	26 to 100		VISIT 3	2007-05-12
3	XYZ	FA	XYZ-789	123453	5	COUNT	Count	Papules	1 to 25		VISIT 3	2007-05-12
4	XYZ	FA	XYZ-789	123454	5	COUNT	Count	Vesicles	0		VISIT 3	2007-05-12
5	XYZ	FA	XYZ-789	123455	5	COUNT	Count	Pustules	0		VISIT 3	2007-05-12
6	XYZ	FA	XYZ-789	123456	5	COUNT	Count	Scabs	0		VISIT 3	2007-05-12
7	XYZ	FA	XYZ-789	123457	5	COUNT	Count	Scars	0		VISIT 3	2007-05-12
8	XYZ	FA	XYZ-789	123459	5	SIZE	Size	Injection Site Rash	1	IN	VISIT 4	2007-05-19
9	XYZ	FA	XYZ-789	123460	5	COUNT	Count	Macules	1 to 25		VISIT 4	2007-05-19
10	XYZ	FA	XYZ-789	123461	5	COUNT	Count	Papules	1 to 25		VISIT 4	2007-05-19
11	XYZ	FA	XYZ-789	123462	5	COUNT	Count	Vesicles	0		VISIT 4	2007-05-19
12	XYZ	FA	XYZ-789	123463	5	COUNT	Count	Pustules	0		VISIT 4	2007-05-19
13	XYZ	FA	XYZ-789	123464	5	COUNT	Count	Scabs	0		VISIT 4	2007-05-19
14	XYZ	FA	XYZ-789	123465	5	COUNT	Count	Scars	0		VISIT 4	2007-05-19

RELREC

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
XYZ	AE		AESPID		ONE	23
XYZ	FA		FASPID		MANY	23

Example 3: ***Rheumatoid Arthritis History***

The form below collects information about rheumatoid arthritis. In this mock scenario, rheumatoid arthritis is a prerequisite for participation in an osteoporosis trial and was not collected as a Medical History event.

Rheumatoid Arthritis History	
Date of Assessment	DD-MMM-YYYY
During the past 6 months, how would you rate the following:	
Joint stiffness	○ MILD ○ MODERATE ○ SEVERE
Inflammation	○ MILD ○ MODERATE ○ SEVERE
Joint swelling	○ MILD ○ MODERATE ○ SEVERE
Joint pain (arthralgia)	○ MILD ○ MODERATE ○ SEVERE
Malaise	○ MILD ○ MODERATE ○ SEVERE
Duration of early morning stiffness (hours and minutes)	_____Hours _____Minutes

The collected data meet the following Findings About criteria: Data ("about" an Event or Intervention) for which no Event or Intervention record has been collected or created

In this mock scenario, the rheumatoid arthritis history was assessed on August 13, 2006.

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FATESTCD	FATEST	FAOBJ
1	ABC	FA	ABC-123	1	SEV	Severity/Intensity	Joint Stiffness
2	ABC	FA	ABC-123	2	SEV	Severity/Intensity	Inflammation
3	ABC	FA	ABC-123	3	SEV	Severity/Intensity	Joint Swelling
4	ABC	FA	ABC-123	4	SEV	Severity/Intensity	Arthralgia
5	ABC	FA	ABC-123	5	SEV	Severity/Intensity	Malaise
6	ABC	FA	ABC-123	6	DUR	Duration	Early Morning Stiffness

Row	FACAT	FAORRES	FASTRESC	FADTC	FAEVLINT
1 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	SEVERE	SEVERE	2006-08-13	-P6M
2 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	MODERATE	MODERATE	2006-08-13	-P6M
3 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	MODERATE	MODERATE	2006-08-13	-P6M
4 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	MODERATE	MODERATE	2006-08-13	-P6M
5 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	MILD	MILD	2006-08-13	-P6M
6 (cont'd)	RHEUMATOID ARTHRITIS HISTORY	PT1H30M	PT1H30M	2006-08-13	-P6M

Example 4: ***Findings About Fracture Events***

In this example, details about bone-fracture events are collected. This form is designed to collect multiple entries of fracture information including an initial entry for the most recent fracture prior to study participation, as well as entry of information for fractures that occur during the study.

Bone Fracture Assessment	
Complete form for most recent fracture prior to study participation. Enter Fracture Event Reference Number for all fractures occurring during study participation:	 _____
How did fracture occur	○ Pathologic ○ Fall ○ Other trauma ○ Unknown
What was the outcome	○ Normal Healing ○ Complications Select all that apply: □ *Complication x* □ *Complication y* □ *Complication z*
Additional therapeutic measures required	○ No ○ Unknown ○ Yes Select all that apply □ T*herapeutic measure a* □ *Therapeutic measure b* □ *Therapeutic measure c*

The collected data meet the following Findings About criteria: (1) Data ("about" an Event or Intervention) that indicate the occurrence of related symptoms or therapies and (2) Data ("about" an event/intervention) for which no Event or Intervention record has been collected or created

Determining when data further describe the parent event record either as Variable Qualifiers or Supplemental Qualifiers may be dependent on data collection design. In the above form, responses are provided for the most recent fracture but an event record reference number was not collected. But for in-study fracture events, a reference number is collected which would allow representing the responses as part of the Event record either as Supplemental Qualifiers and/or variables like --OUT and --CONTRT.

The below domains reflect responses to each Bone Fracture Assessment question. The historical-fracture responses that are without a parent record are represented in the FA domain, while the current-fracture responses are represented as Event records with Supplemental Qualifiers.

<u>Historical Fractures Having No Event Records</u>

fa.xpt

STUDYID	DOMAIN	USUBJID	FASEQ	FASPID	FATESTCD	FATEST	FAOBJ	FACAT	FAORRES	FADTC
ABC	FA	ABC -US-701-002	1	798654	REAS	Reason	Bone Fracture	BONE FRACTURE ASSESSMENT - HISTORY	FALL	2006-04-10
ABC	FA	ABC -US-701-002	2	798654	OUT	Outcome	Bone Fracture	BONE FRACTURE ASSESSMENT - HISTORY	COMPLICATIONS	2006-04-10
ABC	FA	ABC -US-701-002	3	798654	OCCUR	Occurrence	Complications	BONE FRACTURE ASSESSMENT	Y	2006-04-10
ABC	FA	ABC -US-701-002	4	798654	OCCUR	Occurrence	Therapeutic Measure	BONE FRACTURE ASSESSMENT	Y	2006-04-10

suppfa.xpt

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
ABC	FA	ABC -US-701-002	FASEQ	1	FATYP	FA Type	MOST RECENT	CRF	
ABC	FA	ABC -US-701-002	FASEQ	2	FATYP	FA Type	MOST RECENT	CRF	
ABC	FA	ABC -US-701-002	FASEQ	3	FATYP	FA Type	MOST RECENT	CRF	
ABC	FA	ABC -US-701-002	FASEQ	4	FATYP	FA Type	MOST RECENT	CRF	

Current Fractures Having Event Records

ce.xpt

STUDYID	DOMAIN	USUBJID	CESEQ	CESPID	CETERM	CELOC	CEOUT	CECONTRT	CESTDTC
ABC	CE	ABC -US-701-002	1	1	Fracture	ARM	NORMAL HEALING	Y	2006-07-03
ABC	CE	ABC -US-701-002	2	2	Fracture	LEG	COMPLICATIONS	N	2006-10-15

suppce.xpt

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
ABC	CE	ABC -US-701-002	CESPID	1	REAS	Reason	FALL	CRF	
ABC	CE	ABC -US-701-002	CESPID	2	REAS	Reason	OTHER TRAUMA	CRF	
ABC	CE	ABC -US-701-002	CESPID	2	OUT	Outcome	COMPLICATIONS	CRF	

Example 5: ***Pre-Specified Adverse Events***

In this example, three AEs are pre-specified and are scheduled to be asked at each visit. If the occurrence is yes, then a complete AE record is collected on the AE form.

Pre-Specified Adverse Events of Clinical Interest	
Date of Assessment	DD-MMM-YYYY
Did the following occur? If Yes, then enter a complete record in the AE CRF	
Headache	○ No ○ Yes ○ Not Done
Respiratory infection	○ No ○ Yes ○ Not Done
Nausea	○ No ○ Yes ○ Not Done

The collected data meet the following Findings About criteria: Data that indicate the occurrence of pre-specified adverse events.

In this mock scenario, each response to the pre-specified terms is represented in the Findings About domain. For the Y responses, an AE record is represented in the AE domain with its respective Qualifiers and timing details. In the example below, the AE of "Headache" encompasses multiple pre-specified Y responses and the AE of "Nausea" asked about on October 10, reported that it occurred and started on October 8 and ended on October 9. Note, in the example below, no relationship was collected to link the yes responses with the AE entries, therefore no RELREC was created.

fa.xpt

STUDYID	DOMAIN	USUBJID	FASEQ	FATESTCD	FATEST	FAOBJ	FAORRES	FASTRESC	FASTAT	FADTC	VISITNUM	VISIT
QRS	FA	1234	1	OCCUR	Occurrence	Headache	Y	Y		2005-10-01	2	VISIT 2
QRS	FA	1234	2	OCCUR	Occurrence	Respiratory Infection	N	N		2005-10-01	2	VISIT 2
QRS	FA	1234	3	OCCUR	Occurrence	Nausea			NOT DONE	2005-10-01	2	VISIT 2
QRS	FA	1234	4	OCCUR	Occurrence	Headache	Y	Y		2005-10-10	3	VISIT 3
QRS	FA	1234	5	OCCUR	Occurrence	Respiratory Infection	N	N		2005-10-10	3	VISIT 3
QRS	FA	1234	6	OCCUR	Occurrence	Nausea	Y	Y		2005-10-10	3	VISIT 3

ae.xpt

STUDYID	DOMAIN	USUBJID	AESEQ	AETERM	AEDECOD	AEBODSYS	AESEV	AEACN	AEPRESP	AESTDTC	AEENDTC
QRS	AE	1234	1	Headache	Headache	Nervous system disorders	MILD	NONE	Y	2005-09-30	
QRS	AE	1234	2	Nausea	Nausea	Gastrointestinal disorders	MODERATE	NONE	Y	2005-10-08	2005-10-09

Example 6: Findings About GERD

In this example, the following CRF is used to capture data about pre-specified symptoms of the disease under study on a daily basis. The date of the assessment is captured, but start and end timing of the events are not.

SYMPTOMS	INVESTIGATOR GERD SYMPTOM MEASUREMENT		
	VOLUME (mL)	NUMBER OF EPISODES	MAXIMUM SEVERITY *None, Mild, Moderate, Severe*
Vomiting			
Diarrhea			
Nausea			

The collected data meet the following Findings About criteria: 1) data that do not describe an Event or Intervention as a whole, and 2) data ("about" an Event or Intervention) having Qualifiers that can be represented in Findings variables (e.g., units, method).

The data below represent data from two visits for one subject. Records occur in blocks of three for Vomit, and in blocks of two for Diarrhea and Nausea.

Rows 1 -3: Show the results for the Vomiting tests at Visit 1.
Rows 4 and 5: Show the results for the Diarrhea tests at Visit 1.
Rows 6 and 7: Show the results for the Nausea tests at Visit 1.
Rows 8-10: Show the results for the Vomiting tests at Visit 2. These indicate that Vomiting was absent at Visit 2.
Rows 11 and 12: Show the results for the Diarrhea tests at Visit 2.
Rows 13 and 14: Indicate that Nausea was not assessed at Visit 2.

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FATESTCD	FATEST	FAOBJ	FACAT
1	XYZ	FA	XYZ-701-002	1	VOL	Volume	Vomit	GERD
2	XYZ	FA	XYZ-701-002	2	NUMEPISD	Number of Episodes	Vomit	GERD
3	XYZ	FA	XYZ-701-002	3	SEV	Severity/Intensity	Vomit	GERD
4	XYZ	FA	XYZ-701-002	4	NUMEPISD	Number of Episodes	Diarrhea	GERD
5	XYZ	FA	XYZ-701-002	5	SEV	Severity/Intensity	Diarrhea	GERD
6	XYZ	FA	XYZ-701-002	6	NUMEPISD	Number of Episodes	Nausea	GERD
7	XYZ	FA	XYZ-701-002	7	SEV	Severity/Intensity	Nausea	GERD
8	XYZ	FA	XYZ-701-002	8	VOL	Volume	Vomit	GERD
9	XYZ	FA	XYZ-701-002	9	NUMEPISD	Number of Episodes	Vomit	GERD
10	XYZ	FA	XYZ-701-002	10	SEV	Severity/Intensity	Vomit	GERD
11	XYZ	FA	XYZ-701-002	11	NUMEPISD	Number of Episodes	Diarrhea	GERD
12	XYZ	FA	XYZ-701-002	12	SEV	Severity/Intensity	Diarrhea	GERD
13	XYZ	FA	XYZ-701-002	13	NUMEPISD	Number of Episodes	Nausea	GERD
14	XYZ	FA	XYZ-701-002	14	SEV	Severity/Intensity	Nausea	GERD

Row	FAORRES	FAORRESU	FASTRESC	FASTRESU	VISIT	FASTAT	FADTC
1 (cont'd)	250	mL	250	mL	1		2006-02-02
2 (cont'd)	>10		>10		1		2006-02-02
3 (cont'd)	SEVERE		SEVERE		1		2006-02-02
4 (cont'd)	2		2		1		2006-02-02
5 (cont'd)	SEVERE		SEVERE		1		2006-02-02
6 (cont'd)	1		1		1		2006-02-02
7 (cont'd)	MODERATE		MODERATE		1		2006-02-02
8 (cont'd)	0	mL	0	mL	2		2006-02-03
9 (cont'd)	0		0		2		2006-02-03
10 (cont'd)	NONE		NONE		2		2006-02-03
11 (cont'd)	1		1		2		2006-02-03
12 (cont'd)	SEVERE		SEVERE		2		2006-02-03
13 (cont'd)					2	NOT DONE	2006-02-03
14 (cont'd)					2	NOT DONE	2006-02-03

Example 7: Findings About GERD

This example is similar to the one above except that with the following CRF, which includes a separate column to collect the occurrence of symptoms, measurements are collected only for symptoms that occurred. There is a record for the occurrence test for each symptom. If Vomiting occurs, there are 3 additional records, and for each occurrence of Diarrhea or Nausea there are two additional records.

Whether there are adverse event records related to these symptoms depends on agreements in place for the study about whether these symptoms are considered reportable adverse events.

SYMPTOMS		INVESTIGATOR GERD SYMPTOM MEASUREMENT (IF SYMPTOM OCCURRED)		
	OCCURRED? *Yes/No*	VOLUME (mL)	NUMBER OF EPISODES	MAXIMUM SEVERITY *Mild, Moderate, Severe*
Vomiting				
Diarrhea				
Nausea				

The collected data meet the following Findings About criteria: 1) data that do not describe an Event or Intervention as a whole, 2) data ("about" an Event or Intervention) having Qualifiers that can be represented in Findings variables (e.g., units, method), and 3) data ("about" an Event or Intervention) that indicate the occurrence of related symptoms or therapies.

The data below represent data two visits for one subject.
Rows 1-4: Show the results for the Vomiting tests at Visit 1.
Rows 5-7: Show the results for the Diarrhea tests at Visit 1.
Rows 8-10: Show the results for the Nausea tests at Visit 1.
Row 11: Show that Vomiting was absent at Visit 2.
Rows 12-14: Show the results for the Diarrhea tests at Visit 2.
Row 15: Show that Nausea was not assessed at Visit 2.

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FATESTCD	FATEST	FAOBJ	FACAT	FAORRES	FAORRESU	FASTRESC	FASTRESU	VISIT	FASTAT	FADTC
1	XYZ	FA	XYZ-701-002	1	OCCUR	Occurrence	Vomit	GERD	Y		Y		1		2006-02-02
2	XYZ	FA	XYZ-701-002	2	VOL	Volume	Vomit	GERD	250	mL	250	mL	1		2006-02-02
3	XYZ	FA	XYZ-701-002	3	NUMEPISD	Number of Episodes	Vomit	GERD	>10		>10		1		2006-02-02
4	XYZ	FA	XYZ-701-002	4	SEV	Severity/Intensity	Vomit	GERD	SEVERE		SEVERE		1		2006-02-02
5	XYZ	FA	XYZ-701-002	5	OCCUR	Occurrence	Diarrhea	GERD	Y		Y		1		2006-02-02
6	XYZ	FA	XYZ-701-002	6	NUMEPISD	Number of Episodes	Diarrhea	GERD	2		2		1		2006-02-02
7	XYZ	FA	XYZ-701-002	7	SEV	Severity/Intensity	Diarrhea	GERD	SEVERE		SEVERE		1		2006-02-02
8	XYZ	FA	XYZ-701-002	8	OCCUR	Occurrence	Nausea	GERD	Y		Y		1		2006-02-02
9	XYZ	FA	XYZ-701-002	9	NUMEPISD	Number of Episodes	Nausea	GERD	1		1		1		2006-02-02
10	XYZ	FA	XYZ-701-002	10	SEV	Severity/Intensity	Nausea	GERD	MODERATE		MODERATE		1		2006-02-02
11	XYZ	FA	XYZ-701-002	11	OCCUR	Occurrence	Vomit	GERD	N		N		2		2006-02-03
12	XYZ	FA	XYZ-701-002	12	OCCUR	Occurrence	Diarrhea	GERD	Y		Y		2		2006-02-03
13	XYZ	FA	XYZ-701-002	13	NUMEPISD	Number of Episodes	Diarrhea	GERD	1		1		2		2006-02-03
14	XYZ	FA	XYZ-701-002	14	SEV	Severity/Intensity	Diarrhea	GERD	SEVERE		SEVERE		2		2006-02-03
15	XYZ	FA	XYZ-701-002	15	OCCUR	Occurrence	Nausea	GERD					2	NOT DONE	2006-02-03

Example 8: Severity Assessments Per Visit of Adverse Events

The adverse event module collects, instead of a single assessment of severity, assessments of severity at each visit, as follows:

At each visit, record severity of the Adverse Event.						
Visit	1	2	3	4	5	6
Severity						

The collected data meet the following Findings About criteria: data that do not describe an Event or Intervention as a whole.

AE Domain (For clarity, only selected variables are shown.)

Row 1: Shows the record for a verbatim term of "Morning queasiness", for which the maximum severity over the course of the event was "Moderate."

Row 2: Shows the record for a verbatim term of "Watery stools", for which "Mild" severity was collected at Visits 2 and 3 before the event ended.

ae.xpt

Row	DOMAIN	USUBJID	AESEQ	AETERM	AEDECOD	AESTDTC	AEENDTC	AESEV
1	AE	123	1	Morning queasiness	Nausea	2006-02-01	2006-02-23	MODERATE
2	AE	123	2	Watery stools	Diarrhea	2006-02-01	2006-02-15	MILD

FA domain

Rows 1-4: Show severity data collected at the four visits that occurred between the start and end of the AE, "Morning queasiness". FAOBJ = NAUSEA, which is the value of AEDECOD in the associated AE record.

Rows 5-6: Show severity data collected at the two visits that occurred between the start and end of the AE, "Watery stools." FAOBJ = DIARRHEA, which is the value of AEDECOD in the associated AE record.

fa.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FATESTCD	FATEST	FAOBJ	FAORRES	VISIT	FADTC
1	XYZ	FA	XYZ-US-701-002	1	SEV	Severity/Intensity	Nausea	MILD	2	2006-02-02
2	XYZ	FA	XYZ-US-701-002	2	SEV	Severity/Intensity	Nausea	MODERATE	3	2006-02-09
3	XYZ	FA	XYZ-US-701-002	3	SEV	Severity/Intensity	Nausea	MODERATE	4	2006-02-16
4	XYZ	FA	XYZ-US-701-002	4	SEV	Severity/Intensity	Nausea	MILD	5	2006-02-23
5	XYZ	FA	XYZ-US-701-002	5	SEV	Severity/Intensity	Diarrhea	MILD	2	2006-02-02
6	XYZ	FA	XYZ-US-701-002	6	SEV	Severity/Intensity	Diarrhea	MILD	3	2006-02-09

RELREC dataset

Depending on how the relationships were collected, in this example, RELREC could be created with either 2 or 6 RELIDs. With 2 RELIDs, the Sponsor is describing that the severity ratings are related to the AE as well as being related to each other. With 6 RELIDs, the Sponsor is describing that the severity ratings are related to the AE only (and not to each other).

Example with two RELIDS

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
ABC	AE	XYZ-US-701-002	AESEQ	1		1
ABC	FA	XYZ-US-701-002	FASEQ	1		1
ABC	FA	XYZ-US-701-002	FASEQ	2		1
ABC	FA	XYZ-US-701-002	FASEQ	3		1
ABC	FA	XYZ-US-701-002	FASEQ	4		1
ABC	AE	XYZ-US-701-002	AESEQ	2		2
ABC	FA	XYZ-US-701-002	FASEQ	5		2
ABC	FA	XYZ-US-701-002	FASEQ	6		2

Example with six RELIDS

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
ABC	AE	XYZ-US-701-002	AESEQ	1		1
ABC	FA	XYZ-US-701-002	FASEQ	1		1
ABC	AE	XYZ-US-701-002	AESEQ	1		2
ABC	FA	XYZ-US-701-002	FASEQ	2		2
ABC	AE	XYZ-US-701-002	AESEQ	1		3
ABC	FA	XYZ-US-701-002	FASEQ	3		3
ABC	AE	XYZ-US-701-002	AESEQ	1		4
ABC	FA	XYZ-US-701-002	FASEQ	4		4
ABC	AE	XYZ-US-701-002	AESEQ	2		5
ABC	FA	XYZ-US-701-002	FASEQ	5		5
ABC	AE	XYZ-US-701-002	AESEQ	2		6
ABC	FA	XYZ-US-701-002	FASEQ	6		6

7 Trial Design Datasets

7.1 INTRODUCTION

7.1.1 PURPOSE OF TRIAL DESIGN MODEL

ICH E3, Guidance for Industry, Structure and Content of Clinical Study Reports, Section 9.1, calls for a brief, clear description of the overall plan and design of the study, and supplies examples of charts and diagrams for this purpose in Annex IIIa and Annex IIIb. Each Annex corresponds to an example trial, and each shows a diagram describing the study design and a table showing the schedule of assessments. The Trial Design Model in the SDTM provides a standardized way to describe those aspects of the planned conduct of a clinical trial shown in the study design diagrams of these examples. The standard Trial Design Datasets will allow reviewers to:

- clearly and quickly grasp the design of a clinical trial
- compare the designs of different trials
- search a data warehouse for clinical trials with certain features
- compare planned and actual treatments and visits for subjects in a clinical trial.

Modeling a clinical trial in this standardized way requires the explicit statement of certain decision rules that may not be addressed or may be vague or ambiguous in the usual prose protocol document. Prospective modeling of the design of a clinical trial should lead to a clearer, better protocol. Retrospective modeling of the design of a clinical trial should ensure a clear description of how the trial protocol was interpreted by the sponsor.

7.1.2 DEFINITIONS OF TRIAL DESIGN CONCEPTS

A clinical trial is a scientific experiment involving human subjects, which is intended to address certain scientific questions (the objectives of the trial). [See CDISC glossary for more complete definitions of clinical trial and objective.]

Trial Design: The design of a clinical trial is a plan for what will be done to subjects, and what data will be collected about them, in the course of the trial, to address the trial's objectives.

Epoch: As part of the design of a trial, the planned period of subjects' participation in the trial is divided into Epochs. Each Epoch is a period of time that serves a purpose in the trial as a whole. That purpose will be at the level of the primary objectives of the trial. Typically, the purpose of an Epoch will be to expose subjects to a treatment, or to prepare for such a treatment period (e.g., determine subject eligibility, wash out previous treatments) or to gather data on subjects after a treatment has ended. Note that at this high level a “treatment” is a treatment strategy, which may be simple (e.g., exposure to a single drug at a single dose) or complex. Complex treatment strategies could involve tapering through several doses, titrating dose according to clinical criteria, complex regimens involving multiple drugs, or strategies that involve adding or dropping drugs according to clinical criteria.

Arm: An Arm is a planned path through the trial. This path covers the entire time of the trial. The group of subjects assigned to a planned path is also often colloquially called an Arm. The group of subjects assigned to an Arm is also often called a treatment group, and in this sense, an Arm is equivalent to a treatment group.

Study Cell: Since the trial as a whole is divided into Epochs, each planned path through the trial (i.e., each Arm) is divided into pieces, one for each Epoch. Each of these pieces is called a Study Cell. Thus, there is a study cell for each combination of Arm and Epoch. Each Study Cell represents an implementation of the purpose of its associated Epoch. For an Epoch whose purpose is to expose subjects to treatment, each Study Cell associated with the Epoch has an associated treatment strategy. For example, a three-Arm parallel trial might have a Treatment Epoch whose purpose is to expose subjects to one of three study treatments: placebo, investigational product, or active control. There would be three Study Cells associated with the Treatment Epoch, one for each Arm. Each of these Study Cells exposes the subject to one of the three study treatments. Another example

involving more complex treatment strategies: a trial compares the effects of cycles of chemotherapy drug A given alone or in combination with drug B, where drug B is given as a pre-treatment to each cycle of drug A.

Element: An Element is a basic building block in the trial design. It involves administering a planned intervention, which may be treatment or no treatment, during a period of time. Elements for which the planned intervention is "no treatment" would include Elements for screening, washout, and follow-up.

Study Cells and Elements: Many, perhaps most, clinical trials, involve a single, simple administration of a planned intervention within a Study Cell, but for some trials, the treatment strategy associated with a Study Cell may involve a complex series of administrations of treatment. It may be important to track the component steps in a treatment strategy both operationally and because secondary objectives and safety analyses require that data be grouped by the treatment step during which it was collected. The steps within a treatment strategy may involve different doses of drug, different drugs, or different kinds of care, as in pre-operative, operative, and post-operative periods surrounding surgery. When the treatment strategy for a Study Cell is simple, the Study Cell will contain a single Element, and for many purposes there is little value in distinguishing between the Study Cell and the Element. However, when the treatment strategy for a Study Cell consists of a complex series of treatments, a Study Cell can contain multiple Elements. There may be a fixed sequence of Elements, or a repeating cycle of Elements, or some other complex pattern. In these cases, the distinction between a Study Cell and an Element is very useful.

Branch: In a trial with multiple Arms, the protocol plans for each subject to be assigned to one Arm. The time within the trial at which this assignment takes place is the point at which the Arm paths of the trial diverge, and so is called a branch point. For many trials, the assignment to an Arm happens all at one time, so the trial has one branch point. For other trials, there may be two or more branches that collectively assign a subject to an Arm. The process that makes this assignment may be a randomization, but it need not be.

Treatments: The word "treatment" may be used in connection with Epochs, Study Cells, or Elements, but has somewhat different meanings in each context:

- Since Epochs cut across Arms, an "Epoch treatment" is at a high level that does not specify anything that differs between Arms. For example, in a three-period crossover study of three doses of Drug X, each treatment Epoch is associated with Drug X, but not with a specific dose.
- A "Study Cell treatment" is specific to a particular Arm. For example, a parallel trial might have Study Cell treatments Placebo and Drug X, without any additional detail (e.g., dose, frequency, route of administration) being specified. A Study Cell treatment is at a relatively high level, the level at which treatments might be planned in an early conceptual draft of the trial, or in the title or objectives of the trial.
- An “Element treatment” may be fairly detailed. For example, for an Element representing a cycle of chemotherapy, Element treatment might specify 5 daily 100 mg doses of Drug X.

The distinctions between these levels are not rigid, and depend on the objectives of the trial. For example, route is generally a detail of dosing, but in a bioequivalence trial that compared IV and oral administration of Drug X, route is clearly part of Study Cell treatment.

Visit: A clinical encounter. The notion of a Visit derives from trials with outpatients, where subjects interact with the investigator during Visits to the investigator's clinical site. However, the term is used in other trials, where a trial Visit may not correspond to a physical Visit. For example, in a trial with inpatients, time may be subdivided into Visits, even though subjects are in hospital throughout the trial. For example, data for a screening Visit may be collected over the course of more than one physical visit. One of the main purposes of Visits is the performance of assessments, but not all assessments need take place at clinic Visits; some assessments may be performed by means of telephone contacts, electronic devices or call-in systems. The protocol should specify what contacts are considered Visits and how they are defined.

7.1.3 CURRENT AND FUTURE CONTENTS OF THE TRIAL DESIGN MODEL

The datasets currently included in the Trial Design Model:

- Trial Arms: describes the sequences of Elements in each Epoch for each Arm, and thus describes the complete sequence of Elements in each Arm.
- Trial Elements: describes the Elements used in the trial.
- Trial Visits: describes the planned schedule of Visits.
- Trial Inclusion/Exclusion: describes the inclusion/exclusion criteria used to screen subjects.
- Trial Summary: lists key facts (parameters) about the trial that are likely to appear in a registry of clinical trials.

The Trial Inclusion/Exclusion (TI) is discussed in Section 7.5. The IE domain (subject specific inclusion/exclusion criteria not met) described in Section 6.3.2 contains the actual exceptions to those criteria for enrolled subjects. The Trial Inclusion/Exclusion dataset was developed before the define.xml standard for metadata. Because the text of all inclusion/exclusion criteria can now be included in define.xml, this dataset may be deprecated in future versions of the SDTM.

Future versions of the Trial Design Model are expected to include additional aspects of clinical trials; some of these additional aspects will be used in submissions, while others are needed for accurate representation of protocols for the planning stage, but will have limited effects on the SDTM.

Work is underway on representing the schedule of assessments and planned interventions. When this work is completed, it is expected that the information on planned assessments and interventions will be submitted along with SDTM datasets containing actual subject data, to allow the comparison of planned and actual assessments and interventions.

The current Trial Design Model has limitations in representing protocols, which include the following:

- plans for indefinite numbers of repeating Elements (e.g., indefinite numbers of chemotherapy cycles)
- indefinite numbers of Visits (e.g., periodic follow-up Visits for survival)
- indefinite numbers of Epochs
- indefinite numbers of Arms.

The last two situations arise in dose-escalation studies where increasing doses are given until stopping criteria are met. Some dose-escalation studies enroll a new cohort of subjects for each new dose, and so, at the planning stage, have an indefinite number of Arms. Other dose-escalation studies give new doses to a continuing group of subjects, and so are planned with an indefinite number of Epochs.

There may also be limitations in representing other patterns of Elements within a Study Cell that are more complex than a simple sequence. For the purpose of submissions about trials that have already completed, these limitations are not critical, so it is expected that development of the Trial Design Model to address these limitations will have a minimal impact on SDTM.

7.2 TRIAL ARMS

This section contains:

- The Trial Arms dataset and assumptions
- A series of example trials, which illustrate the development of the Trial Arms dataset
- Advice on various issues in the development of the Trial Arms dataset
- A recap of the Trial Arms dataset, and the function of its variables.

