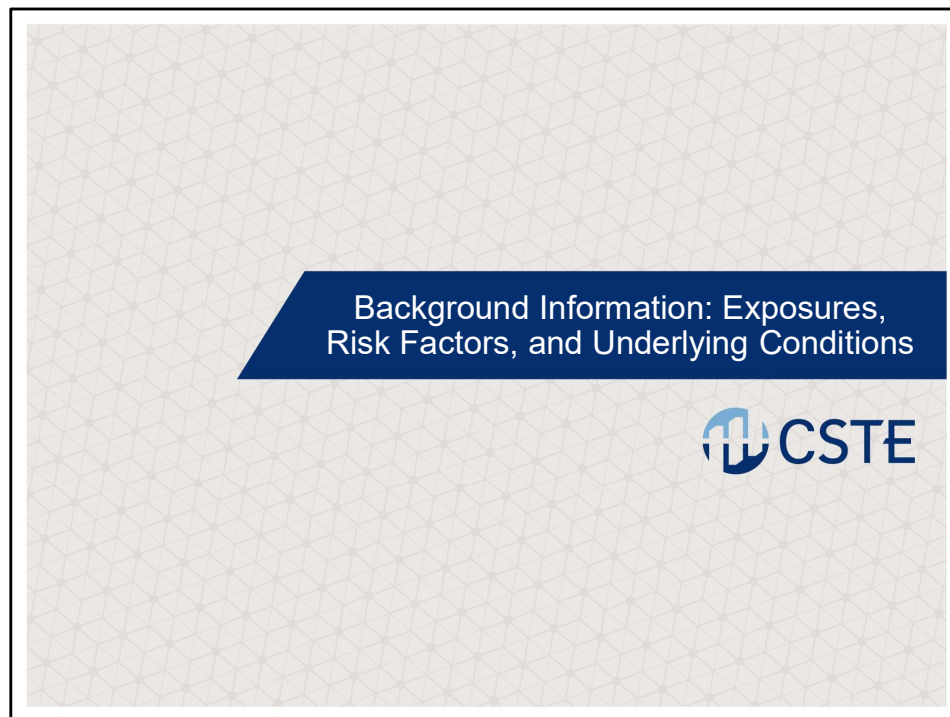




Background Information: Exposures, Risk Factors, and Underlying Conditions



Hello, and welcome to the recorded background information for the Data Element Specific Team discussing the data concepts of Exposure, Risk Factors, and Underlying Conditions. These three concepts are being discussed together as they are closely related and potentially overlap in subject matter. For the most part, these discussions will remain at a higher level than previous topics which have been discussed in Data Element Specific Teams (also known DESTs), and the end goal is to come to consensus about the general distinctions between these three concepts and not to try to define the specific data elements and value sets related them.

Some data classes which require more in depth discussion of data elements as core surveillance will be covered by other DESTs in the near future. In particular, discussions about the inclusion of disability or Social Determinants of Health data elements as core will be left to future discussions. How to categorize them within these three concepts, however, may be touched on here.

This background recording will also include information on the structure of data elements and use of repeating groups for Exposures, Risk Factors, and Underlying Conditions across different message mapping guides. We plan to explore these structure questions in an informatics-focused call in March.

Potential data elements related to Exposures*



- | | |
|--------------------------------------|---------------------------------|
| • Congregate housing | • Date(s) of Exposure |
| • Contact with known case | • Location of exposure |
| • Airport | • Exposure Comments |
| • Animal contact | • Country of Exposure |
| • Undercooked meat | • State or Province of Exposure |
| • Work in wastewater treatment plant | • City of Exposure |
| • Was on cruise ship | • County of Exposure |
| • Worked with soil | |

*Information may be captured as individual data elements or as repeating groups

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Here are some examples of data elements related to exposure that are used either in NNDSS Message Mapping Guides or in other standards.

