

Data Class Structure in MMGs

CSTE DSWG Data Element Specific Team

03/08/2024



Council of State and Territorial Epidemiologists

Please mute phone/ headset/ computer audio!

Agenda

- Welcome & Announcements
- MMG Structure Overview
- Structure Discussion
- Polling
- Next Steps
- Wrap-Up & Adjourn

DSWG Reminders



- Immunizations and Death drafts out to wider DSWG for comment now!
 - Link in chat (input due by 4/1)
- The Data-element Specific Team (DEST) Interest Sign-Up sheet has been updated to include known future data classes:
 - Identifiers (Case/Event Related/Laboratory)
 - Reporting Source
 - Laboratory
 - Race/Ethnicity/Tribal Affiliation
 - Medication/Treatment
 - Disability
 - Social Determinants of Health

Link to Sign-Up sheet:

<https://app.smartsheet.com/b/form/3da89d48bda94fc7a33c4a8a505fe54a>

If you have signed up previously but feel you are not getting the emails/meeting invites that you expected to get, please reach out directly to LLane@jmmichael-consulting.com.

Meeting ground rules



- Discussion Guidelines
 - "Raise" your hand
 - Use the chat to provide feedback and ask questions
 - When called, state your name and affiliation
 - Stay on point, be brief, and within the context of the discussion in progress
 - 80/20 consensus
 - Co-Chairs/moderators' prerogative to move the discussion forward as needed
 - Post-meeting survey provided for additional input
 - Be courteous and be open to new ideas

Active participation encouraged for all!

- Chats, voting, comments, etc.
- Includes STLT jurisdictions + CDC Programs + CSTE, etc.

In-scope vs Out-of-scope



What this is:

- Collaborative consensus building about the best ways to approach the transmission of public health data in a standardized way
- Today's discussion focuses on the best way to send groups of similar data elements in an HL7 v2 notification message to CDC

What this is not:

- Discussion of individual data elements or classes as "core" (this is being done in separate meetings)
- Discussion of data elements for research studies
- Recommendations for public facing surveys
- Limitations on what can be collected for a data element within a jurisdiction
- Recommendations for how to ask about data elements in a case interview

Background Review: MMG Structure for ERU and SSCM



ERU and SSCM Data Classes



- Each potential **data class** → Many **data elements**
 - **Exposures:**
 - Within an exposure period, did the person get a tattoo?
 - Within an exposure period, did the person consume eggs?
 - **Risk Factors:**
 - Is the person a healthcare worker?
 - Has the person ever used tobacco?
 - **Underlying Conditions:**
 - Does the person have a diagnosis of diabetes?
 - Is the person positive for HIV?
 - **Signs and Symptoms:**
 - Did the case have a fever?
 - Did the case have jaundice?

- Message mapping guides include these **data classes** using three different formats:
 - Individual questions, each representing one **data element**
 - Repeating elements allowing for the selection of multiple **data elements** within one question (one OBX segment)
 - Repeating groups allowing for many **data elements** in the same data class, transmitted as paired "question" and "answer" OBX segments for each data element

Individual Questions



- OBX-3.1 = Data Element Identifier
- OBX-5 = Yes/No/Unknown value from value set for many but can be any value set
- No repeating

Data Element (DE) Name	Data Element Description	May Repe	Value Set Name (VADS Hyperlink)
Eat Ground Beef, Within 7 Days Before Illness	In the 7 days before illness, did the subject eat any ground beef?	N	Yes No Unknown (YNU)
Eat Beef Made Outside Of Home, Within 7 Days Before Illness	In the 7 days before illness, did the subject eat any beef made outside of home at a business such as a restaurant, deli, fast food, take-out, or catered event?	N	Yes No Unknown (YNU)
Eat Uncooked Ground Beef, Within 7 Days Before Illness	In the 7 days before illness, did you/your child eat any ground beef that was undercooked or raw?	N	Yes No Unknown (YNU)