7.2.1 TRIAL ARMS DATASET — TA

ta.xpt, Trial Arms — Trial Design, Version 3.1.2. One record per planned Element per Arm

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req
DOMAIN	Domain Abbreviation	Char	TA	Identifier	Two-character abbreviation for the domain.	Req
ARMCD	Planned Arm Code	Char	*	Topic	ARMCD is limited to 20 characters and does not have special character restrictions. The maximum length of ARMCD is longer than that for other "short" variables to accommodate the kind of values that are likely to be needed for crossover trials. For example, if ARMCD values for a seven-period crossover were constructed using two-character abbreviations for each treatment and separating hyphens, the length of ARMCD values would be 20.	Req
ARM	Description of Planned Arm	Char	*	Synonym Qualifier	Name given to an Arm or treatment group.	Req
TAETORD	Order of Element within Arm	Num		Identifier	Number that gives the order of the Element within the Arm.	Req
ETCD	Element Code	Char	*	Record Qualifier	ETCD (the companion to ELEMENT) is limited to 8 characters and does not have special character restrictions. These values should be short for ease of use in programming, but it is not expected that ETCD will need to serve as a variable name.	Req
ELEMENT	Description of Element	Char	*	Synonym Qualifier	The name of the Element. The same Element may occur more than once within an Arm.	Perm
TABRANCH	Branch	Char		Rule	Condition subject met, at a "branch" in the trial design at the end of this Element, to be included in this Arm; (e.g., randomization to DRUG X).	Exp
TATRANS	Transition Rule	Char		Rule	If the trial design allows a subject to transition to an Element other than the next Element in sequence, then the conditions for transitioning to those other Elements, and the alternative Element sequences, are specified in this rule (e.g., Responders go to washout).	Exp
EPOCH	Epoch	Char	*	Timing	Name of the Trial Epoch with which this Element of the Arm is associated.	Req

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

7.2.2 ASSUMPTIONS FOR TA DATASET

1. TAETORD is an integer. In general the value of TAETORD is 1 for the first Element in each Arm, 2 for the second Element in each Arm, etc. Occasionally, it may be convenient to skip some values (see Section 7.2.3.6 for an example). Although the values of TAETORD need not always be sequential, their order must always be the correct order for the Elements in the Arm path.
2. Elements in different Arms with the same value of TAETORD may or may not be at the same time, depending on the design of the trial. The example trials illustrate a variety of possible situations. The same Element may occur more than once within an Arm.

3. TABRANCH describes the outcome of a branch decision point in the trial design for subjects in the Arm. A branch decision point takes place between Epochs, and is associated with the Element that ends at the decision point. For instance, if subjects are assigned to an Arm where they receive treatment A through a randomization at the end of Element X, the value of TABRANCH for Element X would be "Randomized to A."
4. Branch decision points may be based on decision processes other than randomizations, such as clinical evaluations of disease response or subject choice.
5. There is usually some gap in time between the performance of a randomization and the start of randomized treatment. However, in many trials this gap in time is small and it is highly unlikely that subjects will leave the trial between randomization and treatment. In these circumstances, the trial does not need to be modeled with this time period between randomization and start of treatment as a separate Element.
6. Some trials include multiple paths that are closely enough related so that they are all considered to belong to one Arm. In general, this set of paths will include a "complete" path along with shorter paths that skip some Elements. The sequence of Elements represented in the Trial Arms should be the complete, longest path. TATRANS describes the decision points that may lead to a shortened path within the Arm.
7. If an Element does not end with a decision that could lead to a shortened path within the Arm, then TATRANS will be blank. If there is such a decision, TATRANS will be in a form like, "If condition X is true, then go to Epoch Y" or "If condition X is true, then go to Element with TAETORD=Z."
8. EPOCH is not strictly necessary for describing the sequence of Elements in an Arm path, but it is the conceptual basis for comparisons between Arms, and also provides a useful way to talk about what is happening in a blinded trial while it is blinded. During periods of blinded treatment, blinded participants will not know which Arm and Element a subject is in, but EPOCH should provide a description of the time period that does not depend on knowing Arm.
9. EPOCH should be assigned in such a way that Elements from different Arms with the same value of EPOCH are "comparable" in some sense. The degree of similarity across Arms varies considerably in different trials, as illustrated in the examples.
10. Note that Study Cells are not explicitly defined in the Trial Arms dataset. A set of records with a common value of both ARMCD and EPOCH constitute the description of a Study Cell. Transition rules within this set of records are also part of the description of the Study Cell.
11. EPOCH may be used as a timing variable in other datasets, such as EX and DS, and values of EPOCH must be different for different epochs. For instance, in a crossover trial with three treatment epochs, each must be given a distinct name; all three cannot be called “TREATMENT”.

7.2.3 TRIAL ARMS EXAMPLES

The core of the Trial Design Model is the Trial Arms (TA) dataset. For each Arm of the trial, it contains one record for each occurrence of an Element in the path of the Arm.

Although the Trial Arms dataset has one record for each trial Element traversed by subjects assigned to the Arm, it is generally more useful to work out the overall design of the trial at the Study Cell level, then to work out the Elements within each Study Cell, and finally to develop the definitions of the Elements that are contained in the Trial Elements table.

It is generally useful to draw diagrams, like those mentioned in ICH E3, when working out the design of a trial. The protocol may include a diagram that can serve as a starting point. Such a diagram can then be converted into a Trial Design Matrix, which displays the Study Cells and which can be, in turn, converted into the Trial Arms dataset.

This section uses example trials of increasing complexity, numbered 1 to 7, to illustrate the concepts of trial design. For each example trial, the process of working out the Trial Arms table is illustrated by means of a series of diagrams and tables, including the following:

- A diagram showing the branching structure of the trial in a “study schema” format such as might appear in a protocol.
- A diagram that shows the “prospective” view of the trial, the view of those participating in the trial. It is similar to the "study schema" view in that it usually shows a single pool of subjects at the beginning of the trial, with the pool of subjects being split into separate treatment groups at randomizations and other branches. They show the epochs of the trial, and, for each group of subjects and each epoch, the sequence of elements within each epoch for that treatment group. The arms are also indicated on these diagrams.

- A diagram that shows the “retrospective” view of the trial, the view of the analyst reporting on the trial. The style of diagram looks more like a matrix; it is also more like the structure of the Trial Arms dataset. It is an arm-centered view, which shows, for each study cell (epoch/arm combination) the sequence of elements within that study cell. It can be thought of as showing, for each arm the elements traversed by a subject who completed that arm as intended.
- If the trial is blinded, a diagram that shows the trial as it appears to a blinded participant.
- A Trial Design Matrix, an alternative format for representing most of the information in the diagram that shows Arms and Epochs, and emphasizes the Study Cells.
- The Trial Arms dataset.

Readers are advised to read the following section with Example 1 before reading other examples, since Example 1 explains the conventions used for the diagrams and tables.

7.2.3.1 EXAMPLE TRIAL 1, A PARALLEL TRIAL

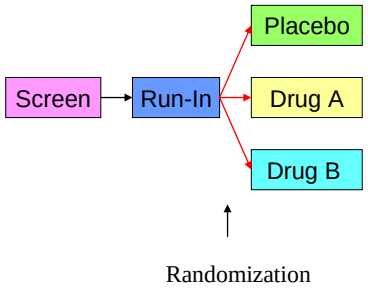
Diagrams that represent study schemas generally conceive of time as moving from left to right, use horizontal lines to represent periods of time, and slanting lines to represent branches into separate treatments, convergence into a common follow-up, or cross-over to a different treatment.

In this document, diagrams are drawn using "blocks" corresponding to trial Elements rather than horizontal lines. Trial Elements are the various treatment and non-treatment time periods of the trial, and we want to emphasize the separate trial Elements that might otherwise be "hidden" in a single horizontal line. See Section 7.3 for more information about defining trial Elements. In general, the Elements of a trial will be fairly clear. However, in the process of working out a trial design, alternative definitions of trial Elements may be considered, in which case diagrams for each alternative may be constructed.

In the study schema diagrams in this document, the only slanting lines used are those that represent branches, the decision points where subjects are divided into separate treatment groups. One advantage of this style of diagram, which does not show convergence of separate paths into a single block, is that the number of Arms in the trial can be determined by counting the number of parallel paths at the right end of the diagram.

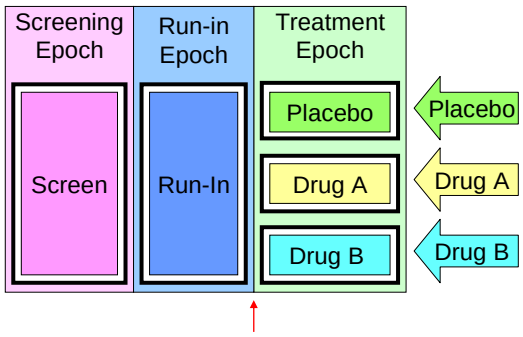
Below is the study schema diagram for Example Trial 1, a simple parallel trial. This trial has three Arms, corresponding to the three possible left-to-right "paths" through the trial. Each path corresponds to one of the three treatment Elements at the right end of the diagram. Note that the randomization is represented by the three red arrows leading from the Run-in block.

Example Trial 1: Parallel Design
Study schema



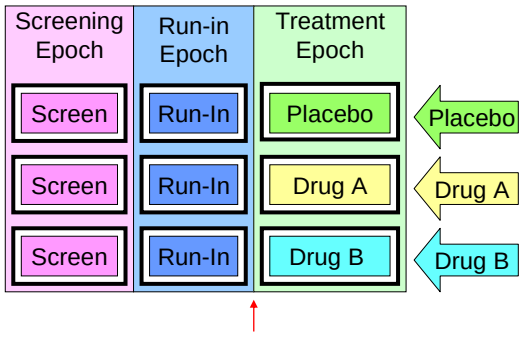
The next diagram for this trial shows the epochs of the trial, indicates the three Arms, and shows the sequence of elements for each group of subjects in each epoch. The arrows are at the right hand side of the diagram because it is at the end of the trial that all the separate paths through the trial can be seen. Note that, in this diagram, the randomization, which was shown using three red arrows connecting the Run-in block with the three treatment blocks in the first diagram, is now indicated by a note with an arrow pointing to the line between two epochs.

Example Trial 1: Parallel Design
Prospective view



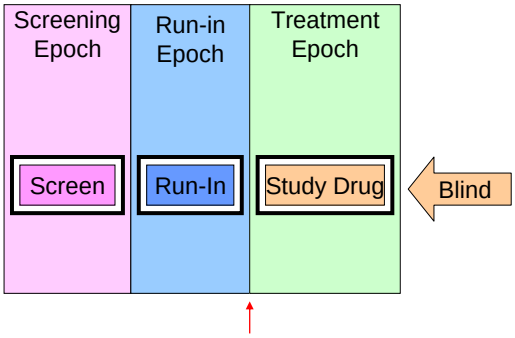
The next diagram can be thought of as the "retrospective" view of a trial, the view back from a point in time when a subject's assignment to an arm is known. In this view, the trial appears as a grid, with an arm represented by a series of study cells, one for each epoch, and a sequence of elements within each study cell. In this trial, as in many trials, there is exactly one element in each study cell, but later examples will illustrate that this is not always the case.

Example Trial 1: Parallel Design
Retrospective view



The next diagram shows the trial from the viewpoint of blinded participants. To blinded participants in this trial, all Arms look alike. They know when a subject is in the Screen Element, or the Run-in Element, but when a subject is in the Treatment Epoch, they know only that the subject is in an Element which involves receiving study drug, not which study drug, and therefore not which Element.

Example Trial 1: Parallel Trial Blinded View



A trial design matrix is a table with a row for each Arm in the trial and a column for each Epoch in the trial. It is closely related to the retrospective view of the trial, and many users may find it easier to construct a table than to draw a diagram. The cells in the matrix represent the Study Cells, which are populated with trial Elements. In this trial, each Study Cell contains exactly one Element.

The columns of a Trial Design Matrix are the Epochs of the trial, the rows are the Arms of the trial, and the cells of the matrix (the Study Cells) contain Elements. Note that the randomization is not represented in the Trial Design Matrix. All the diagrams above and the trial design matrix below are alternative representations of the trial design. None of them contains all the information that will be in the finished Trial Arms dataset, but users may find it useful to draw some or all of them when working out the dataset.

Trial Design Matrix for Example Trial 1

	Screen	**Run-in**	**Treatment**
Placebo	Screen	Run-in	PLACEBO
A	Screen	Run-in	DRUG A
B	Screen	Run-in	DRUG B

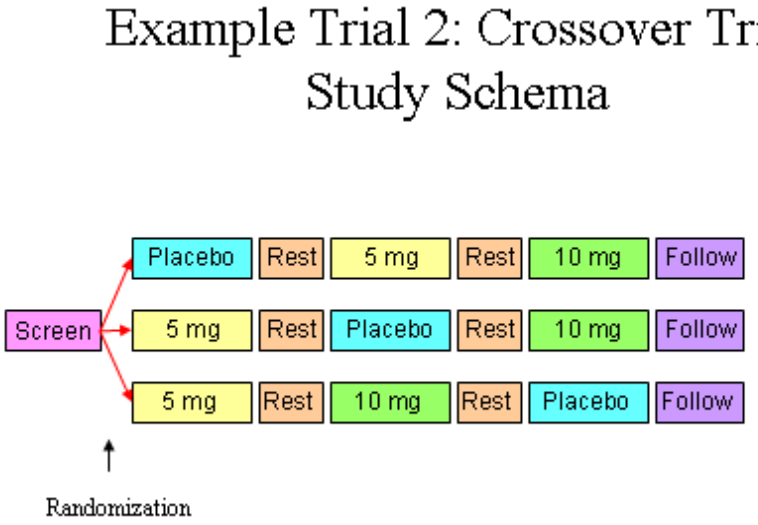
For Example Trial 1, the conversion of the Trial Design Matrix into the Trial Arms dataset is straightforward. For each cell of the matrix, there is a record in the Trial Arms dataset. ARM, EPOCH, and ELEMENT can be populated directly from the matrix. TAETORD acts as a sequence number for the Elements within an Arm, so it can be populated by counting across the cells in the matrix. The randomization information, which is not represented in the Trial Design Matrix, is held in TABRANCH in the Trial Arms dataset. TABRANCH is populated only if there is a branch at the end of an Element for the Arm. When TABRANCH is populated, it describes how the decision at the branch point would result in a subject being in this Arm.

Trial Arms Dataset for Example Trial 1

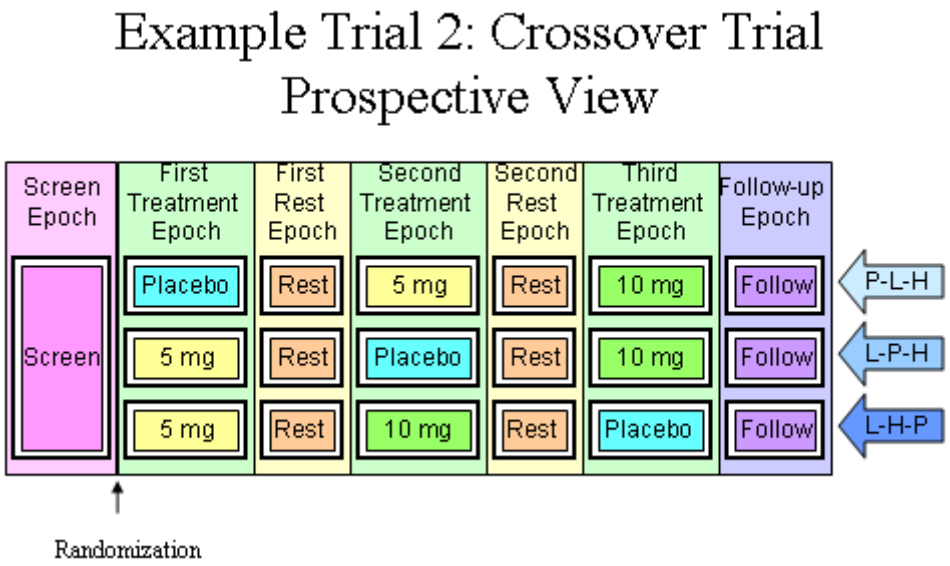
Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX1	TA	P	Placebo	1	SCRN	Screen			Screen
2	EX1	TA	P	Placebo	2	RI	Run-In	Randomized to Placebo		Run-In
3	EX1	TA	P	Placebo	3	P	Placebo			Treatment
4	EX1	TA	A	A	1	SCRN	Screen			Screen
5	EX1	TA	A	A	2	RI	Run-In	Randomized to Drug A		Run-In
6	EX1	TA	A	A	3	A	Drug A			Treatment
7	EX1	TA	B	B	1	SCRN	Screen			Screen
8	EX1	TA	B	B	2	RI	Run-In	Randomized to Drug B		Run-In
9	EX1	TA	B	B	3	B	Drug B			Treatment

7.2.3.2 EXAMPLE TRIAL 2, A CROSSOVER TRIAL

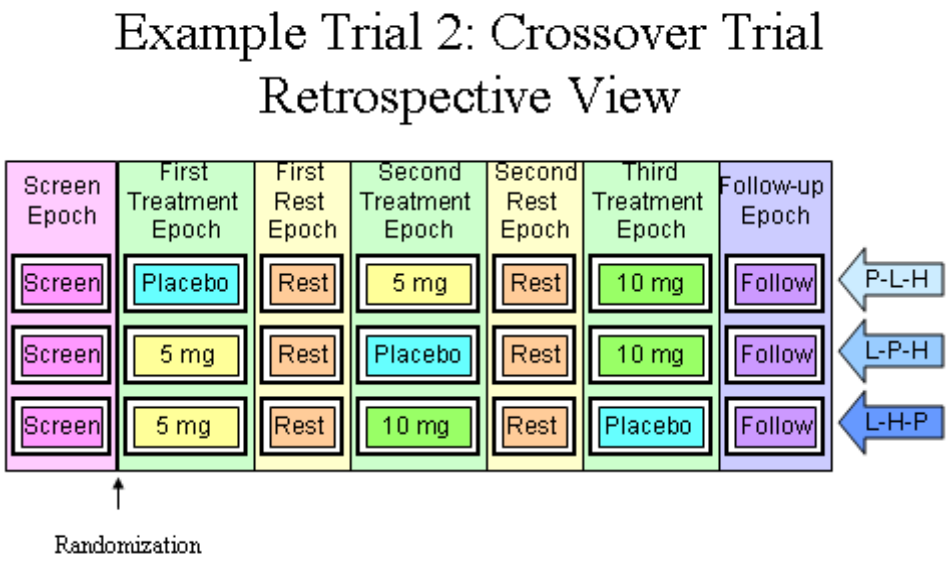
The diagram below is for a crossover trial. However, the diagram does not use the crossing slanted lines sometimes used to represent crossover trials, since the order of the blocks is sufficient to represent the design of the trial. Slanted lines are used only to represent the branch point at randomization, when a subject is assigned to a sequence of treatments. As in most crossover trials, the Arms are distinguished by the order of treatments, with the same treatments present in each Arm. Note that even though all three Arms of this trial end with the same block, the block for the follow-up Element, the diagram does not show the Arms converging into one block. Also note that the same block (the "Rest" Element) occurs twice within each Arm. Elements are conceived of as "reusable" and can appear in more than one Arm, in more than one Epoch, and more than once in an Arm.



The next diagram for this crossover trial shows the prospective view of the trial, identifies the epoch and arms of the trial, and gives each a name. As for most crossover studies, the objectives of the trial will be addressed by comparisons between the arms and by within-subject comparisons between treatments. The design thus depends on differentiating the periods during which the subject receives the three different treatments and so there are three different treatment epochs. The fact that the rest periods are identified as separate Epochs suggests that these also play an important part in the design of the trial; they are probably designed to allow subjects to return to "baseline" with data collected to show that this occurred. Note that Epochs are not considered "reusable", so each Epoch has a different name, even though all the Treatment Epochs are similar and both the Rest Epochs are similar. As with the first example trial, there is a one to one relationship between the Epochs of the trial and the Elements in each Arm.

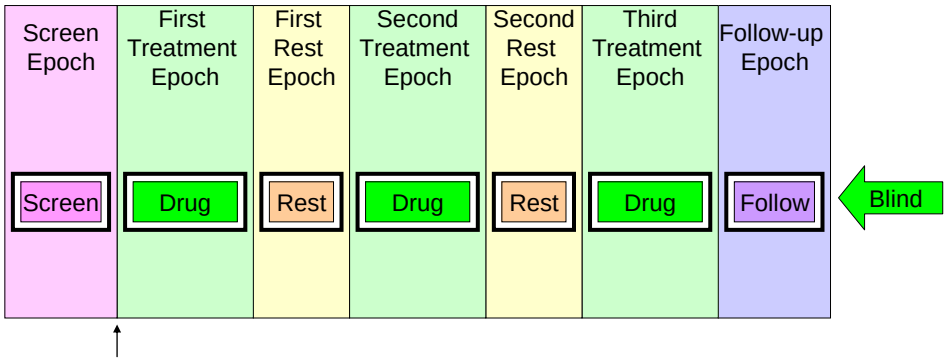


The next diagram shows the retrospective view of the trial.



The last diagram for this trial shows the trial from the viewpoint of blinded participants. As in the simple parallel trial above, blinded participants see only one sequence of Elements, since during the treatment Epochs they do not know which of the treatment Elements a subject is in.

Example Trial 2: Crossover Trial Blinded View



The trial design matrix for the crossover example trial is shown below. It corresponds closely to the retrospective diagram above.

Trial Design Matrix for Example Trial 2

	Screen	First Treatment	First Rest	Second Treatment	Second Rest	Third Treatment	Follow-up
P-5-10	Screen	Placebo	Rest	5 mg	Rest	10 mg	Follow-up
5-P-10	Screen	5 mg	Rest	Placebo	Rest	10 mg	Follow-up
5-10-P	Screen	5 mg	Rest	10 mg	Rest	Placebo	Follow-up

It is straightforward to produce the Trial Arms dataset for this crossover trial from the diagram showing Arms and Epochs, or from the Trial Design Matrix. To avoid confusion between the "Screen" Epoch, and the "Screen" Element, the word "Epoch" has been included in all the Epoch names.

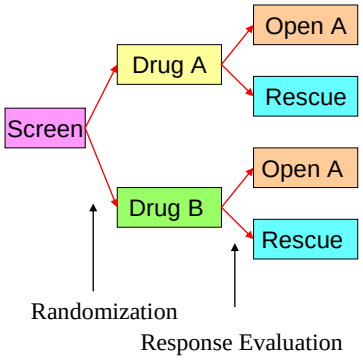
Trial Arms Dataset for Example Trial 2

Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX2	TA	P-5-10	Placebo-5mg-10mg	1	SCRN	Screen	Randomized to Placebo - 5 mg - 10 mg		Screen Epoch
2	EX2	TA	P-5-10	Placebo-5mg-10mg	2	P	Placebo			First Treatment Epoch
3	EX2	TA	P-5-10	Placebo-5mg-10mg	3	REST	Rest			First Rest Epoch
4	EX2	TA	P-5-10	Placebo-5mg-10mg	4	5	5 mg			Second Treatment Epoch
5	EX2	TA	P-5-10	Placebo-5mg-10mg	5	REST	Rest			Second Rest Epoch
6	EX2	TA	P-5-10	Placebo-5mg-10mg	6	10	10 mg			Third Treatment Epoch
7	EX2	TA	P-5-10	Placebo-5mg-10mg	7	FU	Follow-up			Follow-up Epoch
8	EX2	TA	5-P-10	5mg-Placebo-10mg	1	SCRN	Screen	Randomized to 5 mg - Placebo - 10 mg		Screen Epoch
9	EX2	TA	5-P-10	5mg-Placebo-10mg	2	5	5 mg			First Treatment Epoch
10	EX2	TA	5-P-10	5mg-Placebo-10mg	3	REST	Rest			First Rest Epoch
11	EX2	TA	5-P-10	5mg-Placebo-10mg	4	P	Placebo			Second Treatment Epoch
12	EX2	TA	5-P-10	5mg-Placebo-10mg	5	REST	Rest			Second Rest Epoch
13	EX2	TA	5-P-10	5mg-Placebo-10mg	6	10	10 mg			Third Treatment Epoch
14	EX2	TA	5-P-10	5mg-Placebo-10mg	7	FU	Follow-up			Follow-up Epoch
15	EX2	TA	5-10-P	5mg-10mg-Placebo	1	SCRN	Screen	Randomized to 5 mg - 10 mg – Placebo		Screen Epoch
16	EX2	TA	5-10-P	5mg-10mg-Placebo	2	5	5 mg			First Treatment Epoch
17	EX2	TA	5-10-P	5mg-10mg-Placebo	3	REST	Rest			First Rest Epoch
18	EX2	TA	5-10-P	5mg-10mg-Placebo	4	10	10 mg			Second Treatment Epoch
19	EX2	TA	5-10-P	5mg-10mg-Placebo	5	REST	Rest			Second Rest Epoch
20	EX2	TA	5-10-P	5mg-10mg-Placebo	6	P	Placebo			Third Treatment Epoch
21	EX2	TA	5-10-P	5mg-10mg-Placebo	7	FU	Follow-up			Follow-up Epoch

7.2.3.3 EXAMPLE TRIAL 3, A TRIAL WITH MULTIPLE BRANCH POINTS

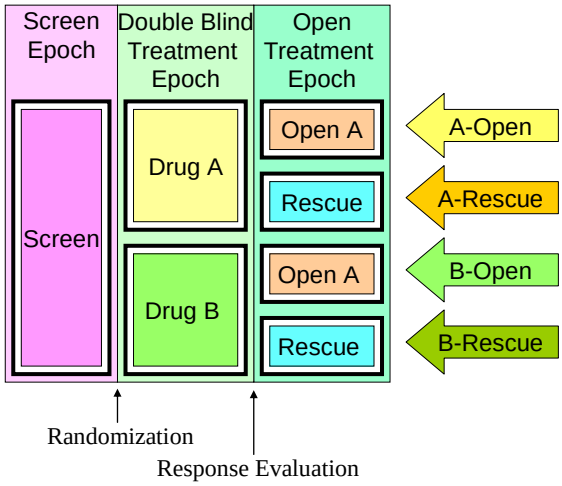
Each of the paths for the trial shown in the diagram below goes through one branch point at randomization, and then through another branch point when response is evaluated. This results in four Arms, corresponding to the number of possible paths through the trial, and also to the number of blocks at the right end of the diagram. The fact that there are only two kinds of block at the right end ("Open DRUG X" and "Rescue") does not affect the fact that there are four "paths" and thus four Arms.

Example Trial 3: Multiple Branches
Study Schema



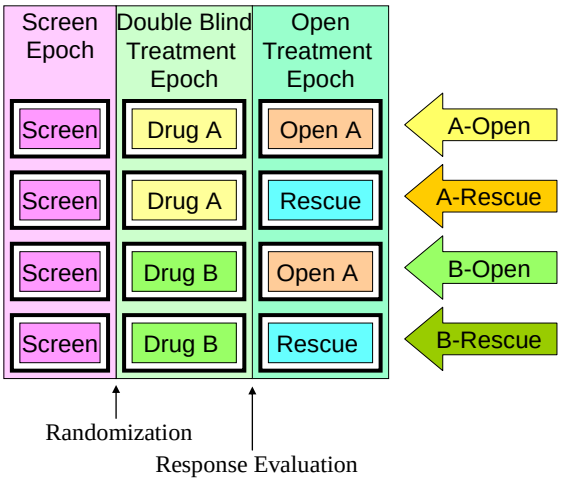
The next diagram for this trial is the prospective view. It shows the epochs of the trial and how the initial group of subjects is split into two treatment groups for the double blind treatment epoch, and how each of those initial treatment groups is split in two at the response evaluation, resulting in the four Arms of this trial The names of the Arms have been chosen to represent the outcomes of the successive branches that, together, assign subjects to Arms. These compound names were chosen to facilitate description of subjects who may drop out of the trial after the first branch and before the second branch. See Example 7 in Section 5.1.1.2, which illustrates DM and SE data for such subjects.

Example Trial 3 : Multiple Branches
Prospective View



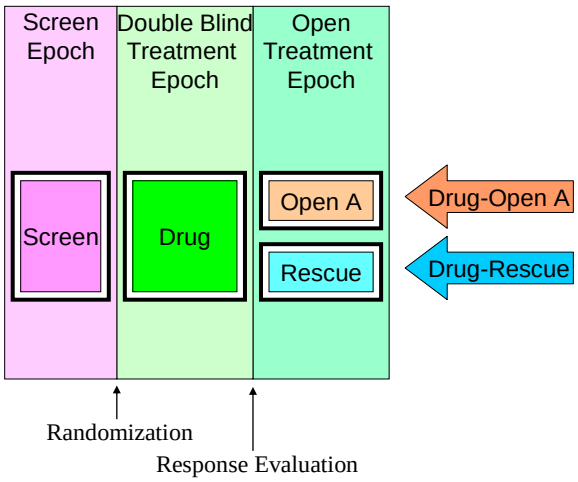
The next diagram shows the retrospective view. As with the first two example trials, there is one element in each study cell.

Example Trial 3 : Multiple Branches Retrospective View



The last diagram for this trial shows the trial from the viewpoint of blinded participants. Since the prospective view is the view most relevant to study participants, the blinded view shown here is a prospective view. Since blinded participants can tell which treatment a subject receives in the Open Label Epoch, they see two possible element sequences.

Example Trial 3 : Multiple Branches Blinded Prospective View



The trial design matrix for this trial can be constructed easily from the diagram showing Arms and Epochs.

Trial Design Matrix for Example Trial 3

	Screen	Double Blind	Open Label
A-Open A	Screen	Treatment A	Open Drug A
A-Rescue	Screen	Treatment A	Rescue
B-Open A	Screen	Treatment B	Open Drug A
B-Rescue	Screen	Treatment B	Rescue

Creating the Trial Arms dataset for Example Trial 3 is similarly straightforward. Note that because there are two branch points in this trial, TABRANCH is populated for two records in each Arm. Note also that the values of ARMCD, like the values of ARM, reflect the two separate processes that result in a subject's assignment to an Arm.

