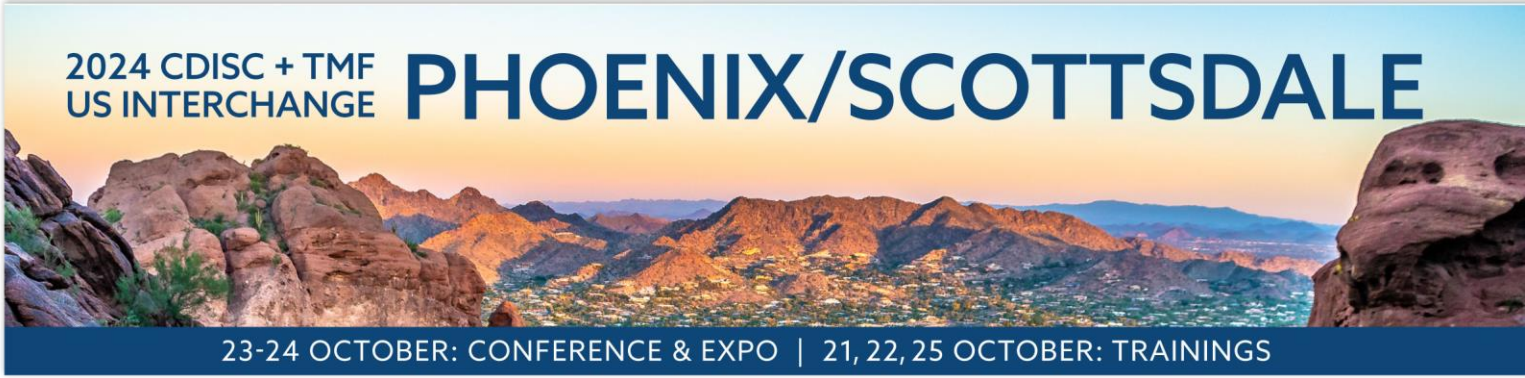

Which ADaM Data Structure Is Most Appropriate? Gray Areas in BDS and OCCDS

Presented by Veronica “Vee” Gonzalez [formerly Renauldo],
Sr Principal Analyst, Statistical Programming, Biogen Inc.

Meet the Speaker

Veronica “Vee” Gonzalez [formerly Renauldo]

Title: Sr Principal Analyst

Organization: Biogen Inc.

Veronica “Vee” Gonzalez, formerly Renauldo, is a Sr Principal Analyst at Biogen. She is Advanced ADaM certified through CDISC and serves as a therapeutic area (TA) CDISC standards SME (SDTM, ADaM, Submission). She currently serves as the compound indication lead over multiple studies, from a statistical programming perspective, involving: ADaM specification creation/implementation, TFL design/implementation, CRF design, data cleaning, resource forecasting/management, in addition to being consulted as the TA SME. She earned her MS in Biostatistics from Grand Valley State University in 2016.

