

CDISC Public Webinar- Clostridium Difficile Associated Diarrhea Therapeutic Area User Guide

8th February 2018

10am CST



Strength through Collaboration

Panelists

- Laura Butte, Senior Project Manager at Critical Path Institute (C-Path)
- Diane Corey, Data Manager and Standards Developer at Critical Path Institute (C-Path)
- Jordan Li, Biomedical Clinical Research Information Specialist at NCI/EVS

Question & Answer

- ‘Panelist’: Question
- OR
- ‘Presentation’: Question

Examples:

- 1) What should be supported by ADaM datasets?
- 2) Jack: Is there a limit to the number of variables that can be in ADSL?

Content Disclaimer

All content in this presentation is for education and information only.

References to any specific commercial product, process, service, or corporation are also for information only, and do not constitute endorsement, recommendation, or favoring by CDISC or the CDISC community.

AGENDA

- **Team Collaboration**
- **Introduction to Clostridium Difficile Associated Diarrhea**
- **CDAD TAUG Overview**
 - Sections
 - Domains
 - Variables
 - Non-Standard Variables
 - Controlled Terminology
- **Public Review Information**
- **Q&A**

CDAD TAUG Development Team

Core Team Members

Name	Institution/Organization
Daniel Olson - Team Lead	Critical Path Institute
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Diane Corey	Critical Path Institute
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Shrimant Mishra	FDA
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CDISC Core Team Members

Name	Institution/Organization
Diane Wold	CDISC
Dana Booth	CDISC
Jon Neville	CDISC
Rhonda Facile	CDISC

Introduction to CDAD

- *Clostridium difficile* associated diarrhea (CDAD) is a bacterial infection that includes diarrhea, fever, elevated white blood cell count and abdominal pain/tenderness.
- Risk factors of CDAD include recent antibacterial use, older age, weakened immune system, and prior episodes of CDAD.
- Treatment includes cessation of antibacterial and administration of approved antibacterial against *C. difficile*.

Overview of TAUG Content

- **Section 1, [Introduction](#)**, provides an overall introduction to the purpose and goals of the Therapeutic Area Data Standards User Guide for CDAD.
- **Section 2, [Overview](#)**, provides some general information on CDAD.
- **Section 3, [Subject and Disease Characteristics](#)**, provides examples to support the modelling of identification of *C. difficile*, medical history of prior CDAD episodes, and drug resistance.
- **Section 4, [Disease Assessments](#)**, provides examples used to support the modelling of baseline severity, symptoms of CDAD, stool count and volume along with Questionnaires, Ratings and Scales.

Overview of TAUG Content

- **Section 5, [Routine Data](#)**, provides examples used to support the modelling of stool sample collection data.
- **Section 6, [Appendices](#)**, provide additional background material and describe other supplemental material relevant to CDAD.

Subject and Disease Characteristics

Identification and Diagnosis of C. difficile

- *C. difficile* is first isolated from a fecal specimen on a selective medium.
- Toxin enzyme immunoassay (EIA) and cell cytotoxicity neutralization assay (CCCNA) methods are used to determine whether the strain of *C. difficile* isolated from culturing is toxigenic or non-toxigenic by testing for the presence of toxin A and/or B.
- Confirmatory polymerase chain reactions (PCRs) are performed to further verify and detect the presence of tcdA and tcdB DNA. tcdA and tcdB genes encode for Toxin A and B respectively.
- Specific hypervirulent strain variants can also be determined by PCR.
- Example in TAUG shows how these different tests can be modelled in the MB and PF domains.

Identification of Toxigenic Clostridium difficile – Using the Microbiology (MB) Domain