Trial Arms Dataset for Example Trial 3

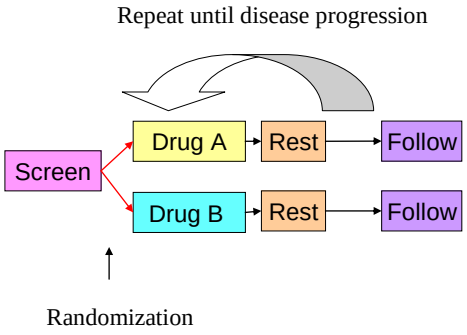
Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX3	TA	AA	A-Open A	1	SCRN	Screen	Randomized to Treatment A		Screen
2	EX3	TA	AA	A-Open A	2	DBA	Treatment A	Assigned to Open Drug A on basis of response evaluation		Double Blind
3	EX3	TA	AA	A-Open A	3	OA	Open DRUG A			Open Label
4	EX3	TA	AR	A-Rescue	1	SCRN	Screen	Randomized to Treatment A		Screen
5	EX3	TA	AR	A-Rescue	2	DBA	Treatment A	Assigned to Rescue on basis of response evaluation		Double Blind
6	EX3	TA	AR	A-Rescue	3	RSC	Rescue			Open Label
7	EX3	TA	BA	B-Open A	1	SCRN	Screen	Randomized to Treatment B		Screen
8	EX3	TA	BA	B-Open A	2	DBB	Treatment B	Assigned to Open Drug A on basis of response evaluation		Double Blind
9	EX3	TA	BA	B-Open A	3	OA	Open DRUG A			Open Label
10	EX3	TA	BR	B-Rescue	1	SCRN	Screen	Randomized to Treatment B		Screen
11	EX3	TA	BR	B-Rescue	2	DBB	Treatment B	Assigned to Rescue on basis of response evaluation		Double Blind
12	EX3	TA	BR	B-Rescue	3	RSC	Rescue			Open Label

See Section 7.2.4.1 for additional discussion of when a decision point in a trial design should be considered to give rise to a new Arm.

7.2.3.4 EXAMPLE TRIAL 4, CYCLES OF CHEMOTHERAPY

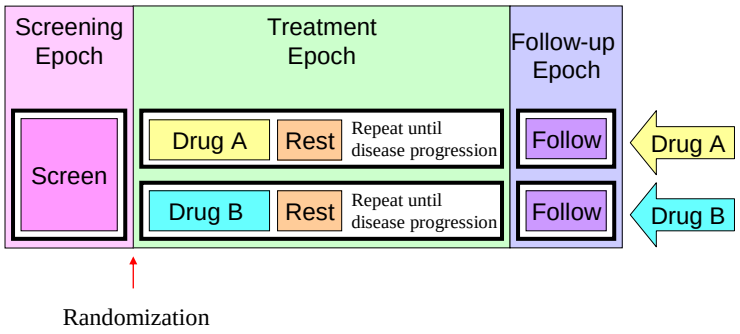
The diagram below uses a new symbol, a large curved arrow representing the fact that the chemotherapy treatment (A or B) and the rest period that follows it are to be repeated. In this trial, the chemotherapy "cycles" are to be repeated until disease progression. Some chemotherapy trials specify a maximum number of cycles, but protocols that allow an indefinite number of repeats are not uncommon.

Example Trial 4: Cyclical Chemotherapy
Study Schema



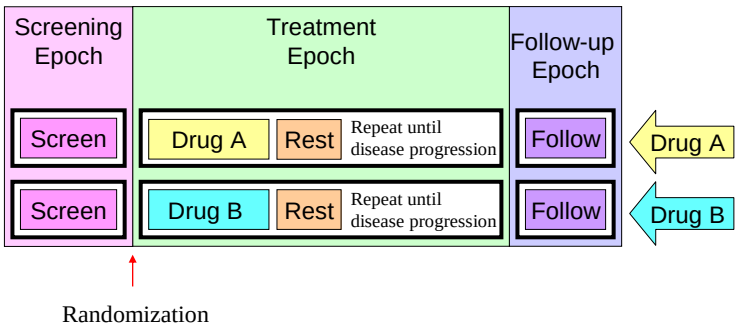
The next diagram shows the prospective view of this trial. Note that, in spite of the repeating element structure, this is, at its core, a two-arm parallel study, and thus has two arms. In SDTMIG 3.1.1, there was an implicit assumption that each element must be in a separate epoch, and trials with cyclical chemotherapy were difficult to handle. The introduction of the concept of study cells, and the dropping of the assumption that elements and epochs have a one to one relationship resolves these difficulties. This trial is best treated as having just three epochs, since the main objectives of the trial involve comparisons between the two treatments, and do not require data to be considered cycle by cycle.

Example Trial 4: Cyclical Chemotherapy
Prospective View



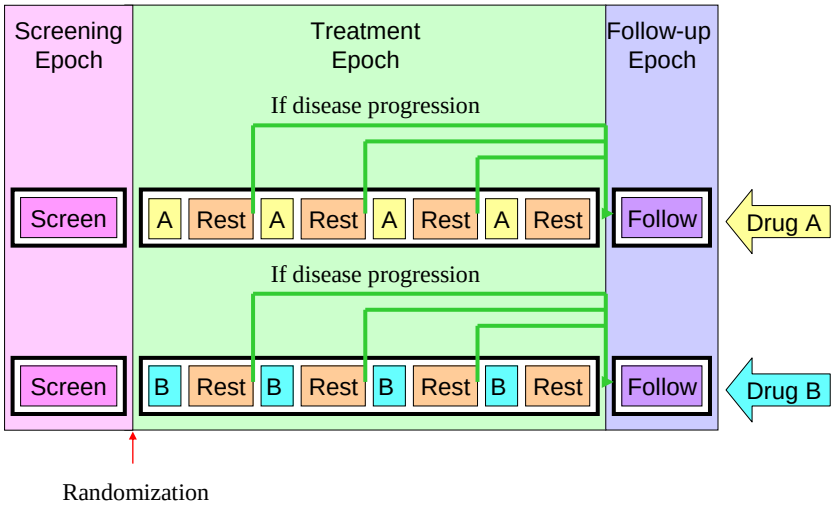
The next diagram shows the retrospective view of this trial.

Example Trial 4: Cyclical Chemotherapy
Retrospective View



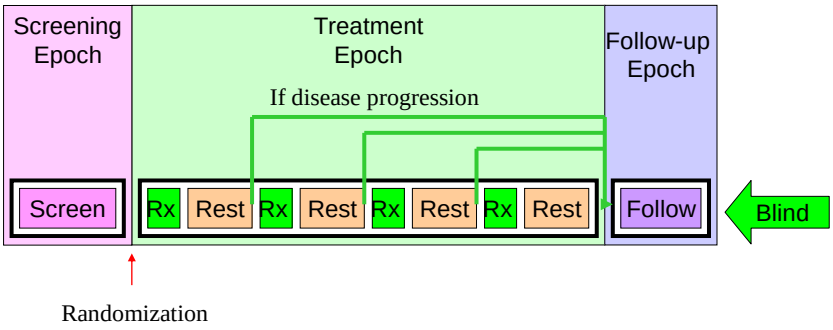
For the purpose of developing a Trial Arms dataset for this oncology trial, the diagram must be redrawn to explicitly represent multiple treatment and rest elements. If a maximum number of cycles is not given by the protocol, then, for the purposes of constructing an SDTM Trial Arms dataset for submission, which can only take place after the trial is complete, the number of repeats included in the Trial Arms dataset should be the maximum number of repeats that occurred in the trial. The next diagram assumes that the maximum number of cycles that occurred in this trial was four. Some subjects will not have received all four cycles, because their disease progressed. The rule that directed that they receive no further cycles of chemotherapy is represented by a set of green arrows, one at the end of each Rest epoch, that shows that a subject "skips forward" if their disease progresses. In the Trial Arms dataset, each "skip forward" instruction is a transition rule, recorded in the TATRANS variable; when TATRANS is not populated, the rule is to transition to the next element in sequence.

Example Trial 4: Cyclical Chemotherapy
Retrospective View with Explicit Repeats



The logistics of dosing mean that few oncology trials are blinded, if this trial is blinded, then the next diagram shows the trial from the viewpoint of blinded participants.

Example Trial 4: Cyclical Chemotherapy
Blinded View



The Trial Design Matrix for Example Trial 4 corresponds to the diagram showing the retrospective view with explicit repeats of the treatment and rest elements. As noted above, the Trial Design Matrix does not include information on when randomization occurs; similarly, information corresponding to the “skip forward” rules is not represented in the Trial Design Matrix.

Trial Design Matrix for Example Trial 4

	Screen	Treatment								Follow-up
A	Screen	Trt A	Rest	Trt A	Rest	Trt A	Rest	Trt A	Rest	Follow-up
B	Screen	Trt B	Rest	Trt B	Rest	Trt B	Rest	Trt B	Rest	Follow-up

The Trial Arms dataset for Example Trial 4 requires the use of the TATRANS variable in the Trial Arms dataset to represent the "repeat until disease progression" feature. In order to represent this rule in the diagrams that explicitly represent repeated elements, a green "skip forward" arrow was included at the end of each element where disease progression is assessed. In the Trial Arms dataset, TATRANS is populated for each element with a green arrow in the diagram. In other words, if there is a possibility that a subject will, at the end of this Element, "skip forward" to a later part of the Arm, then TATRANS is populated with the rule describing the conditions under which a subject will go to a later element. If the subject always goes to the next Element in the Arm (as was the case for the first three example trials presented here) then TATRANS is null.

The Trial Arms datasets presented below corresponds to the Trial Design Matrix above.

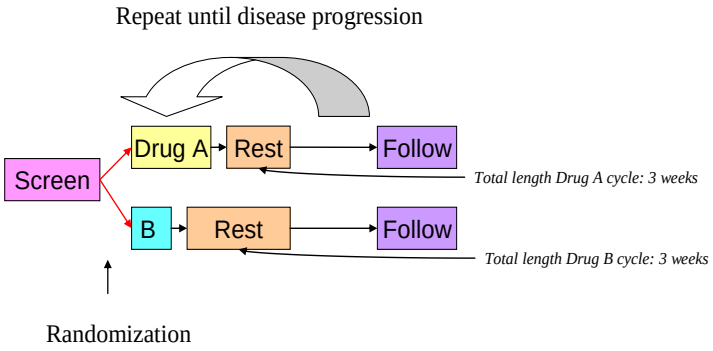
Trial Arms Dataset for Example Trial 4

Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX4	TA	A	A	1	SCRN	Screen	Randomized to A		Screen
2	EX4	TA	A	A	2	A	Trt A			Treatment
3	EX4	TA	A	A	3	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
4	EX4	TA	A	A	4	A	Trt A			Treatment
5	EX4	TA	A	A	5	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
6	EX4	TA	A	A	6	A	Trt A			Treatment
7	EX4	TA	A	A	7	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
8	EX4	TA	A	A	8	A	Trt A			Treatment
9	EX4	TA	A	A	9	REST	Rest			Treatment
10	EX4	TA	A	A	10	FU	Follow-up			Follow-up
11	EX4	TA	B	B	1	SCRN	Screen	Randomized to B		Screen
12	EX4	TA	B	B	2	B	Trt B			Treatment
13	EX4	TA	B	B	3	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
14	EX4	TA	B	B	4	B	Trt B			Treatment
15	EX4	TA	B	B	5	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
16	EX4	TA	B	B	6	B	Trt B			Treatment
17	EX4	TA	B	B	7	REST	Rest		If disease progression, go to Follow-up Epoch	Treatment
18	EX4	TA	B	B	8	B	Trt B			Treatment
19	EX4	TA	B	B	9	REST	Rest			Treatment
20	EX4	TA	B	B	10	FU	Follow-up			Follow-up

7.2.3.5 EXAMPLE TRIAL 5, CYCLES WITH DIFFERENT TREATMENT DURATIONS

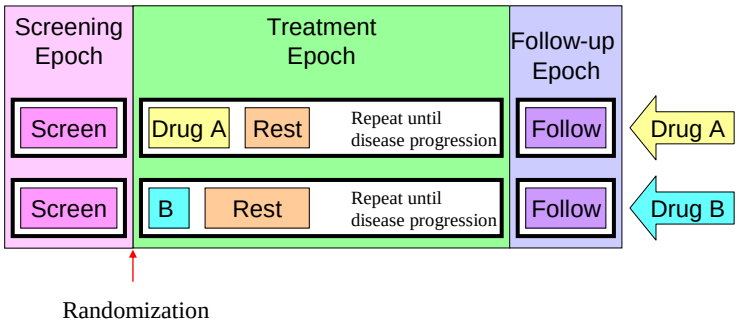
Example Trial 5 is much like the last oncology trial in that the two treatments being compared are given in cycles, and the total length of the cycle is the same for both treatments. However, in this trial Treatment A is given over longer duration than Treatment B. Because of this difference in treatment patterns, this trial cannot be blinded.

Example Trial 5: Different Chemo Durations
Study Schema



In SDTMIG 3.1.1, the assumption of a one to one relationship between elements and epochs made this example difficult to handle. However, without that assumption, this trial is essentially the same as Trial 4. The next diagram shows the retrospective view of this trial.

Example Trial 5: Cyclical Chemotherapy
Retrospective View



The Trial Design Matrix for this trial is almost the same as for Example Trial 4; the only difference is that the maximum number of cycles for this trial was assumed to be three.

Trial Design Matrix for Example Trial 5

	Screen	Treatment						Follow-up
A	Screen	Trt A	Rest A	Trt A	Rest A	Trt A	Rest A	Follow-up
B	Screen	Trt B	Rest B	Trt B	Rest B	Trt B	Rest B	Follow-up

The Trial Arms dataset for this trial shown below corresponds to the Trial Design Matrix above.

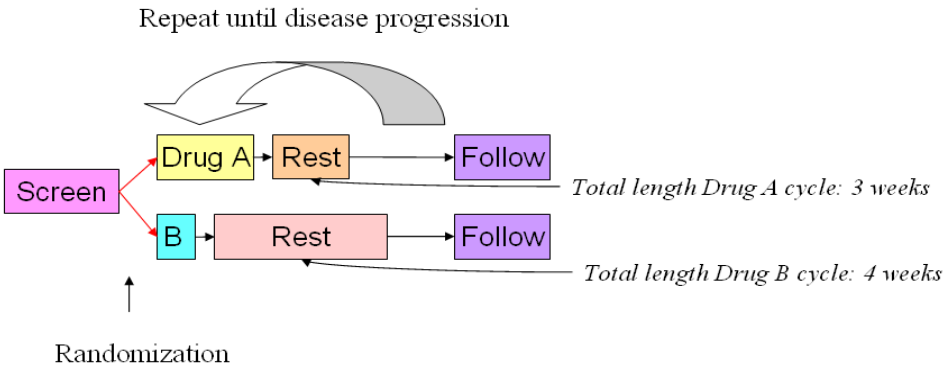
Trial Arms Dataset for Example Trial 5, with one Epoch per Cycle

Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX5	TA	A	A	1	SCRN	Screen	Randomized to A		Screen
2	EX5	TA	A	A	2	A	Trt A			Treatment
3	EX5	TA	A	A	3	RESTA	Rest A		If disease progression, go to Follow-up Epoch	Treatment
4	EX5	TA	A	A	4	A	Trt A			Treatment
5	EX5	TA	A	A	5	RESTA	Rest A		If disease progression, go to Follow-up Epoch	Treatment
6	EX5	TA	A	A	6	A	Trt A			Treatment
7	EX5	TA	A	A	7	RESTA	Rest A			Treatment
8	EX5	TA	A	A	8	FU	Follow-up			Follow-up
9	EX5	TA	B	B	1	SCRN	Screen	Randomized to B		Screen
10	EX5	TA	B	B	2	B	Trt B			Treatment
11	EX5	TA	B	B	3	RESTB	Rest B		If disease progression, go to Follow-up Epoch	Treatment
12	EX5	TA	B	B	4	B	Trt B			Treatment
13	EX5	TA	B	B	5	RESTB	Rest B		If disease progression, go to Follow-up Epoch	Treatment
14	EX5	TA	B	B	6	B	Trt B			Treatment
15	EX5	TA	B	B	7	RESTB	Rest B			Treatment
16	EX5	TA	B	B	8	FU	Follow-up			Follow-up

7.2.3.6 EXAMPLE TRIAL 6, CHEMOTHERAPY TRIAL WITH CYCLES OF DIFFERENT LENGTHS

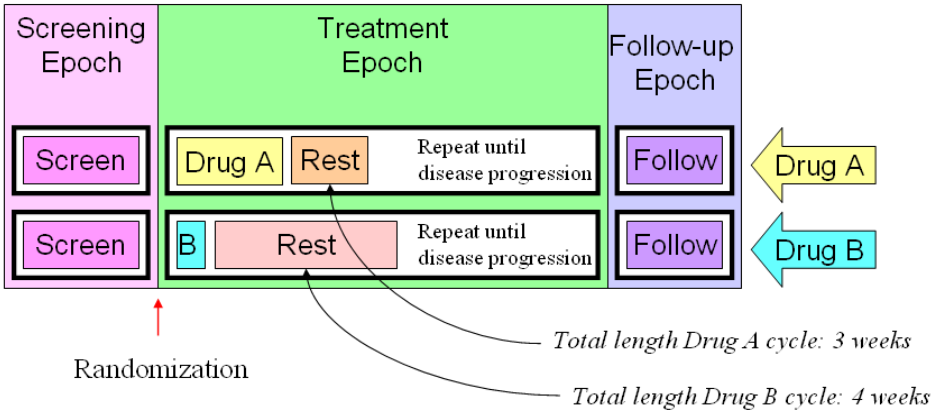
Example Trial 6 is an oncology trial comparing two types of chemotherapy that are given using cycles of different lengths with different internal patterns. Treatment A is given in 3-week cycles with a longer duration of treatment and a short rest, while Treatment B is given in 4-week cycles with a short duration of treatment and a long rest.

Example Trial 6: Different Cycle Durations
Study Schema



The design of this trial is very similar to that for Example Trials 4 and 5. The main difference is that there are two different rest elements, the short one used with Drug A and the long one used with Drug B. The next diagram shows the retrospective view of this trial.

Example Trial 6: Cyclical Chemotherapy
Retrospective View



The Trial Design Matrix for this trial assumes that there were a maximum of four cycles of Drug A and a maximum of three cycles of Drug B.

Trial Design Matrix for Example Trial 6

	Screen	**Treatment**								**Follow-up**
A	Screen	Trt A	Rest A	Trt A	Rest A	Trt A	Rest A	Trt A	Rest A	Follow-up
B	Screen	Trt B	Rest B		Trt B	Rest B		Trt B	Rest B	Follow-up

In the following Trial Arms dataset, because the Treatment Epoch for Arm A has more Elements than the Treatment Epoch for Arm B, TAETORD is 10 for the Follow-up Element in Arm A, but 8 for the Follow-up Element in Arm B. It would also be possible to assign a TAETORD value of 10 to the Follow-up Element in Arm B. The primary purpose of TAETORD is to order Elements within an Arm; leaving gaps in the series of TAETORD values does not interfere with this purpose.

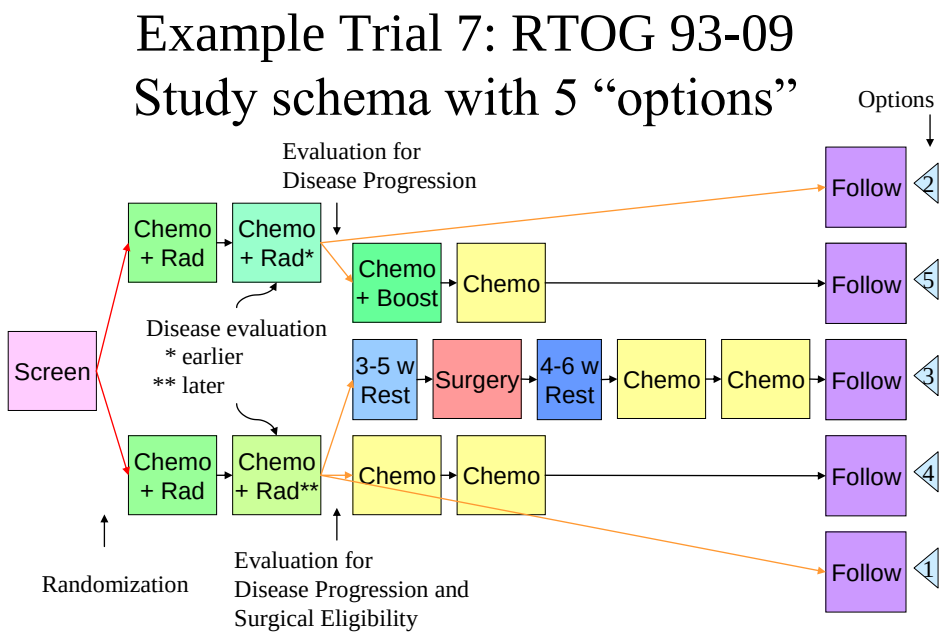
Trial Arms Dataset for Example Trial 6

Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX6	TA	A	A	1	SCRN	Screen	Randomized to A		Screen
2	EX6	TA	A	A	2	A	Trt A			Treatment
3	EX6	TA	A	A	3	RESTA	Rest A		If disease progression, go to Follow-up Epoch	Treatment
4	EX6	TA	A	A	4	A	Trt A			Treatment
5	EX6	TA	A	A	5	RESTA	Rest A		If disease progression, go to Follow-up Epoch	Treatment
6	EX6	TA	A	A	6	A	Trt A			Treatment
7	EX6	TA	A	A	7	RESTA	Rest A		If disease progression, go to Follow-up Epoch	Treatment
8	EX6	TA	A	A	8	A	Trt A			Treatment
9	EX6	TA	A	A	9	RESTA	Rest A			Treatment
10	EX6	TA	A	A	10	FU	Follow-up			Follow-up
11	EX6	TA	B	B	1	SCRN	Screen	Randomized to B		Screen
12	EX6	TA	B	B	2	B	Trt B			Treatment
13	EX6	TA	B	B	3	RESTB	Rest B		If disease progression, go to Follow-up Epoch	Treatment
14	EX6	TA	B	B	4	B	Trt B			Treatment
15	EX6	TA	B	B	5	RESTB	Rest B		If disease progression, go to Follow-up Epoch	Treatment
16	EX6	TA	B	B	6	B	Trt B			Treatment
17	EX6	TA	B	B	7	RESTB	Rest B			Treatment
18	EX6	TA	B	B	8	FU	Follow-up			Follow-up

7.2.3.7 EXAMPLE TRIAL 7, TRIAL WITH DISPARATE ARMS

In open trials, there is no requirement to maintain a blind, and the Arms of a trial may be quite different from each other. In such a case, changes in treatment in one Arm may differ in number and timing from changes in treatment in another Arm, so that there is nothing like a one-to-one match between the Elements in the different Arms. In such a case, Epochs are likely to be defined as broad intervals of time, spanning several Elements, and be chosen to correspond to periods of time that will be compared in analyses of the trial.

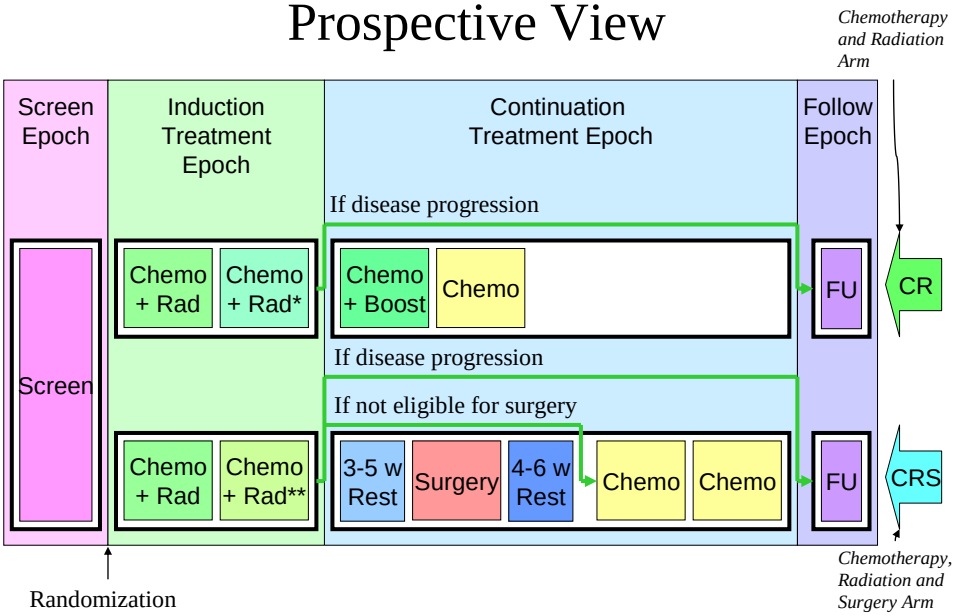
Example Trial 7, RTOG 93-09, involves treatment of lung cancer with chemotherapy and radiotherapy, with or without surgery. The protocol (RTOG-93-09), which is available online at the Radiation Oncology Therapy Group (RTOG) website http://www.rtog.org/members/numericactive.html , does not include a study schema diagram, but does include a text-based representation of diverging "options" to which a subject may be assigned. All subjects go through the branch point at randomization, when subjects are assigned to either Chemotherapy + Radiotherapy (CR) or Chemotherapy + Radiotherapy + Surgery (CRS). All subjects receive induction chemotherapy and radiation, with a slight difference between those randomized to the two arms during the second cycle of chemotherapy. Those randomized to the non-surgery arm are evaluated for disease somewhat earlier, to avoid delays in administering the radiation boost to those whose disease has not progressed. After induction chemotherapy and radiation, subjects are evaluated for disease progression, and those whose disease has progressed stop treatment, but enter follow-up. Not all subjects randomized to receive surgery who do not have disease progression will necessarily receive surgery. If they are poor candidates for surgery or do not wish to receive surgery, they will not receive surgery, but will receive further chemotherapy. The diagram below is based on the text "schema" in the protocol, with the five "options" it names. The diagram in this form might suggest that the trial has five arms.



However, the objectives of the trial make it clear that this trial is designed to compare two treatment strategies, chemotherapy and radiation with and without surgery, so this study is better modeled as a two-Arm trial, but with major "skip forward" arrows for some subjects, as illustrated in the following diagram. This diagram also shows more detail within the blocks labeled "Induction Chemo + RT" and "Additional Chemo" than the diagram above. Both the "induction" and "additional" chemotherapy are given in two cycles. Also, the second induction cycle is different for the two arms, since radiation therapy for those assigned to the non-surgery arm includes a "boost" which those assigned to surgery arm do not receive.

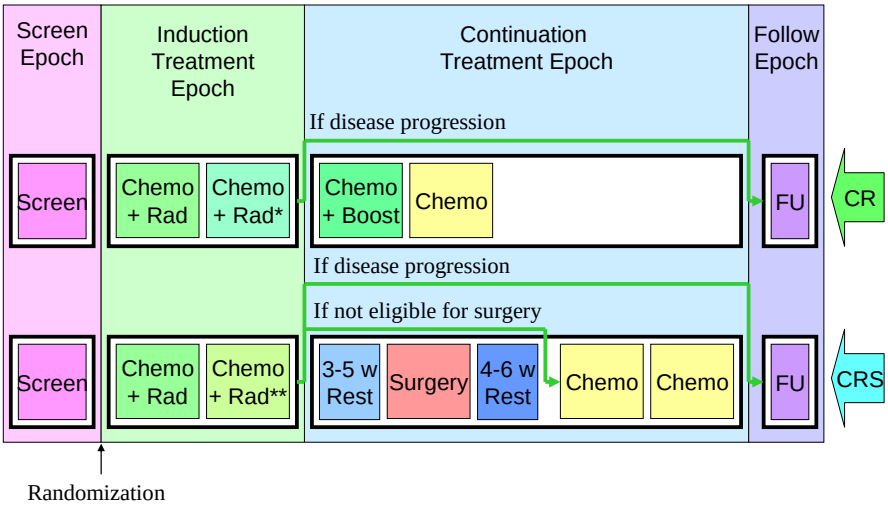
The next diagram shows the prospective view of this trial. The protocol conceives of treatment as being divided into two parts, Induction and Continuation, so these have been treated as two different epochs. This is also an important point in the trial operationally, the point when subjects are "registered" a second time, and when subjects are identified who will "skip forward" because of disease progression or ineligibility for surgery.

Example Trial 7: RTOG 93-09 Prospective View



The next diagram shows the retrospective view of this trial. The fact that the elements in the study cell for the CR arm in the Continuation Treatment Epoch do not fill the space in the diagram is an artifact of the diagram conventions. Those subjects who do receive surgery will in fact spend a longer time completing treatment and moving into follow-up. Although it is tempting to think of the horizontal axis of these diagrams as a timeline, this can sometimes be misleading. The diagrams are not necessarily "to scale" in the sense that the length of the block representing an element represents its duration, and elements that line up on the same vertical line in the diagram may not occur at the same relative time within the study.

Example Trial 7: RTOG 93-09 Retrospective View



The Trial Design Matrix for Example Trial 7, RTOG 93-09, a Two-Arm Trial is shown in the following table.

	Screen	Induction		Continuation					Follow-up
CR	Screen	Initial Chemo + RT	Chemo + RT (non-Surgery)	Chemo			Chemo		Off Treatment Follow-up
CRS	Screen	Initial Chemo + RT	Chemo + RT (Surgery)	3-5 w Rest	Surgery	4-6 w Rest	Chemo	Chemo	Off Treatment Follow-up

The Trial Arms dataset for the trial is shown below for Example Trial 7, as a two-Arm trial

Row	STUDYID	DOMAIN	ARMCD	ARM	TAETORD	ETCD	ELEMENT	TABRANCH	TATRANS	EPOCH
1	EX7	TA	1	CR	1	SCRN	Screen	Randomized to CR		Screen
2	EX7	TA	1	CR	2	ICR	Initial Chemo + RT			Induction
3	EX7	TA	1	CR	3	CRNS	Chemo+RT (non-Surgery)		If progression, skip to Follow-up.	Induction
4	EX7	TA	1	CR	4	C	Chemo			Continuation
5	EX7	TA	1	CR	5	C	Chemo			Continuation
6	EX7	TA	1	CR	6	FU	Off Treatment Follow-up			Follow-up
7	EX7	TA	2	CRS	1	SCRN	Screen	Randomized to CRS		Screen
8	EX7	TA	2	CRS	2	ICR	Initial Chemo + RT			Induction
9	EX7	TA	2	CRS	3	CRS	Chemo+RT (Surgery)		If progression, skip to Follow-up. If no progression, but subject is ineligible for or does not consent to surgery, skip to Addl Chemo.	Induction
10	EX7	TA	2	CRS	4	R3	3-5 week rest			Continuation
11	EX7	TA	2	CRS	5	SURG	Surgery			Continuation
12	EX7	TA	2	CRS	6	R4	4-6 week rest			Continuation
13	EX7	TA	2	CRS	7	C	Chemo			Continuation
14	EX7	TA	2	CRS	8	C	Chemo			Continuation
15	EX7	TA	2	CRS	9	FU	Off Treatment Follow-up			Follow-up

7.2.4 ISSUES IN TRIAL ARMS DATASETS

7.2.4.1 DISTINGUISHING BETWEEN BRANCHES AND TRANSITIONS

Both the Branch and Transition columns contain rules, but the two columns represent two different types of rules. Branch rules represent forks in the trial flowchart, giving rise to separate Arms. The rule underlying a branch in the trial design appears in multiple records, once for each "fork" of the branch. Within any one record, there is no choice (no "if" clause) in the value of the Branch condition. For example, the value of TABRANCH for a record in Arm A is "Randomized to Arm A" because a subject in Arm A must have been randomized to Arm A. Transition rules are used for choices within an Arm. The value for TATRANS does contain a choice (an "if" clause). In Example Trial 4, subjects who receive 1, 2, 3, or 4 cycles of Treatment A are all considered to belong to Arm A.