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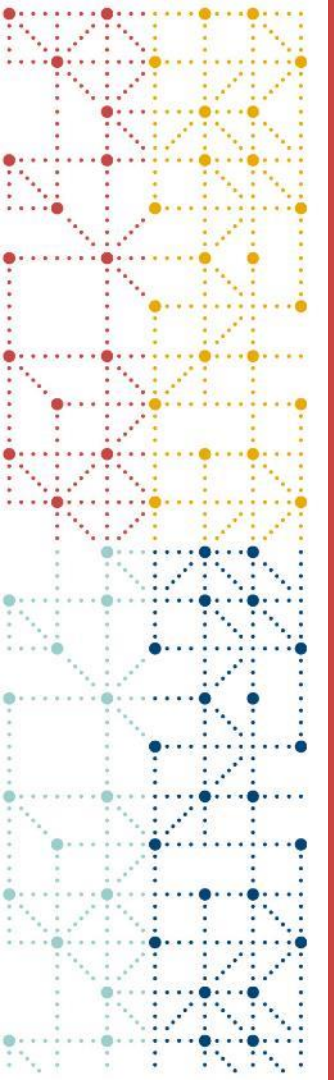
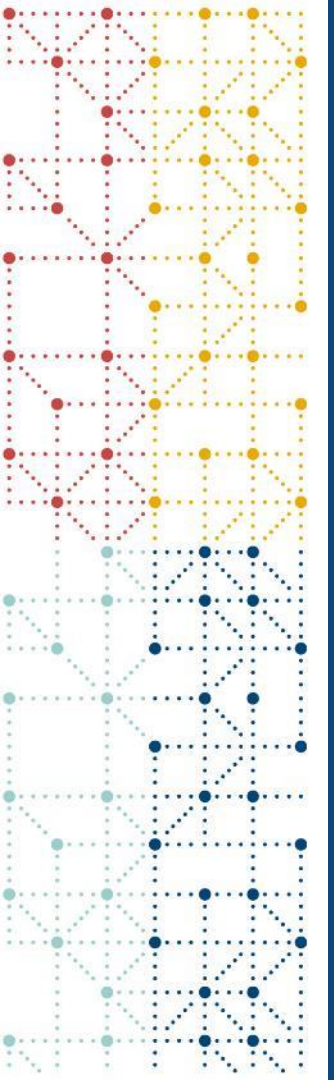
- *The views and opinions expressed in this presentation are those of the author(s) and do not necessarily reflect the official policy or position of CDISC.*
- The author has no real or apparent conflicts of interest to report.



Agenda

1. Introduction
2. Data Collections and SDTM
3. Analysis Requirements
4. Fundamental ADaM Principles & Traceability
5. ADaM OCCDS
6. ADaM BDS
7. Comparison



Introduction

Study Documentation/Definitions

- Study protocol:
  - Describes what data will be collected and at what frequency (schedule of activities)
  - Objectives/endpoints of the trial
  - Rational for the trial, study design, etc.
- Case report form (CRF)
  - Dictates how the protocol requirements will be collected.
  - Electronic Data Capture (EDCs) are used to collected eCRFs (electronic CRFs) data (though most sites have paper backups)
- Raw data
  - EDC, eCOA, Central Labs
- Study Data Tabulations Model (SDTM)
  - Formatted raw data
  - Submission datasets for observed, and sometimes derived, data
    - Derived data example: questionnaire scoring
- Analysis Data Model (ADaM)
  - Uses SDTM as source data for analyses
  - Required for primary and secondary efficacy along with safety analyses
  - Used to create TFLs

Data Collections and SDTM

- CRF & SDTM Mapping
- SDTM Example Data

Data Collections and SDTM Mapping

- Assess the history of the disease x of interest for the study.
- The first 6 questions are answered only once per subject
- The data collected on this CRF goes into two different SDTM domains (MH and FA).

Form: Disease x History		SDTM Mapping
Did the subject have disease x?	◦Yes ◦No	MHOCCUR where MHTERM = “DISEASE X” and MHLNKGRP = “DIS01”
[If yes]		
History of disease x flares?	◦Yes ◦No	MHOCCUR where MHTERM = “DISEASE X FLARES”
Current Course of Disease	◦Chronic Active ◦Relapsing-Remitting	FAORRES where FATESTCD = “STATUS”, FAOBJ = “DISEASE X”, and FALNKGRP = “DIS01”
History of comorbidity disease #1?	◦Yes ◦No	MHOCCUR where MHTERM = “COMORBIDITY #1” and MHLNKGRP = “COM01”
[If yes]		
Class of comorbidity disease #1	◦Class I ◦Class II ◦Class III	FAORRES where FATESTCD = “CLASS”, FAOBJ = “COMORBIDITY #1”, and FALNKGRP = “COM01”
History of comorbidity disease #2?	◦Yes ◦No	MHOCCUR where MHTERM = “COMORBIDITY #2”

Data Collections and SDTM Mapping (continued)

- Log lines section (aka add-entry), can be many records per subject.

