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Confused about Oncology Response Mappings? We're Here to Help!

Melanie Paules, Kim Musgrave and Erin Muhlbradt

Meet the Speakers

Melanie Paules

Title: Director, Statistical Programming Organization: Takeda

Melanie has worked in pharmaceutical drug development in the areas of statistical programming and clinical data standards. As a CDISC volunteer, she is leading the CDISC Oncology SDS (Submission Data Standards) team in the development and maintenance of the SDTM TU, TR and RS domains and associated terminology, and in the development of CDISC Disease Response Supplements for various oncology disease response criteria.

Erin Muhlbradt

Title: Clinical/Biomedical Information Specialist and CDISC Terminology Program Lead

Organization: US NCI-EVS [c] (MSC Inc., a Guidehouse company)

Dr. Muhlbradt leads the CDISC Controlled Terminology program as well as co-leading the SDS Genomics and SDS Cell Phenotyping teams. She is a terminology representative for CDISC therapeutic area standards development teams and the CDISC Global Governance Group, and is also a CDISC authorized instructor.

Kim Musgrave

Title: Biomedical Data Stewardship, Sr Mgr Organization: Amgen

Kim has participated in the CDISC Oncology SDS team for more than seven years. Kim's focus at Amgen is on the analysis side supporting standard SAP language and table, figure and listing shells. After many years as a statistical programming manager at Berlex and then Amgen, Kim joined the standards organization.

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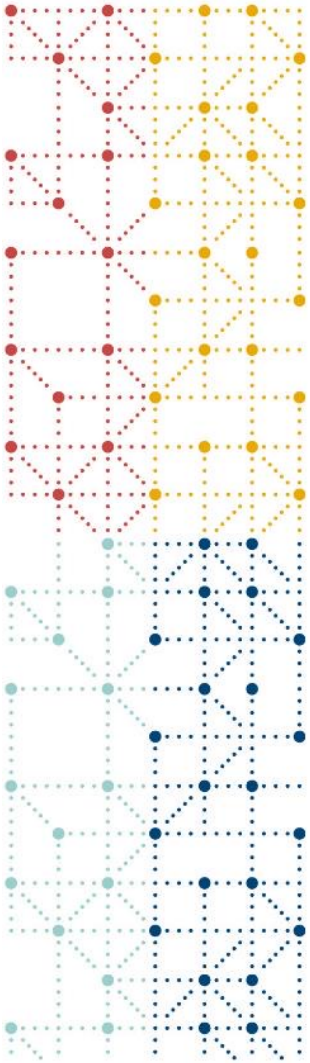
- *The views and opinions expressed in this presentation are those of the author's and do not necessarily reflect the official policy or position of CDISC or for the author's respective organizations.*

- *{Please disclose any financial relationship or conflict of interest relevant to this presentation here OR}*
- *The author(s) have no real or apparent conflicts of interest to report.*

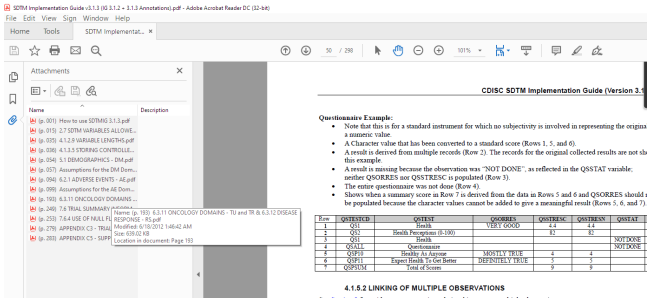


Agenda

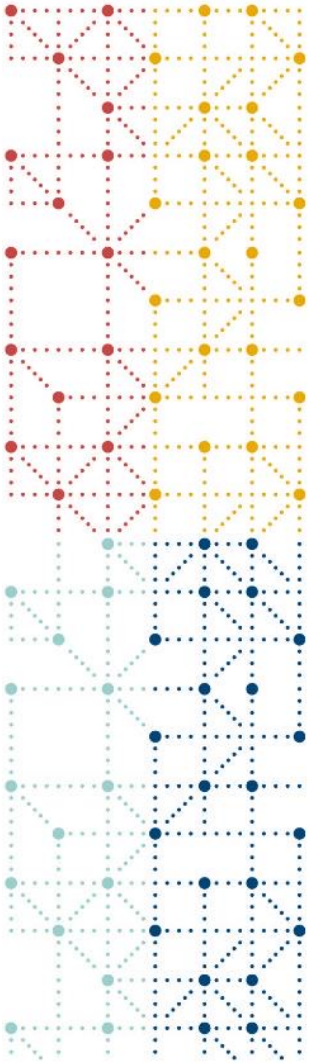
1. History
2. Oncology Terminology Content Developed to Date
3. Disease Response Supplement Development
4. Future Plans
5. Team Recognition

History

- TU, TR and RS modeling examples were attachments to the SDTMIG PDF through v3.1.3
  - Focus on RECIST (**R**esponse **E**valuation **C**riteria **i**n **S**olid **T**umor)



- SDTMIG v3.2 Oncology Domains (TU, TR and RS) and Questionnaire Supplements
- SDTMIG v3.3 RS moved to QRS
- Oncology TAUGs referencing SDTM Examples for Oncology Use Cases
- Additional Oncology examples, terminology and codetable mappings developed for other tumor response criteria based on:
  - Feedback from industry experience with implementation
  - Expert advice/opinion



Oncology Terminology Content Developed to Date

- Oncology CT
- Codetable Mapping Files
- Terminology Development Rules

CDISC Controlled Terminology – Oncology-specific codelists

TU Domain

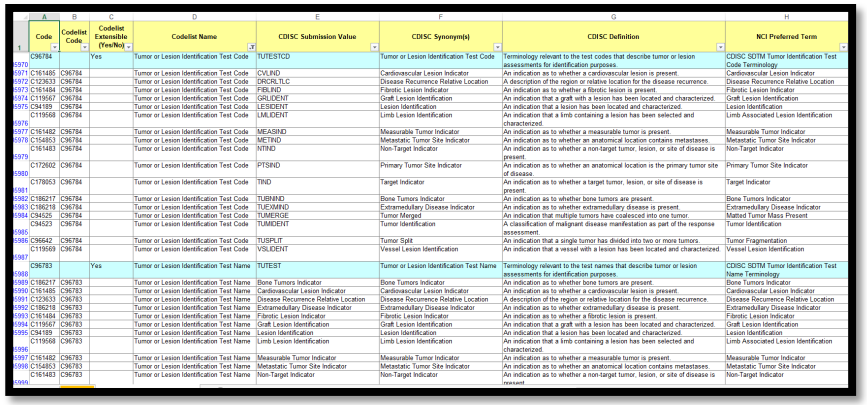
- TUTEST/TUTESTCD
- TUIDRS

TR Domain

- TRTEST/TRTESTCD
- TRPROPRS

RS Domain (Onc)