In modeling a trial, decisions may have to be made about whether a decision point in the flow chart represents the separation of paths that represent different Arms, or paths that represent variations within the same Arm, as illustrated in the discussion of Example Trial 7. This decision will depend on the comparisons of interest in the trial.

Some trials refer to groups of subjects who follow a particular path through the trial as "cohorts", particularly if the groups are formed successively over time. The term "cohort" is used with different meanings in different protocols and does not always correspond to an Arm.

7.2.4.2 SUBJECTS NOT ASSIGNED TO AN ARM

Some trial subjects may drop out of the study before they reach all of the branch points in the trial design. In the Demographics domain, values of ARM and ARMCD must be supplied for such subjects, but the special values used for these subjects should not be included in the Trial Arms dataset; only complete Arm paths should be described in the Trial Arms dataset. Demographics Assumption 4 (Section 5.1.1.1) describes special ARM and ARMCD values used for subjects who do not reach the first branch point in a trial. When a trial design includes two or more branches, special values of ARM and ARMCD may be needed for subjects who pass through the first branch point, but drop out before the final branch point. See Example 7 in Section 5.1.1.2 for an example of how to construct values of ARM and ARMCD for such trials.

7.2.4.3 DEFINING EPOCHS

The series of examples in Section 7.2.3 provides a variety of scenarios and guidance about how to assign Epoch in those scenarios. In general, assigning Epochs for blinded trials is easier than for unblinded trials. The blinded view of the trial will generally make the possible choices clear. For unblinded trials, the comparisons that will be made between Arms can guide the definition of Epochs. For trials that include many variant paths within an Arm, comparisons of Arms will mean that subjects on a variety of paths will be included in the comparison, and this is likely to lead to definition of broader Epochs.

7.2.4.4 RULE VARIABLES

The Branch and Transition columns shown in the example tables are variables with a Role of "Rule." The values of a Rule variable describe conditions under which something is planned to happen. At the moment, values of Rule variables are text. At some point in the future, it is expected that these will become executable code. Other Rule variables are present in the Trial Elements and Trial Visits datasets.

7.3 TRIAL ELEMENTS

The Trial Elements (TE) dataset contains the definitions of the elements that appear in the Trial Arms (TA) dataset. An Element may appear multiple times in the Trial Arms table because it appears either 1) in multiple Arms, 2) multiple times within an Arm, or 3) both. However, an Element will appear only once in the Trial Elements table.

Each row in the TE dataset may be thought of as representing a "unique Element" in the sense of "unique" used when a case report form template page for a collecting certain type of data is often referred to as "unique page." For instance, a case report form might be described as containing 87 pages, but only 23 unique pages. By analogy, the trial design matrix for Example Trial 1 in Section 7.2.3.1 has 9 Study Cells, each of which contains one Element, but the same trial design matrix contains only 5 unique Elements, so the trial Elements dataset for that trial has only 5 records.

An Element is a building block for creating Study Cells and an Arm is composed of Study Cells. Or, from another point of view, an Arm is composed of Elements, i.e., the trial design assigns subjects to Arms, which are comprised of a sequence of steps called Elements.

Trial Elements represent an interval of time that serves a purpose in the trial and are associated with certain activities affecting the subject. “Week 2 to Week 4” is not a valid Element. A valid Element has a name that describes the purpose of the Element and includes a description of the activity or event that marks the subject's transition into the Element as well as the conditions for leaving the Element.

7.3.1 TRIAL ELEMENTS DATASET — TE

te.xpt, Trial Elements — Trial Design, Version 3.1.2 One record per planned Element

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req
DOMAIN	Domain Abbreviation	Char	TE	Identifier	Two-character abbreviation for the domain.	Req
ETCD	Element Code	Char	*	Topic	ETCD (the companion to ELEMENT) is limited to 8 characters and does not have special character restrictions. These values should be short for ease of use in programming, but it is not expected that ETCD will need to serve as a variable name.	Req
ELEMENT	Description of Element	Char	*	Synonym Qualifier	The name of the Element.	Req
TESTRL	Rule for Start of Element	Char		Rule	Expresses rule for beginning Element.	Req
TEENRL	Rule for End of Element	Char		Rule	Expresses rule for ending Element. Either TEENRL or TEDUR must be present for each Element.	Perm
TEDUR	Planned Duration of Element	Char	ISO 8601	Timing	Planned Duration of Element in ISO 8601 format. Used when the rule for ending the Element is applied after a fixed duration.	Perm

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

7.3.2 ASSUMPTIONS FOR TE DATASET

1. There are no gaps between Elements. The instant one Element ends, the next Element begins. A subject spends no time "between" Elements.
2. ELEMENT, the Description of the Element, usually indicates the treatment being administered during an Element, or, if no treatment is being administered, the other activities that are the purpose of this period of time, such as Screening, Follow-up, Washout. In some cases, this may be quite passive, such as Rest, or Wait (for disease episode).
3. TESTRL, the Rule for Start of Element, identifies the event that marks the transition into this Element. For Elements that involve treatment, this is the start of treatment.
4. For Elements that do not involve treatment, TESTRL can be more difficult to define. For washout and follow-up Elements, which always follow treatment Elements, the start of the Element may be defined relative to the end of a preceding treatment. For example, a washout period might be defined as starting 24 or 48 hours after the last dose of drug for the preceding treatment Element or Epoch. This definition is not totally independent of the Trial Arms dataset, since it relies on knowing where in the trial design the Element is used, and that it always follows a treatment Element. Defining a clear starting point for the start of a non-treatment Element that always follows another non-treatment Element can be particularly difficult. The transition may be defined by a decision-making activity such as enrollment or randomization. For example, every Arm of a trial which involves treating disease episodes might start with a screening Element followed by an Element which consists of waiting until a disease episode occurs. The activity that marks the beginning of the wait Element might be randomization.
5. TESTRL for a treatment Element may be thought of as "active" while the start rule for a non-treatment Element, particularly a follow-up or washout Element, may be "passive." The start of a treatment Element will not occur until a dose is given, no matter how long that dose is delayed. Once the last dose is given, the start of a subsequent non-treatment Element is inevitable, as long as another dose is not given.
6. Note that the date/time of the event described in TESTRL will be used to populate the date/times in the Subject Elements dataset, so the date/time of the event should be one that will be captured in the CRF.
7. Specifying TESTRL for an Element that serves the first Element of an Arm in the Trial Arms dataset involves defining the start of the trial. In the examples in this document, obtaining informed consent has been used as "Trial Entry."
8. TESTRL should be expressed without referring to Arm. If the Element appears in more than one Arm in the Trial Arms dataset, then the Element description (ELEMENT) must not refer to any Arms.
9. TESTRL should be expressed without referring to Epoch. If the Element appears in more than one Epoch in the Trial Arms dataset, then the Element description (ELEMENT) must not refer to any Epochs.
10. For a blinded trial, it is useful to describe TESTRL in terms that separate the properties of the event that are visible to blinded participants from the properties that are visible only to those who are unblinded. For treatment Elements in blinded trials, wording such as the following is suitable, "First dose of study drug for a treatment Epoch, where study drug is X."
11. Element end rules are rather different from Element start rules. The actual end of one Element is the beginning of the next Element. Thus the Element end rule does not give the conditions under which an Element does end, but the conditions under which it should end or is planned to end.
12. At least one of TEENRL and TEDUR must be populated. Both may be populated.
13. TEENRL describes the circumstances under which a subject should leave this Element. Element end rules may depend on a variety of conditions. For instance, a typical criterion for ending a rest Element between oncology chemotherapy-treatment Elements would be, "15 days after start of Element and after WBC values have recovered." The Trial Arms dataset, not the Trial Elements dataset, describes where the subject moves next, so TEENRL must be expressed without referring to Arm.
14. TEDUR serves the same purpose as TEENRL for the special (but very common) case of an Element with a fixed duration. TEDUR is expressed in ISO 8601. For example, a TEDUR value of P6W is equivalent to a TEENRL of "6 weeks after the start of the Element."
15. Note that Elements that have different start and end rules are different Elements and must have different values of ELEMENT and ETCD. For instance, Elements that involve the same treatment but have different durations are different Elements. The same applies to non-treatment Elements. For instance, a washout with a fixed duration of 14 days is different from a washout that is to end after 7 days if drug cannot be detected in a blood sample, or after 14 days otherwise.

7.3.3 TRIAL ELEMENTS EXAMPLES

Below are Trial Elements datasets for Example Trials 1 and 2 described in Section 7.2.3.1 and Section 7.2.3.2. Both these trials are assumed to have fixed-duration Elements. The wording in TESTRL is intended to separate the description of the event that starts the Element into the part that would be visible to a blinded participant in the trial (e.g., "First dose of a treatment Epoch") from the part that is revealed when the study is unblinded (e.g., "where dose is 5 mg"). Care must be taken in choosing these descriptions to be sure that they are "Arm and Epoch neutral." For instance, in a crossover trial such as Example Trial 3 described in Section 7.2.3.3, where an Element may appear in one of multiple Epochs, the wording must be appropriate for all the possible Epochs. The wording for Example Trial 2 uses the wording "a treatment Epoch." The SDS Team is considering adding a separate variable to the Trial Elements dataset that would hold information on the treatment that is associated with an Element. This would make it clearer which Elements are "treatment Elements", and therefore, which Epochs contain treatment Elements, and thus are "treatment Epochs".

Trial Elements Dataset for Example Trial 1

Row	STUDYID	DOMAIN	ETCD	ELEMENT	TESTRL	TEENRL	TEDUR
1	EX1	TE	SCRN	Screen	Informed consent	1 week after start of Element	P7D
2	EX1	TE	RI	Run-In	Eligibility confirmed	2 weeks after start of Element	P14D
3	EX1	TE	P	Placebo	First dose of study drug, where drug is placebo	2 weeks after start of Element	P14D
4	EX1	TE	A	Drug A	First dose of study drug, where drug is Drug A	2 weeks after start of Element	P14D
5	EX1	TE	B	Drug B	First dose of study drug, where drug is Drug B	2 weeks after start of Element	P14D

Trial Elements Dataset for Example Trial 2

Row	STUDYID	DOMAIN	ETCD	ELEMENT	TESTRL	TEENRL	TEDUR
1	EX2	TE	SCRN	Screen	Informed consent	2 weeks after start of Element	P14D
2	EX2	TE	P	Placebo	First dose of a treatment Epoch, where dose is placebo	2 weeks after start of Element	P14D
3	EX2	TE	5	5 mg	First dose of a treatment Epoch, where dose is 5 mg drug	2 weeks after start of Element	P14D
4	EX2	TE	10	10 mg	First dose of a treatment Epoch, where dose is 10 mg drug	2 weeks after start of Element	P14D
5	EX2	TE	REST	Rest	48 hrs after last dose of preceding treatment Epoch	1 week after start of Element	P7D
6	EX2	TE	FU	Follow-up	48 hrs after last dose of third treatment Epoch	3 weeks after start of Element	P21D

The Trial Elements dataset for Example Trial 4 illustrates Element end rules for Elements that are not of fixed duration. The Screen Element in this study can be up to 2 weeks long, but may end earlier, so is not of fixed duration. The Rest Element has a variable length, depending on how quickly WBC recovers. Note that the start rules for the A and B Elements have been written to be suitable for a blinded study.

Trial Elements Dataset for Example Trial 4

Row	STUDYID	DOMAIN	ETCD	ELEMENT	TESTRL	TEENRL	TEDUR
1	EX4	TA	SCRN	Screen	Informed Consent	Screening assessments are complete, up to 2 weeks after start of Element	
2	EX4	TA	A	Trt A	First dose of treatment Element, where drug is Treatment A	5 days after start of Element	P5D
3	EX4	TA	B	Trt B	First dose of treatment Element, where drug is Treatment B	5 days after start of Element	P5D
4	EX4	TA	REST	Rest	Last dose of previous treatment cycle + 24 hrs	At least 16 days after start of Element and WBC recovered	
5	EX4	TA	FU	Follow-up	Decision not to treat further	4 weeks	P28D

7.3.4 TRIAL ELEMENTS ISSUES

7.3.4.1 GRANULARITY OF TRIAL ELEMENTS

Deciding how finely to divide trial time when identifying trial Elements is a matter of judgment, as illustrated by the following examples:

1. Example Trial 2 (described in Section 7.2.3.2, and with Elements described in Section 7.3.3) was represented using three treatment Epochs separated by two washout Epochs and followed by a follow-up Epoch. It might have been modeled using three treatment Epochs that included both the 2-week treatment period and the 1-week rest period. Since the first week after the third treatment period would be included in the third treatment Epoch, the Follow-up Epoch would then have a duration of 2 weeks.
2. In Example Trials 4, 5, and 6 in Section 7.2.3.4, Section 7.2.3.5 and Section 7.2.3.6 separate Treatment and Rest Elements were identified. However, the combination of treatment and rest could be represented as a single Element.
3. A trial might include a dose titration, with subjects receiving increasing doses on a weekly basis until certain conditions are met. The trial design could be modeled in any of the following ways:
   - using several one-week Elements at specific doses, followed by an Element of variable length at the chosen dose,
   - as a titration Element of variable length followed by a constant dosing Element of variable length
   - one Element with dosing determined by titration

   The choice of Elements used to represent this dose titration will depend on the objectives of the trial and how the data will be analyzed and reported. If it is important to examine side effects or lab values at each individual dose, the first model is appropriate. If it is important only to identify the time to completion of titration, the second model might be appropriate. If the titration process is routine and is of little interest, the third model might be adequate for the purposes of the trial.

7.3.4.2 DISTINGUISHING ELEMENTS, STUDY CELLS, AND EPOCHS

It is easy to confuse Elements, which are reusable trial building blocks, with Study Cells, which contain the Elements for a particular Epoch and Arm, and with Epochs, which are time periods for the trial as a whole. In part, this is because many trials have Epochs for which the same Element appears in all Arms. In other words, in the trial design matrix for many trials, there are columns (Epochs) in which all the Study Cells have the same contents. Furthermore, it is natural to use the same name (e.g., Screen or Follow-up) for both such an Epoch and the single Element that appears within it.

Confusion can also arise from the fact that, in the blinded treatment portions of blinded trials, blinded participants do not know which Element a subject is in, but do know what Epoch the subject is in.

In describing a trial, one way to avoid confusion between Elements and Epochs is to include "Element" or "Epoch" in the values of ELEMENT or EPOCH when these values (such as Screening or Follow-up) would otherwise be the same. It becomes tedious to do this in every case, but can be useful to resolve confusion when it arises or is likely to arise.

The difference between Epoch and Element is perhaps clearest in crossover trials. In Example Trial 2, as for most crossover trials, the analysis of PK results would include both treatment and period effects in the model. "Treatment effect" derives from Element (Placebo, 5 mg, or 10 mg), while "Period effect" derives from the Epoch (1st, 2nd, or 3rd Treatment Epoch).

7.3.4.3 TRANSITIONS BETWEEN ELEMENTS

The transition between one Element and the next can be thought of as a three-step process:

Step Number	Step Question	How step question is answered by information in the Trial Design datasets
1	Should the subject leave the current Element?	Criteria for ending the current Element are in TEENRL in the TE dataset.
2	Which Element should the subject enter next?	• If there is a branch point at this point in the trial, evaluate criteria described in TABRANCH (e.g., randomization results) in the TA dataset • otherwise, if TATRANS in the TA dataset is populated in this Arm at this point, follow those instructions • otherwise, move to the next Element in this Arm as specified by TAETORD in the TA dataset.
3	What does the subject do to enter the next Element?	The action or event that marks the start of the next Element is specified in TESTRL in the TE dataset

Note that the subject is not "in limbo" during this process. The subject remains in the current Element until Step 3, at which point the subject transitions to the new Element. There are no gaps between Elements.

From this table, it is clear that executing a transition depends on information that is split between the Trial Elements and the Trial Arms datasets.

It can be useful, in the process of working out the Trial Design datasets, to create a dataset that supplements the Trial Arms dataset with the TESTRL, TEENRL, and TEDUR variables, so that full information on the transitions is easily accessible. However, such a working dataset is not an SDTM dataset, and should not be submitted.

The following table shows a fragment of such a table for Example Trial 4. Note that for all records that contain a particular Element, all the TE variable values are exactly the same. Also, note that when both TABRANCH and TATRANS are blank, the implicit decision in Step 2 is that the subject moves to the next Element in sequence for the Arm.

ARM	EPOCH	TAETORD	ELEMENT	TESTRL	TEENRL	TEDUR	TABRANCH	TATRANS
A	Screen	1	Screen	Informed Consent	Screening assessments are complete, up to 2 weeks after start of Element		Randomized to A	
A	Treatment	2	Trt A	First dose of treatment in Element, where drug is Treatment A	5 days after start of Element	P5D		
A	Treatment	3	Rest	Last dose of previous treatment cycle + 24 hrs	16 days after start of Element and WBC recovers			If disease progression, go to Follow-up Epoch
A	Treatment	4	Trt A	First dose of treatment in Element, where drug is Treatment A	5 days after start of Element	P5D		

Note that both the second and fourth rows of this dataset involve the same Element, Trt A, and so TESTRL is the same for both. The activity that marks a subject's entry into the fourth Element in Arm A is "First dose of treatment Element, where drug is Treatment A." This is not the subject's very first dose of Treatment A, but it is their first dose in this Element.

7.4 TRIAL VISITS

The Trial Visits (TV) dataset describes the planned Visits in a trial. Visits are defined as "clinical encounters" and are described using the timing variables VISIT, VISITNUM, and VISITDY.

Protocols define Visits in order to describe assessments and procedures that are to be performed at the Visits.

7.4.1 TRIAL VISITS DATASET — TV

tv.xpt, Trial Visits — Trial Design, Version 3.1.2. One record per planned Visit per Arm

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req
DOMAIN	Domain Abbreviation	Char	TV	Identifier	Two-character abbreviation for the domain	Req
VISITNUM	Visit Number	Num		Topic	1. Clinical encounter number 2. Numeric version of VISIT, used for sorting.	Req
VISIT	Visit Name	Char		Synonym Qualifier	1. Protocol-defined description of clinical encounter. 2. May be used in addition to VISITNUM and/or VISITDY as a text description of the clinical encounter.	Perm
VISITDY	Planned Study Day of Visit	Num		Timing	1. Planned study day of VISIT. 2. Due to its sequential nature, used for sorting.	Perm
ARMCD	Planned Arm Code	Char	*	Record Qualifier	1.ARMCD is limited to 20 characters and does not have special character restrictions. The maximum length of ARMCD is longer than for other "short" variables to accommodate the kind of values that are likely to be needed for crossover trials. For example, if ARMCD values for a seven-period crossover were constructed using two-character abbreviations for each treatment and separating hyphens, the length of ARMCD values would be 20. 2. If the timing of Visits for a trial does not depend on which ARM a subject is in, then ARMCD should be null.	Exp
ARM	Description of Planned Arm	Char	*	Synonym Qualifier	1. Name given to an Arm or Treatment Group. 2. If the timing of Visits for a trial does not depend on which Arm a subject is in, then Arm should be left blank.	Perm
TVSTRL	Visit Start Rule	Char		Rule	Rule describing when the Visit starts, in relation to the sequence of Elements.	Req
TVENRL	Visit End Rule	Char		Rule	Rule describing when the Visit ends, in relation to the sequence of Elements.	Perm

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

7.4.2 ASSUMPTIONS FOR TV DATASET

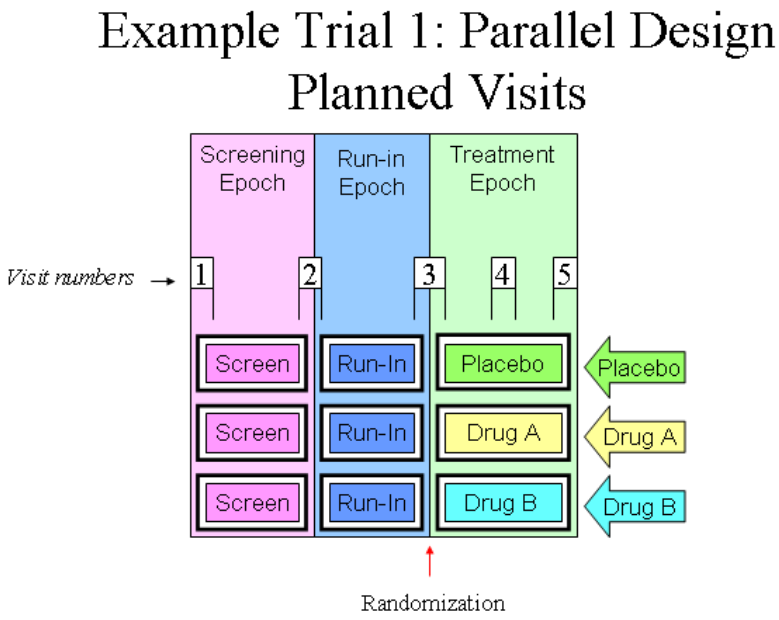
1. Although the general structure of the Trial Visits dataset is "One Record per Planned Visit per Arm", for many clinical trials, particularly blinded clinical trials, the schedule of Visits is the same for all Arms, and the structure of the Trial Visits dataset will be "One Record per Planned Visit". If the schedule of Visits is the same for all Arms, ARMCD should be left blank for all records in the TV dataset. For trials with trial Visits that are different for different Arms, such as Example Trial 7 in Section 7.2.3.7, ARMCD and ARM should be populated for all records. If some Visits are the same for all Arms, and some Visits differ by Arm, then ARMCD and ARM should be populated for all records, to assure clarity, even though this will mean creating near-duplicate records for Visits that are the same for all Arms.
2. A Visit may start in one Element and end in another. This means that a Visit may start in one Epoch and end in another. For example, if one of the activities planned for a Visit is the administration of the first dose of study drug,

the Visit might start in the screen Epoch, in the screen Element, and end in a treatment Epoch, in a treatment Element.

3. TVSTRL describes the scheduling of the Visit and should reflect the wording in the protocol. In many trials, all Visits are scheduled relative to the study's Day 1, RFSTDTC. In such trials, it is useful to include VISITDY, which is, in effect, a special case representation of TVSTRL.
4. Note that there is a subtle difference between the following two examples. In the first case, if Visit 3 were delayed for some reason, Visit 4 would be unaffected. In the second case, a delay to Visit 3 would result in Visit 4 being delayed as well.
    - Case 1: Visit 3 starts 2 weeks after RFSTDTC. Visit 4 starts 4 weeks after RFSTDTC.
    - Case 2: Visit 3 starts 2 weeks after RFSTDTC. Visit 4 starts 2 weeks after Visit 3.
5. Many protocols do not give any information about Visit ends because Visits are assumed to end on the same day they start. In such a case, TVENRL may be left blank to indicate that the Visit ends on the same day it starts. Care should be taken to assure that this is appropriate, since common practice may be to record data collected over more than one day as occurring within a single Visit. Screening Visits may be particularly prone to collection of data over multiple days. See Section 7.4.3 for examples showing how TVENRL could be populated.
6. The values of VISITNUM in the TV dataset are the valid values of VISITNUM for planned Visits. Any values of VISITNUM that appear in subject-level datasets that are not in the TV dataset are assumed to correspond to unplanned Visits. This applies, in particular, to the subject-level Subject Visits (SV) dataset; see Section 5.3.2 on the SV dataset for additional information about handling unplanned Visits. If a subject-level dataset includes both VISITNUM and VISIT, then records that include values of VISITNUM that appear in the TV dataset should also include the corresponding values of VISIT from the TV dataset.

7.4.3 TRIAL VISITS EXAMPLES

The diagram below shows Visits by means of numbered "flags" with Visit Numbers. Each "flag" has two supports, one at the beginning of the Visit, the other at the end of the Visit. Note that Visits 2 and 3 span Epoch transitions. In other words, the transition event that marks the beginning of the Run-in Epoch (confirmation of eligibility) occurs during Visit 2, and the transition event that marks the beginning of the Treatment Epoch (the first dose of study drug) occurs during Visit 3.



Two Trial Visits datasets are shown for this trial. The first shows a somewhat idealized situation, where the protocol has given specific timings for the Visits. The second shows a more usual situation, where the timings have been described only loosely.

Trial Visits Dataset for Example Trial 1 with explicitly scheduled starts and ends of Visits

Row	STUDYID	DOMAIN	VISITNUM	TVSTRL	TVENRL
1	EX1	TV	1	Start of Screen Epoch	1 hour after start of Visit
2	EX1	TV	2	30 minutes before end of Screen Epoch	30 minutes after start of Run-in Epoch
3	EX1	TV	3	30 minutes before end of Run-in Epoch	1 hour after start of Treatment Epoch
4	EX1	TV	4	1 week after start of Treatment Epoch	1 hour after start of Visit
5	EX1	TV	5	2 weeks after start of Treatment Epoch	1 hour after start of Visit

Trial Visits Dataset for Example Trial 1 with loosely described starts and ends of Visits

Row	STUDYID	DOMAIN	VISITNUM	TVSTRL	TVENRL
1	EX1	TV	1	Start of Screen Epoch	
2	EX1	TV	2	On the same day as, but before, the end of the Screen Epoch	On the same day as, but after, the start of the Run-in Epoch
3	EX1	TV	3	On the same day as, but before, the end of the Run-in Epoch	On the same day as, but after, the start of the Treatment Epoch
4	EX1	TV	4	1 week after start of Treatment Epoch	
5	EX1	TV	5	2 weeks after start of Treatment Epoch	At Trial Exit

Although the start and end rules in this example reference the starts and ends of Epochs, the start and end rules of some Visits for trials with Epochs that span multiple Elements will need to reference Elements rather than Epochs. When an Arm includes repetitions of the same Element, it may be necessary to use TAETORD as well as an Element name to specify when a Visit is to occur.

7.4.4 TRIAL VISITS ISSUES

7.4.4.1 IDENTIFYING TRIAL VISITS

In general, a trial's Visits are defined in its protocol. The term "Visit" reflects the fact that data in outpatient studies is usually collected during a physical Visit by the subject to a clinic. Sometimes a Trial Visit defined by the protocol may not correspond to a physical Visit. It may span multiple physical Visits, as when screening data may be collected over several clinic Visits but recorded under one Visit name (VISIT) and number (VISITNUM). A Trial Visit may also represent only a portion of an extended physical Visit, as when a trial of in-patients collects data under multiple Trial Visits for a single hospital admission.

Diary data and other data collected outside a clinic may not fit the usual concept of a Trial Visit, but the planned times of collection of such data may be described as "Visits" in the Trial Visits dataset if desired.

7.4.4.2 TRIAL VISIT RULES

Visit start rules are different from Element start rules because they usually describe when a Visit should occur, while Element start rules describe the moment at which an Element is considered to start. There are usually gaps between Visits, periods of time that do not belong to any Visit, so it is usually not necessary to identify the moment when one Visit stops and another starts. However, some trials of hospitalized subjects may divide time into Visits in a manner more like that used for Elements, and a transition event may need to be defined in such cases.

Visit start rules are usually expressed relative to the start or end of an Element or Epoch, e.g., "1-2 hours before end of First Wash-out" or "8 weeks after end of 2nd Treatment Epoch." Note that the Visit may or may not occur during the Element used as the reference for Visit start rule. For example, a trial with Elements based on treatment of disease episodes might plan a Visit 6 months after the start of the first treatment period, regardless of how many disease episodes have occurred.

Visit end rules are similar to Element end rules, describing when a Visit should end. They may be expressed relative to the start or end of an Element or Epoch, or relative to the start of the Visit.

The timings of Visits relative to Elements may be expressed in terms that cannot be easily quantified. For instance, a protocol might instruct that at a baseline Visit the subject be randomized, given study drug, and instructed to take the first dose of study Drug X at bedtime that night. This baseline Visit is thus started and ended before the start of the treatment Epoch, but we don't know how long before the start of the treatment Epoch the Visit will occur. The trial start rule might contain the value, "On the day of, but before, the start of the Treatment Epoch."

7.4.4.3 VISIT SCHEDULES EXPRESSED WITH RANGES

Ranges may be used to describe the planned timing of Visits (e.g., 12-16 days after the start of 2nd Element), but this is different from the “windows” that may be used in selecting data points to be included in an analysis associated with that Visit. For example, although Visit 2 was planned for 12-16 days after the start of treatment, data collected 10-18 days after the start of treatment might be included in a “Visit 1“ analysis. The two ranges serve different purposes.

7.4.4.4 CONTINGENT VISITS

Section 5.3.2, which describes the Subject Visits dataset, describes how records for unplanned Visits are incorporated. It is sometimes difficult to decide exactly what constitutes an "unplanned Visit" versus a "contingent Visit, " a Visit that is contingent on a "trigger" event, such as a certain adverse event, a finding above a certain threshold value, or a decision to discontinue a subject’s participation in the trial. Contingent Visits may be included in the Trial Visits table, with start rules that describe the circumstances under which they will take place. Since values of VISITNUM must be assigned to all records in the Trial Visits dataset, a contingent Visit included in the Trial Visits dataset must have a VISITNUM, but the VISITNUM value may not be a "chronological" value, due to the uncertain timing of the Visit.

7.5 TRIAL INCLUSION/EXCLUSION CRITERIA

The Trial Inclusion Exclusion (TI) dataset is not subject oriented. It contains all the inclusion and exclusion criteria for the trial, and thus provides information that may not be present in the subject-level data on inclusion and exclusion criteria. The IE domain (described in Section 6.3.2) contains records only for inclusion and exclusion criteria that subjects did not meet.