mb.xpt

Row	STUDYID	DOMAIN	USUBJID	SPDEVID	MBSEQ	MBGRPID	MBTESTCD	MBTEST	MBTSTDTL	MBORRES	MBORRESU	MBSTRESC	MBSTRESN	MBSTRESU	MBSPEC	MBMETHOD	VISITNUM	VISIT	MBDTC	MBMEDTYP	MBRRSTYP
1	ABC	MB	ABC-008	ABC333	1	1	MCORGIDN	Microbial Organism Identification CDAD-78 RESOLVED		CLOSTRIDIUM DIFFICILE		CLOSTRIDIUM DIFFICILE			STOOL	MICROBIAL CULTURE, SOLID	2	WEEK 2	2017-10-02	Cycloserine-Cefoxitin Fructose Agar	
2	ABC	MB	ABC-008	ABC333	2	1	CDF	Clostridium difficile	COLONY COUNT	77	CFU/mL	77	77	CFU/mL	STOOL	MICROBIAL CULTURE, SOLID	2	WEEK 2	2017-10-02	Cycloserine-Cefoxitin Fructose Agar	QUANTITATIVE
3	ABC	MB	ABC-008	ABC333	3	1	CDF	Clostridium difficile	COLONY COUNT	1+		1+			STOOL	MICROBIAL CULTURE, SOLID	2	WEEK 2	2017-10-02	Cycloserine-Cefoxitin Fructose Agar	ORDINAL
4	ABC	MB	ABC-008	ABC111	4	1	CDFGDH	C. difficile Glutamate Dehydrogenase	DETECTION	POSITIVE		POSITIVE			STOOL	EIA	2	WEEK 2	2017-10-02		
5	ABC	MB	ABC-008	ABC222	5	1	CDFABTOX	Clostridium difficile A/B Toxin	DETECTION	POSITIVE		POSITIVE			STOOL	EIA	2	WEEK 2	2017-10-02		
6	ABC	MB	ABC-008		6	1	CDFTCDDAD	Clostridium difficile tcdA DNA	DETECTION	POSITIVE		POSITIVE			STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02		
7	ABC	MB	ABC-008		7	1	CDFTCDBD	Clostridium difficile tcdB DNA	DETECTION	POSITIVE		POSITIVE			STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02		
8	ABC	MB	ABC-008		8	1	CDFTCDCD	Clostridium difficile tcdC DNA	DETECTION	POSITIVE		POSITIVE			STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02		
9	ABC	MB	ABC-008		9	1	TOXCDF	Toxigenic Clostridium difficile	INTERPRETATION	POSITIVE		POSITIVE			STOOL		2	WEEK 2	2017-10-02		

Dataset Debug Message

When the JIRA issue(s) present in the dataset have been resolved, and their resolution has been confirmed by governance, please remove them.

MB NSV Metadata

Variable	Label	Type	Role	Origin
MBMEDTYP	Medium Type	text	Non-Standard Record Qualifier	eDT
MBRRSTYP	Reported Result Scale Type	text	Non-Standard Record Qualifier	eDT

Identification of the Hypervirulent Strain of Clostridium difficile – MB and Pharmacogenomics/Genetics Findings (PF) domain

mb.xpt

Rows 1-2: Show the toxin B gene (tcdB DNA) and binary toxin gene (cdt DNA) are detected in subject ABC-852's stool sample.

Row 3: Indicates the subject ABC-852's sample is positive for toxigenic *C. difficile*.

Row 4: The results in MB row 2 and PF row 1 indicate that the subject ABC-852's sample is positive for 027/NAP1/BI strain.

Rows 5-6: Show the subject's stool sample is positive for toxin B gene and negative for the binary toxin gene.

Row 7: Indicates the subject ABC-877's sample is positive for toxigenic *C. difficile*.

Row 8: The results in MB row 6 and PF row 2 indicate that the subject ABC-877's sample is negative for the 027/NAP1/BI strain.

mb.xpt

Row	STUDYID	DOMAIN	USUBJID	SPDEVID	MBSEQ	MBGRPID	MBLNKID	MBTESTCD	MBTEST	MBTSTDTL	MFORRES	MBSTRESC	MBSPEC	MBMETHOD	VISITNUM	VISIT	MBDTC
1	ABC	MB	ABC-852	ABC555	1	1		CDFTCDBD	Clostridium difficile tcdB DNA	DETECTION	POSITIVE	POSITIVE	STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02
2	ABC	MB	ABC-852	ABC555	2	1		CDFCDDT	Clostridium difficile cdt DNA	DETECTION	POSITIVE	POSITIVE	STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02
3	ABC	MB	ABC-852	ABC555	3	1		TOXCDF	Toxigenic Clostridium difficile	INTERPRETATION	POSITIVE	POSITIVE	STOOL		2	WEEK 2	2017-10-02
4	ABC	MB	ABC-852	ABC555	3	1	CD101	27NAP1BI	Clostridium difficile 027/NAP1/BI	INTERPRETATION	POSITIVE	POSITIVE	STOOL		2	WEEK 2	2017-10-02
5	ABC	MB	ABC-877	ABC555	1	2		CDFTCDBD	Clostridium difficile tcdB DNA	DETECTION	POSITIVE	POSITIVE	STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02
6	ABC	MB	ABC-877	ABC555	2	2		CDFCDDT	Clostridium difficile cdt DNA	DETECTION	NEGATIVE	NEGATIVE	STOOL	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02
7	ABC	MB	ABC-877	ABC555	3	2		TOXCDF	Toxigenic Clostridium difficile	INTERPRETATION	POSITIVE	POSITIVE	STOOL		2	WEEK 2	2017-10-02
8	ABC	MB	ABC-877	ABC555	3	2	CD102	27NAP1BI	Clostridium difficile 027/NAP1/BI	INTERPRETATION	NEGATIVE	NEGATIVE	STOOL		2	WEEK 2	2017-10-02