(Continued)		SDTM Mapping
[Log Lines]		
Organ/System involved with flare	◦Musculoskeletal ◦Renal ◦<7 other locations>	MHOCCUR = “Y” where MHTERM = “DISEASE X FLARES: <selected organ system>”
Flare Date		MHSTDTC where MHTERM = “DISEASE X FLARES: <selected organ system>”
Resolved?	◦Yes ◦No	If yes, MHENRTPT = “BEFORE” where MHTERM = “DISEASE X FLARES: <selected organ system>”. If no, MHENRTPT = “ONGOING” where MHTERM = “DISEASE X FLARES: <selected organ system>”.
Severity of flare	◦Mild ◦Moderate ◦Severe	MHSEV where MHTERM = “DISEASE X FLARES: <selected organ system>”

SDTM Example Data: MH & FA

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHPRESP	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT
1001	1	DIS01	DISEASE X	Y	Y			
1001	2		DISEASE X FLARES	Y	Y			
1001	3	COM01	COMORBIDITY #1	Y	Y			
1001	4		COMORBIDITY #2	Y	Y			
1001	5		DISEASE X FLARES: RENAL			MILD	2024-01-01	ONGOING
1001	6		DISEASE X FLARES: RENAL			SEVERE	2020-10-10	BEFORE
1002	1	DIS01	DISEASE X	Y	Y			
1002	2		DISEASE X FLARES	Y	N			
1002	3		COMORBIDITY #1	Y	N			
1002	4		COMORBIDITY #2	Y	N			
1003	1		DISEASE X	Y	N			

USUBJID	FASEQ	FALNKGRP	FAOBJ	FATESTCD	FATEST	FAORRES
1001	1	DIS01	DISEASE X	STATUS	Status	CHRONIC ACTIVE
1001	2	COM01	COMORBIDITY #1	CLASS	Classification	CLASS II
1002	1	DIS01	DISEASE X	STATUS	Status	RELAPSING-REMITTING

SDTM Example Data: MH & FA

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHPRESP	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT
1001	1	DIS01	DISEASE X	Y	Y			
1001	2		DISEASE X FLARES	Y	Y			
1001	3	COM01	COMORBIDITY #1	Y	Y			
1001	4		COMORBIDITY #2	Y	Y			
1001	5		DISEASE X FLARES: RENAL			MILD	2024-01-01	ONGOING
1001	6		DISEASE X FLARES: RENAL			SEVERE	2020-10-10	BEFORE
1002	1	DIS01	DISEASE X	Y	Y			
1002	2		DISEASE X FLARES	Y	N			
1002	3		COMORBIDITY #1	Y	N			
1002	4		COMORBIDITY #2	Y	N			
1003	1		DISEASE X	Y	N			

USUBJID	FASEQ	FALNKGRP	FAOBJ	FATESTCD	FATEST	FAORRES
1001	1	DIS01	DISEASE X	STATUS	Status	CHRONIC ACTIVE
1001	2	COM01	COMORBIDITY #1	CLASS	Classification	CLASS II
1002	1	DIS01	DISEASE X	STATUS	Status	RELAPSING-REMITTING

SDTM Example Data: MH & FA

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHPRESP	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT
1001	1	DIS01	DISEASE X	Y	Y			
1001	2		DISEASE X FLARES	Y	Y			
1001	3	COM01	COMORBIDITY #1	Y	Y			
1001	4		COMORBIDITY #2	Y	Y			
1001	5		DISEASE X FLARES: RENAL			MILD	2024-01-01	ONGOING
1001	6		DISEASE X FLARES: RENAL			SEVERE	2020-10-10	BEFORE
1002	1	DIS01	DISEASE X	Y	Y			
1002	2		DISEASE X FLARES	Y	N			
1002	3		COMORBIDITY #1	Y	N			
1002	4		COMORBIDITY #2	Y	N			
1003	1		DISEASE X	Y	N			