Exposure data elements generally capture information on the specific or potential settings, events, or activities in which the individual may have acquired the condition.

Information is often collected about specific exposures, using data elements such as those in the left column, including congregate housing, airport, contact with animals, or contact with a known case.

In addition to DEs about particular exposures, information on dates and location of those exposures is often collected as well, as shown in the column on the right. Within MMGs, information on exposures can be structured as either individual data elements or as a repeating block.

Potential data elements related to Risk Factors* and Underlying Conditions*



Risk Factors

- Smoking Status
- Heavy drinker
- Homelessness
- Injection drug use
- Exchanged Drugs/Money for Sex
- Had Sex with an Anonymous Partner
- Type of correctional facility

Underlying Conditions

- Diabetes
- Patient Immunocompromised
- Cardiovascular disease
- HIV status
- History of Disease

*Information may be captured as individual data elements or as repeating groups

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Risk factors and underlying conditions indicate factors that may put the person at higher risk for acquiring a condition or for developing more severe illness.

Risk factors might be thought of as a general category that includes behavioral, social, or situational factors that may increase the likelihood of exposure or of disease progression. For example, these risk factors might include smoking status across a person's lifetime.

Underlying conditions are generally more specific to medical or health-related conditions which may put the individual at elevated risk. Examples include diabetes, being immunocompromised, or having chronic hepatitis or cancer. As with exposures, risk factors and underlying conditions may be structured as single DEs or as repeating groups.

As defined in current message mapping guides, there is overlap and blurred boundaries between these three data concepts. For example, history of injection drug use exists as a risk factor and as an exposure, depending on the condition MMG being considered. As a team, we will attempt to more clearly define all three data concepts with examples of specific questions that would apply to each.

Exposures

Exposure/Contact Source/Target Participant (L2)

The source or target of the exposure or contact. Could be person, animal, or location. Either the patient's contact with an entity (person, animal, or substance) or presence at a location where exposure to an agent could have occurred or the patient's contact with an entity (person, animal, or substance) or presence at a location where transmission from the patient could have occurred.

Exposure/Contact Direction (L2)

Whether the direction of exposure/contact is acquisition (patient is the target and another person, animal, location, etc. is the source) or transmission (patient is the source and another person, animal, location, etc. is the target).

Exposure/Contact Type (L2)

The type of exposure/contact (environmental, activity, event, location, person, animal, etc.) to an agent.

Exposure/Contact Agent (L2)

The possible agent of concern in the exposure/contact.

Exposure/Contact Date (L2)

The date or period on which the possible exposure/contact occurred.

First, we will consider what is present in some of the data standards spaces beginning with US Core Data for Interoperability, or USCDI.

Within USCDI, DEs describing exposures are included in the data class of “Exposure/Contact Information”. This class contains five data elements that capture the basic concepts of epidemiologic interest -

- The contact source/target participant indicates what or who the patient had contact with or where the contact occurred.
- Direction indicates whether the patient was the exposed or was the source of exposure for someone or something.
- Type describes how the exposure occurred, for example if it was environmental, involved another person, or was through an activity.
- The agent describes the possible agent for the exposure
- And the date indicates when the possible exposure occurred.

All five DEs are at a USCDI maturity level 2, indicating that they have broad standardization and guidance for their collection, existing terminology standards or technical specifications for their representation, are already being captured and

exchanged in multiple EHRs, and can be applied to most care settings.

For these data elements, USCDI refers to the FHIR US Public Health Exposure Contact Information profile for value sets and codes.

U.S. Core Data for Interoperability (USCDI)



Risk Factors

Problems

- Problems (Version 1)
- SDOH Problems/Health Concerns (Version 2)

Health Status Assessments

- Alcohol Use (Version 4)
- Disability Status (Version 3)
- Substance Use (Version 4)
- Smoking Status (Version 2)

Social History

- Sexual Activity (Level 2)
- Congregate Living (Level 2)
- Refugee Status (Level 2)

Social Determinants of Health

- Incarceration History (Level 0)
- Housing Instability and Homelessness (Level 0)

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Within USCDI, there is not a risk factor data class. Rather, information on specific risk factors is spread across several data classes.