pf.xpt

Row 1: Shows the single-base-pair deletion at nucleotide 117 in the tcdC gene in subject ABC-852.

Row 2: Shows there is no deletion at nucleotide 117 in the tcdC gene for subject ABC-877.

pf.xpt

Row	STUDYID	DOMAIN	USUBJID	SPDEVID	PFSEQ	PFLNKID	NHOID	PFTSTCD	PFTST	PFGENRI	PFCAT	PFORRES	PFORREF	PFGENLOC	PFSTRESC	PFRESCAT	PFSPEC	PFMETHOD	VISITNUM	VISIT	PFDTC
1	ABC	PF	ABC-852	ABC555	1	CD101	TOXIGENIC CLOSTRIDIUM DIFFICILE	NUC	Nucleotide	tcdC	MICROBIOLOGY	-	A	117	c.117A	DELETION	DNA	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02
2	ABC	PF	ABC-877	ABC555	2	CD102	TOXIGENIC CLOSTRIDIUM DIFFICILE	NUC	Nucleotide	tcdC	MICROBIOLOGY	A	A	117	c.117A	NO DELETION	DNA	REAL-TIME POLYMERASE CHAIN REACTION ASSAY	2	WEEK 2	2017-10-02

Subject and Disease Characteristics

Medical History

- A history of CDAD is a risk factor for recurrence.
- The example represented in the Medical History (MH) domain in this TAUG shows details about the occurrence(s) of CDAD.
- If prior CDAD occurrences exist, the number of occurrences can be represented in the Findings About (FA) domain and linked back to the MH example using the RELREC domain.

MH/FAMH Example

USUBJID	MHSEQ	MKLNKID	MHTERM	MHDECOD	MHCAT	MHPRESP	MHOCCUR
CDAD-01-101	1	1	Clostridium difficile	Clostridium difficile infection	PRIMARY DIAGNOSIS	Y	Y
CDAD-01-101	2	1	Clostridium difficile	Clostridium difficile infection	PRIMARY DIAGNOSIS	Y	Y
CDAD-01-201	1		Clostridium difficile	Clostridium difficile infection	PRIMARY DIAGNOSIS	Y	N

MHDTCT	MHSTDTCT	MHENDTCT	MHSTDY	MHENDY
2014-05-05	2014-01-20	2014-01-29	-256	-247
2014-05-05	2014-02-15	2014-02-20	-230	-225
2014-05-25				

USUBJID	FASEQ	FALNKID	FATESTCD	FATEST	FAOBJ	FAORRES
CDAD-01-101	1	1	NUMOCCUR	Number of Occurrences	Clostridium difficile infection	2

STUDYID	RDOMAIN	USUBJID	IDVAR	IDVARVAL	RELTYPE	RELID
CDAD-01	MH		MHLNKID		MANY	MHFA
CDAD-01	FAMH		FALNKID		ONE	MHFA

Subject and Disease Characteristics

Drug Resistance

- After *C.difficile* is identified, drug resistance can be assessed using the agar dilution method (see section 3.1 for more examples of identification).
- The example represented in the Microbiology Susceptibility (MS) domain in this TAUG shows details about the susceptibility of *C.difficile* to Metronidazole.
- This example shows the minimal inhibitory concentration in the M5CONC/M5CONCU variables and whether *C.difficile* is resistant or susceptible in the MSORRES/MSSTRESC variables.