USUBJID	FASEQ	FALNKGRP	FAOBJ	FATESTCD	FATEST	FAORRES
1001	1	DIS01	DISEASE X	STATUS	Status	CHRONIC ACTIVE
1001	2	COM01	COMORBIDITY #1	CLASS	Classification	CLASS II
1002	1	DIS01	DISEASE X	STATUS	Status	RELAPSING-REMITTING

SDTM Example Data: MH & FA

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHPRESP	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT
1001	1	DIS01	DISEASE X	Y	Y			
1001	2		DISEASE X FLARES	Y	Y			
1001	3	COM01	COMORBIDITY #1	Y	Y			
1001	4		COMORBIDITY #2	Y	Y			
1001	5		DISEASE X FLARES: RENAL			MILD	2024-01-01	ONGOING
1001	6		DISEASE X FLARES: RENAL			SEVERE	2020-10-10	BEFORE
1002	1	DIS01	DISEASE X	Y	Y			
1002	2		DISEASE X FLARES	Y	N			
1002	3		COMORBIDITY #1	Y	N			
1002	4		COMORBIDITY #2	Y	N			
1003	1		DISEASE X	Y	N			

USUBJID	FASEQ	FALNKGRP	FAOBJ	FATESTCD	FATEST	FAORRES
1001	1	DIS01	DISEASE X	STATUS	Status	CHRONIC ACTIVE
1001	2	COM01	COMORBIDITY #1	CLASS	Classification	CLASS II
1002	1	DIS01	DISEASE X	STATUS	Status	RELAPSING-REMITTING

Analysis Requirements

Analysis Requirements/TFL

- Summary table of the count and percentages of each response per collected item per treatment group.
- Only one record per organ/system should be selected per subject using the following selection criteria:
  - Record with maximum severity will be selected.
  - If multiple records of maximum severity exist, then the record that is not resolved will be selected.
  - If multiple ongoing maximum severity records exist, then the record with the latest date will be selected.

	Placebo (N=xx)	Active Arm (N=xx)
Diagnosed with Disease x		
Yes	nn (pp.p)	nn (pp.p)
No	nn (pp.p)	nn (pp.p)
History of Flares		
Yes	nn (pp.p)	nn (pp.p)
No	nn (pp.p)	nn (pp.p)
Current Course of Disease		
Chronic Active	nn (pp.p)	nn (pp.p)
Relapsing-Remitting	nn (pp.p)	nn (pp.p)
History of Comorbidity #1		
Yes	XX (pp.p)	nn/XX (pp.p)
Class I	nn/XX (pp.p)	nn/XX (pp.p)
Class II	nn/XX (pp.p)	nn/XX (pp.p)
Class III	nn/XX (pp.p)	nn/XX (pp.p)
No	nn (pp.p)	nn (pp.p)
History of Comorbidity #2		
Yes	nn (pp.p)	nn (pp.p)
No	nn (pp.p)	nn (pp.p)
Organ/System Involved		
<Locations>	YY (pp.p)	YY (pp.p)
Resolved		
Yes	nn/YY (pp.p)	nn/YY (pp.p)
No	nn/YY (pp.p)	nn/YY (pp.p)
Severity of Flare		
Mild	nn/YY (pp.p)	nn/YY (pp.p)
Moderate	nn/YY (pp.p)	nn/YY (pp.p)
Severe	nn/YY (pp.p)	nn/YY (pp.p)

Fundamental ADaM Principles & Traceability

Metadata and data point traceability

Fundamental ADaM Principles

Fundamental Principles

Analysis datasets and their associated metadata must:

- facilitate clear and unambiguous communication
- provide traceability between the analysis data and its source data (ultimately SDTM)
- be readily useable by commonly available software tools

Analysis datasets must:

- be accompanied by metadata
- be analysis-ready

From ADaM v2.1

- These principles must be applied when looking at designing datasets to achieve the statistical analysis of interest.
- Largest components: traceability