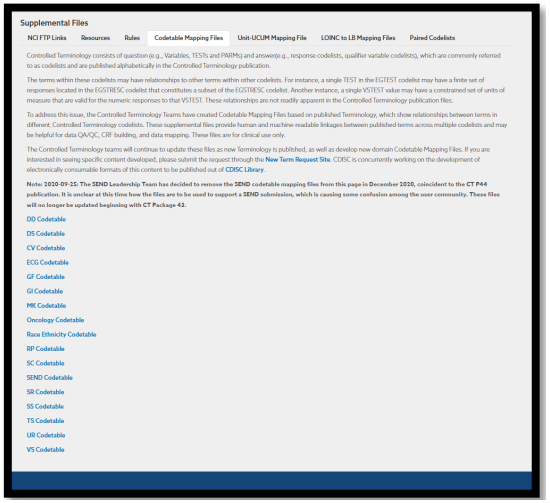
- ONCRSCAT
- ONCRTS/ONCRTSCD
- ONCRSR

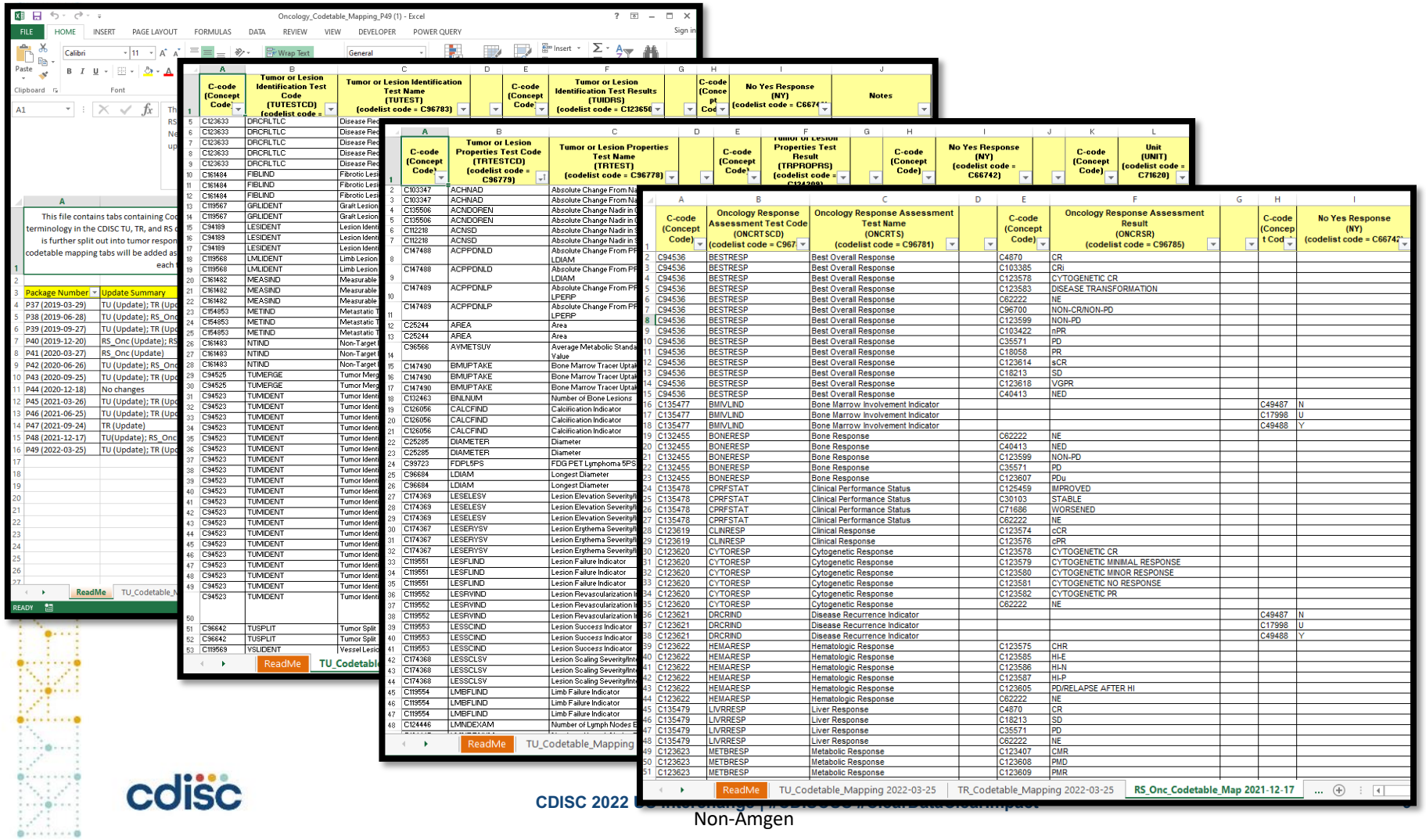


	A	B	C	D	E	F	G	H
1	Code	Codelist Code	Codelist Extensible (Yes/No)	Codelist Name	CDISC Submission Value	CDISC Synonym(s)	CDISC Definition	NCI Preferred Term
	C96784		Yes	Tumor or Lesion Identification Test Code	TUTESTCD	Tumor or Lesion Identification Test Code	Terminology relevant to the test codes that describe tumor or lesion assessments for identification purposes.	CDISC SDTM Tumor Identification Test Code Terminology
5971	C161485	C96784		Tumor or Lesion Identification Test Code	CVLIND	Cardiovascular Lesion Indicator	An indication as to whether a cardiovascular lesion is present.	Cardiovascular Lesion Indicator
5972	C123633	C96784		Tumor or Lesion Identification Test Code	DRCRLTLC	Disease Recurrence Relative Location	A description of the region or relative location for the disease recurrence.	Disease Recurrence Relative Location
5973	C161484	C96784		Tumor or Lesion Identification Test Code	FIBLIND	Fibrotic Lesion Indicator	An indication as to whether a fibrotic lesion is present.	Fibrotic Lesion Indicator
5974	C119567	C96784		Tumor or Lesion Identification Test Code	GRLIDENT	Graft Lesion Identification	An indication that a graft with a lesion has been located and characterized.	Graft Lesion Identification
5975	C94189	C96784		Tumor or Lesion Identification Test Code	LESIDENT	Lesion Identification	An indication that a lesion has been located and characterized.	Lesion Identification
	C119568	C96784		Tumor or Lesion Identification Test Code	LMLIDENT	Limb Lesion Identification	An indication that a limb containing a lesion has been selected and characterized.	Limb Associated Lesion Identification
5976								
5977	C161482	C96784		Tumor or Lesion Identification Test Code	MEASIND	Measurable Tumor Indicator	An indication as to whether a measurable tumor is present.	Measurable Tumor Indicator
5978	C154853	C96784		Tumor or Lesion Identification Test Code	METIND	Metastatic Tumor Site Indicator	An indication as to whether an anatomical location contains metastases.	Metastatic Tumor Site Indicator
	C161483	C96784		Tumor or Lesion Identification Test Code	NTIND	Non-Target Indicator	An indication as to whether a non-target tumor, lesion, or site of disease is present.	Non-Target Indicator
5979								
	C172602	C96784		Tumor or Lesion Identification Test Code	PTSIND	Primary Tumor Site Indicator	An indication as to whether an anatomical location is the primary tumor site of disease.	Primary Tumor Site Indicator
5980								
	C178053	C96784		Tumor or Lesion Identification Test Code	TIND	Target Indicator	An indication as to whether a target tumor, lesion, or site of disease is present.	Target Indicator
5981								
5982	C186217	C96784		Tumor or Lesion Identification Test Code	TUBNIND	Bone Tumors Indicator	An indication as to whether bone tumors are present.	Bone Tumors Indicator
5983	C186218	C96784		Tumor or Lesion Identification Test Code	TUEXMIND	Extramedullary Disease Indicator	An indication as to whether extramedullary disease is present.	Extramedullary Disease Indicator
5984	C94525	C96784		Tumor or Lesion Identification Test Code	TUMERGE	Tumor Merged	An indication that multiple tumors have coalesced into one tumor.	Matted Tumor Mass Present
	C94523	C96784		Tumor or Lesion Identification Test Code	TUMIDENT	Tumor Identification	A classification of malignant disease manifestation as part of the response assessment.	Tumor Identification
5985								
5986	C96642	C96784		Tumor or Lesion Identification Test Code	TUSPLIT	Tumor Split	An indication that a single tumor has divided into two or more tumors.	Tumor Fragmentation
	C119569	C96784		Tumor or Lesion Identification Test Code	VSLIDENT	Vessel Lesion Identification	An indication that a vessel with a lesion has been located and characterized.	Vessel Lesion Identification
5987								
	C96783		Yes	Tumor or Lesion Identification Test Name	TUTEST	Tumor or Lesion Identification Test Name	Terminology relevant to the test names that describe tumor or lesion assessments for identification purposes.	CDISC SDTM Tumor Identification Test Name Terminology
5988								
5989	C186217	C96783		Tumor or Lesion Identification Test Name	Bone Tumors Indicator	Bone Tumors Indicator	An indication as to whether bone tumors are present.	Bone Tumors Indicator
5990	C161485	C96783		Tumor or Lesion Identification Test Name	Cardiovascular Lesion Indicator	Cardiovascular Lesion Indicator	An indication as to whether a cardiovascular lesion is present.	Cardiovascular Lesion Indicator
5991	C123633	C96783		Tumor or Lesion Identification Test Name	Disease Recurrence Relative Location	Disease Recurrence Relative Location	A description of the region or relative location for the disease recurrence.	Disease Recurrence Relative Location
5992	C186218	C96783		Tumor or Lesion Identification Test Name	Extramedullary Disease Indicator	Extramedullary Disease Indicator	An indication as to whether extramedullary disease is present.	Extramedullary Disease Indicator
5993	C161484	C96783		Tumor or Lesion Identification Test Name	Fibrotic Lesion Indicator	Fibrotic Lesion Indicator	An indication as to whether a fibrotic lesion is present.	Fibrotic Lesion Indicator
5994	C119567	C96783		Tumor or Lesion Identification Test Name	Graft Lesion Identification	Graft Lesion Identification	An indication that a graft with a lesion has been located and characterized.	Graft Lesion Identification
5995	C94189	C96783		Tumor or Lesion Identification Test Name	Lesion Identification	Lesion Identification	An indication that a lesion has been located and characterized.	Lesion Identification
	C119568	C96783		Tumor or Lesion Identification Test Name	Limb Lesion Identification	Limb Lesion Identification	An indication that a limb containing a lesion has been selected and characterized.	Limb Associated Lesion Identification
5996								
5997	C161482	C96783		Tumor or Lesion Identification Test Name	Measurable Tumor Indicator	Measurable Tumor Indicator	An indication as to whether a measurable tumor is present.	Measurable Tumor Indicator
5998	C154853	C96783		Tumor or Lesion Identification Test Name	Metastatic Tumor Site Indicator	Metastatic Tumor Site Indicator	An indication as to whether an anatomical location contains metastases.	Metastatic Tumor Site Indicator
	C161483	C96783		Tumor or Lesion Identification Test Name	Non-Target Indicator	Non-Target Indicator	An indication as to whether a non-target tumor, lesion, or site of disease is present.	Non-Target Indicator
5999								