MS Example

USUBJID	NHOID	MSSEQ	MSLNKID	MSTESTCD	MSTEST	MSAGENT	MSCONC
CDAD-01-101	CLOSTRIDIUM DIFFICILE	1	1	MIC	Minimum Inhibitory Concentration	Metronidazole	32
CDAD-01-201	CLOSTRIDIUM DIFFICILE	1	2	MIC	Minimum Inhibitory Concentration	Metronidazole	2

MSCONCU	MSORRES	MSSTRESC	MSSPEC	MSMETHOD
ug/mL	RESISTANT	RESISTANT	STOOL	AGAR DILUTION
ug/mL	SUSCEPTIBLE	SUSCEPTIBLE	STOOL	AGAR DILUTION

Disease Assessments

QRS Instruments

Full Name and Abbreviation	Copyright Permission Status	Supplement Status
ATLAS (age, treatment with systemic antibiotics during CDI therapy, leukocyte count, serum albumin, and serum creatinine) score	Public Domain	In progress
Bristol Stool Form Scale (BSFS)	Requested	
Clostridium difficile Health-related Quality-of-Life Questionnaire (CDiff32)	Requested	

Disease Assessments

Symptoms of CDAD

- Here the presence of pre-specified symptoms are represented in the Clinical Events (CE) domain.

ce.xpt

Row	STUDYID	DOMAIN	USUBJID	CESEQ	CEGRPID	CETERM	CECAT	CESEV	CEPRES	CEOCCUR	CEDTC	CESTDTC	CEENDTC
1	CDAD-01	CE	CDAD-01-001	1	101	FEVER	CDIFF SYMPTOMS	MODERATE	Y	Y	2018-01-28	2018-01-27	2018-02-07
2	CDAD-01	CE	CDAD-01-001	2	101	ABDOMINAL PAIN	CDIFF SYMPTOMS	MILD	Y	Y	2018-01-28	2018-01-27	2018-02-07
3	CDAD-01	CE	CDAD-01-001	3	101	ABDOMINAL TENDERNESS	CDIFF SYMPTOMS	MILD	Y	Y	2018-01-28	2018-01-27	2018-02-07

Routine Data

Stool Sample Collection

Row 1: Shows the date and time of the stool sample collection from subject CDAD-01-001.

Rows 2-3: Show the date and time that the stool sample was collected from subject CDAD-01-002 (row 2) and frozen (row 3). The Frozen sample was stored in a container using BEREFIG to show the container number.

be.xpt

Row	STUDYID	DOMAIN	USUBJID	BESEQ	BEREFID	BETERM	BEDECOD	VISITNUM	VISIT	VISITDY	BEDTC	BESTDTC	BEENDTC	BEST	BESPEC
1	CDAD-01	BE	CDAD-01-001	1	ST123	Collected	COLLECTING	1	SCREENING	-1	2018-01-31T13:05	2018-01-31T13:05		-1	STOOL
2	CDAD-01	BE	CDAD-01-002	1	ST124	Collected	COLLECTING	1	SCREENING	-1	2018-01-31T15:00	2018-01-31T15:00		-1	STOOL
3	CDAD-01	BE	CDAD-01-002	2	ST124	Frozen	FREEZING	1	SCREENING	-1	2018-01-31T17:00	2018-01-31T17:00		-1	STOOL

BE NSV Metadata

Variable	Label	Type	Role	Codelist	Origin
BESPEC	Specimen Type	text	Non-Standard Record Qualifier	SPECTYPE	CRF

lb.xpt

Row	STUDYID	DOMAIN	USUBJID	LBSEQ	LBREFID	LBTESTCD	LBTEST	LBORRES	LBORRESU	LBSTRESC	LBSTRESN	LBSTRESU	LBSPEC
1	CDAD-01	LB	CDAD-01-001	1	ST123	VOLUME	Volume	200	mL	200	200	mL	STOOL
2	CDAD-01	LB	CDAD-01-002	1	ST124	VOLUME	Volume	250	mL	250	250	mL	STOOL

Disease Assessments

Stool Count/Volume Data

- Unformed stool count or stool volume information may be used to evaluate efficacy endpoints.
- The resolution of diarrhea is often defined as either an unformed stool count of <3 per day or a decrease in volume of stool of 75% compared to the volume at admission.