7.5.1 TRIAL INCLUSION/EXCLUSION CRITERIA DATASET — TI

ti.xpt, Trial Inclusion/Exclusion Criteria — Trial Design, Version 3.1.2.One record per I/E criterion

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req
DOMAIN	Domain Abbreviation	Char	TI	Identifier	Two-character abbreviation for the domain.	Req
IETESTCD	Incl/Excl Criterion Short Name	Char	*	Topic	Short name IETEST. It can be used as a column name when converting a dataset from a vertical to a horizontal format. The value in IETESTCD cannot be longer than 8 characters, nor can it start with a number (e.g., "1TEST"). IETESTCD cannot contain characters other than letters, numbers, or underscores. The prefix "IE" is used to ensure consistency with the IE domain.	Req
IETEST	Inclusion/Exclusion Criterion	Char	*	Synonym Qualifier	Full text of the inclusion or exclusion criterion. The prefix "IE" is used to ensure consistency with the IE domain.	Req
IECAT	Inclusion/Exclusion Category	Char	(IECAT)	Grouping Qualifier	Used for categorization of the inclusion or exclusion criteria.	Req
IESCAT	Inclusion/Exclusion Subcategory	Char	*	Grouping Qualifier	A further categorization of the exception criterion. Can be used to distinguish criteria for a sub-study or for to categorize as a major or minor exceptions. Examples: MAJOR, MINOR.	Perm
TIRL	Inclusion/Exclusion Criterion Rule	Char		Rule	Rule that expresses the criterion in computer-executable form (see assumption 4 below).	Perm
TIVERS	Protocol Criteria Versions	Char		Record Qualifier	The number of this version of the Inclusion/Exclusion criteria. May be omitted if there is only one version.	Perm

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

7.5.2 ASSUMPTIONS FOR TI DATASET

1. If inclusion/exclusion criteria were amended during the trial, then each complete set of criteria must be included in the TI domain. TIVERS is used to distinguish between the versions.
2. Protocol version numbers should be used to identify criteria versions, though there may be more versions of the protocol than versions of the inclusion/exclusion criteria. For example, a protocol might have versions 1, 2, 3, and 4, but if the inclusion/exclusion criteria in version 1 were unchanged through versions 2 and 3, and only changed in version 4, then there would be two sets of inclusion/exclusion criteria in TI, one for version 1 and one for version 4.
3. Individual criteria do not have versions. If a criterion changes, it should be treated as a new criterion, with a new value for IETESTCD. If criteria have been numbered and values of IETESTCD are generally of the form INCL00n or EXCL00n, and new versions of a criterion have not been given new numbers, separate values of IETESTCD might be created by appending letters, e.g. INCL003A, INCL003B.
4. IETEST contains the text of the inclusion/exclusion criterion. However, since entry criteria are rules, the variable TIRL has been included in anticipation of the development of computer executable rules.
5. If a criterion text is <200 characters, it goes in IETEST; if the text is >200 characters, put meaningful text in IETEST and describe the full text in the study metadata. See Section 4.1.5.3.1 for further information.

7.5.3 EXAMPLES FOR TRIAL INCLUSION/EXCLUSION DATASET MODEL

This example shows records for a trial that had two versions of inclusion/exclusion criteria.
Rows 1-3 show the two inclusion criteria and one exclusion criterion for version 1 of the protocol.
Rows 4-6 show the inclusion/exclusion criteria for version 2.2 of the protocol, which changed the minimum age for entry from 21 to 18.

Row	STUDYID	DOMAIN	IETESTCD	IETEST	IECAT	TIVERS
1	XYZ	TI	INCL01	Has disease under study	INCLUSION	1
2	XYZ	TI	INCL02	Age 21 or greater	INCLUSION	1
3	XYZ	TI	EXCL01	Pregnant or lactating	EXCLUSION	1
4	XYZ	TI	INCL01	Has disease under study	INCLUSION	2.2
5	XYZ	TI	INCL02A	Age 18 or greater	INCLUSION	2.2
6	XYZ	TI	EXCL01	Pregnant or lactating	EXCLUSION	2.2

7.6 TRIAL SUMMARY INFORMATION

The Trial Summary (TS) dataset allows the sponsor to submit a summary of the trial in a structured format. Each record in the Trial Summary dataset contains the value of a parameter, a characteristic of the trial. For example, Trial Summary is used to record basic information about the study such as trial phase, protocol title, and trial objectives. The Trial Summary dataset contains information about the planned trial characteristics; it does not contain subject level data or data that can be derived from subject data. Thus, for example, it includes the number of subjects planned for the trial but not the number of subjects enrolled in the trial.

7.6.1 TRIAL SUMMARY DATASET — TS

ts.xpt, Trial Summary — Trial Design, Version 3.1.2.One record per trial summary parameter value

Variable Name	Variable Label	Type	Controlled Terms, Codelist or Format	Role	CDISC Notes	Core
STUDYID	Study Identifier	Char		Identifier	Unique identifier for a study.	Req
DOMAIN	Domain Abbreviation	Char	TS	Identifier	Two-character abbreviation for the domain.	Req
TSSEQ	Sequence Number	Num		Identifier	Sequence number given to ensure uniqueness within a dataset. Allows inclusion of multiple records for the same TSPARMCD, and can be used to join related records.	Req
TSGRPID	Group ID	Char		Identifier	Used to tie together a group of related records	Perm
TSPARMCD	Trial Summary Parameter Short Name	Char	TSPARMCD	Topic	TSPARMCD (the companion to TSPARM) is limited to 8 characters and does not have special character restrictions. These values should be short for ease of use in programming, but it is not expected that TSPARMCD will need to serve as variable names. Examples: AGEMIN, AGEMAX	Req
TSPARM	Trial Summary Parameter	Char	TSPARM	Synonym Qualifier	Term for the Trial Summary Parameter. The value in TSPARM cannot be longer than 40 characters. Examples Planned Minimum Age of Subjects, Planned Maximum Age of Subjects	Req
TSVAL	Parameter Value	Char	*	Result Qualifier	Value of TSPARM. Example: “ASTHMA” when TSPARM value is “Trial Indication”. TSVAL cannot be null – a value is required for the record to be valid. Text over 200 characters can be added to additional columns TSVAL1-TSVALn.	Req

** Indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

7.6.2 ASSUMPTIONS FOR TRIAL SUMMARY DATASET MODEL

1. The intent of this dataset is to provide a summary of trial information. This is not subject level data.
2. A list of values for TSPARM and TSPARMCD is included in Appendix C3. The appendix also includes assumptions related to particular parameters.
3. TSVAL may have controlled terminology depending on the value of TSPARMCD. See Appendix C3 for more information.
4. There is not yet guidance on which Trial Summary parameters are required, but the following minimum recommended set is based on the WHO International Clinical Trial Registry Platform (ICTRP) Registration Data Set: TITLE, INDIC, TCNTRL, RANDOM, TRT, COMPTRT (when applicable), AGESPAN, AGEMIN, AGEMAX, AGEU, SEXPOP, PLANSUB, OBJPRIM, OBJSEC. Parameters to support TRT (e.g., DOSE, ROUTE, etc.) should be considered. However, for some complex study designs, these simple parameters may not provide a useful summary of the trial design.
5. Sponsors may include parameters not in Appendix C3. The meaning of such parameters should be explained in the metadata for the TS dataset.
6. For some trials, there will be multiple records in the Trial Summary dataset for a single parameter. For example, a trial that addresses both Safety and Efficacy could have two records with TSPARMCD = TTYPE, one with the TSVAL = "SAFETY" and the other with TSVAL = "EFFICACY."
7. TSSEQ has a different value for each record for the same parameter. Note that this is different from datasets that contain subject data, where the --SEQ variable has a different value for each record for the same subject.
8. The method for treating text > 200 characters in Trial Summary is similar to that used for the Comments special-purpose domain (Section 5.2). If TSVAL is > 200 characters, then it should be split into multiple variables, TSVAL-TSVALn.
9. Since TS does not contain subject-level data, there is no restriction analogous to the requirement in subject-level datasets that the blocks bound by TSGRPID are within a subject. TSGRPID can be used to tie together any block of records in the dataset. GRPID is most likely to be used when the TS dataset includes multiple records for the same parameter. For example, if a trial compared a dose of 50 mg twice a day with a dose of 100 mg once a day, a record with TSPARMCD = DOSE and TSVAL=50 and a record with TSPARMCD = DOSFREQ and TSVAL = BID could be assigned one GRPID, while a record with TSPARMCD = DOSE and TSVAL=100 and a record with TSPARMCD = DOSFREQ and TSVAL = Q24H could be assigned a different GRPID.
10. The order of parameters in the examples of TD datasets in Section 7.6.3 should not be taken as a requirement. There are no requirements or expectations about the order of parameters within the TS dataset.

7.6.3 EXAMPLES FOR TRIAL SUMMARY DATASET MODEL

Example 1:
Rows 1-5, 10-13, 15 and 16: Use controlled terminology for TSVAL (see Appendix C3).
Rows 1-6, 8-11, 13 and 14: Contain parameters from the recommended minimal set. The recommended (but not required) parameters OBJSEC, TCNTRL, and PLANSUB are missing.
Rows 1-2: This trial includes subjects from both the ADULT (18-65) and ELDERLY (>65) age groups, so there are two records for the AGESPAN parameter.
Row 7: The parameter DESIGN, which is not included in Appendix C3, was added by the Sponsor.
Rows 15-16: This trial addresses both safety and efficacy, so there are 2 records for the TYPE parameter.

Row	STUDYID	DOMAIN	TSSEQ	TSPARMCD	TSPARM	TSVAL
1	XYZ	TS	1	AGESPAN	Age Span	ADULT (18-65)
2	XYZ	TS	2	AGESPAN	Age Span	ELDERLY (> 65)
3	XYZ	TS	1	AGEMAX	Planned Maximum Age of Subjects	70
4	XYZ	TS	1	AGEMIN	Planned Minimum Age of Subjects	18
5	XYZ	TS	1	AGEU	Age Unit	YEARS
6	XYZ	TS	1	COMPTRT	Comparative Treatment Name	PLACEBO
7	XYZ	TS	1	DESIGN	Description of Trial Design	PARALLEL
8	XYZ	TS	1	INDIC	Trial Indication	Asthma
9	XYZ	TS	1	OBJPRIM	Trial Primary Objective	Reduce the incidence of exacerbations of asthma
10	XYZ	TS	1	RANDOM	Trial is Randomized	Y
11	XYZ	TS	1	SEXPOP	Sex of Participants	BOTH
12	XYZ	TS	1	TBLIND	Trial Blinding Schema	DOUBLE BLIND
13	XYZ	TS	1	TITLE	Trial Title	A 24 Week Study of Daily Oral Investigational Drug vs. Placebo in Subjects with Asthma
14	XYZ	TS	1	TRT	Reported Name of Test Product	Investigational New Drug
15	XYZ	TS	1	TTYPE	Trial Type	EFFICACY
16	XYZ	TS	2	TTYPE	Trial Type	SAFETY

Example 2

Rows 1-3: AGEMIN, AGEMAX and AGEU are included, but AGESPAN is missing.

Row 5: The parameter DESIGN, which is not included in Appendix C3, was added by the Sponsor.

Row 7: Note that TSVAL for the LENGTH parameter is expressed in ISO 8601 duration format. Note that TSVAL for LENGTH is P14W, while the TSVAL for TITLE includes "10-week." The trial involved 10 weeks of treatment, but the planned total duration of a subject's involvement in the study was 14 weeks.

Row 9: The parameter PLANEVAL is not in Appendix C3, but was added by the sponsor.

Row 15: The title is longer than 200 characters, so it has been separated into two pieces and stored in TSVAL and TSVAL1.

Row 15: The title includes the information that dosing in the study was flexible. The sponsor felt this flexible dosing could not be adequately represented using the usual dosing parameters, so none were submitted.

Row	STUDYID	DOMAIN	TSSEQ	TSPARMCD	TSPARM	TSVAL	TSVAL1
1	ABC	TS	1	AGEMIN	Planned Minimum Age of Subjects	18	
2	ABC	TS	1	AGEMAX	Planned Maximum Age of Subjects	64	
3	ABC	TS	1	AGEU	Age Unit	YEARS	
4	ABC	TS	1	COMPTRT	Comparative Treatment Name	PLACEBO	
5	ABC	TS	1	DESIGN	Description of Trial Design	Parallel	
6	ABC	TS	1	INDIC	Trial Indication	Generalized Disease	
7	ABC	TS	1	LENGTH	Trial Length	P14W	
8	ABC	TS	1	PLANSUB	Planned Number of Subjects	500	
9	ABC	TS	1	PLANEVAL	Planned Number of Evaluable Subjects	470	
10	ABC	TS	1	SEXPOP	Sex of Participants	BOTH	
11	ABC	TS	1	RANDOM	Trial is Randomized	Y	
12	ABC	TS	1	TBLIND	Trial Blinding Schema	DOUBLE BLIND	
13	ABC	TS	1	TCNTRL	Type of Control	PLACEBO	
14	ABC	TS	1	TINDTP	Trial Indication Type	TREATMENT	
15	ABC	TS	1	TITLE	Trial Title	A 10-Week, Randomized, Double-Blind, Placebo-Controlled, Parallel-Group, Flexible-Dosage Study to Evaluate the Efficacy and Safety of New Drug (up to 16 mg/day) in the Treatment of	Adults With Generalized Disease
16	ABC	TS	1	TPHASE	Trial Phase Classification	Phase III Trial	
17	ABC	TS	1	TRT	Reported Name of Test Product	New Drug	
18	ABC	TS	1	TTYPE	Trial Type	EFFICACY	
19	ABC	TS	2	TTYPE	Trial Type	SAFETY	

Example 3

Rows 2-6, 11, 13-17, 19, 22, 25, and 26: Contain all the recommended minimum set of parameters except COMPTRT. Since the TCNTL record indicates that this trial is placebo-controlled, the sponsor decided that COMPTRT would be redundant, and did not submit it.

Rows 7 and 8: Since this is a trial comparing two doses, there are two DOSE records.

Rows 9, 10 and 17: These rows provide unit, frequency, and route data to support the DOSE records.

Row 12: Note that for the LENGTH parameter, TSVAL is expressed in ISO 8601 duration format. Standard terminology for TSVAL is in upper case.

Rows 13, 14, and 24: This sponsor has chosen to submit all TSVAL values, including objectives and title, in upper case.

Row	STUDYID	DOMAIN	TSSEQ	TSPARMCD	TSPARM	TSVAL
1	DEF	TS	1	ADDON	Added on to Existing Treatments	N
2	DEF	TS	1	AGESPAN	Age Group	ADULT (18-65)
3	DEF	TS	2	AGESPAN	Age Group	ELDERLY (> 65)
4	DEF	TS	1	AGEMAX	Planned Maximum Age of Subjects	75
5	DEF	TS	1	AGEMIN	Planned Minimum Age of Subjects	22
6	DEF	TS	1	AGEU	Age Unit	YEARS
7	DEF	TS	1	DOSE	Dose per Administration	100
8	DEF	TS	2	DOSE	Dose per Administration	200
9	DEF	TS	1	DOSFRQ	Frequency	BID
10	DEF	TS	1	DOSEU	Dose Unit	mg
11	DEF	TS	1	INDIC	Trial Indication	TEST INDICATION
12	DEF	TS	1	LENGTH	Trial Length	P30M
13	DEF	TS	1	OBJPRIM	Trial Primary Objective	TO INVESTIGATE THE SAFETY AND EFFICACY OF TWO DOSES
14	DEF	TS	1	OBJSEC	Trial Secondary Objective	COMPARE SAFETY PROFILES OF TWO DOSES
15	DEF	TS	1	PLANSUB	Planned Number of Subjects	210
16	DEF	TS	1	RANDOM	Trial is Randomized	Y
17	DEF	TS	1	ROUTE	Route of Administration	ORAL
18	DEF	TS	1	SEXPOP	Sex of Participants	BOTH
19	DEF	TS	1	SPONSOR	Sponsoring Organization	SPONSOR NAME
20	DEF	TS	1	TBLIND	Trial Blinding Schema	DOUBLE BLIND
21	DEF	TS	1	TCNTRL	Type of Control	PLACEBO
22	DEF	TS	1	TDIGRP	Diagnosis Group	SUBJECTS DIAGNOSED WITH DISEASE
23	DEF	TS	1	TINDTP	Trial Indication Type	TREATMENT
24	DEF	TS	1	TITLE	Trial Title	A RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED, MULTI-CENTER, PARALLEL GROUP DOSE RANGING STUDY.
25	DEF	TS	1	TPHASE	Trial Phase Classification	PHASE III TRIAL
26	DEF	TS	1	TRT	Reported Name of Test Product	STUDY DRUG
27	DEF	TS	1	TTYPE	Trial Type	SAFETY
28	DEF	TS	2	TTYPE	Trial Type	EFFICACY

7.7 HOW TO MODEL THE DESIGN OF A CLINICAL TRIAL

The following steps allow the modeler to move from more-familiar concepts, such as Arms, to less-familiar concepts, such as Elements and Epochs. The actual process of modeling a trial may depart from these numbered steps. Some steps will overlap, there may be several iterations, and not all steps are relevant for all studies.

1. Start from the flow chart or schema diagram usually included in the trial protocol. This diagram will show how many Arms the trial has, and the branch points, or decision points, where the Arms diverge.
2. Write down the decision rule for each branching point in the diagram. Does the assignment of a subject to an Arm depend on a randomization? On whether the subject responded to treatment? On some other criterion?
3. If the trial has multiple branching points, check whether all the branches that have been identified really lead to different Arms. The Arms will relate to the major comparisons the trial is designed to address. For some trials, there may be a group of somewhat different paths through the trial that are all considered to belong to a single Arm.
4. For each Arm, identify the major time periods of treatment and non-treatment a subject assigned to that Arm will go through. These are the Elements, or building blocks, of which the Arm is composed.
5. Define the starting point of each Element. Define the rule for how long the Element should last. Determine whether the Element is of fixed duration.
6. Re-examine the sequences of Elements that make up the various Arms and consider alternative Element definitions. Would it be better to "split" some Elements into smaller pieces or "lump" some Elements into larger pieces? Such decisions will depend on the aims of the trial and plans for analysis.
7. Compare the various Arms. In most clinical trials, especially blinded trials, the pattern of Elements will be similar for all Arms, and it will make sense to define Trial Epochs. Assign names to these Epochs. During the conduct of a blinded trial, it will not be known which Arm a subject has been assigned to, or which treatment Elements they are experiencing, but the Epochs they are passing through will be known.
8. Identify the Visits planned for the trial. Define the planned start timings for each Visit, expressed relative to the ordered sequences of Elements that make up the Arms. Define the rules for when each Visit should end.
9. Identify the inclusion and exclusion criteria to be able to populate the TI dataset. If inclusion and exclusion criteria were amended so that subjects entered under different versions, populate TIVERS to represent the different versions.
10. Populate the TS dataset with summary information.

8 Representing Relationships and Data

The defined variables of the SDTM general observation classes could restrict the ability of sponsors to represent all the data they wish to submit. Collected data that may not entirely fit includes relationships between records within a domain, records in separate domains, and sponsor-defined "variables." As a result, the SDTM has methods to represent five distinct types of relationships, all of which are described in more detail in subsequent sections. These include the following:

- Section 8.1 describes a relationship between a group of records for a given subject within the same dataset.
- Section 8.2 describes a relationship between independent records (usually in separate datasets) for a subject, such as a concomitant medication taken to treat an adverse event.
- Section 8.3 describes a relationship between two (or more) datasets where records of one (or more) dataset(s) are related to record(s) in another dataset (or datasets).
- Section 8.4 describes a method for representing the dependent relationship where data that cannot be represented by a standard variable within a general-observation-class dataset record (or records) can be related back to that record.
- Section 8.5 describes a dependent relationship between a comment in the Comments domain (see also Section 5.2) and a parent record (or records) in other datasets, such as a comment recorded in association with an adverse event.
- Section 8.6 discusses the concept of related datasets and whether to place additional data in a separate dataset or a Supplemental Qualifier special-purpose dataset, and the concept of modeling Findings data that refers to data in another general-observation-class dataset.

All relationships make use of the standard domain identifiers, STUDYID, DOMAIN, and USUBJID. In addition, the variables IDVAR and IDVARVAL are used for identifying the record-level merge/join keys. These keys are used to tie information together by linking records. The specific set of identifiers necessary to properly identify each type of relationship is described in detail in the following sections. Examples of variables that could be used in IDVAR include the following variables:

- The Sequence Number (--SEQ) variable uniquely identifies a record for a given USUBJID within a domain. The variable --SEQ is required in all domains except DM. For example, if subject 1234-2003 has 25 adverse event records in the adverse event (AE) domain, then 25 unique AESEQ values should be established for this subject. Conventions for establishing and maintaining --SEQ values are sponsor-defined. Values may or may not be sequential depending on data processes and sources.
- The Reference Identifier (--REFID) variable can be used to capture a sponsor-defined or external identifier, such as an identifier provided in an electronic data transfer. Some examples are lab-specimen identifiers and ECG identifiers. --REFID is permissible in all domains, but never required. Values for --REFID are sponsor -defined and can be any alphanumeric strings the sponsor chooses, consistent with their internal practices.
- The Grouping Identifier (--GRPID) variable, used to link related records for a subject within a dataset, is explained below in Section 8.1.

8.1 RELATING GROUPS OF RECORDS WITHIN A DOMAIN USING THE --GRPID VARIABLE

The optional grouping identifier variable --GRPID is permissible in all domains that are based on the general observation classes. It is used to identify relationships between records within a USUBJID within a single domain. An example would be Intervention records for a combination therapy where the treatments in the combination varies from subject to subject. In such a case, the relationship is defined by assigning the same unique character value to the --GRPID variable. The values used for --GRPID can be any values the sponsor chooses; however, if the sponsor uses values with some embedded meaning (rather than arbitrary numbers), those values should be consistent across the submission to avoid confusion. It is important to note that --GRPID has no inherent meaning across subjects or across domains.

Using --GRPID in the general-observation-class datasets can reduce the number of records in the RELREC, SUPP--, and CO datasets when those datasets are submitted to describe relationships/associations for records or values to a "group" of general-observation-class records.

8.1.1 --GRPID EXAMPLE

The following table illustrates how to use --GRPID in the Concomitant Medications (CM) domain to identify a combination therapy. In this example, both subjects 1234 and 5678 have reported two combination therapies, each consisting of three separate medications. Each component of a combination is given the same value for CMGRPID.

Note that for USUBJID 1234, the medications for CMGRPID = "COMBO THPY 1" (Rows 1-3) are different from the medications for CMGRPID = "COMBO THPY 2" (Rows 4-6). Likewise, for USUBJID 5678, the medications for CMGRPID = "COMBO THPY 1" (Rows 7-9) are different from the medications for CMGRPID = "COMBO THPY 2" (Rows 10-12). Additionally, the medications for Subject 1234 CMGRPID = "COMBO THPY 1" and CMGRPID = "COMBO THPY 2" (Rows 1-6) are different from the medications for Subject 5678 CMGRPID = "COMBO THPY 1" and CMGRPID = "COMBO THPY 2" (Rows 7-12). This example illustrates how CMGRPID groups information only within a subject within a domain.

Row	STUDYID	DOMAIN	USUBJID	CMSEQ	CMGRPID	CMTRT	CMDECOD	CMDOSE	CMDOSU	CMSTDTC	CMENDTC
1	1234	CM	1234	1	COMBO THPY 1	Verbatim Med A	Generic Med A	100	mg	2004-01-17	2004-01-19
2	1234	CM	1234	2	COMBO THPY 1	Verbatim Med B	Generic Med B	50	mg	2004-01-17	2004-01-19
3	1234	CM	1234	3	COMBO THPY 1	Verbatim Med C	Generic Med C	200	mg	2004-01-17	2004-01-19
4	1234	CM	1234	4	COMBO THPY 2	Verbatim Med D	Generic Med D	150	mg	2004-01-21	2004-01-22
5	1234	CM	1234	5	COMBO THPY 2	Verbatim Med E	Generic Med E	100	mg	2004-01-21	2004-01-22
6	1234	CM	1234	6	COMBO THPY 2	Verbatim Med F	Generic Med F	75	mg	2004-01-21	2004-01-22
7	1234	CM	5678	1	COMBO THPY 1	Verbatim Med G	Generic Med G	37.5	mg	2004-03-17	2004-03-25
8	1234	CM	5678	2	COMBO THPY 1	Verbatim Med H	Generic Med H	60	mg	2004-03-17	2004-03-25
9	1234	CM	5678	3	COMBO THPY 1	Verbatim Med I	Generic Med I	20	mg	2004-03-17	2004-03-25
10	1234	CM	5678	4	COMBO THPY 2	Verbatim Med J	Generic Med J	100	mg	2004-03-21	2004-03-22
11	1234	CM	5678	5	COMBO THPY 2	Verbatim Med K	Generic Med K	50	mg	2004-03-21	2004-03-22
12	1234	CM	5678	6	COMBO THPY 2	Verbatim Med L	Generic Med L	10	mg	2004-03-21	2004-03-22

8.2 RELATING PEER RECORDS

The Related Records (RELREC) special-purpose dataset is used to describe relationships between records for a subject (as described in this section), and relationships between datasets (as described in Section 8.3). In both cases, relationships represented in RELREC are collected relationships, either by explicit references or check boxes on the CRF, or by design of the CRF, such as vital signs captured during an exercise stress test.

A relationship is defined by adding a record to RELREC for each record to be related and by assigning a unique character identifier value for the relationship. Each record in the RELREC special-purpose dataset contains keys that identify a record (or group of records) and the relationship identifier, which is stored in the RELID variable. The value of RELID is chosen by the sponsor, but must be identical for all related records within USUBJID. It is recommended that the sponsor use a standard system or naming convention for RELID (e.g., all letters, all numbers, capitalized).

Records expressing a relationship are specified using the key variables STUDYID, RDOMAIN (the two-letter domain code of the record in the relationship), and USUBJID, along with IDVAR and IDVARVAL. Single records can be related by using a unique-record-identifier variable such as --SEQ in IDVAR. Groups of records can be related by using grouping variables such as --GRPID in IDVAR. IDVARVAL would contain the value of the variable described in IDVAR. Using --GRPID can be a more efficient method of representing relationships in RELREC, such as when relating an adverse event (or events) to a group of concomitant medications taken to treat the adverse event(s).

The RELREC dataset should be used to represent either:

- Explicit relationships, such as concomitant medications taken as a result of an adverse event.
- Information of a nature that necessitates using multiple datasets, as described in Section 8.3.

8.2.1 RELREC DATASET

relrec.xpt, Related Records, Version 3.1.2. One record per related record, group of records or dataset

Variable	Variable Label	Type	Controlled Terms, Codelist or Format	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Unique identifier for a study	Req	
RDOMAIN	Related Domain Abbreviation	Char	DOMAIN	Two-character abbreviation for the domain of the parent record(s)	Req	SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Identifier used to uniquely identify a subject across all studies for all applications or submissions involving the product.	Exp	
IDVAR	Identifying Variable	Char	*	Name of the identifying variable in the general-observation-class dataset that identifies the related record(s). Examples include --SEQ and --GRPID.	Req	
IDVARVAL	Identifying Variable Value	Char		Value of identifying variable described in IDVAR. If --SEQ is the variable being used to describe this record, then the value of --SEQ would be entered here.	Exp	
RELTYPE	Relationship Type	Char	ONE, MANY	Identifies the hierarchical level of the records in the relationship. Values should be either ONE or MANY. Used only when identifying a relationship between datasets (as described in Section 8.3).	Exp	
RELID	Relationship Identifier	Char		Unique value within USUBJID that identifies the relationship. All records for the same USUBJID that have the same RELID are considered "related/associated." RELID can be any value the sponsor chooses, and is only meaningful within the RELREC dataset to identify the related/associated Domain records.	Req	

**indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

8.2.2 RELREC DATASET EXAMPLES

***Example 1*:**
This example shows how to use the RELREC dataset to relate records stored in separate domains for USUBJID 123456 who had two lab tests performed (Rows 5 and 6) and took two concomitant medications (Rows 2 and 3) as the result of an adverse event (Rows 1 and 4). This example represents a situation in which the adverse event is related to both the concomitant medications and the lab tests, but there is no relationship between the lab values and the concomitant medications

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	EFC1234	AE	123456	AESEQ	5		1
2	EFC1234	CM	123456	CMSEQ	11		1
3	EFC1234	CM	123456	CMSEQ	12		1
4	EFC1234	AE	123456	AESEQ	5		2
5	EFC1234	LB	123456	LBSEQ	47		2
6	EFC1234	LB	123456	LBSEQ	48		2

***Example 2*:**
Example 2 is the same scenario as Example 1; however, the relationship between concomitant medications (Rows 2 and 3) and lab values (Rows 4 and 5) and their relationship with the adverse event (Row 1) was collected.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	EFC1234	AE	123456	AESEQ	5		1
2	EFC1234	CM	123456	CMSEQ	11		1
3	EFC1234	CM	123456	CMSEQ	12		1
4	EFC1234	LB	123456	LBSEQ	47		1
5	EFC1234	LB	123456	LBSEQ	48		1

***Example 3*:**
Example 3 is the same scenario as Example 2. However, the two concomitant medications have been grouped by the sponsor in the CM dataset by assigning a CMGRPID of "COMBO 1", allowing the elimination of a record in the RELREC dataset.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	EFC1234	AE	123456	AESEQ	5		1
2	EFC1234	CM	123456	CMGRPID	COMBO1		1
3	EFC1234	LB	123456	LBSEQ	47		1
4	EFC1234	LB	123456	LBSEQ	48		1

Additional examples may be found in the domain examples such as the examples for Disposition/Adverse Event found in Section 6.2.2.2, Example 4, and all of the Pharmacokinetics examples in Section 6.3.10.5.

8.3 RELATING DATASETS

The Related Records (RELREC) special-purpose dataset can also be used to identify relationships between datasets (e.g., a one-to-many or parent-child relationship). The relationship is defined by including a single record for each related dataset that identifies the key(s) of the dataset that can be used to relate the respective records.

Relationships between datasets should only be recorded in the RELREC dataset when the sponsor has found it necessary to split information between datasets that are related, and that may need to be examined together for analysis or proper interpretation. Note that it is not necessary to use the RELREC dataset to identify associations from data in the SUPP-- datasets or the CO dataset to their parent general-observation-class dataset records or special-purpose domain records, as both these datasets include the key variable identifiers of the parent record(s) that are necessary to make the association.

8.3.1 RELREC DATASET RELATIONSHIP EXAMPLE

This example shows how to use the RELREC dataset to represent related information that is submitted as two datasets that have a one-to-many relationship. In the example below all the records in one domain are being related to all of the records in the other, so both USUBJID and IDVARVAL are null.

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
1	EFC1234	MB		MBGRPID		ONE	A
2	EFC1234	MS		MSGRPID		MANY	A

In the sponsor's operational database, these datasets may have existed as either separate datasets that were merged for analysis, or one dataset that may have included observations from more than one general observation class (e.g., Events and Findings). The value in IDVAR must be the name of the key used to merge/join the two datasets. In the above example, the --GRPID variable is used as the key to identify the related observations. The values for the --GRPID variable in the two datasets are sponsor defined. Although other variables may also serve as a single merge key when the corresponding values for IDVAR are equal, --GRPID, --SPID, or --REFID are typically used for this purpose.

The variable RELTYPE identifies the type of relationship between the datasets. The allowable values are ONE and MANY (controlled terminology is expected). This information defines how a merge/join would be written, and what would be the result of the merge/join. The possible combinations are the following:

1. ONE and ONE. This combination indicates that there is **NO** hierarchical relationship between the datasets and the records in the datasets. Only one record from each dataset will potentially have the same value of the IDVAR within USUBJID.
2. ONE and MANY. This combination indicates that there **IS** a hierarchical (parent/child) relationship between the datasets. One record within USUBJID in the dataset identified by RELTYPE=ONE will potentially have the same value of the IDVAR with many (one or more) records in the dataset identified by RELTYPE=MANY.
3. MANY and MANY. This combination is unusual and challenging to manage in a merge/join, and may represent a relationship that was never intended to convey a usable merge/join (such as in described for PC and PP in Section 6.3.10.5).