Oncology Codetable Mapping Files

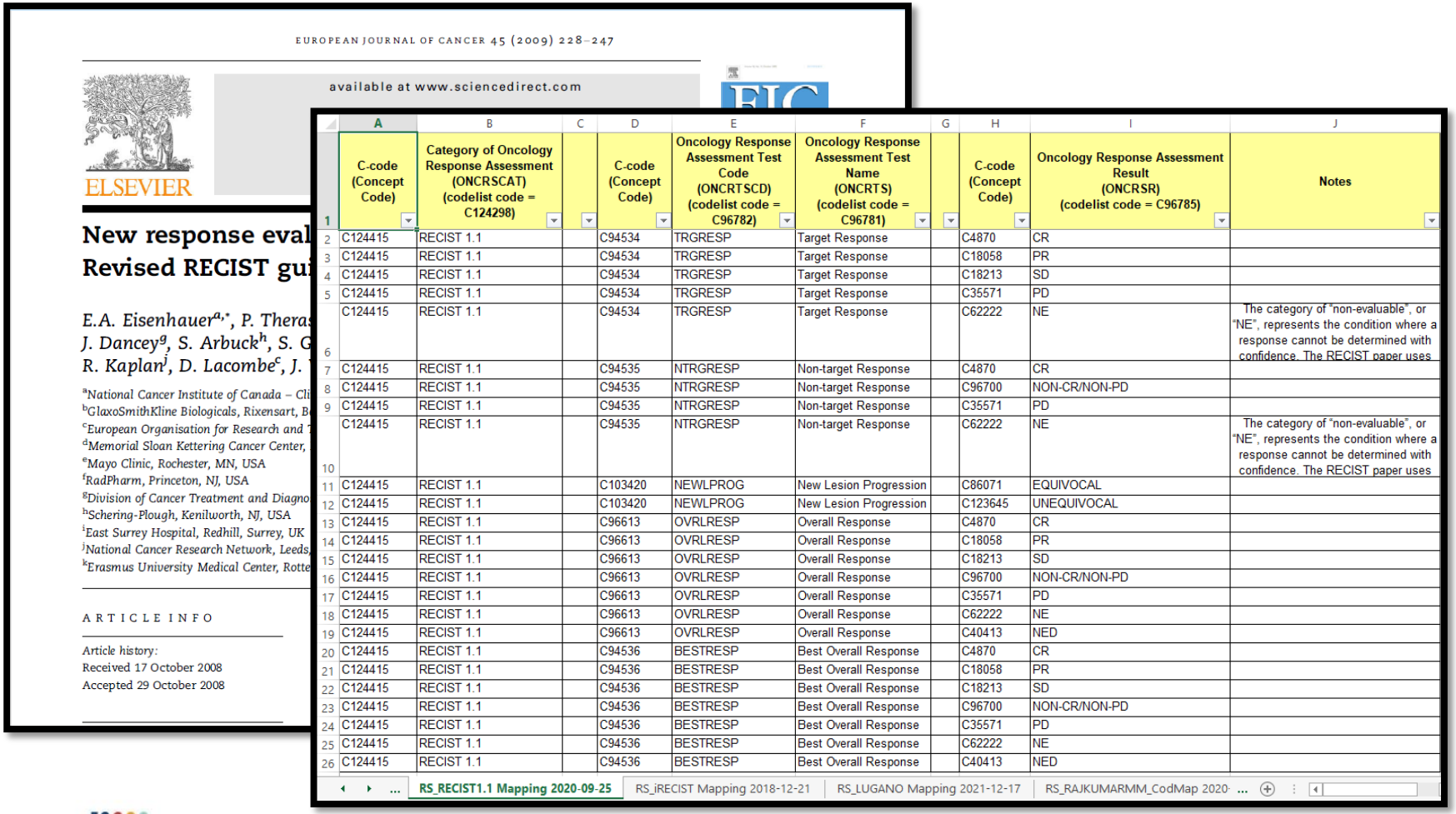
- Quarterly public review with CDISC CT package; published on CT page on CDISC.org
  - https://www.cdisc.org/standards/terminology/controlled-terminology#standard__Codetable_Mapping_Files
- Excel file containing rows and columns that describe relationships between published terms across multiple codelists relevant to a single domain.
- Date on each tab name identifies the CT version date associated with the information.
- Files contain the most up to date information
  - Archive not available…yet




Oncology_Codetable_Mapping_P49 (1) - Excel
This file contains tabs containing Co
terminology in the CDISC TU, TR, and RS
is further split out into tumor respon
codetable mapping tabs will be added as
each
Package Number
Update Summary
P37 (2019-03-29)
TU (Upda
P38 (2019-06-28)
TU (Update); RS_Onc
P39 (2019-09-27)
TU (Upda
P40 (2019-12-20)
RS_Onc (Update); RS
P41 (2020-03-27)
RS_Onc (Update)
P42 (2020-06-26)
TU (Update); RS_Onc
P43 (2020-09-25)
TU (Update); TR (Upd
P44 (2020-12-18)
No changes
P45 (2021-03-26)
TU (Update); TR (Upd
P46 (2021-06-25)
TU (Update); TR (Upd
P47 (2021-09-24)
TR (Update)
P48 (2021-12-17)
TU(Update); RS_Onc
P49 (2022-03-25)
TU (Update); TR (Upd
ReadMe
TU_Codetable_M
C-code (Concept Code)
Tumor or Lesion Identification Test Name (TUTEST) (codelist code = C96783)
Tumor or Lesion Identification Test Results (TUIDRS) (codelist code = C123650
No Yes Response (NY) (codelist code = C6674
Notes
C123633 DRCRLTLC Disease Rec
C161484 FIBLIND Fibrotic Lesi
C119567 GRLIDENT Graft Lesion
C94189 LESIDENT Lesion Ident
C119568 LMLIDENT Limb Lesion
C161482 MEASIND Measurable
C154853 METIND Metastatic T
C161483 NTIND Non-Target
C94525 TUMERGE Tumor Merg
C94523 TUMIDENT Tumor Ident
C96642 TUSPLIT Tumor Split
C119569 VSLIDENT Vessel Lesio
ReadMe
TU_Codetabl
C-code (Concept Code)
Tumor or Lesion Properties Test Code (TRTESTCD) (codelist code = C96779)
Tumor or Lesion Properties Test Name (TRTEST) (codelist code = C96778)
Unit (UNIT) (codelist code = C71620)
C103347 ACHNAD Absolute Change From Na
C135506 ACNDOREN Absolute Change Nadir in
C112218 ACNSD Absolute Change Nadir in
C147488 ACPPDNLD Absolute Change From PF LDIAM
C147489 ACPPDNLP Absolute Change From PF LPERP
C25244 AREA Area
C96566 AVMETSUV Average Metabolic Standa Value
C147490 BMUPTAKE Bone Marrow Tracer Uptak
C132463 BNLNUM Number of Bone Lesions
C126056 CALCFIND Calcification Indicator
C25285 DIAMETER Diameter
C99723 FDPL5PS FDG PET Lymphoma 5PS
C96684 LDIAM Longest Diameter
C174369 LESELESV Lesion Elevation Severity/In
C174367 LESERYSV Lesion Erythema Severity/In
C119551 LESFLIND Lesion Failure Indicator
C119552 LESRVIND Lesion Revascularization In
C119553 LESSCIND Lesion Success Indicator
C174368 LESSCLSV Lesion Scaling Severity/Inc
C119554 LMBFLIND Limb Failure Indicator
C124446 LMNDEXAM Number of Lymph Nodes E
ReadMe
TU_Codetable_Mapping
C-code (Concept Code)
Oncology Response Assessment Test Code (ONCRTSCD) (codelist code = C967
Oncology Response Assessment Test Name (ONCRTS) (codelist code = C96781)
Oncology Response Assessment Result (ONCRSR) (codelist code = C96785)
No Yes Response (NY) (codelist code = C6674
C94536 BESTRESP Best Overall Response CR
C103385 CRi
C123578 CYTOGENETIC CR
C123583 DISEASE TRANSFORMATION
C62222 NE
C96700 NON-CR/NON-PD
C123599 NON-PD
C103422 nPR
C35571 PD
C18058 PR
C123614 sCR
C18213 SD
C123618 VGPR
C40413 NED
C135477 BMIVLIND Bone Marrow Involvement Indicator C49487 N
C17998 U
C49488 Y
C132455 BONERESP Bone Response
C40413 NED
C123599 NON-PD
C35571 PD
C123607 PDu
C135478 CPRFSTAT Clinical Performance Status
C125459 IMPROVED
C30103 STABLE
C71686 WORSENED
C62222 NE
C123574 cCR
C123576 cPR
C123620 CYTORESP Cytogenetic Response
C123578 CYTOGENETIC CR
C123579 CYTOGENETIC MINIMAL RESPONSE
C123580 CYTOGENETIC MINOR RESPONSE
C123581 CYTOGENETIC NO RESPONSE
C123582 CYTOGENETIC PR
C62222 NE
C123621 DRCRIND Disease Recurrence Indicator C49487 N
C17998 U
C49488 Y
C123622 HEMARESP Hematologic Response
C123575 CHR
C123585 HI-E
C123586 HI-N
C123587 HI-P
C123605 PD/RELAPSE AFTER HI
C62222 NE
C135479 LIVRESP Liver Response
C4870 CR
C18213 SD
C35571 PD
C62222 NE
C123623 METBRESP Metabolic Response
C123407 CMR
C123608 PMD
C123609 PMR
ReadMe
TU_Codetable_Mapping 2022-03-25
TR_Codetable_Mapping 2022-03-25
RS_Onc_Codetable_Map 2021-12-17