Traceability

- All ADaM datasets require traceability.
- Traceability: Where the item came from (result or variable)
  - “Data’s lineage or relationship between an analysis value and its predecessor(s)” (ADaM v2.1)
- Allows the reviewer to identify:
  - Where the source of the analysis result comes from, such as SDTM or other ADaMs (ADaM v2.1)
  - Any methods used to create the analysis result (derivations, imputations). (ADaM v2.1)
- Two types: Metadata and Data point

Metadata	• Traceability is provided in the define and/or reviewer’s guide
Data Point	• Traceability is provided directly in the dataset (--SEQ, SRCSEQ)

Traceability: Multiple Sources for ADaM

Variable Name	Variable Label	CDISC Notes
SRCDOM	Source Data	The SDTM domain name or ADaM dataset name that relates to the analysis value (i.e., AVAL or AVALC in a BDS dataset). If the source data is a supplemental qualifier in SDTM, this variable will contain the value of RDOMAIN in SUPP-- or SUPPQUAL.
SRCVAR	Source Variable	The name of the column (in the domain or dataset identified by SRCDOM) that relates to the analysis value (i.e., AVAL or AVALC in a BDS dataset). In the event that SRCDOM is a SUPPQUAL, then SRCVAR will be populated with the value of the related QNAM.
SRCSEQ	Source Sequence Number	The sequence number --SEQ or ASEQ of the row (in the domain or dataset identified by SRCDOM) that relates to the analysis value (i.e., AVAL or AVALC in a BDS dataset). In the event that SRCDOM is a SUPPQUAL, then this variable will contain the sequence number of the relevant related domain record.

ADaM OCCDS

Overview

Implementation Example

Occurrence Data Structure (OCCDS) Overview

Used for occurrence analyses.

- From ADaM Structure for Occurrence Data (OCCDS):
  - Counting of subjects with a given record or term
  - Usually coded to using a structured hierarchy of dictionary coding categories
  - Data examples: Adverse events, concomitant medications, and medical history

OCCDS is used for medical/medication term collection type.

- Variables used: dose, location, route, frequency, severity, start and end dates, etc.

Data is typically only collected if an event of interest, such as an adverse event, happens.

These datasets are wide in nature.

Disease X History Analysis Dataset (ADDISX- OCCDS)

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT	ACAT1	ATERM1	ACAT2	ATERM2	ANL01FL
1001	1	DIS01	DISEASE X	Y				Status	CHRONIC ACTIVE			Y
1001	2		DISEASE X FLARES	Y								Y
1001	3	COM01	COMORBIDITY #1	Y						Class of comorbidity disease #1	CLASS II	Y
1001	4		COMORBIDITY #2	Y								Y
1001	5		DISEASE X FLARES: RENAL		MILD	2024-01-01	ONGOING					
1001	6		DISEASE X FLARES: RENAL		SEVERE	2020-10-10	BEFORE					Y
1002	1	DIS01	DISEASE X	Y				Status	RELAPSING-REMITTING			Y
1002	2		DISEASE X FLARES	N								Y
1002	3		COMORBIDITY #1	N								Y
1002	4		COMORBIDITY #2	N								Y
1003	1		DISEASE X	N								Y

Disease X History Analysis Dataset (ADDISX- OCCDS)

Data from MH

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT	ACAT1	ATERM1	ACAT2	ATERM2	ANL01FL
1001	1	DIS01	DISEASE X	Y				Status	CHRONIC ACTIVE			Y
1001	2		DISEASE X FLARES	Y								Y
1001	3	COM01	COMORBIDITY #1	Y						Class of comorbidity disease #1	CLASS II	Y
1001	4		COMORBIDITY #2	Y								Y
1001	5		DISEASE X FLARES: RENAL		MILD	2024-01-01	ONGOING					
1001	6		DISEASE X FLARES: RENAL		SEVERE	2020-10-10	BEFORE					Y
1002	1	DIS01	DISEASE X	Y				Status	RELAPSING-REMITTING			Y
1002	2		DISEASE X FLARES	N								Y
1002	3		COMORBIDITY #1	N								Y
1002	4		COMORBIDITY #2	N								Y
1003	1		DISEASE X	N								Y