Since IDVAR identifies the keys that can be used to merge/join records between the datasets, the root values (i.e., SPID in the above example) for IDVAR must be the same for both records with the same RELID. --SEQ cannot be used because --SEQ only has meaning within a subject within a dataset, not across datasets.

8.4 RELATING NON-STANDARD VARIABLES VALUES TO A PARENT DOMAIN

The SDTM does not allow the addition of new variables. Therefore, the Supplemental Qualifiers special purpose dataset model is used to capture non-standard variables and their association to parent records in general-observation-class datasets (Events, Findings, Interventions) and Demographics. Supplemental Qualifiers may be represented as either a single SUPPQUAL dataset per study or via separate SUPP-- datasets for each dataset containing sponsor-defined variables (see Section 8.4.2 for more on this topic). Most references in this guide will use the designation of SUPP-- rather than SUPPQUAL to serve as a reminder of the preferred submission format for Supplemental Qualifiers.

SUPP-- represents the metadata and data for each non-standard variable/value combination. As the name "Supplemental Qualifiers" suggests, this dataset is intended to capture additional Qualifiers for an observation. Data that represent separate observations should be treated as separate observations, either in this domain or another domain. The Supplemental Qualifiers dataset is structured similarly to the RELREC dataset, in that it uses the same set of keys to identify parent records. Each SUPP-- record also includes the name of the Qualifier variable being added (QNAM), the label for the variable (QLABEL), the actual value for each instance or record (QVAL), the origin (QORIG) of the value (see Section 4.1.1.8), and the Evaluator (QEVAL) to specify the role of the individual who assigned the value (such as ADJUDICATION COMMITTEE or SPONSOR). Controlled terminology for certain expected values for QNAM and QLABEL are included in Appendix C5.

SUPP-- datasets are also used to capture attributions. An attribution is typically an interpretation or subjective classification of one or more observations by a specific evaluator, such as a population flag that classifies a subject or their data according to their evaluability for efficacy analysis, or whether an observation is considered to be clinically significant. Since it is possible that different attributions may be necessary in some cases, SUPP-- provides a mechanism for incorporating as many attributions as are necessary. A SUPP-- dataset can contain both objective data (where values are collected or derived algorithmically) and subjective data (attributions where values are assigned by a person or committee). For objective data, the value in QEVAL will be null. For subjective data (when QORIG=”ASSIGNED”), the value in QEVAL should reflect the role of the person or institution assigning the value (e.g., SPONSOR or ADJUDICATION COMMITTEE).

The combined set of values for the first six columns (STUDYID…QNAM) should be unique for every record. That is, there should not be multiple records in a SUPP-- dataset for the same QNAM value, as it relates to IDVAR/IDVARVAL for a USUBJID in a domain. For example, if two individuals provide a determination on whether an Adverse Event is Treatment Emergent (e.g., the investigator and an independent adjudicator) then separate QNAM values should be used for each set of information, perhaps AETRTEMI and AETRTEMA. This is necessary to ensure that reviewers can join/merge/transpose the information back with the records in the original domain without risk of losing information.

When populating a SUPPDM dataset with population flags related to the Demographics domain (subject-level evaluability), there should be one record for each population flag for each subject. QVAL values for population flags should be Y or N, with no null values. In the event that evaluability is based upon individual visits or CRF pages, additional population flags attached to other domains may be included in SUPP-- datasets.

Just as use of the optional grouping identifier variable, --GRPID, can be a more efficient method of representing relationships in RELREC, it can also be used in a SUPP-- dataset to identify individual qualifier values (SUPP-- records) related to multiple general-observation-class domain records that could be grouped, such as relating an attribution to a group of ECG measurements.

8.4.1 SUPPLEMENTAL QUALIFIERS: SUPPQUAL OR SUPP-- DATASETS

supp--.xpt, Supplemental Qualifiers [DOMAIN NAME], Version 3.1.2. One record per IDVAR, IDVARVAL, and QNAM value per subject

Variable	Variable Label	Type	Controlled Terms, Codelist or Format	CDISC Notes	Core	References
STUDYID	Study Identifier	Char		Study Identifier of the Parent record(s).	Req	SDTM 2.2.4
RDOMAIN	Related Domain Abbreviation	Char	DOMAIN	Two-character abbreviation for the domain of the parent record(s).	Req	SDTM 2.2.4, SDTMIG Appendix C2
USUBJID	Unique Subject Identifier	Char		Unique Subject Identifier of the Parent record(s).	Req	SDTM 2.2.4
IDVAR	Identifying Variable	Char	*	Identifying variable in the dataset that identifies the related record(s). Examples: --SEQ, --GRPID.	Exp	
IDVARVAL	Identifying Variable Value	Char		Value of identifying variable of the parent record(s).	Exp	
QNAM	Qualifier Variable Name	Char	*	The short name of the Qualifier variable, which is used as a column name in a domain view with data from the parent domain. The value in QNAM cannot be longer than 8 characters, nor can it start with a number (e.g., "1TEST"). QNAM cannot contain characters other than letters, numbers, or underscores. This will often be the column name in the sponsor's operational dataset.	Req	SDTMIG 4.1.2.1, Appendix C5
QLABEL	Qualifier Variable Label	Char		This is the long name or label associated with QNAM. The value in QLABEL cannot be longer than 40 characters. This will often be the column label in the sponsor's original dataset.	Req	
QVAL	Data Value	Char		Result of, response to, or value associated with QNAM. A value for this column is required; no records can be in SUPP-- with a null value for QVAL.	Req	
QORIG	Origin	Char		Since QVAL can represent a mixture of collected (on a CRF), derived, or assigned items, QORIG is used to indicate the origin of this data. Examples include CRF, ASSIGNED, or DERIVED. See Section 4.1.1.8.	Req	
QEVAL	Evaluator	Char	*	Used only for results that are subjective (e.g., assigned by a person or a group). Should be null for records that contain objectively collected or derived data. Some examples include ADJUDICATION COMMITTEE, STATISTICIAN, DATABASE ADMINISTRATOR, CLINICAL COORDINATOR, etc.	Exp	

**indicates variable may be subject to controlled terminology, (Parenthesis indicates CDISC/NCI codelist code value)*

A record in a SUPP-- dataset relates back to its parent record(s) via the key identified by the STUDYID, RDOMAIN, USUBJID and IDVAR/IDVARVAL variables. An exception is SUPP-- dataset records that are related to Demographics (DM) records, such as the Intent To Treat (ITT) and Safety (SAFETY) subject-level population flags, where both IDVAR and IDVARVAL will be null because the key variables STUDYID, RDOMAIN, and USUBJID are sufficient to identify the unique parent record in DM (DM has one record per USUBJID).

All records in the SUPP-- datasets must have a value for QVAL. Transposing source variables with missing/null values may generate SUPP-- records with null values for QVAL, causing the SUPP-- datasets to be extremely large. When this happens, the sponsor must delete the records where QVAL is null prior to submission.

See Section 4.1.5.3 for information on representing information greater than 200 characters in length.

See Appendix C5 for controlled terminology for QNAM and QLABEL for some of the most common Supplemental Qualifiers. Additional QNAM values may be created as needed, following the guidelines provided in the CDISC Notes for QVAL.

8.4.2 SUBMITTING SUPPLEMENTAL QUALIFIERS IN SEPARATE DATASETS

In SDTMIG V3.1.1, the preferred approach is to submit Supplemental Qualifiers by domain rather than placing all of the supplemental information within one dataset. Therefore, it is recommended that sponsors who utilize the single SUPPQUAL approach begin to transition to individual SUPP-- datasets by domain. The single SUPPQUAL dataset option will be deprecated (phased out) in the next (post V3.1.2) release.

There is a one-to-one correspondence between a domain dataset and it's Supplemental Qualifier dataset by creating one SUPPQUAL for each domain dataset. The set of Supplemental Qualifiers for each domain is included in a separate dataset with the name SUPP-- where "--" denotes the source domain which the Supplemental Qualifiers relate back to. For example, population flags and other demographic Qualifiers would be placed in suppdm.xpt. Data may have been additionally split into multiple datasets (see Section 4.1.1.7, Splitting Domains).

Sponsors must, however, choose only one approach for each study. Either individual SUPP-- datasets for each domain where needed should be submitted, or a single SUPPQUAL dataset for the entire study. In other words, separate SUPP-- datasets cannot be used with some domains and SUPPQUAL for the others.

8.4.3 SUPP-- EXAMPLES

The examples below demonstrate how a set of SUPP-- datasets could be used to relate non-standard information to a parent domain.

Example 1
In the two rows of suppdm.xpt, population flags are defined as supplemental information to a subject's demographic data. IDVAR and IDVARVAL are null because the key variables STUDYID, RDOMAIN, and USUBJID are sufficient to identify a unique parent record in DM.

suppdm.xpt: Supplemental Qualifiers for DM

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	1996001	DM	99-401			ITT	Intent to Treat	Y	DERIVED	SPONSOR
2	1996001	DM	99-401			PPROT	Per Protocol Set	N	DERIVED	SPONSOR

Example 2
The two rows of suppae.xpt add qualifying information to adverse event data (RDOMAIN=AE). IDVAR defines the key variable used to link this information to the AE data (AESEQ). IDVARVAL specifies the value of the key variable within the parent AE record that the SUPPAE record applies to. The remaining columns specify the supplemental variables' names (AESOSP and AETRTEM), labels, values, origin, and who made the evaluation.

suppae.xpt: Supplemental Qualifiers for AE

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	1996001	AE	99-401	AESEQ	1	AESOSP	Other Medically Important SAE	Spontaneous Abortion	CRF	
2	1996001	AE	99-401	AESEQ	1	AETRTEM	Treatment Emergent Flag	N	DERIVED	SPONSOR

Example 3
This is an example of how the language used for a questionnaire might be represented. The parent domain (RDOMAIN) is QS, and IDVAR is QSCAT. QNAM holds the name of the Supplemental Qualifier variable being defined (QSLANG). The language recorded in QVAL applies to all of the subject's records where IDVAR (QSCAT) equals the value specified in IDVARVAL. In this case, IDVARVAL has values for two questionnaires (SF36 and ADAS) for two separate subjects. QVAL identifies the questionnaire language version (French or German) for each subject.

suppqs.xpt: Supplemental Qualifiers for QS

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	1996001	QS	99-401	QSCAT	SF36	QSLANG	Questionnaire Language	FRENCH	CRF	
2	1996001	QS	99-401	QSCAT	ADAS	QSLANG	Questionnaire Language	FRENCH	CRF	
3	1996001	QS	99-802	QSCAT	SF36	QSLANG	Questionnaire Language	GERMAN	CRF	
4	1996001	QS	99-802	QSCAT	ADAS	QSLANG	Questionnaire Language	GERMAN	CRF	

Example 4
The following example illustrates how data that may have been represented in an operational database as a single domain can be expressed using an Events general-observation-class dataset and a Supplemental Qualifiers dataset.

Original Operational (non-SDTM) Dataset:

Variable	Variable Label	
HOSEQ	Sequence Number	**Event Variables**
HOTERM	Term	
HOSTDT	Start (Admission) Date/Time	
HOENDT	End (Discharge) Date/Time	
HODUR	Duration	
AEREPF	AE Reported This Episode?	**SUPPQUAL Variables**
MEDSFL	Meds Prescribed?	
PROCFL	Procedures Performed?	
PROVNM	Provider Name	
SPUNFL	Any Time in Spec. Unit?	
SPUNCD	Specialized Unit Type	
RLCNDF	Visit Related to Study Med Cond.?	

HO Events General Observation Class Custom Dataset with SUPPHO Supplemental Qualifiers dataset:

The shading in the two datasets below is used to differentiate the three hospitalization records for which data are shown. Note that for Rows 1-7 in the SUPPHO dataset, RDOMAIN= HO, USUBJID = 0001, IDVAR = HOSEQ, and IDVARVAL = 1. These four values (along with STUDYID) allow these seven SUPPHO records to be linked to the HO dataset record in Row 1 which has value in HOSEQ = 1 for Subject 0001. Likewise, SUPPHO dataset rows 8-14 are linked to the HO dataset record where HOSEQ = 2 for the same subject, and SUPPHO dataset rows 15-21 are linked to the HO dataset record where HOSEQ =1 for Subject 0002.

ho.xpt: Hospitalization ( )

Row	STUDYID	DOMAIN	USUBJID	HOSEQ	HOTERM	HOSTDTC	HOENDTC	HODUR
1	1999001	HO	0001	1	Hospitalization	2004-01-05	2004-01-12	P1W
2	1999001	HO	0001	2	Hospitalization	2004-01-23	2004-02-07	P15D
3	1999001	HO	0002	1	Hospitalization	2004-01-21	2004-01-22	P1D

suppho.xpt: Supplemental Qualifiers for HO

Row	STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	QNAM	QLABEL	QVAL	QORIG	QEVAL
1	1999001	HO	0001	HOSEQ	1	AEREPF	AE Reported This Episode	Y	CRF	
2	1999001	HO	0001	HOSEQ	1	MEDSFL	Meds Prescribed	Y	CRF	
3	1999001	HO	0001	HOSEQ	1	PROCFL	Procedures Performed	Y	CRF	
4	1999001	HO	0001	HOSEQ	1	PROVNM	Provider Name	General Hosp	CRF	
5	1999001	HO	0001	HOSEQ	1	SPUNCD	Specialized Unit Type	ICU	CRF	
6	1999001	HO	0001	HOSEQ	1	SPUNFL	Any Time in Spec. Unit	Y	CRF	
7	1999001	HO	0001	HOSEQ	1	RLCNDF	Visit Related to Study Med Cond.	Y	CRF	
8	1999001	HO	0001	HOSEQ	2	AEREPF	AE Reported This Episode	Y	CRF	
9	1999001	HO	0001	HOSEQ	2	MEDSFL	Meds Prescribed	Y	CRF	
10	1999001	HO	0001	HOSEQ	2	PROCFL	Procedures Performed	N	CRF	
11	1999001	HO	0001	HOSEQ	2	PROVNM	Provider Name	Univ Hosp	CRF	
12	1999001	HO	0001	HOSEQ	2	SPUNCD	Specialized Unit Type	CCU	CRF	
13	1999001	HO	0001	HOSEQ	2	SPUNFL	Any Time in Spec. Unit	Y	CRF	
14	1999001	HO	0001	HOSEQ	2	RLCNDF	Visit Related to Study Med Cond.	Y	CRF	
15	1999001	HO	0002	HOSEQ	1	AEREPF	AE Reported This Episode	Y	CRF	
16	1999001	HO	0002	HOSEQ	1	MEDSFL	Meds Prescribed	N	CRF	
17	1999001	HO	0002	HOSEQ	1	PROCFL	Procedures Performed	Y	CRF	
18	1999001	HO	0002	HOSEQ	1	PROVNM	Provider Name	St. Mary's	CRF	
19	1999001	HO	0002	HOSEQ	1	SPUNCD	Specialized Unit Type	ICU	CRF	
20	1999001	HO	0002	HOSEQ	1	SPUNFL	Any Time in Spec. Unit	N	CRF	
21	1999001	HO	0002	HOSEQ	1	RLCNDF	Visit Related to Study Med Cond.	Y	CRF	

Additional examples may be found in the domain examples such as for Demographics in Examples 3, 4, and 5 under Section 5.1.1.2, for ECGs in Example 1 under Section 6.3.1.2, and for Labs in Example 1 under Section 6.3.3.2

8.4.4 WHEN NOT TO USE SUPPLEMENTAL QUALIFIERS

Examples of data that should not be submitted as Supplemental Qualifiers are the following:

- Subject-level objective data that fit in Subject Characteristics (SC). Examples include Subject Initials, Eye Color.
- Findings interpretations that should be added as an additional test code and result. An example of this would be a record for ECG interpretation where EGTESTCD = "INTP", and the same EGGRPID or EGREFID value would be assigned for all records associated with that ECG (Section 4.1.5.5).

- Comments related to a record or records contained within a parent dataset. Although they may have been collected in the same record by the sponsor, comments should instead be captured in the CO special-purpose domain.
- Data not directly related to records in a parent domain. Such records should instead be captured in either a separate general observation class or special purpose domain.

8.5 RELATING COMMENTS TO A PARENT DOMAIN

The Comments special-purpose domain, which is also described in Section 5.2, is used to capture unstructured free text comments. It allows for the submission of comments related to a particular domain (e.g., adverse events) or those collected on separate general-comment log-style pages not associated with a domain. Comments may be related to a Subject, a domain for a Subject, or to specific parent records in any domain. The Comments special-purpose domain is structured similarly to the Supplemental Qualifiers (SUPP--) dataset, in that it uses the same set of keys (STUDYID, RDOMAIN, USUBJID, IDVAR, and IDVARVAL) to identify related records.

All comments except those collected on log-style pages not associated with a domain are considered child records of subject data captured in domains. STUDYID, USUBJID, and DOMAIN (with the value CO) must always be populated. RDOMAIN, IDVAR, and IDVARVAL should be populated as follows:

1. Comments related only to a subject in general (likely collected on a log-style CRF page/screen) would have RDOMAIN, IDVAR, IDVARVAL null, as the only key needed to identify the relationship/association to that subject is USUBJID.
2. Comments related only to a specific domain (and not to any specific record(s)) for a subject would populate RDOMAIN with the domain code for the domain with which they are associated. IDVAR and IDVARVAL would be null.
3. Comments related to specific domain record(s) for a subject would populate the RDOMAIN, IDVAR, and IDVARVAL variables with values that identify the specific parent record(s).

If additional information is collected further describing the comment relationship to a parent record(s), and it cannot be represented using the relationship variables, RDOMAIN, IDVAR and IDVARVAL, this can be done by two methods:

1. Values may be placed in COREF, such as the CRF page number or name
2. Timing variables may be added to the CO special-purpose domain, such as VISITNUM and/or VISIT. See CO special-purpose Section 5.2.1.1, Assumption 6 for a complete list of Identifier and Timing variables that can be added to the CO special-purpose domain.

As with Supplemental Qualifiers (SUPP--) and Related Records (RELREC), --GRPID and other grouping variables can be used as the value in IDVAR to identify comments with relationships to multiple domain records, as a comment that applies to a group of concomitant medications, perhaps taken as a combination therapy. The limitation on this is that a single comment may only be related to records in one domain (RDOMAIN can have only one value). If a single comment relates to records in multiple domains the comment may need to be repeated in the CO special-purpose domain to facilitate the understanding of the relationships.

Examples for Comments data can be found in Section 5.2.1.2.

8.6 HOW TO DETERMINE WHERE DATA BELONG IN THE SDTM

8.6.1 GUIDELINES FOR DETERMINING THE GENERAL OBSERVATION CLASS

Section 2.6 discusses when to place data in an existing domain and how to create a new domain. A key part of the process of creating a new domain is determining whether an observation represents an Event, Intervention, or

Finding. Begin by considering the content of the information in the light of the definitions of the three general observation classes (SDTM Section 2.2) rather than by trying to deduce the class from the information's physical structure; physical structure can sometimes be misleading. For example, from a structural standpoint, one might expect Events observations to include a start and stop date. However, Medical History data (data about previous conditions or events) is Events data regardless of whether dates were collected.

An Intervention is something that is done to a subject (possibly by the subject) that is expected to have a physiological effect. This concept of an intended effect makes Interventions relatively easy to recognize, although there are grey areas around some testing procedures. For example, exercise stress tests are designed to produce and then measure certain physiological effects. The measurements from such a testing procedure are Findings, but some aspects of the procedure might be modeled as Interventions.

An Event is something that happens to a subject spontaneously. Most, although not all, Events data captured in clinical trials is about medical events. Since many medical events must, by regulation, be treated as adverse events, new Events domain will be created only for events that are clearly not adverse events; the existing Medical History and Clinical Events domain are the appropriate places to store most medical events that are not adverse events. Many aspects of medical events, including tests performed to evaluate them, interventions that may have caused them, and interventions given to treat them, may be collected in clinical trials. Where to place data on assessments of events can be particularly challenging, and is discussed further in Section 8.6.3.

Findings general-observation-class data are measurements, tests, assessments, or examinations performed on a subject in the clinical trial. They may be performed on the subject as a whole (e.g., height, heart rate), or on a "specimen" taken from a subject (e.g., a blood sample, an ECG tracing, a tissue sample). Sometimes the relationship between a subject and a finding is less direct; a finding may be about an event that happened to the subject or an intervention they received. Findings about Events and Interventions are discussed further in Section 8.6.3.

8.6.2 GUIDELINES FOR FORMING NEW DOMAINS

It may not always be clear whether a set of data represents one topic or more than one topic, and thus whether it should be combined into one dataset (domain) or split into two or more datasets (domains). This implementation guide shows examples of both.

In some cases, a single data structure works well for a variety of types of data. For example, all questionnaire data is placed in the QS domain, with particular questionnaires identified by QSCAT (Section 6.3.5). Although some operational databases may store urinalysis data in a separate dataset, SDTM places all lab data is in the LB domain (Section 6.3.3) with urinalysis tests identified using LBSPEC.

In other cases, a particular topic may be very broad and/or require more than one data structure (and therefore require more than one dataset). Two examples in this implementation guide are the topics of microbiology and pharmacokinetics. Both have been modeled using two domain datasets (see Section 6.3.9 for Microbiology) and Section 6.3.10 for Pharmacokinetics). This is because, within these scientific areas, there is more than one topic, and each topic results in a different data structure. For example, the topic for PC is plasma (or other specimen) drug concentration as a function of time, and the structure is one record per analyte per time point per reference time point (e.g., dosing event) subject. PP contains characteristics of the time-concentration curve such as AUC, Cmax, Tmax, half-life, and elimination rate constant; the structure is one record per parameter per analyte per reference time point per subject.

8.6.3 GUIDELINES FOR DIFFERENTIATING BETWEEN EVENTS, FINDINGS, AND FINDINGS ABOUT EVENTS

This section discusses Events, Findings, and Findings about Events. The relationship between Interventions, Findings, and Findings about Interventions would be handled similarly.

The Findings About domain was specially created to store findings about events. This section discusses Events and Findings generally, but it is particularly useful for understanding the distinction between the CE and FA domains.

There may be several sources of confusion about whether a particular piece of data belongs in an Event record or a Findings record. One generally thinks of an event as something that happens spontaneously, and has a beginning and end; however, one should consider the following:

- Events of interest in a particular trial may be pre-specified, rather than collected as free text.
- Some events may be so long lasting in that they are perceived as "conditions" rather than "events", and their beginning and end dates are not of interest.
- Some variables or data items one generally expects to see in an Events record may not be present. For example, a post-marketing study might collect the occurrence of certain adverse events, but no dates.
- Properties of an Event may be measured or assessed, and these are then treated as Findings About Events, rather than as Events.
- Some assessments of events (e.g., severity, relationship to study treatment) have been built into the SDTM Events model as Qualifiers, rather than being treated as Findings About Events.
- Sponsors may choose how they define an Event. For example, adverse event data may be submitted using one record that summarizes an event from beginning to end, or using one record for each change in severity.

The structure of the data being considered, although not definitive, will often help determine whether the data represent an Event or a Finding. The questions below may assist sponsors in deciding where data should be placed in SDTM.

Question	Interpretation of Answers
Is this a measurement, with units, etc.?	• "Yes" answer indicates a Finding. • "No" answer is inconclusive.
Is this data collected in a CRF for each visit, or an overall CRF log-form?	• Collection forms that are independent of visits suggest Event or Intervention general observation class data • Data collected at visits is usually for items that can be controlled by the study schedule, namely planned Findings or planned (study) Interventions or Events. • Data collected at an initial visit may fall into any of the three general observation classes.
What date/times are collected?	• If the dates collected are start and/or end dates, then data are probably about an Event or Intervention. • If the dates collected are dates of assessments, then data probably represents a Finding. • If dates of collection are different from other dates collected, it suggests that data are historical, or that it is about an Event or Intervention that happened independently of the study schedule for data collection.
Is verbatim text collected, and then coded?	• "Yes" answer suggests that this is Events or Interventions general-observation-class data. However, Findings general-observation-class data from an examination that identifies abnormalities may also be coded. Note that for Events and Interventions general-observation-class data, the topic variable is coded, while for Findings general-observation-class data, it is the result that is coded. • A "No" answer is inconclusive. It does not rule out Events or Interventions general-observation-class data, particularly if Events or Interventions are pre-specified; it also does not rule out Findings general observation class data.
If this is data about an event, does it apply to the event as a whole?	• "Yes" answer suggests this is traditional Events general-observation-class data, and should have a record in an Events domain. • "No" answer suggests that there are multiple time-based findings about an event, and that this data should be treated as Findings About data.

The Events general observation class is intended for observations about a clinical event as a whole. Such observations typically include what the condition was, captured in --TERM (the topic variable), and when it happened (captured in its start and/or end dates). Other qualifier values collected (severity, seriousness, etc.) apply to the totality of the event. Note that sponsors may choose how they define the "event as a whole."

Data that does not describe the event as a whole should not be stored in the record for that event or in a --SUPP record tied to that event. If there are multiple assessments of an event, then each should be stored in a separate FA record.

When data related to an event does not fit into one of the existing Event general observation class Qualifiers, the first question to consider is whether the data represents information about the event itself, or whether it represents data about something (a Finding or Intervention) that is associated with the event.

- If the data consist of a finding or intervention that is associated with the event, it is likely that it can be stored in a relevant Findings or Intervention general observation class dataset, with the connection to the Event record being captured using RELREC. For example, if a subject had a fever of 102 that was treated with aspirin, the fever would be stored in an adverse event record, the temperature could be stored in a vital signs record, and the aspirin could be stored in a concomitant medication record, and RELREC might be used to link those records.
- If the data item contains information about the event, then consider storing it as a Supplemental Qualifier. However, a number of circumstances may rule out the use of a Supplemental Qualifier:
    - The data are measurements that need units, normal ranges, etc.
    - The data are about the non-occurrence or non-evaluation of a pre-specified Adverse Event, data that may not be stored in the AE domain, since each record in the AE domain must represent a reportable event that occurred.

  If a Supplemental Qualifier is not appropriate, the data may be stored in Findings About. Section 6.4 provides additional information and examples.

Appendices

APPENDIX A: CDISC SDS TEAM *

Name	Company
Fred Wood, Team Leader	Octagon Research Solutions, Inc.
Wayne Kubick, Past Team Lead	Lincoln Technologies
Barrie Nelson, SDS Leadership Team	Amgen
Diane Wold, SDS Leadership Team	GlaxoSmithKline
Karen Alexander	Boehringer-Ingelheim
Randall Austin	GlaxoSmithKline
Gary Cunningham	Cephalon
Dan Godoy	Astra Zeneca
Andreas Gromen	Bayer Healthcare
Tom Guinter	Independent
Susan Hamilton	Lilly
Joyce Hernandez	Merck
Jan Hess	Procter & Gamble Pharmaceuticals
Sandy Lei	Johnson and Johnson PRD
Mary Lenzen	Octagon Research Solutions, Inc
Richard Lewis	Octagon Research Solutions, Inc
Tang Li	Cephalon
Musa Nsereko	Shire Pharmaceuticals
Cliff Reinhardt	Schwarz Biosciences, Inc.
Janet Reich	Take Solutions
Gail Stoner	Centocor
Chris Tolk	CDISC
Madhavi Vemuri	Johnson and Johnson PRD
Gary Walker	Quintiles
Carolyn Wilson	Forest Research Institute
Aileen Yam	Sanofi-Aventis
Jay Levine	FDA Liaison

* Individuals having met membership criteria as of publication date.

APPENDIX B: GLOSSARY AND ABBREVIATIONS

The following abbreviations and terms are used in this document. Additional definitions can be found in the CDISC Glossary available at http://www.cdisc.org/glossary/index.html.

ADaM	CDISC Analysis Dataset Model
ATC code	Anatomic Therapeutic Chemical code from WHO Drug
CDISC	Clinical Data Interchange Standards Consortium
CRF	Case report form (sometimes case record form)
CRT	Case report tabulation
CTCAE	Common Terminology Criteria for Adverse Events
Dataset	A collection of structured data in a single file
Domain	A collection of observations with a topic-specific commonality
eDT	Electronic Data Transfer
FDA	Food and drug Administration
HL7	Health Level 7
ICD9	International Classification of Diseases, 9th revision.
ICH	International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use
ICH E2A	ICH guidelines on Clinical Safety Data Management: Definitions and Standards for Expedited Reporting
ICH E2B	ICH guidelines on Clinical Safety Data Management: Data Elements for Transmission of Individual Cases Safety Reports
ICH E3	ICH guidelines on Structure and Content of Clinical Study Reports
ICH E9	ICH guidelines on Statistical Principles for Clinical Trials
ISO	International Organization for Standardization
ISO 8601	ISO character representation of dates, date/times, intervals, and durations of time. The SDTM uses the extended format.
LOINC	Logical Observation, Identifiers, Names, and Codes
MedDRA	Medical Dictionary for Regulatory Activities
NCI	National Cancer Institute (NIH)
SDS	Submission Data Standards. Also the name of the Team that created the SDTM and SDTMIG.
SDTM	Study Data Tabulation Model
SDTMIG	Submission Data Standards Study Data Tabulation Model Implementation Guide: Human Clinical Trials [this document]
SEND	Standard for Exchange of Non-Clinical Data
SF-36	A multi-purpose, short-form health survey with 36 questions
SNOMED	Systematized Nomenclature of Medicine (a dictionary)
SOC	System Organ Class (from MedDRA)
TDM	Trial Design Model
UUID	Universally Unique Identifier
V3.x	Version 3.1 of the SDTMIG and all subsequent versions of the SDTMIG
WHODRUG	World Health Organization Drug Dictionary
XML	eXtensible Markup Language

APPENDIX C: CONTROLLED TERMINOLOGY

The current list of controlled terminology (Appendix C1) is located on the CDISC website at http://www.cancer.gov/cancertopics/terminologyresources/CDISC . Please note that Domain Codes are also listed in Appendix C2, and Trial Summary Codes are listed in Appendix C3.