ce.xpt

Row	STUDYID	DOMAIN	USUBJID	CESEQ	CESPID	CETERM	CEDECOD	CECAT	CEPRES	CEOCCUR	CESTDTC	CEENDTC
1	CDAD-01	CE	CDAD-01-001	1	101	Unformed Stool Production	Diarrhea	CDIFF SYMPTOMS	Y	Y	2018-01-27	2018-02-07
2	CDAD-01	CE	CDAD-01-002	1	102	Unformed Stool Production	Diarrhea	CDIFF SYMPTOMS	Y	Y	2018-01-27	2018-02-07

face.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FASPID	FATESTCD	FATEST	FAOBJ	FACAT	FAORRES	FAORRESU
1	CDAD-01	FA	CDAD-01-001	1	101	EPSDNUM	Number of Episodes	Diarrhea	CDIFF SYMPTOMS	10	
2	CDAD-01	FA	CDAD-01-001	2	101	EPSDNUM	Number of Episodes	Diarrhea	CDIFF SYMPTOMS	6	
3	CDAD-01	FA	CDAD-01-002	1	102	VOL	Volume	Diarrhea	CDIFF SYMPTOMS	800	mL
4	CDAD-01	FA	CDAD-01-002	2	102	VOL	Volume	Diarrhea	CDIFF SYMPTOMS	400	mL

FAEVLINT	
2	-PT24H
3	-PT24H
2	-PT24H
3	-PT24H

Disease Assessments

Baseline Severity

- The severity level in this example is based on the number of unformed stools in a 24-hour period.
- A baseline flag (–LOBXFL) of 'Y' is used to indicate that the record is taken from the baseline visit.

face.xpt

Row	STUDYID	DOMAIN	USUBJID	FASEQ	FASPID	FATESTCD	FATEST	FAOBJ	FACAT	FAORRES
1	CDAD-01	FA	CDAD-01-001	1	100	EPSDNUM	Number of Episodes	Diarrhea	CDIFF SYMPTOMS	6
2	CDAD-01	FA	CDAD-01-001	2	100	SEV	Severity/Intensity	Diarrhea	CDIFF SYMPTOMS	MODERATE

FASTRESC	FASTRESN	FALOBXFL	VISITNUM	VISIT	FADTC	FADY	FAEVLINT
6	6	Y	2	VISIT 1	2018-02-02	1	-PT24H
MODERATE		Y	2	VISIT 1	2018-02-02	1	-PT24H

Domains

- No new domains were submitted for this version of the TAUG
- The following Domains are referenced in the TAUG

Datasets	Description	Section Description
MB	Microbiology Specimen	Identification and Diagnosis, Drug Susceptibility
PF	Pharmacogenomics/Genetics Findings	Identification and Diagnosis
DI	Devices	Identification and Diagnosis
FA	Findings About	Medical History, Baseline Severity and Stool Count/Volume
MH	Medical History	Medical History
MS	Microbiology Susceptibility	Drug Susceptibility
CE	Clinical Events	Baseline Severity, Symptoms and Stool Count/Volume
BE	Biospecimen Events	Stool Sample Collection
LB	Laboratory Test Results	Stool Sample Collection

New Variables

- No new variables were submitted for approval to become SDTM variables for this user guide

Non-Standard Variables

Parent Domain	Variable	Label	SAS Data Type	XML Data Type	Codelist/Controlled Terms	Role	Description	Comments
MB	MBMEDTYP	Medium Type	char	text	Culture Medium Type/SDTM-CLTMDTYP	Non-Standard Record Qualifier	The type of medium in which the specimen was cultured.	
MB	MBRRSTYP	Reported Result Scale Type	char	text	N/A	Non-Standard Record Qualifier	A textual description of the type of the original result; examples are but not limited to: Quantitative, Qualitative, Ordinal, Narrative, etc.	May be controlled for CT development.

Public Review Information

- Review Package Contents
 - Made available only on the CDISC WIKI
 - Reviewers are requested to make any comments directly via JIRA
 - Wiki and JIRA use the same credentials, so if you can see the TAUG-CDAD page in the WIKI, then you can use JIRA.
 - Links/Instructions are provided in the Public Review announcement email

Public Review Information – cont.

TAUG-CDAD compiled

- Allows review of entire document as a single document
- View is more prone to errors when entering comments into JIRA.