OBX|nn|CWE|FDD_Q_969^Eat Beef, Within 7 Days Before Illness^PHINQUESTION||Y^Yes^HL70136|||||F

Individual Questions



Known advantages

- Straightforward to map from most systems
- Mapping also straightforward regardless of which values belong to which buckets. (E.g. Is diabetes a risk factor or underlying condition)

Known disadvantages

- If a system has a "select all" option, they may not have "No" or "Unknown" values to map.
- New data elements and revisions to existing data elements have to be cleared through the OMB process, and a new/updated MMG may have to be onboarded.

Repeating Element (aka “may repeat”)



- Repeating Element
 - One question with multi-select value set
 - OBX-5 values may repeat for that data element
 - Example:
 - OBX|nn|CWE|INV298^Bacterial Infection Syndrome^PHINQUESTION||233604007^Pneumonia^SCT~128045006^Cellulitis^SCT|||||F

Data Element (DE) Name	Data Element Description	May Repeat	Value Set Name (VADS Hyperlink)	HL7 Message Context	HL7 Data Type	HL7 Usage	HL7 Cardinality	HL7 Implementation Note
Bacterial Infection Syndrome	Types of infection caused by organism/Clinical Syndromes	Y	Infection Type (RIBD)	OBX segment with OBX-3.1=INV298 OBX-5=value from value set OBX-5.9=string up to 199 characters	CWE	RE	[0..*]	OBX-5.9 MAY contain "Other, please specify" text response.

Repeating Element (aka “may repeat”)



Known advantages

- Value set may be updated without OMB approval process or MMG onboarding
 - Flexibility for the list of symptoms/risk factors/etc. over time
- Aligns with some jurisdictional systems which have elements already structured this way on their front end

Known disadvantages

- Only accounts for positive indications of a data elements and lacks the capacity to capture "No" and "Unknown" answers

Repeating Group



Question:

Answer:

Data Element (DE) Name	Data Element Description	May Repeat	Value Set Name (VADS Hyperlink)	HL7 Cardinality	HL7 Implementation Note	Repeating Group Element
Did Underlying Condition(s) Exist	Did the subject have any underlying causes or prior illnesses?	N	Yes No Unknown (YNU)	[0..1]		NO
START: Underlying Conditions Repeating Group (Used for ABCs cases and National Surveillance Cases)						
Underlying Condition(s)	Listing of underlying causes or prior illnesses	N	Underlying Condition (RIBD)	[0..1]	OBX-5.9 MAY contain "Other, please specify" text response.	PRIMARY/ PARENT
Underlying Conditions Indicator	Underlying Conditions Indicator	N	Yes No Unknown (YNU)	[0..1]		CHILD
END: Underlying Conditions Repeating Group (Used for ABCs cases and National Surveillance Cases)						

- Paired data elements transmit the “question” and “answer”
- Repeat as needed through all values in the “question” value set

Repeating Group



- These data elements can be present multiple times in the message, linked together using OBX-4 values
- The combination of OBX-3 and OBX-4 must be unique in the message
 - OBX|36|CWE|INV1117^Patient Epidemiological Risk Factors^PHINQUESTION|1|PHC2098^Diabetic at Diagnostic Evaluation^CDCPHINVS|||||F
 - OBX|37|CWE|INV1118^Patient Epidemiological Risk Factors Indicator^PHINQUESTION|1|N^No^HL70136|||||F
 - OBX|38|CWE|INV1117^Patient Epidemiological Risk Factors^PHINQUESTION|2|46177005^End-Stage Renal Disease^SCT|||||F
 - OBX|39|CWE|INV1118^Patient Epidemiological Risk Factors Indicator^PHINQUESTION|2|Y^Yes^HL70136|||||F

Known advantages

- Value sets may be updated without OMB approval or new MMG onboarding
 - Flexibility for the list of symptoms/risk factors/etc. over time
- Allows for additional “answers” to be attached to each element
 - E.g. Exposure – Y/N/U – Date of Exposure

Known disadvantages

- If a system has a select all option, they may not have "No" or "Unknown" values to map.
- Tricky to map some jurisdiction system setups to this format.