APPENDIX C1: CONTROLLED TERMS OR FORMAT FOR SDTM VARIABLES (SEE ALSO APPENDIX C3: TRIAL SUMMARY CODES)

Codelist Short Name	Description	SDTM Variable(s)	Comments
ACN	Action Taken with Study Treatment	--ACN	Populated using a code value in the list of controlled terms, codelist ACN (C66767) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AGEU	Age Unit	AGEU	Populated using a code value in the list of controlled terms, codelist AGEU (C66781) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AESEV	Severity/Intensity Scale for Adverse Events	AESEV	Populated using a code value in the list of controlled terms, codelist AESEV (C66769) athttp://www.cancer.gov/cancertopics/terminologyresources/CDISC
COUNTRY	Country	COUNTRY	Populated using a code value in the list of controlled terms, codelist COUNTRY (C66786) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DSCAT	Category for Disposition Event	DSCAT	Populated using a code value in the list of controlled terms, codelist DSCAT (C74558) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DOMAIN	Domain Abbreviation	DOMAIN	Please see Appendix C2.
EGMETHOD	ECG Test Method	EGMETHOD	Populated using a code value in the list of controlled terms, codelist EGMETHOD (C71151) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
EGSTRESC	ECG Result	EGSTRESC	Populated using a code value in the list of controlled terms, codelist EGSTRESC (C71150) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
EGTEST	ECG Test Name	EGTEST	Populated using a code value in the list of controlled terms, codelist EGTEST (C71152) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also EGTESTCD
EGTESTCD	ECG Test Code	EGTESTCD	Populated using a code value in the list of controlled terms, codelist EGTESTCD (C71153) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also EGTEST

Codelist Short Name	Description	SDTM Variable(s)	Comments
ETHNIC	Patient Ethnic Group	ETHNIC	Will be changed to Subject Ethnic Group in the future. Populated using a code value in the list of controlled terms, codelist ETHNIC (C66790) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
FREQ	Frequency	--FRQ	Populated using a code value in the list of controlled terms, codelist FREQ (C71113) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
FRM	Pharmaceutical Dosage Form	--DOSFRM	Populated using a code value in the list of controlled terms, codelist FRM (C66726) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
IECAT	Category for Inclusion/Exclusion	IECAT	Populated using a code value in the list of controlled terms, codelist IECAT (C66797) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
LBTEST	Laboratory Test Name	LBTEST	Populated using a code value in the list of controlled terms, codelist LBTEST (C67154) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also LBTESTCD
LBTESTCD	Laboratory Test Code	LBTESTCD	Populated using a code value in the list of controlled terms, codelist LBTESTCD (C65047) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also LBTEST
LOC	Anatomical Location	--LOC	Populated using a code value in the list of controlled terms, codelist LOC (C74456) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
NCOMPLT	Completion/Reason for Non-Completion	DSDECOD when DSCAT = "DISPOSITION EVENT"	Populated using a code value in the list of controlled terms, codelist NCOMPLT (C66727) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
ND	Not Done	--STAT	Populated using a code value in the list of controlled terms, codelist ND (C66789) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
NY	No Yes Response	IEORRES, IESTRESC, --OCCUR, --PRESP, --SER --SCAN, --SCONG, --SDISAB, --SDTH, --SHOSP, --SLIFE, --SOD, --SMIE, --CONTRT, --BLFL, --FAST, --DRVFL	Populated using a code value in the list of controlled terms, codelist NY (C66742) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
OUT	Outcome of Event	--OUT	Populated using a code value in the list of controlled terms, codelist OUT (C66768) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
POSITION	Position	--POS	Populated using a code value in the list of controlled terms, codelist POSITION (C71148) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
RACE	RACE	RACE	Populated using a code value in the list of controlled terms, codelist RACE (C74457) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

Codelist Short Name	Description	SDTM Variable(s)	Comments
ROUTE	Route of Administration	--ROUTE	Populated using a code value in the list of controlled terms, codelist ROUTE (C66729) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SCCD	Subject Characteristic Code	SCTESTCD	Populated using a code value in the list of controlled terms, codelist SCCD (C74559) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SEX	Sex	SEX	Populated using a code value in the list of controlled terms, codelist SEX (C66731) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SIZE	Size	Controlled Terms for when VSTESTCD = FRMSIZE (Frame Size)	Populated using a code value in the list of controlled terms, codelist SIZE (C66733) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SOC	CDISC System Organ Class	Could be used for --BODSYS variables but not required to be used.	Populated using a code value in the list of controlled terms, codelist SOC (C66783) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
STENRF	Relation to Reference Period	--STRF, --ENRF See Section 4.1.4.7 "Use of RELATIVE Timing Variables --STRF, --STTPT, --STRTPT, --ENRF, --ENTPT, and --ENRTPT" for specific regarding controlled terminology for these variables.	Populated using a code value in the list of controlled terms, codelist STENRF (C66728) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TOXGR	Common Terminology Criteria for Adverse Events	Could be used for AETOXGR but not required to be used.	Populated using a code value in the list of controlled terms, codelist TOXGR (C66784) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
UNIT	Unit	--DOSU, --ORRESU, --STRESU	Populated using a code value in the list of controlled terms, codelist UNIT (C71620) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
VSRESU	Units for Vital Signs Results	VSORRESU, VSSTRESU	Populated using a code value in the list of controlled terms, codelist VSRESU (C66770) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
VSTEST	Vital Signs Test Name	VSTEST	Populated using a code value in the list of controlled terms, codelist VSTEST (C67153) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also VSTESTCD
VSTESTCD	Vital Signs Test Code	VSTESTCD	Populated using a code value in the list of controlled terms, codelist VSTESTCD (C66741) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC See also VSTEST

APPENDIX C2: RESERVED DOMAIN CODES

The following domain codes have been reserved for use with the domain topics listed. CDISC will be preparing additional domain models to describe many of these over time.

Code	Domain	Class	Description	Status
AD	Analysis Datasets	Not Applicable	Added as a "restricted prefix" and variable naming prefix - see Appendix D. Do not use as a Domain Code.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AE	Adverse Events	Events	See Section 6.2.1.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
CE	Clinical Events	Events	See Section 6.2.5.1, Assumption 1	Will be added to list of controlled terms on CDISC website.
CM	Concomitant Medications	Interventions	See Section 6.1.1.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
CO	Comments	Special Purpose	See Section 5.2.1.1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DA	Drug Accountability	Findings	Data regarding the accountability of study drug, such as information on the receipt, dispensing, return, and packaging. See Section 6.3.8.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DM	Demographics	Special Purpose	Demographics includes a set of essential standard variables that describe each subject in a clinical study. It is the parent domain for all other observations for human clinical subjects. See SDTM 2.2.6.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DS	Disposition	Events	See Section 6.2.2.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DV	Protocol Deviations	Events	See Section 6.2.4.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
EG	Electrocardiogram Test Results	Findings	See Section 6.3.1.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
EX	Exposure	Interventions	See Section 6.1.2.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
FA	Findings About	Findings	See Section 6.4.5, Assumption 1.	Will be added to list of controlled terms on CDISC website.
IE	Inclusion/ Exclusion Criterion not met	Findings	See Section 6.3.2.1, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

Code	Domain	Class	Description	Status
LB	Laboratory Data	Findings	See Section 6.3.3.1, Assumption 1. Does not include microbiology or PK data, which are stored in separate domains.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
MB	Microbiology Specimen	Findings	Microbiology Specimen findings, including gram stain results, and organisms found. See Section 6.3.9.2, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
MH	Medical History	Events	See Section 6.2.3.1, Assumption 1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
MS	Microbiology Susceptibility Test	Findings	Microbiology Susceptibility Test results, plus results of any other organism-related tests. See Section 6.3.9.3, Assumption 1.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
PC	Pharmacokinetic Concentration	Findings	Concentrations of drugs/metabolites in fluids or tissues as a function of time.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
PE	Physical Examination	Findings	See Section 6.3.4.1, Assumption 1. Does not include vital signs measurements, which are stored in the VS domain.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
PP	Pharmacokinetic Parameters	Findings	Pharmacokinetic parameters derived from pharmacokinetic concentration-time (PC) data.	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
QS	Questionnaires	Findings	See Section 6.3.5.1, Assumption 1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SC	Subject Characteristics	Findings	See Section 6.3.6.1 Assumption 1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SE	Subject Elements	Special Purpose	See Section 5.3.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SU	Substance Use	Interventions	See Section 6.1.3.1, Assumption 1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SV	Subject Visits	Special Purpose	See Section 5.3.2	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TA	Trial Arms	Trial Design	See Section 7.2.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TE	Trial Elements	Trial Design	See Section 7.3.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

Code	Domain	Class	Description	Status
TI	Trial Inclusion/ Exclusion Criteria	Trial Design	See Section 7.5.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TS	Trial Summary	Trial Design	See Section 7.6.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TV	Trial Visits	Trial Design	See Section 7.4.1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
VS	Vital Signs	Findings	See Section 6.3.7.1, Assumption 1	Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
X-	Sponsor Defined	Sponsor defined	Reserved for sponsor use; will not be used with SDTM standard domains. The hyphen may be replaced by any letter or number.	
Y-	Sponsor Defined	Sponsor defined		
Z-	Sponsor Defined	Sponsor defined		

APPENDIX C2A: RESERVED DOMAIN CODES UNDER DISCUSSION

Code	Domain	Class	Description	Status
BM	Bone Measurements	Findings	Findings resulting from evaluations of bone.	The description of the domain code will be corrected to Bone Measurements. Bone Measurements is not under development. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
HO	Hospitalization	Events	Description of Hospitalization events involving research subjects.	See HU (Healthcare Resource Utilization). Hospitalization events (HO) will be consolidated with Healthcare Resource Utilization (HU). The HO domain prefix will be reserved as long as HU is not developed.
HU	Healthcare Resource Utilization	Findings	Healthcare resource utilization data such as subject visits to physicians, hospitalizations, and nursing home stays.	Hospitalization events (HO) will be consolidated with Healthcare resource utilization (HU). HU is not under development. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
ML	Meal Data	Interventions	Information regarding the subject's meal consumption, such as fluid intake, amounts, form (solid or liquid state), frequency, etc., typically used for PK analysis.	Meal Data (ML) is not under development. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
NE	Non Subject Events	Events	Used if information is collected on anyone other than the subject during the trial. It is not limited to just historical data (before the study). An example of non-subject-event data is Serious Adverse Events (SAEs) of children born to mothers participating in the study.	Non Subject Events (NE) is under development.
OM	Organ Measurements	Findings	Findings from organ measurement evaluations.	Organ Measurements is not under development, but under discussion. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
PG	Pharmacogenomics	Findings	Pharmacogenomics findings initially focusing on Genotype and Gene Expression data.	Pharmacogenomics (PG) is under development. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734)) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
PH	Pathology/Histology	Findings	Findings from pathology/histology analysis	Pathology/Histology (PH) is under development.
PF	Pharmacogenomics Findings	Findings	Findings from genetic testing	Pharmacogenomics Findings (PF) is under development.

Code	Domain	Class	Description	Status
SG	Surgery	To be determined		Surgery (SG) might be consolidated with Procedure domain(s). SG or Procedure domain(s) are not under development, but under discussion. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SL	Sleep Data	Findings	Findings from diagnostic sleep tests (e.g., polysomnography).	Sleep Data (SL) is not under development, but under discussion. Included as a value in the list of controlled terms, codelist Domain Abbreviation (C66734) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TR	Tumor Results	Findings	Results and measurements of tumors.	Tumor Results (TR) is developed and in the public review cycle.
TU	Tumor Identification	Findings	Identification of tumors.	Tumor Identification (TU) is developed and in the public review.

APPENDIX C3: TRIAL SUMMARY CODES

Parameters for naming the dictionaries used for a clinical trial (AEDICT, DRUGDICT, MHDICT) were developed, but we now recommend that information on dictionaries and dictionary versions be included in the SDTM metadata, since the define.xml specification has explicit mechanisms for handling references to dictionaries and dictionary versions. This recommendation is also based on the fact that Trial Summary is intended to convey information about the planned trial, while dictionary use, and in particular dictionary version, may not be prospectively defined.

TSPARMCD	TSPARM	TSVAL	Assumptions	Status
ADDON	Added on to Existing Treatments	Populated using a code value from the list of controlled terms, codelist No Yes Response (C66742) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AEDICT	Adverse Event Dictionary	**Not applicable**	**DO NOT USE -** Information on dictionaries and dictionary versions should be included in the SDTM metadata, since the define.xml specification has explicit mechanisms for handling references to dictionaries and dictionary versions.	The TSPARMCD code will be removed as a value from the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AGEMAX	Planned Maximum Age of Subjects	No controlled terminology.		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AGEMIN	Planned Minimum Age of Subjects	No controlled terminology.		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AGESPAN	Age Group	Populated using a code value from the list of controlled terms, codelist AGESPAN (C66780) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	A record for each applicable category should be included.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
AGEU	Age Unit	Populated using a code value from the list of controlled terms, codelist AGEU (C66781) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	Units are associated with both AGEMIN and AGEMAX	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

TSPARMCD	TSPARM	TSVAL	Assumptions	Status
COMPTRT	*Comparative Treatment Name*	*No controlled terminology.*		*In the future, may be added to list of controlled terms on CDISC website.*
DOSE	Dose per Administration	No controlled terminology.	The dose associated with a test product or comparative treatment. Records for dosing parameters may be grouped using TSGRPID. In trials with complex dosing, it may not be useful to submit dosing parameters, as the TE and TA datasets are better suited to describing such information.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
DOSFRQ	*Dosing Frequency*	Populated using a code value in the list of controlled terms, codelist FREQ (C71113) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	*Dose frequency associated with a test product or comparative treatment.*	*In the future, may be added to list of controlled terms on CDISC website*
DOSU	*Dose Units*	Populated using a code value in the list of controlled terms, codelist UNIT (C71620) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	*Units used with value(s) in DOSE.*	*In the future, may be added to list of controlled terms on CDISC website*
DRUGDICT	Drug Dictionary	**Not applicable**	**DO NOT USE -** Information on dictionaries and dictionary versions should be included in the SDTM metadata, since the define.xml specification has explicit mechanisms for handling references to dictionaries and dictionary versions.	The TSPARMCD code will be removed as a value from the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
INDIC	*Trial Indication*	*No controlled terminology.*		*In the future, may be added to list of controlled terms on CDISC website*
LENGTH	Trial Length	No controlled terminology.	Defined as the planned length of time for a subject's participation. It should be recorded using the ISO8601 format for durations, see Section 4.1.4.3.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

TSPARMCD	TSPARM	TSVAL	Assumptions	Status
MHDICT	Medical History Dictionary	**Not applicable**	**DO NOT USE -** Information on dictionaries and dictionary versions should be included in the SDTM metadata, since the define.xml specification has explicit mechanisms for handling references to dictionaries and dictionary versions.	The TSPARMCD code will be removed as a value from the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
OBJPRIM	*Trial Primary Objective*	*No controlled terminology*	*Should be described in terms of the desired statement in labeling.*	*In the future, may be added to list of controlled terms on CDISC website*
OBJSEC	*Trial Secondary Objective*	*No controlled terminology*	*Should be described in terms of the desired statement in labeling.*	*In the future, may be added to list of controlled terms on CDISC website*
PLANSUB	Planned Number of Subjects	No controlled terminology.		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
RANDOM	Trial is Randomized	Populated using a code value from the list of controlled terms, codelist NY (C66742) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
ROUTE	Route of Administration	Populated using a code value from the list of controlled terms, codelist ROUTE (C66729) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	The route associated with a test product or comparative treatment.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SEXPOP	Sex of Participants	Populated using a code value from the list of controlled terms, codelist SEXPOP (C66732) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
SPONSOR	*Sponsoring Organization*	*No controlled terminology.*		*In the future, may be added to list of controlled terms on CDISC website*
STOPRULE	Study Stop Rules		If the trial has study stop rules (STOPRULE is not equal to "NONE"), contains a description of the stop rules.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TBLIND	Trial Blinding Schema	Populated using a code value from the list of controlled terms, codelist TBLIND (C66735) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

TSPARMCD	TSPARM	TSVAL	Assumptions	Status
TCNTRL	Control Type	Populated using a code value from the list of controlled terms, codelist TCNTRL (C66785) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TDIGRP	Diagnosis Group	Populated using a code value from the list of controlled terms, codelist TDIGRP (C66787) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	If trial does not enroll healthy subjects (TDIGRP is not equal to "HEALTHY SUBJECTS"), contains the diagnosis of subjects to be enrolled.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TINDTP	Trial Indication Type	Populated using a code value from the list of controlled terms, codelist TINDTP (C66736) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	TINDTP provides a classification system for the indication provided as text in INDIC. MITIGATION is used narrowly to mean mitigate the adverse effect of another treatment.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TITLE	Trial Title	No controlled terminology.		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TPHASE	Trial Phase Classification	Populated using a code value from the list of controlled terms, codelist TPHASE (C66737) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC	The controlled terminology for phase includes several formats as synonyms.	Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC
TRT	*Reported Name of Test Product*	*No controlled terminology.*		*In the future, may be added to list of controlled terms on CDISC website*
TTYPE	Trial Type	Populated using a code value from the list of controlled terms, codelist TTYPE (C66739) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC		Included as a value in the list of controlled terms, codelist Trial Summary Parameter Test Code (C66738) at http://www.cancer.gov/cancertopics/terminologyresources/CDISC

APPENDIX C4: DRUG ACCOUNTABILITY TEST CODES

The following table contains the test codes suggested by CDISC for use in DRUG Accountability domains.

DATESTCD	DATEST
DISPAMT	Dispensed Amount
RETAMT	Returned Amount

APPENDIX C5: SUPPLEMENTAL QUALIFIERS NAME CODES

The following table contains an initial set of standard name codes for use in the Supplemental Qualifiers (SUPP--) special-purpose datasets. There are no specific conventions for naming QNAM and some sponsors may choose to include the 2-character domain in the QNAM variable name. Note that the 2-character domain code is not required in QNAM since it is present in the variable RDOMAIN in the SUPP-- datasets.

QNAM	QLABEL	Applicable Domains
AESOSP	Other Medically Important SAE	AE
AETRTEM	Treatment Emergent Flag	AE
--CLSIG	Clinically Significant	Findings
COMPLT	Completers Population Flag	DM
FULLSET	Full Analysis Set Flag	DM
ITT	Intent to Treat Population Flag	DM
PPROT	Per Protocol Set Flag	DM
SAFETY	Safety Population Flag	DM
--REAS	Reason	All general observation classes
--HLGT	High Level Group Term	AE, MH, PE, and any other domain coded to MedDRA
--HLT	High Level Term	AE, MH, PE, and any other domain coded to MedDRA
--LLT	Lowest Level Term	AE, MH, PE, and any other domain coded to MedDRA
--LLTCD	Lowest Level Term Code	AE, MH, PE, and any other domain coded to MedDRA
--PTCD	Preferred Term Code	AE, MH, PE, and any other domain coded to MedDRA
--HLTCD	High Level Term Code	AE, MH, PE, and any other domain coded to MedDRA
--HLGTCD	High Level Group Term Code	AE, MH, PE, and any other domain coded to MedDRA
--SOCCD	System Organ Class Code	AE, MH, PE, and any other domain coded to MedDRA

APPENDIX D: CDISC VARIABLE-NAMING FRAGMENTS

The CDISC SDS group has defined a standard list of fragments to use as a guide when naming variables in SUPP--datasets (as QNAM) or assigning --TESTCD values that could conceivably be treated as variables in a horizontal listing derived from a V3.x dataset. In some cases, more than one fragment is used for a given keyword. This is necessary when a shorter fragment must be used for a --TESTCD or QNAM that incorporates several keywords that must be combined while still meeting the 8-character variable naming limit of SAS transport files. When using fragments, the general rule is to use the fragment(s) that best conveys the meaning of the variable within the 8-character limit; thus, the longer fragment should be used when space allows. If the combination of fragments still exceeds 8 characters, a character should be dropped where most appropriate (while avoiding naming conflicts if possible) to fit within the 8-character limit.

In other cases the same fragment may be used for more than one meaning, but these would not normally overlap for the same variable.

Keyword(s)	Fragment
ACTION	ACN
ADJUSTMENT	ADJ
ANALYSIS DATASET	AD
ASSAY	AS
BASELINE	BL
BIRTH	BRTH
BODY	BOD
CANCER	CAN
CATEGORY	CAT
CHARACTER	C
CONDITION	CND
CLASS	CLAS
CLINICAL	CL
CODE	CD
COMMENT	COM
CONCOMITANT	CON
CONGENITAL	CONG
DATE TIME - CHARACTER	DTC
DAY	DY
DEATH	DTH
DECODE	DECOD
DERIVED	DRV
DESCRIPTION	DESC
DISABILITY	DISAB
DOSE, DOSAGE	DOS, DOSE
DURATION	DUR
ELAPSED	EL
ELEMENT	ET
EMERGENT	EM
END	END, EN
ETHNICITY	ETHNIC
EXTERNAL	X
EVALUATOR	EVAL
EVALUATION	EVL
FASTING	FAST

Keyword(s)	Fragment
FILENAME	FN
FLAG	FL
FORMULATION, FORM	FRM
FREQUENCY	FRQ
GRADE	GR
GROUP	GRP
UPPER LIMIT	HI
HOSPITALIZATION	HOSP
IDENTIFIER	ID
INDICATION	INDC
INDICATOR	IND
INTERVAL	INT
INTERPRETATION	INTP
INVESTIGATOR	INV
LIFE-THREATENING	LIFE
LOCATION	LOC
LOINC CODE	LOINC
LOWER LIMIT	LO
MEDICALLY-IMPORTANT EVENT	MIE
NAME	NAM
NON-STUDY THERAPY	NST
NORMAL RANGE	NR
NOT DONE	ND
NUMBER	NUM
NUMERIC	N
OBJECT	OBJ
ONGOING	ONGO
ORDER	ORD
ORIGIN	ORIG
ORIGINAL	OR
OTHER	OTH, O
OUTCOME	OUT
OVERDOSE	OD
PARAMETER	PARM
PATTERN	PATT

Keyword(s)	Fragment
POPULATION	POP
POSITION	POS
QUALIFIER	QUAL
REASON	REAS
REFERENCE	REF, RF
REGIMEN	RGM
RELATED	REL, R
RELATIONSHIP	REL
RESULT	RES
RULE	RL
SEQUENCE	SEQ
SERIOUS	S, SER
SEVERITY	SEV
SIGNIFICANT	SIG
SPECIMEN	SPEC, SPC
SPONSOR	SP
STANDARD	ST, STD
START	ST
STATUS	STAT
SUBCATEGORY	SCAT
SUBJECT	SUBJ
SUPPLEMENTAL	SUPP
SYSTEM	SYS
TEXT	TXT
TIME	TM
TIME POINT	TPT
TOTAL	TOT
TOXICITY	TOX
TRANSITION	TRANS
TREATMENT	TRT
UNIT	U
UNIQUE	U
UNPLANNED	UP
VARIABLE	VAR
VALUE	VAL
VEHICLE	V

APPENDIX E: REVISION HISTORY

Changes from CDISC SDTMIG V3.1.1 to V3.1.2

Classification	Type	Section	Description of change
Minor	Addition	2.2	Adds information on how Controlled Terminology (CT) is represented.
Minor	Deletion	3.2	Reference to an outdated Metadata Model document from November, 2001 is deleted.
Minor	Correction	4.1.1 – General Domain Assumptions	Section title revised to General Domain Assumptions (from General Dataset Assumptions).
Minor	Deletion	4.1.1.1 – Review Study Data Tabulation and Implementation Guide	Reference to the CDISC Submission Metadata Model was deleted.
Minor	Addition	4.1.1.2 – Relationship to Analysis Datasets	CDISC ADaM General Considerations referenced.
Minor	Addition	4.1.1.3 – Additional Timing Variables	General assumption for adding timing variables was expanded to reference Section 4.1.4.8, domain assumptions and relationship datasets.
Minor	Addition	4.1.1.4 – Order of the Variables	Additional guidance specified.
Minor	Addition	4.1.1.5 – CDISC Core Variables	Definitions clarified.
Minor	Addition	4.1.1.6 – Additional Guidance on Dataset Naming	Guidance for dataset naming described; custom domain codes beginning with X, Y, or Z will not overlap with future CDISC reserved codes.
Major	Addition	4.1.1.7 – Splitting Domains	Section and examples added.
Major	Addition	4.1.1.8 – Origin Metadata	Section added.
Major	Addition	4.1.1.9 – Assigning Natural Keys in the Metadata	Section added.
Minor	Addition	4.1.2.1 – Variable-Naming Conventions	Conventions for --TESTCDs , QNAMs, and labels clarified.
Minor	Addition	4.1.2.2 – Two-Character Domain Identifier	Two-character prefixing further explained.
Minor	Addition	4.1.2.3 – Use of “Subject” and USUBJID	USUBJID expectations further described with an example.
Minor	Addition	4.1.2.5 – Convention for Missing Values	Missing values for individual data items should be represented by nulls and convention regarding use of --STAT and --REASND clarified.
Major	Addition	4.1.2.6 – Grouping Variables and Categorization	Descriptions of how the following variables group data was clarified: STUDYID, DOMAIN, --CAT, --SCAT, USUBJID, --GRPID and --REFID.
Major	Addition	4.1.2.7 – Submitting Free Text from the CRF	Conventions expanded and examples added.
Major	Addition	4.1.2.8 – Multiple Values for a Variable	Section added.
Minor	Addition	4.1.3 – Coding and Controlled Terminology Assumptions	Introductory note added referencing CDISC published controlled terminology.
Minor	Addition	4.1.3.1 – Types of Controlled Terminology	Controlled terminology is represented one of three ways: single asterisk, codelist, external codelist.
Minor	Addition	4.1.3.3 – Controlled Terminology Values	Convention clarified regarding values to be represented in the define.xml.
Minor	Addition	4.1.3.4 – Use of Controlled Terminology and Arbitrary Number Codes	Description clarified.

Classification	Type	Section	Description of change
Major	Addition	4.1.3.5 – Storing Controlled Terminology for Synonym Qualifier Variables	Convention clarified for values of AEBODSYS, CMCLAS and expectation to submit dictionary name and version.
Minor	Addition	4.1.3.7 – Use of "Yes" and "No" Values	Note updated to extend values for variables with NY controlled terminology to include "NA" if collected.
Minor	Addition	4.1.4 – Actual and Relative Time Assumptions	Introduction to Section 4.1.4 added.
Minor	Deletion	4.1.4.1 – Formats for Date/Time Variables	References to models prior to SDTMIG v3.1.1 removed.
Minor	Addition	4.1.4.2 – Date/Time Precision	References to models prior to SDTMIG v3.1.1 removed and description clarified for omitting components for intervals of uncertainty.
Minor	Addition	4.1.4.3 – Intervals of Time and Use of Duration for --DUR Variables	Descriptions and examples expanded.
Major	Change	4.1.4.3 – Removed example of negative duration, -PT2H	A value containing "-P" cannot be used with a duration, which signifies a time interval between a start and end of an event. An event cannot end before it starts, Note that a value containing "-P" can be used for --ELTM or --EVLINT.
Minor	Addition	4.1.4.5 – Clinical Encounters and Visits	Conventions for describing clinical encounters clarified.
Major	Addition	4.1.4.6 – Representing Additional Study Days	Guidance added for representing values like 'day within element' and 'day within epoch.'
Major	Addition	4.1.4.7 – Use of Relative Timing Variables	References to models prior to SDTMIG v3.1.1 removed, conventions clarified for --STRF and --ENRF and added for --STRTPT, --STTPT, --ENRTPT and --ENTPT.
Minor	Revised	4.1.4.8 – Date and Time Reported in a Domain Based on Findings	Clarified description of interval collections.
Major	Addition	4.1.4.10 – Representing Time Points	Section added.
Minor	Addition	4.1.5.1 – Original and Standardized Results of Findings and Tests Not Done	Descriptions and examples clarified.
Minor	Addition	4.1.5.2 – Linking of Multiple Observations	Text updated to point to Section 8.
Minor	Addition	4.1.5.3 – Text Strings that Exceed the Maximum Length for General-Observation-Class Domain Variables	Descriptions and examples expanded.
Major	Addition	4.1.5.5 – Clinical Significance for Findings Observation Class Data	Section added.
Major	Addition	4.1.5.6 – Supplemental Reason Variables	Section added.
Major	Addition	4.1.5.7 – Presence or Absence of Pre-Specified Interventions and Events	Section added.
Major	Addition	Table 5.1.1 Demographics	The following Timing variables are permissible and may be added as appropriate: VISITNUM, VISIT, VISITDY. The Record Qualifier DMXFN (External File Name) is the only additional variable that may be added, which is adopted from the Findings general observation class, may also be used to refer to an external file, such as a subject narrative.
Major	Change	Table 5.1.1 Demographics	Role of RFSTDTC and RFENDTC changed from "Timing" to "Record Qualifier".