Disease Response Criterion-specific Codetable Mapping Files

- 85 Disease Response Criterion published in ONCRSCAT codelist to date
- 8 Codetable Mapping Files published or in development*
  - RANO - *Wen PY et al 2010*
  - iRANO - *Okada H et al 2015*
  - RECIST 1.0 - *Therasse P et al 2000*
  - RECIST 1.1 - *E.A. Eisenhauer et al 2009*
  - iRECIST - *Seymour L et al 2017*
  - Lugano - *Cheson BD et al 2014*
  - Rajkumar Multiple Myeloma - *Rajkumar SV et al 2011*
  - Kumar IMWG - *Kumar S et al 2016**



EUROPEAN JOURNAL OF CANCER 45 (2009) 228–247

available at www.sciencedirect.com

ELSEVIER

New response eval
Revised RECIST gui

E.A. Eisenhauer[a,*], P. Theras
J. Dancey[g], S. Arbuck[h], S. G
R. Kaplan[j], D. Lacombe[c], J.

[a]National Cancer Institute of Canada – Cli
[b]GlaxoSmithKline Biologicals, Rixensart, B
[c]European Organisation for Research and
[d]Memorial Sloan Kettering Cancer Center,
[e]Mayo Clinic, Rochester, MN, USA
[f]RadPharm, Princeton, NJ, USA
[g]Division of Cancer Treatment and Diagno
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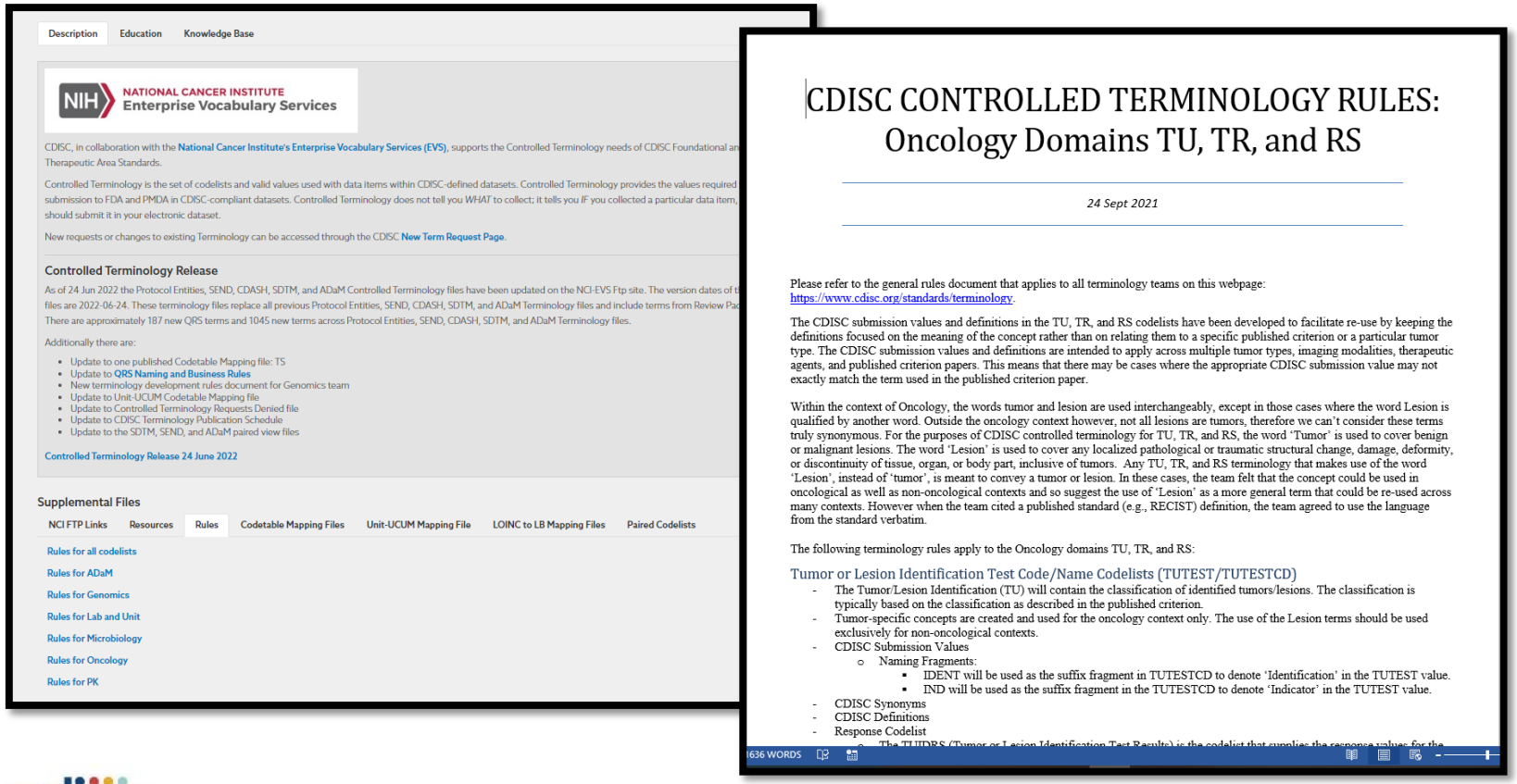
ARTICLE INFO

Article history:
Received 17 October 2008
Accepted 29 October 2008

	A	B	C	D	E	F	G	H	I	J
1	C-code (Concept Code)	Category of Oncology Response Assessment (ONCRSCAT) (codelist code = C124298)		C-code (Concept Code)	Oncology Response Assessment Test Code (ONCRTSCD) (codelist code = C96782)	Oncology Response Assessment Test Name (ONCRTS) (codelist code = C96781)		C-code (Concept Code)	Oncology Response Assessment Result (ONCRSR) (codelist code = C96785)	Notes
2	C124415	RECIST 1.1		C94534	TRGRESP	Target Response		C4870	CR	
3	C124415	RECIST 1.1		C94534	TRGRESP	Target Response		C18058	PR	
4	C124415	RECIST 1.1		C94534	TRGRESP	Target Response		C18213	SD	
5	C124415	RECIST 1.1		C94534	TRGRESP	Target Response		C35571	PD	
6	C124415	RECIST 1.1		C94534	TRGRESP	Target Response		C62222	NE	The category of "non-evaluable", or "NE", represents the condition where a response cannot be determined with confidence. The RECIST paper uses
7	C124415	RECIST 1.1		C94535	NTRGRESP	Non-target Response		C4870	CR	
8	C124415	RECIST 1.1		C94535	NTRGRESP	Non-target Response		C96700	NON-CR/NON-PD	
9	C124415	RECIST 1.1		C94535	NTRGRESP	Non-target Response		C35571	PD	
10	C124415	RECIST 1.1		C94535	NTRGRESP	Non-target Response		C62222	NE	The category of "non-evaluable", or "NE", represents the condition where a response cannot be determined with confidence. The RECIST paper uses
11	C124415	RECIST 1.1		C103420	NEWLPROG	New Lesion Progression		C86071	EQUIVOCAL	
12	C124415	RECIST 1.1		C103420	NEWLPROG	New Lesion Progression		C123645	UNEQUIVOCAL	
13	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C4870	CR	
14	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C18058	PR	
15	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C18213	SD	
16	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C96700	NON-CR/NON-PD	
17	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C35571	PD	
18	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C62222	NE	
19	C124415	RECIST 1.1		C96613	OVRLRESP	Overall Response		C40413	NED	
20	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C4870	CR	
21	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C18058	PR	
22	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C18213	SD	
23	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C96700	NON-CR/NON-PD	
24	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C35571	PD	
25	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C62222	NE	
26	C124415	RECIST 1.1		C94536	BESTRESP	Best Overall Response		C40413	NED	