Disease X History Analysis Dataset (ADDISX- OCCDS)

Data from FA

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT	ACAT1	ATERM1	ACAT2	ATERM2	ANL01FL
1001	1	DIS01	DISEASE X	Y				Status	CHRONIC ACTIVE			Y
1001	2		DISEASE X FLARES	Y								Y
1001	3	COM01	COMORBIDITY #1	Y						Class of comorbidity disease #1	CLASS II	Y
1001	4		COMORBIDITY #2	Y								Y
1001	5		DISEASE X FLARES: RENAL		MILD	2024-01-01	ONGOING					
1001	6		DISEASE X FLARES: RENAL		SEVERE	2020-10-10	BEFORE					Y
1002	1	DIS01	DISEASE X	Y				Status	RELAPSING-REMITTING			Y
1002	2		DISEASE X FLARES	N								Y
1002	3		COMORBIDITY #1	N								Y
1002	4		COMORBIDITY #2	N								Y
1003	1		DISEASE X	N								Y

Disease X History Analysis Dataset (ADDISX- OCCDS)

Analysis flag as only one record per organ/system should be used per subject

USUBJID	MHSEQ	MHLNKGRP	MHTERM	MHOCCUR	MHSEV	MHSTDTC	MHENRTPT	ACAT1	ATERM1	ACAT2	ATERM2	ANL01FL
1001	1	DIS01	DISEASE X	Y				Status	CHRONIC ACTIVE			Y
1001	2		DISEASE X FLARES	Y								Y
1001	3	COM01	COMORBIDITY #1	Y						Class of comorbidity disease #1	CLASS I	Y
1001	4		COMORBIDITY #2	Y								Y
1001	5		DISEASE X FLARES: RENAL		MILD	2024-01-01	ONGOING					
1001	6		DISEASE X FLARES: RENAL		SEVERE	2020-10-10	BEFORE					Y
1002	1	DIS01	DISEASE X	Y				Status	RELAPSING-REMITTING			Y
1002	2		DISEASE X FLARES	N								Y
1002	3		COMORBIDITY #1	N								Y
1002	4		COMORBIDITY #2	N								Y
1003	1		DISEASE X	N								Y

ADaM BDS

Overview

Implementation Example

Basic Data Structure (BDS) Overview

Used for response level analyses

- Summary of responses per question
- Change from Baseline
- Percent change from baseline
- Time-to-event

Used for parameter level information where a response is provided

- From Analysis Data Model v2.1:
  - One or more records per subject, per analysis parameter, per analysis timepoint
  - Variables that describe the analysis parameter (e.g., PARAM and related variables) and contain the value being analyzed (e.g., AVAL and AVALC and related variables)

Data collected at required visits/intervals per protocol (pre-planned collections)

- Examples of data: Questionnaires, Laboratory Results, Vital Signs

These datasets are vertical in nature.

Disease X History Analysis Dataset (ADDISX- BDS)

USUBJID	SRCDOM	SRCVAR	SRCSEQ	ASTDT	PARAM	PARAMCD	AVAL	AVALC	ANL01FL
1001	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1001	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	1	Y	Y
1001	FA	FAORRES	1		Current Course of Disease x	STATUS	1	CHRONIC ACTIVE	Y
1001	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	1	Y	Y
1001	FA	FAORRES	2		Comorbidity Disease #1 Class	CLASS	2	CLASS II	Y
1001	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	1	Y	Y
1001	MH	MHOCCUR	5	2024-01-01	Occurrence of Renal Flare	OCCURREN	1	Y	
1001	MH	MHENRTPT	5	2024-01-01	Renal Flare Resolution	RENRES	2	N	
1001	MH	MHSEV	5	2024-01-01	Renal Flare Severity	RENSEV	1	MILD	
1001	MH	MHOCCUR	6	2020-10-10	Occurrence of Renal Flare	OCCURREN	1	Y	Y
1001	MH	MHENRTPT	6	2020-10-10	Renal Flare Resolution	RENRES	1	Y	Y
1001	MH	MHSEV	6	2020-10-10	Renal Flare Severity	RENSEV	3	SEVERE	Y
1002	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1002	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	2	N	Y
1002	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	2	N	Y
1002	FA	FAORRES	1		Current Course of Disease x	STATUS	1	RELAPSING-REMITTING	Y
1002	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	2	N	Y
1003	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	2	N	Y