TAUG-CDAD sections

- Allows review of each section separately
- Easy navigation between sections using navigation label at the bottom of the page
- Reviews can also jump back and forth between sections
- Tables, and tables representing datasets (including any attendant row captions or footnotes), are inside expandable sections. Clicking on an indented line “ > “reveal the content within.

CDAD Examples and Concept Maps

- Allows all the SDTM examples and concept maps used in the TAUG-CDAD to be viewed in 1 section.

Public Review Information – cont.

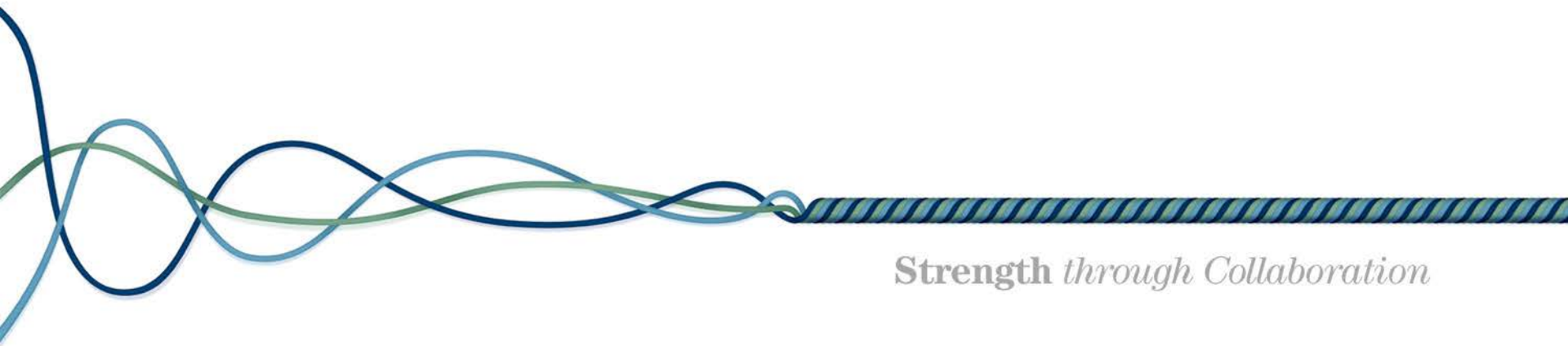
Keep the JIRA-CDAD page and the WIKI CDAD Therapeutic User guide open in separate window

- Comments can be entered without navigating back and forth between the Wiki and JIRA.
- Always check to make sure the project selected in JIRA is CDAD.



- Add scope suggestions for future versions
- **If you have no edits or comments to a page, click 'Like' at the bottom of the page. This will help us determine who has read each page.**

Controlled Terminology



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Summary of Controlled Terminology Developed for the KT TA Project

Batch	Details	Status
1	<ul style="list-style-type: none">▪ New TEST-CD terminology for MB▪ New codelist for CDFATSCD/CDFATS; New values added to the CDFATSCD/CDFATS codelist	<ul style="list-style-type: none">▪ MBTEST-CD terminology is currently under review and will be published with P34 on 2018-06-29.▪ CDFATSCD/CDFATS codelists and valid values are currently being reviewed by the General terminology team and are tentatively scheduled for P34 CT release in June 2018.
2	<ul style="list-style-type: none">▪ New values added to Culture Medium Type/CLTMDTYP codelist	<ul style="list-style-type: none">▪ CLTMDTYP terminology is under review and is tentatively scheduled for P34 June 2018 release.

Q&A



Upcoming CDISC Webinars

- **Members-Only Tech Webinar – Getting Started with SHARE API v1.0**
 - Join the CDISC SHARE Team for a technology webinar introducing the CDISC SHARE Application Programming Interface (API), which is available free to CDISC Platinum Members as a 2018 Member benefit.
 - The CDISC SHARE API, a RESTful web service, allows real-time access to standards in a variety of formats (XML, RDF and JSON) for programmatic use by developers to create CDISC metadata libraries within your metadata repositories, support CDISC standards in electronic case report forms, and use within clinical research and learning health systems. The API facilitates the implementation of CDISC standards to further automate clinical research processes.
 - 13 Feb 2018 – 10am CST
 - For registration, visit our webinars page at www.cdisc.org/education/webinars

Any more questions?

Thank you for attending this webinar.

**CDISC's vision is to:
Inform Patient Care & Safety Through Higher Quality Medical Research**



Strength *through collaboration.*