RS_RECIST1.1 Mapping 2020-09-25 | RS_iRECIST Mapping 2018-12-21 | RS_LUGANO Mapping 2021-12-17 | RS_RAJKUMARMM_CodMap 2020

Oncology Terminology Development Rules



Description Education Knowledge Base

NIH NATIONAL CANCER INSTITUTE Enterprise Vocabulary Services

CDISC, in collaboration with the National Cancer Institute's Enterprise Vocabulary Services (EVS), supports the Controlled Terminology needs of CDISC Foundational an
Therapeutic Area Standards.

Controlled Terminology is the set of codelists and valid values used with data items within CDISC-defined datasets. Controlled Terminology provides the values required
submission to FDA and PMDA in CDISC-compliant datasets. Controlled Terminology does not tell you *WHAT* to collect; it tells you *IF* you collected a particular data item,
should submit it in your electronic dataset.

New requests or changes to existing Terminology can be accessed through the CDISC New Term Request Page.

Controlled Terminology Release

As of 24 Jun 2022 the Protocol Entities, SEND, CDASH, SDTM, and ADaM Controlled Terminology files have been updated on the NCI-EVS Ftp site. The version dates of t
files are 2022-06-24. These terminology files replace all previous Protocol Entities, SEND, CDASH, SDTM, and ADaM Terminology files and include terms from Review Pac
There are approximately 187 new QRS terms and 1045 new terms across Protocol Entities, SEND, CDASH, SDTM, and ADaM Terminology files.

Additionally there are:

- Update to one published Codetable Mapping file: TS
- Update to QRS Naming and Business Rules
- New terminology development rules document for Genomics team
- Update to Unit-UCUM Codetable Mapping file
- Update to Controlled Terminology Requests Denied file
- Update to CDISC Terminology Publication Schedule
- Update to the SDTM, SEND, and ADaM paired view files

Controlled Terminology Release 24 June 2022

Supplemental Files

NCI FTP Links | Resources | Rules | Codetable Mapping Files | Unit-UCUM Mapping File | LOINC to LB Mapping Files | Paired Codelists

Rules for all codelists
Rules for ADaM
Rules for Genomics
Rules for Lab and Unit
Rules for Microbiology
Rules for Oncology
Rules for PK

CDISC CONTROLLED TERMINOLOGY RULES:
Oncology Domains TU, TR, and RS

24 Sept 2021

Please refer to the general rules document that applies to all terminology teams on this webpage:
https://www.cdisc.org/standards/terminology.

The CDISC submission values and definitions in the TU, TR, and RS codelists have been developed to facilitate re-use by keeping the definitions focused on the meaning of the concept rather than on relating them to a specific published criterion or a particular tumor type. The CDISC submission values and definitions are intended to apply across multiple tumor types, imaging modalities, therapeutic agents, and published criterion papers. This means that there may be cases where the appropriate CDISC submission value may not exactly match the term used in the published criterion paper.

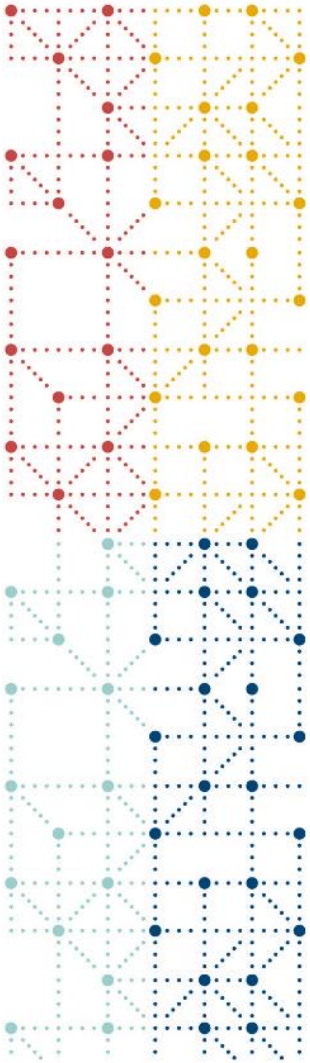
Within the context of Oncology, the words tumor and lesion are used interchangeably, except in those cases where the word Lesion is qualified by another word. Outside the oncology context however, not all lesions are tumors, therefore we can't consider these terms truly synonymous. For the purposes of CDISC controlled terminology for TU, TR, and RS, the word 'Tumor' is used to cover benign or malignant lesions. The word 'Lesion' is used to cover any localized pathological or traumatic structural change, damage, deformity, or discontinuity of tissue, organ, or body part, inclusive of tumors. Any TU, TR, and RS terminology that makes use of the word 'Lesion', instead of 'tumor', is meant to convey a tumor or lesion. In these cases, the team felt that the concept could be used in oncological as well as non-oncological contexts and so suggest the use of 'Lesion' as a more general term that could be re-used across many contexts. However when the team cited a published standard (e.g., RECIST) definition, the team agreed to use the language from the standard verbatim.

The following terminology rules apply to the Oncology domains TU, TR, and RS:

Tumor or Lesion Identification Test Code/Name Codelists (TUTEST/TUTESTCD)

- The Tumor/Lesion Identification (TU) will contain the classification of identified tumors/lesions. The classification is typically based on the classification as described in the published criterion.
- Tumor-specific concepts are created and used for the oncology context only. The use of the Lesion terms should be used exclusively for non-oncological contexts.
- CDISC Submission Values
  - Naming Fragments:
    - IDENT will be used as the suffix fragment in TUTESTCD to denote 'Identification' in the TUTEST value.
    - IND will be used as the suffix fragment in the TUTESTCD to denote 'Indicator' in the TUTEST value.
- CDISC Synonyms
- CDISC Definitions
- Response Codelist

1636 WORDS



Disease Response Supplement Development

Purpose

Oncology disease response supplements provide a mechanism to represent more extensive examples for each disease response criteria, showing the controlled terminology which will be presented in context for the CDISC user community

- Disease Response Supplement to the Study Data Tabulation Model Implementation Guide for Human Clinical Trials
  - Published independently of the CDISC SDTMIG versions
- CDISC QRS Disease Response supplements are new
  - Oncology related ones are developed by CDISC Oncology SDS sub-team
- Creation of a Disease Response supplement requires
  - Detailed SDTM examples
  - Controlled terminology, including codetable mapping files
- SDTM examples within the supplement support various use cases for the disease response criteria of interest
  - SDTMIG TU, TR and RS represent a very small subset of disease response data in oncology studies

Development Process for Disease Response Supplements

- A new QRS Template was created specifically for Disease Response Supplements
- RECIST 1.1 created first since it is used most broadly across industry
- Building Disease Response Supplements
  - Pointing to and not repeating contents from other sources: disease response criteria publication, SDTMIG and controlled terminology documents
  - Build examples: RS, TU, TR, and other applicable domains as needed (PR, GF, CP and MI, etc.) with supporting Controlled Terminology
  - Engage with other SDS teams to align concepts (CP, GF)
  - Create row captions for the examples
  - Develop the supplement section: “General Points on Representation of Data within the Oncology Disease Response Domains”
  - Document the Supplemental Qualifier Name Codes
- Follows the CDISC QRS approval process: initial review by Oncology Team, QRS team review, internal review and public review

Structure of the Disease Response Supplement
Response Evaluation Criteria in Solid Tumors 1.1 (RECIST 1.1)