Data Class Indicator



Data Class Indicator:

Data Element (DE) Name	Data Element Description	Max Repetitions	Value Set Name (VADS Hyperlink)	HL7 Cardinality	HL7 Implementation Note	Repeating Group Element
Did Underlying Condition(s) Exist	Did the subject have any underlying causes or prior illnesses?	N	Yes No Unknown (YNU)	[0..1]		NO
START: Underlying Conditions Repeating Group (Used for ABCs cases and National Surveillance Cases)						
Underlying Condition(s)	Listing of underlying causes or prior illnesses	N	Underlying Condition (RIBD)	[0..1]	OBX-5.9 MAY contain "Other, please specify" text response.	PRIMARY/PARENT
Underlying Conditions Indicator	Underlying Conditions Indicator	N	Yes No Unknown (YNU)	[0..1]		CHILD
END: Underlying Conditions Repeating Group (Used for ABCs cases and National Surveillance Cases)						

- "Symptoms Present" indicator is part of the Minimum Dataset for Case Notification during an Emergency
- Answering "No" may remove the need to send the repeating group or explain why a repeating element is absent.

Structure Discussion



What structure is best for all (or each) of these data classes?

- Individual Questions
 - Y/N/U responses for individual data elements
 - New data elements need OMB approval and new MMG onboarding
 - Systems aren't always set up to collect No/Unknown
- Repeating Element
 - Cannot transmit No vs Unknown vs Not asked
 - Value set allows updating without OMB approval or new MMG onboarding
- Repeating Group
 - Y/N/U responses for each data element
 - Value set allows updating without OMB approval or new MMG onboarding
 - Systems aren't always set up to collect No/Unknown
 - Informatics gymnastics for some systems

For the data classes of exposures, risks, underlying conditions, and signs/symptoms & clinical manifestations:

- **Does it make sense to use the same structure across these data classes?**
 - Already voted as core in previous meetings: they should be collected and transmitted in a standard format across conditions when applicable.
 - The value sets for what is collected in these classes for each condition may be condition specific.
- **Are there any considerations to discuss or define to make future implementation easier?**

Polling process



- Poll questions will be shown first on a slide before poll opens
 - Opportunity for clarifications & questions
- Questions will be mostly "Select the structure that should be used for this data class"
 - Feel free to abstain if you aren't familiar with message transmission, don't have a preference, or don't feel strongly
 - There will be an option for "none" - use this if you do not believe any of the data classes should use this method
 - There is an option for "other similar data classes" - use this if you believe the structure should be consistent across not yet discussed data classes
- Potential opportunity for additional discussion on data classes with a big split.

Poll 1 – Exposures



Which question structure should the Exposure data concept use?

- **Individual Y/N/U data element**
- **Repeating element**
 - (Value set of responses, unable to transmit No/Unk)
- **Repeating group**
 - (For example, two OBX segments per element- one “question”, one “answer”.)

Poll 2 – Risk Factors



Which question structure should the Risk Factors data concept use?

- **Individual Y/N/U data element**
- **Repeating element**
 - (Value set of responses, unable to transmit No/Unk)
- **Repeating group**
 - (For example, two OBX segments per element- one “question”, one “answer”.)

Next Steps



- Upcoming DEST team meetings:
 - 3/15 1-2 pm ET – Continuation of this structure discussion?
 - 4/12 1-2 pm ET – Exposures, Risks, Underlying Conditions
 - 4/19 1-2 pm ET – Signs, Symptoms, Clinical Manifestations?
 - [Link to Sign Up](#)
- The next large DSWG call will be on 26 April 2024.