Disease X History Analysis Dataset (ADDISX- BDS)

Data from MH

USUBJID	SRCDOM	SRCVAR	SRCSEQ	ASTDT	PARAM	PARAMCD	AVAL	AVALC	ANL01FL
1001	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1001	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	1	Y	Y
1001	FA	FAORRES	1		Current Course of Disease x	STATUS	1	CHRONIC ACTIVE	Y
1001	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	1	Y	Y
1001	FA	FAORRES	2		Comorbidity Disease #1 Class	CLASS	2	CLASS II	Y
1001	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	1	Y	Y
1001	MH	MHOCCUR	5	2024-01-01	Occurrence of Renal Flare	OCCURREN	1	Y	
1001	MH	MHENRTPT	5	2024-01-01	Renal Flare Resolution	RENRES	2	N	
1001	MH	MHSEV	5	2024-01-01	Renal Flare Severity	RENSEV	1	MILD	
1001	MH	MHOCCUR	6	2020-10-10	Occurrence of Renal Flare	OCCURREN	1	Y	Y
1001	MH	MHENRTPT	6	2020-10-10	Renal Flare Resolution	RENRES	1	Y	Y
1001	MH	MHSEV	6	2020-10-10	Renal Flare Severity	RENSEV	3	SEVERE	Y
1002	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1002	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	2	N	Y
1002	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	2	N	Y
1002	FA	FAORRES	1		Current Course of Disease x	STATUS	1	RELAPSING-REMITTING	Y
1002	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	2	N	Y
1003	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	2	N	Y

Disease X History Analysis Dataset (ADDISX- BDS)

Data from FA

USUBJID	SRCDOM	SRCVAR	SRCSEQ	ASTDT	PARAM	PARAMCD	AVAL	AVALC	ANL01FL
1001	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1001	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	1	Y	Y
1001	FA	FAORRES	1		Current Course of Disease x	STATUS	1	CHRONIC ACTIVE	Y
1001	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	1	Y	Y
1001	FA	FAORRES	2		Comorbidity Disease #1 Class	CLASS	2	CLASS II	Y
1001	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	1	Y	Y
1001	MH	MHOCCUR	5	2024-01-01	Occurrence of Renal Flare	OCCURREN	1	Y	
1001	MH	MHENRTPT	5	2024-01-01	Renal Flare Resolution	RENRES	2	N	
1001	MH	MHSEV	5	2024-01-01	Renal Flare Severity	RENSEV	1	MILD	
1001	MH	MHOCCUR	6	2020-10-10	Occurrence of Renal Flare	OCCURREN	1	Y	Y
1001	MH	MHENRTPT	6	2020-10-10	Renal Flare Resolution	RENRES	1	Y	Y
1001	MH	MHSEV	6	2020-10-10	Renal Flare Severity	RENSEV	3	SEVERE	Y
1002	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1002	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	2	N	Y
1002	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	2	N	Y
1002	FA	FAORRES	1		Current Course of Disease x	STATUS	1	RELAPSING-REMITTING	Y
1002	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	2	N	Y
1003	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	2	N	Y

Disease X History Analysis Dataset (ADDISX- BDS)