Header

1 Introduction

- 1.1 Representations and Warranties, Limitations of Liability, and Disclaimers

2 Copyright Status

3 The Oncology Disease Response and Supporting Domains Model for RECIST 1.1

- 3.1 Assumptions for the Oncology Disease Response and Supporting Domains Model
- 3.2 General Points on Representation of Data within the Oncology Disease Response Domains for RECIST 1.1”

4 Examples for the Oncology Disease Response Domains Model for RECIST 1.1

- Includes Eleven examples in sections 4.1 to 4.11

5 RELREC

6 Supplemental Qualifier Name Codes

Key RECIST 1.1 Concepts Covered

- Tumors are identified as target tumors, non-target tumors and new tumors
  - Target non-lymph node tumors are measured in longest diameter
  - Target lymph node tumors are measured in longest perpendicular (short axis)
  - Target tumors that split (fragment) and/or merge (coalesce)
  - Collected or transferred calculations (e.g., Target lesion sum of diameters)
  - Absent, non-pathological lymph nodes, and too small to measure target tumors
  - Equivocal and unequivocal new tumors
- Overall response is based on:
  - Measurements of target tumors (target response)
  - Qualitative assessments of non-target tumors (non-target response)
  - Appearance of new tumors
- Response related values
  - Why RSDTC may be derived in SDTM RS, and general conventions for assigning RSDTC
  - Symptomatic deterioration
  - Representation of "NE" (Not Evaluable) and “NED” (No evidence of disease)

Key Concepts from SDTMIG

- The preferred SDTM data representation is shown in the examples
  - Note that examples in SDTMIG and this disease response supplement are based on assumptions about the data collection forms
- Linking Between Domains
  - Tumor identifier
    - TULNKID in the TU domain links to the TRLNKID in the TR Domain
  - Image identifier
    - TUREFID, TRREFID and PRREFID link across the TU, TR and PR Domains
  - Link Group
    - RSLNKGRP links the RSTEST='Overall Response' in RS domain with the underlying assessment in TR domain with matching TRLNKGRP
    - Note that some criteria link to data in domains in addition to the TR domain

RECIST 1.1 Examples (1-6)

Response (RS) data and the underlying tumor identification (TU), tumor results (TR), procedure (PR) data and trial disease assessment (TD)

Example #	Topics Covered	Source
1	• Case where lymph nodes are selected as target lesions • NE assessment • Use of the RSTEST='New Lesion Progression' for equivocal new lesions	Investigator
2	• Preferred representation of split (fragmented) and merged (coalesced) tumors (TULNKID/TRLNKID)	Investigator
3	• How to represent the case were progressive disease due to symptomatic deterioration was determined based on a clinical assessment by the investigator	Investigator
4	• Use of the acceptance flag to identify records when multiple assessments are performed by independent assessors (Radiologist 1 and Radiologist 2) for the same timepoint	Independent Assessor
5	• Data for a subject that has only Target tumors at screening • The example includes an unscheduled assessment	Investigator
6	• Shows the investigator tumor identification, tumor results, and response data using RECIST 1.1 along with an independent radiologist's tumor identification, tumor results, and response data using volumetric measurements	Investigator and Independent Assessor

RECIST 1.1 Examples (7-11)

Response (RS) data and the underlying tumor identification (TU), tumor results (TR), procedure (PR) data and trial disease assessment (TD)

Example #	Topics Covered	Source
7	• Data for a subject with non-target disease only • Tumor presentation type supplemental qualifier and the associated controlled terminology (DSPRTY) • Procedure data to represent correlative imaging used in addition to the primary method for the RECIST 1.1 evaluation	Investigator
8	• Data from a breast cancer study in a metastatic setting • Tumor state for the non-target in the pleural cavity is an assessment of the pleural effusion • "SCINTIGRAPHY" of the "BONE" was not required at every disease assessment per protocol • Another different example of procedure data showing how to represent correlative imaging	Independent Assessor
9	• Independent radiologist found no evidence of disease (NED) at baseline	Independent Assessor
10	• Situation where enlargement from nadir of a single non-target does not necessarily mean that the Non-Target Response is PD	Independent Assessor
11	• Case where lymph nodes are selected as target lesions • Shows calculations provided in the data transfer from a review by an independent assessor review	Independent Assessor

4.1.1 RS Domain Model

The rs.xpt table below shows the terminology used to implement RECIST 1.1 in the RS domain. This example shows the data for one subject collected at the week 6, week 12 and subsequent 8-week follow-up visit

rs.xpt

Rows 1-3: Show the Target Response (RSTESTCD = "TRGRESP") and Non-Target Response (RSTESTCD = "NTRGRESP") tests and corresponding Overall Response (RSTESTCD = "OVRLRESP") at the week 6 assessn RSLNKGRP is used to associate the Overall Response to underlying data in other domains (e.g., TR). Note that "NE" (Not evaluable) is a valid Overall Response value per the RECIST 1.1 criteria which means that

Rows 4-12: Show the week 12, week 20 and week 28 responses.

Rows 13-20: At week 36, the New Lesion Progression test is used to represent an equivocal new lesion (RSTESTCD = "NEWLPROG" and RSORRES = "EQUIVOCAL") and to represent at week 44 that there are une "UNEQUIVOCAL"). There are different methods of collecting data when there is an equivocal new lesion. Some sponsors update the Overall Response when equivocal evidence of a new lesion has been confirm derive (in ADaM) the new progression date as the date when the new lesion was first identified.

Note: Sponsor may include the New Lesion Indicator test (RSTESTCD = "NEWLIND") at every timepoint if the new lesion yes or no question is part of the data collection.

rs.xpt

Row	STUDYID	DOMAIN	USUBJID	RSSEQ	RSLNKGRP	RSTESTCD	RSTEST	RSCAT	RSORRES	RSSTRESC	RSEVAL	EPOCH	VISITNUM	VISIT	RSDTC	RSDY
1	EX11111	RS	90001	1		TRGRESP	Target Response	RECIST 1.1	NE	NE	INVESTIGATOR	TREATMENT	40	WEEK 6	2010-02-15	46
2	EX11111	RS	90001	2		NTRGRESP	Non-Target Response	RECIST 1.1	NE	NE	INVESTIGATOR	TREATMENT	40	WEEK 6	2010-02-15	46
3	EX11111	RS	90001	3	A2	OVRLRESP	Overall Response	RECIST 1.1	NE	NE	INVESTIGATOR	TREATMENT	40	WEEK 6	2010-02-15	46
4	EX11111	RS	90001	4		TRGRESP	Target Response	RECIST 1.1	SD	SD	INVESTIGATOR	TREATMENT	60	WEEK 12	2010-03-39	88
5	EX11111	RS	90001	5		NTRGRESP	Non-Target Response	RECIST 1.1	NON-CR/NON-PD	NON-CR/NON-PD	INVESTIGATOR	TREATMENT	60	WEEK 12	2010-03-29	88
6	EX11111	RS	90001	6	A3	OVRLRESP	Overall Response	RECIST 1.1	SD	SD	INVESTIGATOR	TREATMENT	60	WEEK 12	2010-03-29	88
7	EX11111	RS	90001	7		TRGRESP	Target Response	RECIST 1.1	PR	PR	INVESTIGATOR	TREATMENT	80	WEEK 20	2010-05-30	147
8	EX11111	RS	90001	8		NTRGRESP	Non-Target Response	RECIST 1.1	NON-CR/NON-PD	NON-CR/NON-PD	INVESTIGATOR	TREATMENT	80	WEEK 20	2010-05-30	147
9	EX11111	RS	90001	9	A4	OVRLRESP	Overall Response	RECIST 1.1	PR	PR	INVESTIGATOR	TREATMENT	80	WEEK 20	2010-05-30	147
10	EX11111	RS	90001	10		TRGRESP	Target Response	RECIST 1.1	PR	PR	INVESTIGATOR	TREATMENT	100	WEEK 28	2010-07-25	204
11	EX11111	RS	90001	11		NTRGRESP	Non-Target Response	RECIST 1.1	NON-CR/NON-PD	NON-CR/NON-PD	INVESTIGATOR	TREATMENT	100	WEEK 28	2010-07-25	204
12	EX11111	RS	90001	12	A5	OVRLRESP	Overall Response	RECIST 1.1	PR	PR	INVESTIGATOR	TREATMENT	100	WEEK 28	2010-07-25	204
13	EX11111	RS	90001	13		TRGRESP	Target Response	RECIST 1.1	CR	CR	INVESTIGATOR	TREATMENT	120	WEEK 36	2010-09-17	257
14	EX11111	RS	90001	14		NTRGRESP	Non-Target Response	RECIST 1.1	CR	CR	INVESTIGATOR	TREATMENT	120	WEEK 36	2010-09-17	257
15	EX11111	RS	90001	15		NEWLPROG	New Lesion Progression	RECIST 1.1	EQUIVOCAL	EQUIVOCAL	INVESTIGATOR	TREATMENT	120	WEEK 36	2010-09-17	257
16	EX11111	RS	90001	16	A6	OVRLRESP	Overall Response	RECIST 1.1	CR	CR	INVESTIGATOR	TREATMENT	120	WEEK 36	2010-09-17	257
17	EX11111	RS	90001	17		TRGRESP	Target Response	RECIST 1.1	PD	PD	INVESTIGATOR	TREATMENT	140	WEEK 44	2010-11-14	313
18	EX11111	RS	90001	18		NTRGRESP	Non-Target Response	RECIST 1.1	CR	CR	INVESTIGATOR	TREATMENT	140	WEEK 44	2010-11-14	313
19	EX11111	RS	90001	19		NEWLPROG	New Lesion Progression	RECIST 1.1	UNEQUIVOCAL	UNEQUIVOCAL	INVESTIGATOR	TREATMENT	140	WEEK 44	2010-11-14	313
20	EX11111	RS	90001	20	A7	OVRLRESP	Overall Response	RECIST 1.1	PD	PD	INVESTIGATOR	TREATMENT	140	WEEK 44	2010-11-14	313