Major	Correction	Table 5.1.1 Demographics	CDISC Notes for SITEID changed from “Unique identifier for a study site within a submission.” to “Unique identifier for a site within a study.”
Major	Change	Table 5.1.1 Demographics	Role of BRTHDTC changed from “Result Qualifier” to “Record Qualifier”.
Major	Change	Table 5.1.1 Demographics	Role of AGE changed from “Result Qualifier” to “Record Qualifier”.
Major	Correction	Table 5.1.1 Demographics	Changed variable label for AGE from “Age in AGEU at RFSTDTC” to “Age” to remove names of other variables in variable labels. AGE does not have to be derived from RFSTDTC.
Major	Change	Table 5.1.1.1 Demographics	ARMCD is restricted to 20 characters and not 8 characters.
Major	Addition	Table 5.1.1 Demographics - Assumptions	Added clarifications to Assumption 4 for ARM and ARMCD.
Minor	Deletion	Table 5.1.1.1 Demographics - Assumptions	Removed Assumption 5. Justification for using SEX vs. GENDER: Page 71 of 'Providing Regulatory Submissions in Electronic Format - NDAs' (IT-3, January, 1999), available at http://www.fda.gov/cder/guidance/2353fnl.pdf specifically lists SEX as part of demographic data. Similarly, page 60 of 'Guidance for Industry, Providing Regulatory Submissions to the Center for Biologics Evaluation in Electronic Format - Biologics Marketing Applications' (November, 1999),available at http://www.fda.gov/cber/guidelines.htm specifically lists SEX as part of demographic data. SEX is used consistently in both documents except for one instance where GENDER is used (page 30 for Table 6 which may have been from another writer). 'ICH E3: Structure and Content of Clinical Study Reports' (November 30, 1999) only uses SEX (not GENDER).”
Major	Addition	Table 5.1.1.1 Demographics - Assumptions	Added Assumption #6 for submission of multiple races.
Major	Change	Table 5.2.1 Comments	RDOMAIN role changed from “Identifier” to ”Record Qualifier”.
Major	Change	Table 5.2.1 Comments	IDVAR role changed from “Identifier” to ”Record Qualifier”.
Major	Change	Table 5.2.1 Comments	IDVARVAL role changed from “Identifier” to ”Record Qualifier”.
Major	Change	Table 5.2.1 Comments	COVAL role changed from “Result Qualifier” to ”Topic”.
Major	Addition	Table 5.2.1 Comments	Added VISITNUM, VISITDY and VISIT
Major	Change	Table 5.2.1 Comments	CODTC is after VISITDY and is now the last variable. Was after COREF and before COVAL
Major	Addition	Table 5.2.1.1 Comments Assumptions	Added assumption #6, which no longer restricts the addition of Identifiers and Timing variables to Comments.
Minor	Change	Table 5.3.1 Subject Elements	Was Table 7.3.1
Major	Addition	Table 5.3.1 Subject Elements	TAETORD and EPOCH added
Minor	Addition	Table 5.3.1 Subject Elements	12 assumptions added
Minor	Addition	Table 5.3.2 Subject Visits	Was Table 7.3.2
Major	Addition	Table 5.3.2 Subject Visits	Added SVSTDY and SVENDY
Minor	Addition	Table 5.3.2 Subject Visits	Added 11 assumptions.
Minor	Change	Table 6.1.1 Concomitant Medications	Structure of CM domain clarified from 'One record per medication intervention episode per subject, Tabulation' to 'One record per recorded intervention occurrence or constant-dosing interval per subject'
Major	Change	Table 6.1.1 Concomitant Medications	CMSTAT label changed from 'Concomitant Medication Status' to 'Completion Status' to be compliant with the SDTM

Minor	Change	Table 6.1.1 Concomitant Medications	Assumptions have been modified to more accurately reflect the intent of the domain
Major	Addition	Table 6.1.1 Concomitant Medications	Added new variable CMPRESP after CMSCAT and before CMOCCUR.
Major	Change	Table 6.1.1 Concomitant Medications	Changed variable label for CMDOSTOT from “Total Daily Dose Using DOSU” to “Total Daily Dose” to remove names of other variables in variable labels.
Major	Addition	Table 6.1.1 Concomitant Medications	Added new variables CMSTRTPT, CMSTTPT, CMENRTPT, CMENTPT (after CMENRF).
Minor	Addition	Table 6.1.2 Exposure	Added permissible variables EXVAMT and EXVAMTU
Minor	Addition	Table 6.1.2 Exposure	Added permissible variable EPOCH
Major	Change	Table 6.1.2 Exposure	Added assumption that Exposure data is required. Other assumptions were added and modified.
Minor	Addition	Table 6.1.2 Exposure	Example for submitting placebo data has been added
Major	Change	Table 6.1.2 Exposure	Changed variable label for EXDOSTOT from “Total Daily Dose Using DOSU” to “Total Daily Dose” to remove names of other variables in variable labels.
Major	Change	Table 6.1.2 Exposure	Changed variable label for EXELTM from “Planned Elapsed Time from Reference Pt” to “Planned Elapsed Time from Time Point Ref” to be consistent with SDTM Table 2.2.5 and to more accurately represent the intent of the variable.
Major	Change	Table 6.1.2 Exposure	EXDOSFRM changed from “Required” to “Expected”.
Major	Change	Table 6.1.2 Exposure	EXSTDTC changed from “Required” to “Expected”.
Major	Addition	Table 6.1.3 Substance Use	Added new variable SUPRESP after SUSCAT and before SUOCCUR.
Minor	Change	Table 6.1.3 Substance Use	Structure of SU domain clarified from 'One record per substance type per visit per subject' to 'One record per substance type per reported occurrence per subject'
Major	Change	Table 6.1.3 Substance Use	SUSTAT label changed from 'Substance Use Status' to 'Completion Status' to be more compliant with the SDTM
Major	Change	Table 6.1.3 Substance Use	Changed variable label for SUDOSTOT from “Total Daily Dose Using DOSU” to “Total Daily Dose” to remove names of other variables in variable labels.
Minor	Deletion	Table 6.1.3 Substance Use	Removed variables VISIT, VISITNUM and VISITDY but can be added back in if needed since they are timing variables.
Major	Addition	Table 6.1.3 Substance Use	Added new variables SUSTRTPT, SUSTTPT, SUENRTPT, SUENTPT (after SUENRF).
Major	Addition	Table 6.2.1 Adverse Events	Added new variable AEPRESP after AESCAT and before AEBODSYS
Major	Deletion	Table 6.2.1 Adverse Events	Removed variable AEOCCUR. AEOCCUR is not permitted because the AE domain contains only records for adverse events that actually occurred.
Major	Change	Table 6.2.1 Adverse Events	Changed variable label for AELOC from “Location of the Reaction” to “Location of Event” to be more generic and not limited to just a location of a reaction.
Major	Addition	Table 6.2.1 Adverse Events	Added new variables AEENRTPT, AEENTPT (after AEENRF).
Major	Addition	Table 6.2.1 Adverse Events	Added assumption #7 to clarify use of EPOCH and TAETORD.
Major	Change	Table 6.2.1 Adverse Events Assumption	The adverse event dataset is only for adverse events that happened. Assumption 4e “Records should be included in the submission AE dataset only for adverse events that have actually occurred.”

Major	Addition	Table 6.2.1 Adverse Events Assumption #8	The following Qualifiers would not be used in AE: --OCCUR, --STAT, and--REASND. They are the only Qualifiers from the SDTM Events Class not in the AE domain. They are not permitted because the AE domain contains only records for adverse events that actually occurred. See Assumption 4c above for information on how to deal with negative responses or missing responses to probing questions for pre-specified adverse events.
Minor	Deletion	Table 6.2.2 Disposition	Removed variables VISIT, VISITNUM and VISITDY but can be added back in if needed since they are timing variables.
Major	Change	Table 6.2.2 Disposition	EPOCH label changed from “Trial Epoch” to “Epoch”. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Change	Table 6.2.2 Disposition	DSCAT changed from “Permissible” to “Expected”.
Minor	Addition	Table 6.2.2 Disposition	Added assumptions #5 and #6 for ICH E3 guidance.
Major	Change	Table 6.2.3 Medical History	MHSTAT label changed from 'Medical History Status' to 'Completion Status' to be more compliant with the SDTM
Major	Addition	Table 6.2.3 Medical History	Added new variable MHPRESP after MHSCAT and before MHOCCUR.
Minor	Deletion	Table 6.2.3 Medical History	Removed variables VISIT, VISITNUM and VISITDY but can be added back in if needed since they are timing variables.
Major	Change	Table 6.2.3 Medical History	Added new variables MHENRTPT, MHENTPT (after MHENRF).
Minor	Addition	Section 6.2.4 Protocol Deviations	Added new domain model, assumptions and examples.
Major	Addition	Section 6.2.5 Clinical Events	Added new domain model, assumptions and examples.
Minor	Deletion	Table 6.3.1 ECG	EGNRIND removed but can be added back if data is collected or derived.
Minor	Deletion	Table 6.3.1 ECG	EGLOINC removed but can be added back if data is collected or derived. EGLOINC was removed from EG because its use is no longer recommended. Other coding schemes for EGTEST will be proposed by the CDISC Terminology Team.
Minor	Addition	Table 6.3.1 ECG	Permissible variable EGLOC added but can be dropped if data is not collected.
Major	Correction	Table 6.3.1 ECG	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Change	Table 6.3.1 ECG	VISITNUM changed from “Required” to “Expected”.
Major	Correction	Table 6.3.1 ECG	Changed variable label for EGELTM from “Elapsed Time from Reference Point” to “Planned Elapsed Time from Time Point Ref” to be consistent with SDTM Table 2.2.5 and to more accurately represent the intent of the variable.
Minor	Addition	Table 6.3.1 ECG	Permissible variable EGRFTDTC added but can be dropped if data is not collected.
Major\	Change	Table 6.3.1 ECG	EGSTAT label changed to be consistent across domains.
Major	Change	Table 6.3.1 ECG	EGXFN label has the 'F' in 'file' capitalized to be title case.
Major	Change	Table 6.3.1 ECG	EGEVAL changed from Expected to Permissible.
Minor	Change	Table 6.3.1 ECG	EGTPT moved before EGTPTNUM to be consistent with the order in the SDTM.
Minor	Deletion	Table 6.3.1 ECG	Previous assumption #2 removed because it pertains to EGLOINC, which has been removed from the model.
Major	Correction	Table 6.3.2 Inclusion/Exclusion Exceptions	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.

Minor	Change	Table 6.3.2 Inclusion/Exclusion	Structure of IE domain clarified from 'One record per inclusion/exclusion criteria exception per subject' to 'One record per inclusion/exclusion criterion not met per subject'
Minor	Addition	Table 6.3.2 Inclusion/Exclusion	3 assumptions added
Minor	Deletion	Table 6.3.2 Inclusion/Exclusion	Previous assumption #2 removed
Major	Change	Table 6.3.3 Lab	LBSTAT label was changed from 'Lab Status' to 'Completion Status' in order to be more compliant with the SDTM
Major	Change	Table 6.3.3 Lab	VISITNUM changed from Required to Expected
Minor	Addition	Table 6.3.3 Lab	4 assumptions added
Major	Correction	Table 6.3.3 Laboratory Test Results	LBTESTCD variable label changed from “LAB Test or Examination Short Name” to ”Lab Test or Examination Short Name”
Major	Correction	Table 6.3.3 Laboratory Test Results	LBTESTCD variable label changed from “LAB Test or Examination Name” to ”Lab Test or Examination Name”
Major	Correction	Table 6.3.3 Laboratory Test Results	Order of LBSTNRC changed from after LBSTRESC and before LBSTRESN to after LBSTNRHI and before LBNRIND. This change is consistent with SDTM Table 2.2.3, which is the master for the Findings Observation Class.
Major	Correction	Table 6.3.3 Laboratory Test Results	Order of LBDRVFL changed from after LBFAST and before LBSTRESN to after LBFAST and before LBTOX. This change is consistent with SDTM Table 2.2.3, which is the master for the Findings Observation Class.
Major	Correction	Table 6.3.3 Laboratory Test Results	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Correction	Table 6.3.3 Laboratory Test Results	Changed variable label for LBELTM from “Elapsed Time from Reference Point” to “Planned Elapsed Time from Time Point Ref” to be consistent with SDTM Table 2.2.5 and to more accurately represent the intent of the variable.
Minor	Addition	Table 6.3.3 Laboratory Test Results	Permissible variable LBRFTDTC added but can be dropped if data is not collected.
Major	Change	Table 6.3.4 Physical Examination	PESTRESC label had the period after "Std" removed
Major	Deletion	Table 6.3.4 Physical Examination	Removed expected variable PESTRESN
Major	Deletion	Table 6.3.4 Physical Examination	Removed expected variable PESTRESU
Major	Change	Table 6.3.4 Physical Examination	PESTAT had the label changed from 'Examination Status' to 'Completion Status' in order to be more compliant with the SDTM
Minor	Deletion	Table 6.3.4 Physical Examination	Permissible variable PESEV was dropped from the model, but can be added back in if collected.
Minor	Addition	Table 6.3.4 Physical Examination	2 assumptions were added
Major	Correction	Table 6.3.4 Physical Examination	Order of PELOC changed from after PESCAT and before PEBODSYS to after PEREASND and before PEMETHOD. This change is consistent with SDTM Table 2.2.3, which is the master for the Findings Observation Class.
Minor	Addition	Table 6.3.4 Physical Examination	Permissible variable PEMETHOD added but can be dropped if data is not collected.
Major	Correction	Table 6.3.4 Physical Examination	Removed PEBLFL.
Major	Correction	Table 6.3.4 Physical Examination	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.

Minor	Change	Table 6.3.5 Questionnaires	Structure of QS domain clarified from 'One record per question per time point per visit per subject' to 'One record per questionnaire per question per time point per visit per subject'
Major	Change	Table 6.3.5 Questionnaires	Label of QSSTAT changes from 'Status of Question' to 'Completion Status' in order to be more compliant with the SDTM
Minor	Change	Table 6.3.5 Questionnaires	The first three assumptions were rearranged for clarity. 3 additional assumptions were added.
Major	Correction	Table 6.3.5 Questionnaires	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Correction	Table 6.3.5 Questionnaires	Changed variable label for QSELTM from "Elapsed Time from Reference Point" to "Planned Elapsed Time from Time Point Ref" to be consistent with SDTM Table 2.2.5 and to more accurately represent the intent of the variable.
Minor	Correction	Table 6.3.5 Questionnaires	Permissible variable QSRFTDTC added but can be dropped if data is not collected.
Major	Change	Table 6.3.6 Subject Characteristics	SCSTAT label changed from 'Status of SD Measurement' to 'Completion Status' in order to be more compliant with the SDTM
Minor	Addition	Table 6.3.6 Subject Characteristics	1 assumption added
Major	Deletion	Table 6.3.6 Subject Characteristics	Example (previously in 9.4.6) had 'Race Other' information removed
Major	Change	Table 6.3.6 Subject Characteristics	SCDTC changed from "Expected" to "Permissible".
Major	Change	Table 6.3.7 Vital Signs	VISITNUM changed from Required to Expected
Minor	Change	Table 6.3.7 Vital Signs	4 assumptions added
Minor	Addition	Table 6.3.7 Vital Signs	VISITNUM changed from Required to Expected
Minor	Deletion	Table 6.3.7 Vital Signs	VSNRIND removed but can be added back if data is collected or derived.
Minor	Deletion	Table 6.3.7 Vital Signs	VSLOINC removed. CDISC had defined the controlled terminology for Vital Signs Tests.
Major	Correction	Table 6.3.7 Vital Signs	Order of variables changed to VISITNUM, VISIT from VISIT, VISITNUM. This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Correction	Table 6.3.7 Vital Signs	Changed variable label for VSELTM from "Elapsed Time from Reference Point" to "Planned Elapsed Time from Time Point Ref" to be consistent with SDTM Table 2.2.5 and to more accurately represent the intent of the variable.
Minor	Addition	Table 6.3.7 Vital Signs	Permissible variable VSRFTDTC added but can be dropped if data is not collected.
Major	Addition	Section 6.3.8 Drug Accountability	Added new domain model, assumptions and examples.
Major	Addition	Section 6.3.9 Microbiology	Added new domain model, assumptions and examples.
Major	Addition	Section 6.3.10 PK	Added new domain model, assumptions and examples.
Major	Addition	Section 6.4 Findings About	Added new domain model, assumptions and examples.
Minor	Change	7.1 Introduction	Expanded introduction and added subsections 7.1.1 Purpose of Trial Design Model, 7.1.2 Definitions of Trial Design Concepts and 7.1.3 Current and Future Contents of the Trial Design Model.
Minor	Change	Table 7.2.1 Trial Arms	ETCD is restricted to 8 characters. Length was not specified previously.
Minor	Change	Table 7.2.1 Trial Arms	Was Table 7.2.2
Major	Change	Table 7.2.1 Trial Arms	ARMCD is restricted to 20 characters and not 8 characters.
Major	Change	Table 7.2.1 Trial Arms	ARMCD label changed from "Arm Code" to "Planned Arm Code".

Major	Change	Table 7.2.1 Trial Arms	ARM label changed from "Description of Arm" to "Description of Planned Arm".
Major	Change	Table 7.2.1 Trial Arms	EPOCH label changed from "Trial Epoch" to "Epoch". This change is consistent with SDTM Table 2.2.5, which is the master for the Timing Variables.
Major	Change	Table 7.2.1 Trial Arms	EPOCH changed from "Permissible" to "Required".
Minor	Change	Table 7.2.1 Trial Arms	11 assumptions added
Minor	Change	Table 7.3.1 Trial Elements	Was Table 7.2.1
Minor	Change	Table 7.3.1 Trial Elements	ETCD is restricted to 8 characters. Length was not specified previously.
Minor	Change	Table 7.3.1 Trial Elements	Added 15 assumptions
Minor	Change	Table 7.4.1 Trial Visits	Was Table 7.2.3
Major	Change	Table 7.4.1 Trial Visits	ARMCD is restricted to 20 characters and not 8 characters.
Major	Change	Table 7.4.1 Trial Visits	ARMCD label changed from "Arm Code" to "Planned Arm Code".
Major	Change	Table 7.4.1 Trial Visits	ARM label changed from "Description of Arm" to "Description of Planned Arm".
Major	Change	Table 7.4.1 Trial Visits	TVSTRL changed from "Permissible" to "Required".
Minor	Change	Table 7.4.1 Trial Visits	6 assumptions added
Minor	Change	Table 7.5.1 Trial Inclusion/Exclusion Criteria	Was Table 7.9
Major	Addition	Table 7.5.1 Trial Inclusion/Exclusion Criteria	Added new qualifier variable IESCAT to list of qualifiers (after IECAT and before TIRL).
Major	Addition	Table 7.5.1 Trial Inclusion/Exclusion Criteria	Added new qualifier variable TIVERS to list of qualifiers (after TIRL).
Minor	Addition	Table 7.5.1 Trial Inclusion/Exclusion Criteria	Added 4 assumptions.
Minor	Change	Table 7.6.1 Trial Summary	Was Table 7.10
Major	Addition	Table 7.6.1 Trial Summary	Added new qualifier variable TSGRPID to list of qualifiers (after TSSEQ and before TSPARMCD).
Minor	Addition	Table 7.6.1 Trial Summary	Added 10 assumptions.
Minor	Change	Section 8 Representing Relationships and Data	Clarified relationship description. Emphasis was placed on defining relationships between datasets rather than domains since domains may occupy multiple datasets.
Minor	Change	Section 8.1 – Relating Groups of Records within a Domain using the –GRPID Variable	Simplified wording to clarify concepts especially the use of GRPID to group records within a subject versus the use of the variable CAT that can group records across subjects.
Major	Addition	Table 8.2.1 RELREC	Added columns for "Core" and "References".
Minor	Addition	8.3.1 RELREC Dataset Relationship Example	Added more explanation on the different RELTYPES and the functionality each provides.
Minor	Change	8.4 Relating Non-Standard Variables to a Parent Domain	Re-arranged wording to gradually introduce topics by first building the understanding of foundational concepts such as metadata and attributions.
Minor	Addition	8.4.1 Supplemental Qualifiers: SUPPQUAL or SUPP -- Datasets	Added reference to another section for handling data that is greater than 200 characters. Also added a reference to standard QNAMs for commonly represented data.
Major	Addition	Table 8.4.1 SUPPQUAL	Added column for "Core".
Minor	Addition	8.4.2 Submitting Supplemental Qualifiers in Separate Datasets	Added reference to section for additional guidance on splitting domains.
Minor	Addition	8.4.3 SUPPQUAL Examples	Added an example on how to use SUPPQUAL with a sponsor-defined domain.
Major	Addition	8.4.4 When not to use Supplemental Qualifiers	New section with examples that qualify use of SUPPQUAL versus other domains.

Major	Change	8.5 Relating Comments to a Parent Domain	Add several paragraphs that provide guidance on how to use CO (Comments) to store information that describes the comment relationship.
Minor	Change	8.6.1 Guidelines for Determining the General Observation Class	Provides more concrete examples for each type of observation class.
Major	Addition	8.6.2 Guidelines for Forming New Domain	New section that describes how data topics influences whether or not to create a new domain.
Major	Addition	8.6.3 Guidelines for Differentiating Between Events, Findings and Findings About Events	New section that describes the attributes that may be used to distinguish between Events and Findings.
Minor	Change	Section 10.1 – CDISC Team	Renamed to Appendix A. Updated to reflect current list of SDS team members and company affiliation.
Minor	Change	Section 10.2 - Glossary of Terms	Renamed to Appendix B. Added terms ADaM, ATC code, CRF, CTCAE, eDT, ICD9, ICH, ICH E2A, ICH E2B, ICH E3, ICH E9, ISO, ISO 8601, LOINC, MedDRA, NCI, SF-36, SNOMED, SOC, TDM ,UUID, WHODRUG, XML
Minor	Deletion	Section 10.2 - Glossary of Terms	Deleted SDSIG (SDS Implementation Guide V3.1, now referred to as SDTMIG.)
Major	Addition	Appendix C1	New section added: "Appendix C1: Controlled Terms or Format for SDTM Variables". Replaced values for controlled terminology to links to CDISC website.
Minor	Change	Section 10.3.1 – Reserved Domain Codes	Renamed to "Appendix C2: Reserved Domain Codes"
Major	Addition	Section C2A	New section added: Appendix C2A: Reserved Domain Codes Under Discussion
Major	Addition	10.3.1 – Reserved Domain Codes	Added AD (Analysis Dataset), CE (Clinical Events), FA (Findings About) and X, Y, Z (used for sponsor defined domains).
Major	Addition	Section C2A	Added HO (Hospitalization), NE (Non Subject Events, PH (Pathology/Histology), PF (Pharmacogenomics Findings), TR (Tumor Results), TU (Tumor Identification)
Minor	Change	10.3.1 – Reserved Domain Codes – EG, PP, and PC	Abbreviations spelled out for ECG (Electrocardiogram), PK (Pharmacokinetic)
Major	Deletion	10.3.1 – Reserved Domain Codes – AU (Autopsy)	Information about the autopsy (AU) itself would belong in a procedures domain. Finding obtained during the autopsy would more likely belong in the domain based on the topic.
Major	Change	10.3.1 – Reserved Domain Codes – BM	Bone Mineral Density changed to Bone Measurements to be more generic since Bone Mineral Density is one type of Bone Measurement.
Major	Deletion	10.3.1 – Reserved Domain Codes – BR (Biopsy)	Information about the biopsy (BR) itself would belong in a procedures domain. Finding obtained during the biopsy would more likely belong in the domain based on the topic.
Major	Deletion	10.3.1 – Reserved Domain Codes – DC (Disease Characteristics)	Disease Characteristics are more likely to be CE (Clinical Events) or FA (Findings About), which are new models in 3.1.2.
Major	Deletion	10.3.1 – Reserved Domain Codes – EE (Electroencephalogram)	Domains are established based on a common topic (i.e., where the nature of the measurements is the same), rather than by a specific method of collection such as Electroencephalogram.
Major	Deletion	10.3.1 – Reserved Domain Codes – IM	Imaging removed as a domain.
Major	Deletion	10.3.1 – Reserved Domain Codes – SK (Skin Test)	Not under development and concept is too vague for the creation of a domain model.

Major	Deletion	10.3.1 – Reserved Domain Code SL (Sleep (Polysomnography) Data)	Changed "SL (Sleep (Polysomnography) Data)" to "Sleep Data". Polysomnography is an example of a finding from diagnostic sleep tests.
Major	Deletion	10.3.1 – Reserved Domain Codes – SS (Signs and Symptoms)	Replaced by Findings About.
Major	Deletion	10.3.1 – Reserved Domain Codes – ST (Stress (Exercise) Test Data.	Findings are usually in existing domains such as ECG, laboratory, vital signs etc.
Major	Deletion	10.3.2: Electrocardiogram Test Codes and 10.3.3 Vital Signs Test Codes	Controlled terminology is published on the CDISC website. Section replaced by "Appendix C1: Controlled Terms or Format for SDTM Variables".
Major	Deletion	Controlled Terminology - Units for Vital Signs Results (VSRESU)	Controlled terminology is published on the CDISC website. Examples were in CDISC notes for VSORRES. More units were added and some were modified: 1) INCHES changed to IN 2) FEET is not included 3) POUNDS changed to LB 4) BEATS PER MINUTE changed to BEATS/MINUTE
Major	Deletion	Section 10.3.3 Vital Signs Test Codes (VSTESTCD, VSTEST)	Controlled terminology is published on the CDISC website and some changes made from10.3.3 Vital Signs Test Codes Page 167 1) VSTEST "Frame Size" changed to "Body Frame Size" 2) VSTEST "Body Fat" changed to "Adipose Tissue"
Major	Change	Controlled Terminology – Action Taken with Study Treatment	Examples were in CDISC notes for AEACN- DRUG INTERRUPTED was not included as an example.
Major	Change	Controlled Terminology –SEX	Controlled terms for SEX (Undifferentiated) added to be consistent with HL7 (Health Level 7).
Major	Change	Controlled Terminology – Ethnicity	Additions to those listed as controlled terms for ETHNIC. "NOT REPORTED" and "UNKNOWN" added as terms to match what was already in NCI caDSR (National Cancer Institute cancer Data Standards Repository)
Major	Change	Controlled Terminology – Completion/Reason for Non-Completion (NCOMPLT)	Examples were in CDISC notes for DSDECOD disposition events. Added "RECOVERY", Changed "WITHDRAWAL OF CONSENT" to "WITHDRAWAL BY SUBJECT"
Major	Change	Controlled Terminology – No Yes response (NY)	NA (Not Applicable) was added to the list of controlled terms N, Y, and U. (No, Yes and Unknown).
Major	Change	Controlled Terminology – Route of Administration (ROUTE)	Includes many more controlled terms than for those listed in CDISC Notes for --ROUTE. Includes more specific routes than INHALATION listed in CDISC notes for SUROUTE.
Major	Change	10.3.5 Trial Summary Codes	Section moved and renamed to "Appendix C3: Trial Summary Codes".
Major	Change	10.3.5 Trial Summary Codes	All values for TSPARM changed to title case to be consistent with --TEST.
Major	Change	Controlled Terminology - Trial Blinding Schema (ADDON)	TSPARMCD value ADDON The TSPARM was changed from "TEST PRODUCT IS ADDED ON TO EXISTING TREATMENT" to "Added on to Existing Treatments".
Major	Change	Controlled Terminology - Trial Summary Parameter (AEDICT, DRUGDICT, MHDICT)	AEDICT, DRUGDICT, MHDICT are no longer recommended to be used as Trial Summary Parameters. Information on dictionaries and dictionary versions are included in the SDTM metadata, since the define.xml specification has explicit mechanisms for handling references to dictionaries and dictionary versions.
Major	Change	Controlled Terminology - Trial Phase (AGESPAN)	TSPARM for AGESPAN label changed from "AGE SPAN" to "Age Group" to be more descriptive.

Major	Addition	Controlled Terminology - Trial Phase (AGEU)	AGEU (Age Units) added.
Major	Change	Controlled Terminology - Trial Blinding Schema (TBLIND)	TSPARMCD was changed from BLIND to TBLIND.
Minor	Change	Controlled Terminology - Trial Phase (COMPTRT)	TSPARMCD value COMPTRT (Comparative Treatment Name) has been deferred to a later package based on review comments.
Major	Change	Controlled Terminology - Trial Control Type (TCNTRL)	TSPARMCD was changed from CONTROL to TCNTRL. Label changed from "TYPE OF CONTROL" to "Control Type"
Major	Change	Controlled Terminology - Diagnosis Group (TDIGRP)	TSPARMCD was changed from DIAGGRP to TDIGRP
Major	Change	Controlled Terminology - Diagnosis Group (DOSE)	TSPARMCD value DOSE. The TSPARM was changed from "TEST PRODUCT DOSE PER ADMINISTRATION" to "Dose per Administration".
Major	Change	Controlled Terminology - Diagnosis Group (DOSFRQ)	TSPARMCD value DOSFRQ. The TSPARM was changed from "TEST PRODUCT DOSING FREQUENCY" to "Dosing Frequency".
Minor	Change	Controlled Terminology - Trial Phase (DOSFRQ)	TSPARMCD value DOSFRQ (Dosing Frequency) has been deferred to a later package based on review comments.
Major	Change	Controlled Terminology - Diagnosis Group (DOSU)	TSPARMCD value DOSU. The TSPARM was changed from "TEST PRODUCT DOSE UNITS" to "Dose Units".
Minor	Change	Controlled Terminology - Trial Phase (DOSU)	TSPARMCD value DOSU (TEST PRODUCT DOSE UNITS) has been deferred to a later package based on review comments.
Major	Correction	Controlled Terminology - Trial Phase (INDIC)	TSPARMCD value INDIC. The TSPARM was changed from "TRIAL INDICATIONS" to "Trial Indication". The plural form has not been used with trial summary parameters so change for consistency.
Minor	Change	Controlled Terminology - Trial Phase (INDIC)	TSPARMCD value INDIC (Trial Indication) has been deferred to a later package since it's not apparent what the distinction is between "Trial Indication" and "Trial Indication Type".
Major	Change	Controlled Terminology - Trial Indication Type (TINDTP)	TSPARMCD was changed from INDICTYP to TINDTP.
Major	Correction	Controlled Terminology - Trial Phase (LENGTH)	TSPARMCD value LENGTH. The TSPARM was changed from "LENGTH OF TRIAL" to "Trial Length".
Minor	Change	Controlled Terminology - Trial Phase (OBJPRIM)	TSPARMCD value OBJPRIM (TRIAL PRIMARY OBJECTIVE) has been deferred to a later package based on review comments.
Minor	Change	Controlled Terminology - Trial Phase (OBJSEC)	TSPARMCD value OBJSEC (TRIAL SECONDARY OBJECTIVE) has been deferred to a later package based on review comments.
Major	Change	Controlled Terminology - Trial Phase (TPHASE)	TSPARMCD was changed from PHASE to TPHASE. Label changed from "TRIAL PHASE" to "Trial Phase Classification"
Major	Change	Controlled Terminology - Trial Summary Parameter (ROUTE)	TSPARMCD value ROUTE. The TSPARM was changed from "TEST PRODUCT ROUTE OF ADMINISTRATION" to "Route of Administration".
Minor	Change	Controlled Terminology - Trial Phase (SPONSOR)	TSPARMCD value SPONSOR (SPONSORING ORGANIZATION) has been deferred to a later package.
Minor	Change	Controlled Terminology - Trial Phase (TRT)	TSPARMCD value TRT (REPORTED NAME OF TEST PRODUCT) has been deferred to a later package.
Major	Addition	Appendix C3: Trial Summary Codes	STOPRULE (Study Stop Rules) added.

Major	Change	Controlled Terminology - Trial Summary Parameter (TTYPE)	TSPARMCD was changed from TYPE to TTYPE.
Major	Change	Controlled Terminology - Trial Summary Parameter (TTYPE)	TSPARMCD value TTYPE. The TSPARM was changed from ”TYPE OF TRIAL” to “Trial Type”.
Major	Change	Controlled Terminology - Type of Trial (TTYPE)	• TSVAL CONFIRMATORY and EXPLORATORY were removed based on review comments. • TSVAL PHARMACODYNAMICS changed to PHARMACODYNAMIC • TSVAL PHARMACOGENOMICS changed to PHARMACOGENOMIC • TSVAL PHARMACOKINETICS changed to PHARMACOKINETIC
Minor	Change	Section 10.4 CDISC Variable-Naming Fragments.	Section renamed to “Appendix D: CDISC Variable- Naming Fragments”. Added ASSAY, CLINICAL, OBJECT, SIGNIFICANT
Minor	Addition	Appendix C4: Drug Accountability Test Codes	New section added and values: “Appendix C4: Drug Accountability Test Codes”
Minor	Change	Section 10.3.4 Supplemental Qualifiers Name Codes	Section renamed to “Appendix C5: Supplemental Qualifiers Name Codes”.
Minor	Addition	Section 10.3.4 Supplemental Qualifiers Name Codes	Added MedDRA specific values (--HLGT = High Level Group Term, --HLT= High Level Term, --LLT= Lowest Level Term, --LLTCD = Lowest Level Term Code, --PTCD = Preferred Term Code, --HLTCD = High Level Term Code, --HLGTCD = High Level Group Term Code, --SOCCD = System Organ Class Code,)
Minor	Addition	Section 10.3.4 Supplemental Qualifiers Name Codes	Added --CLSIG = Clinically Significant and --REAS = Reason.
Minor	Deletion	Section 10.5 Lessons Learned from the Pilot	Section 10.5 Lessons Learned from the Pilot is deleted since it is historical information and not relevant to this release.

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