Analysis flag as only one record per organ/system should be used per subject

USUBJID	SRCDOM	SRCVAR	SRCSEQ	ASTDT	PARAM	PARAMCD	AVAL	AVALC	ANL01FL
1001	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1001	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	1	Y	Y
1001	FA	FAORRES	1		Current Course of Disease x	STATUS	1	CHRONIC ACTIVE	Y
1001	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	1	Y	Y
1001	FA	FAORRES	2		Comorbidity Disease #1 Class	CLASS	2	CLASS II	Y
1001	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	1	Y	Y
1001	MH	MHOCCUR	5	2024-01-01	Occurrence of Renal Flare	OCCURREN	1	Y	
1001	MH	MHENRTPT	5	2024-01-01	Renal Flare Resolution	RENRES	2	N	
1001	MH	MHSEV	5	2024-01-01	Renal Flare Severity	RENSEV	1	MILD	
1001	MH	MHOCCUR	6	2020-10-10	Occurrence of Renal Flare	OCCURREN	1	Y	Y
1001	MH	MHENRTPT	6	2020-10-10	Renal Flare Resolution	RENRES	1	Y	Y
1001	MH	MHSEV	6	2020-10-10	Renal Flare Severity	RENSEV	3	SEVERE	Y
1002	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	1	Y	Y
1002	MH	MHOCCUR	2		Occurrence History of Disease x Flares	OCCURFLR	2	N	Y
1002	MH	MHOCCUR	3		Occurrence of Comorbidity Disease #1	OCCURCM1	2	N	Y
1002	FA	FAORRES	1		Current Course of Disease x	STATUS	1	RELAPSING-REMITTING	Y
1002	MH	MHOCCUR	4		Occurrence of Comorbidity Disease #2	OCCURCM2	2	N	Y
1003	MH	MHOCCUR	1		Occurrence of Disease x	OCCURDSX	2	N	Y

Comparison

OCCDS-BDS Comparison of

- Traceability
- Strengths
- Weaknesses

Traceability Comparison

OCCDS Version

- MH records: Have both data point and metadata traceability
  - Datapoint: MHSEQ is provided in ADDISX
  - Metadata:
    - Define would show sourcing per ADaM variable
    - ADRG should expand on how FA and MH is merged to form this dataset
- FA records: Only have metadata traceability
  - FASEQ nor SRC variable are contained in the dataset so datapoint traceability is not provided.
    - Metadata traceability would be obtained
    - Refer to MH metadata section

BDS Version

- MH & FA records: Have both data point and metadata traceability
  - Datapoint: ADDISX contains source (SRC) variables for domain, variable relating to AVAL/AVALC, and SEQ
  - Metadata:
    - Define would show sourcing per ADaM variable
    - ADRG should expand on one MH record is brought into ADDISX multiple times to create multiple PARAMs

Strengths Comparison

OCCDS Version

- Typical occurrence data presentation
  - Reflects the main data collection type which is occurrence
  - Agency reviewers are used to receiving medical history data in OCCDS
- Easier to program and understand
  - Adding columns for the FA data is faster than adding additional rows.

BDS Version

- Data point and metadata traceability
  - Traceability to both MH and FA domains contained within the SRC variables.
- Directly meets analysis requirements
  - Table values source directly from AVALC (AVAL available for proper row order).

Weaknesses Comparison

OCCDS Version

- Only metadata traceability
  - Lack of data point traceability to FA domain.
- Inferring Responses
  - Yes or No response for if the organ/system resolved is needing to be created in the table program based on values in MHENRTPT.
- Improper use of ACAT-ATERM
  - P21 does not have validation rules around ACAT or ATERM

BDS Version

- Increased programming time
  - It is more laborious to create additional rows in a dataset than additional columns.
- Increased time for define creation and parameter repository
  - VLM required for AVAL and AVALC
  - 33 possible PARAM-PARAMCD combinations
- Requires more explanation to fully understand

Summary

Summary

- Depending on analysis requirements, multiple ADaM dataset structures (DS) may be appropriate
- Scrutinize which DS works best to archive the analysis requirements
  - Don’t always go with what has been done before
  - Allow yourself to weigh the pros and cons of each implementation tyle
- Ensure the method selected works for your team and adheres to the ADaM fundamental principles.

FDA Technical Conformance Guide

- Only requires ADaMs to support efficacy (primary and secondary) and safety analyses

Thank You!

Gif from: https://images.app.goo.gl/afntdEQhFUwfoAaV6