The supprs.xpt table below shows the data on the reason that the response was not evaluable (QNAM = "REASNE") in the case where the reason is collected.

› supprs.xpt

4.1.2 TU Domain Model

The tu.xpt table below shows the terminology used to implement RECIST 1.1 in the TU domain. This example shows the data for one subject at screening and at weeks 36 and 44 where new lesions are identified lymph node tumors are measured in the short axis (TRTESTCD = "LPERP" and TRTEST = "Longest Perpendicular") in the TR domain. The image identifier is in TUREFID and matches a PRREFID in the PR Domain.

tu.xpt

Rows 1-6: Show a subject with 4 target lesions with TULNKIDs "T01"-"T04" and 2 non-target lesions with TULNKIDs "NT01" and "NT02" identified at screening. "T01" and "T02" target lesions are lymph nodes. LYMPH NODE") on the right side (TULAT = "RIGHT"). The TULOC contains the location from the anatomical location terminology. Note that some locations in controlled terminology contain laterality and/or TULOC unless in the controlled terminology, likewise for directionality.

Row 7: Shows at week 36, an equivocal new lesion (TULNKID = "NEW01") was identified in the left lower lobe of the lung (TULOC = "LUNG, LEFT LOWER LOBE"). In this instance, "LUNG, LEFT LOWER LOBE" is

Row 8-9: Show at week 44, new unequivocal new lesions (TULNKID = "NEW02" and TULNKID = "NEW03") were identified in the cerebellum (TULOC = "CEREBELLUM") and the femoral lymph node (TULOC =

tu.xpt

Row	STUDYID	DOMAIN	USUBJID	TUSEQ	TUREFID	TULNKID	TUTESTCD	TUTEST	TUORRES	TUSTRESC	TULOC	TULAT	TUDIR	TUMETHOD	TUEVAL	
1	EX11111	TU	90001	1	IMG-00001	T01	TUMIDENT	Tumor Identification	TARGET	TARGET	SUPRACLAVICULAR LYMPH NODE	RIGHT		MRI	INVESTIGATOR	
2	EX11111	TU	90001	2	IMG-00002	T02	TUMIDENT	Tumor Identification	TARGET	TARGET	THORACIC LYMPH NODE			CT SCAN	INVESTIGATOR	
3	EX11111	TU	90001	3	IMG-00001	T03	TUMIDENT	Tumor Identification	TARGET	TARGET	THYROID GLAND	LEFT		MRI	INVESTIGATOR	
4	EX11111	TU	90001	4	IMG-00003	T04	TUMIDENT	Tumor Identification	TARGET	TARGET	SKIN OF THE TRUNK		UPPER	PHOTOGRAPHY	INVESTIGATOR	
5	EX11111	TU	90001	5	IMG-00002	NT01	TUMIDENT	Tumor Identification	NON-TARGET	NON-TARGET	MEDIASTINAL LYMPH NODE	RIGHT		CT SCAN	INVESTIGATOR	
6	EX11111	TU	90001	6	IMG-00001	NT02	TUMIDENT	Tumor Identification	NON-TARGET	NON-TARGET	CEREBELLUM	RIGHT		MRI	INVESTIGATOR	
7	EX11111	TU	90001	7	IMG-00020	NEW01	TUMIDENT	Tumor Identification	NEW	NEW	LUNG, LEFT LOWER LOBE			CT SCAN	INVESTIGATOR	TR
8	EX11111	TU	90001	8	IMG-00019	NEW02	TUMIDENT	Tumor Identification	NEW	NEW	CEREBELLUM	LEFT		MRI	INVESTIGATOR	TR
9	EX11111	TU	90001	9	IMG-00022	NEW03	TUMIDENT	Tumor Identification	NEW	NEW	FEMORAL LYMPH NODE	LEFT		ULTRASOUND	INVESTIGATOR	TR

The supptu.xpt table below shows the data on whether a tumor was previously irradiated (QNAM = "PRVIR") and whether that tumor was shown to be progressing since it was irradiated (QNAM = "PRVIRP").

supptu.xpt

4.1.3 TR Domain Model

The tr.xpt table below shows the terminology used to implement RECIST 1.1 in the TR domain. This example shows the data for one subject collected at screening, week 6, week 12 and subsequent 8-week follow (measured in the short axis), as well as measurements of other non-lymph node Target tumors, i.e., longest diameter. In this example, when TRTEST = "Lymph Node State" and TRORRES = "NON-PATHOLOGICAL" has reduced below 10mm. The assessment of a lymph node is represented with TRTEST = "Lymph Node State" and TRORRES = "NON-PATHOLOGICAL" when that all target lymph node lesions have short axis les node tumor has short axis greater than or equal to 10mm. The image identifier is in TRREFID and matches a PRREFID in the PR Domain.

tr.xpt

Rows 1-6: Show the screening identification of the target and non-target lesions. For lymph node target lesions "T01" and "T02" the TRTESTCD used for the assessments are "LPREP" and "LNSTATE". For non-l is "LDIAM".

Rows 7-8: Show the results for the non-targets. "NT01" is a lymph node where the TRTEST used for the assessments is "Lymph Node State" (TRTESTCD = "LNSTATE"). "NT02" is a non-lymph node where the TF

Row 14: Shows a case where the scan was not performed at week 6 (for TRTEST = "Longest Diameter", TRSTAT = "NOT DONE" with TRREASND = "SCAN NOT PERFORMED").

Row 15: Shows a case where the non-target "NT01" was not evaluable (for TRTEST = "Lymph Node State", TRSTAT = "NOT DONE" with TRREASND = "NOT EVALUABLE").

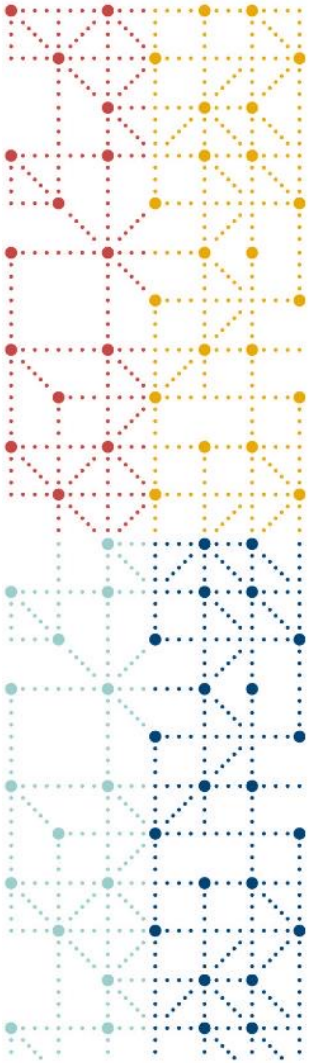
Row 16: Shows a case where the non-target "NT02" was not evaluable (for TRTEST = "Tumor State", TRSTAT = "NOT DONE" with TRREASND = "NOT ASSESSABLE: Image obscured").

Row 30: Shows a target lesion "T04" which is too small to measure. The TRORRES = "TOO SMALL TO MEASURE", and the TRSTRESC and TRSTRESN are standardized to "5" with TRSTRESU as "mm". The standa lesion because it has not disappeared. Providing this The method of standardization of the TRSTRESC and TRSTRESN values is sponsor specific.

Row 58: Shows a new lesion "NEW01" which has a measurement of 4 mm. Note that this value is less than 5 mm and has not been reported as "TOO SMALL TO MEASURE".

tr.xpt

Row	STUDYID	DOMAIN	USUBJID	TRSEQ	TRGRPID	TRREFID	TRLNKGRP	TRLNKID	TRTESTCD	TRTEST	TRORRES	TRORRESU	TRSTRESC	TRSTRESN	TRSTRESU	TRSTAT	TRREASND
1	EX11111	TR	90001	1	TARGET	IMG-00001	A1	T01	LPERP	Longest Perpendicular	17	mm	17	17	mm		
2	EX11111	TR	90001	2	TARGET	IMG-00001	A1	T01	LNSTATE	Lymph Node State	PATHOLOGICAL		PATHOLOGICAL				
3	EX11111	TR	90001	3	TARGET	IMG-00002	A1	T02	LPERP	Longest Perpendicular	16	mm	16	16	mm		
4	EX11111	TR	90001	4	TARGET	IMG-00002	A1	T02	LNSTATE	Lymph Node State	PATHOLOGICAL		PATHOLOGICAL				
5	EX11111	TR	90001	5	TARGET	IMG-00001	A1	T03	LDIAM	Longest Diameter	15	mm	15	15	mm		
6	EX11111	TR	90001	6	TARGET	IMG-00003	A1	T04	LDIAM	Longest Diameter	14	mm	14	14	mm		
7	EX11111	TR	90001	7	NON-TARGET	IMG-00002	A1	NT01	LNSTATE	Lymph Node State	PATHOLOGICAL		PATHOLOGICAL				
8	EX11111	TR	90001	8	NON-TARGET	IMG-00001	A1	NT02	TUMSTATE	Tumor State	PRESENT		PRESENT				



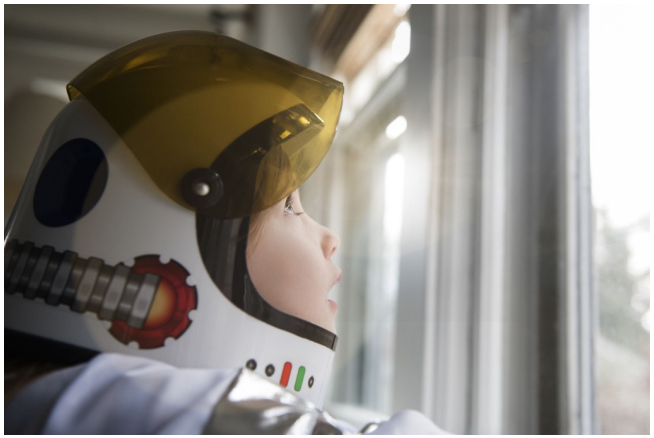
Future Plans

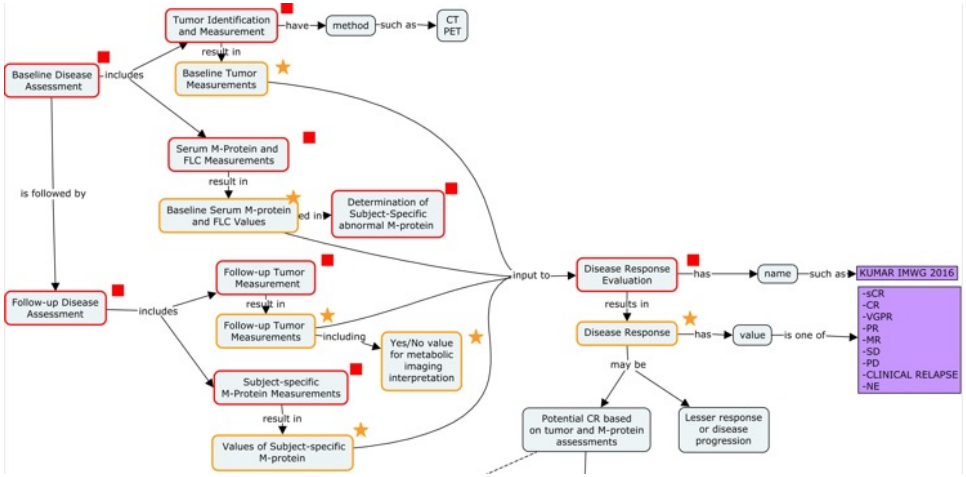
Future Plans: To Do List

- Additional Oncology Disease Response Supplements
  - Finalize RECIST 1.1
  - Create LUGANO, iRECIST, RANO (2017), IMWG
- IMWG: Multiple Myeloma SDTM Examples and CT development with codetable mappings
- TNM Staging
- Survival FU/Disposition/EOS
- CT Development:
  - Codetable Mapping File for each tumor response criterion.
  - Additions of TU and TR domain linkages into response criterion-specific codetable mapping files.
  - Extensions to existing codelists for TU/TR/RS domains
  - Extensions to existing codelists for other related domains such as GF and CP

Future Plans: End-to-End Mapping

- Concept maps
- Relationships from collection/CDASH to SDTM to ADaM
- Dream of downloading package identifying all domains and variables required for each criterion



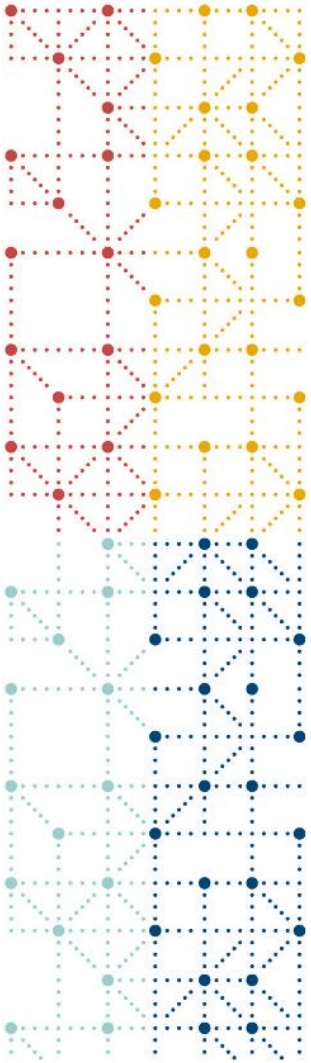


Community Ask

- Please review the disease supplements
- Share examples/use cases for other criteria
  - Join our team
  - Submit through JIRA – DRSUPPCOM (Disease Response Supplement Comments)
- Review Quarterly Terminology Releases
- Submit new terms through CDISC Change Request form, including additions/updates to codetable mapping files

Thanks to our team!

Melanie Paules, Lead
Erin Muhlbradt, CT Lead
Kim Musgrave, Co-lead
Mohtaram Bahmanian, Consultant
Prakash Dev, Covance
Gregory Goldmacher, Merck
Jennifer Gu, Datastand
Margarita Harrod, Merck
Chris Kaiser, Lilly
Catherine Mulvaney, Mint Medical
David Neubauer, IQVIA
Anh Nguyen-Paulus, Arcus Bio
Debra O'Neill, Merck
Manjula Reddy, J&J
Swarupa Sudini, Pfizer
Sharon Weller, Lilly
Rachel Zieverink, Medpace



Resources

SDS Oncology (CDISC wiki)

Public Review Disease Response Supplement RECIST 1.1

Oncology Response Criteria SDTM Examples

SDS Oncology To Do List

CDISC QRS and CT (CDISC.org)

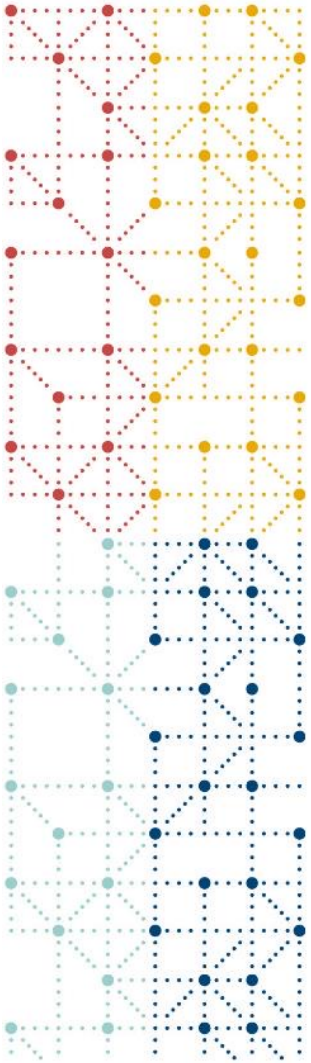
CDISC Controlled Terminology, Codetable Mapping Files and Oncology Rules

CDISC Change Request Form

QRS Supplements

General

RECIST 1.1 EORTC Website with Publication and Guidance



Thank You!

cdisc