The information may appear in the Problems data class, which captures condition, diagnosis, or reason for seeking medical attention. It may also appear in the Health Status Assessments data class, which includes DEs such as alcohol use, disability status, substance use, and smoking status. These concepts are represented by LOINC and SNOMED-CT codes.

The Social History data class includes information on sexual activity, congregate living, and refugee status. A separate Social Determinants of Health data class has been proposed and would include concepts including incarceration history and housing instability or homelessness, but it has not yet been approved for inclusion in USCDI because it is not well standardized or widely used.

U.S. Core Data for Interoperability (USCDI)



Underlying Conditions

Problems (Version 1)

Condition, diagnosis, or reason for seeking medical attention.

SDOH Problems/Health Concerns (Version 2)

*Social Determinants of Health-related health concerns, conditions, or diagnoses.
Examples include but are not limited to homelessness, and food insecurity.*

Date of Diagnosis (Version 2)

Date of first determination by a qualified professional of the presence of a problem or condition affecting a patient.

Date of Resolution (Version 2)

Date of subsiding or termination of a symptom, problem, or condition.

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For underlying conditions, the relevant USCDI data class is Problems, which is described as "Condition, diagnosis, or reason for seeking medical attention." It contains data elements for problems, Social Determinants of Health problems or Health Concerns, Date of diagnosis, and Date of Resolution. These data elements draw on SNOMED CT and ICD-10 for coding.

Electronic Lab Reporting (ELR)



- OBR-31 (Reason for Study) could be used to capture Patient Epidemiological Risk Factors.
 - Values used to populate OBR-31 could be derived from the Core Problem List in SNOMED or ICD-9/ICD-10 codes

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Information on exposures, risk factors, and underlying conditions is not well captured in detail in Electronic Lab Reports. However, information relevant to these concepts might be captured in OBR-31, a field that contains reason for study that is populated with SNOMED-CT or ICD-10 codes.

Electronic Case Reporting (eCR)



Problem Observation

- Reflects a discrete observation about a patient's problem using SNOMED CT or ICD10CM.
- Contained within several sections of eICR including Past Medical History, Problem Concern Act, and Encounter Diagnosis.
- May contain codes that indicate exposures, risk factors, or underlying conditions.

Exposure/Contact Information Observation

- Represents the patient's contact with a person, animal, or substance, or presence at a location where exposure to an agent could have occurred.
- Contained within Travel History, within the Social History Section.

Social History Observation

- Represents concepts such as environmental risk factors, health-related behaviors, and substance use
- Contained within the Social History Section.

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Electronic Case Reporting captures exposure, risk and underlying condition data in several locations.

The Problem Observation template is the most widely utilized place that might contain this data as it reflects a discrete observation about a patient's problem. This problem observation template is used across multiple sections within eICR, including, Hospital Discharge Diagnosis, Encounter Diagnosis, Past Medical History, Hospital Admission Diagnosis, and Problem Concern Act. SNOMED or ICD10 codes may convey information about exposures, risk factors, or underlying conditions.

When it is sent, exposure information may be in the Exposure/Contact Information observation. It can capture environmental, event, and person or animal contact exposures.

The Social History Observation represents a patient's occupations, lifestyle, and environmental health risk factors. This may contain information on things such as substance use or radiation exposure.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 1: Covid MMG

Data Element (DE) Name	DE Identifier Sent in HL7 Message	Data Element Description	Data Type	Value Set Name (VADS Hyperlink)
START: Epidemiological Exposures Repeating Group				
Exposure	INV1085	In the 14 days prior to illness onset, did the patient have any of the following exposures	Coded	Exposure Setting (COVID-19)
Exposure Indicator	INV1086	Exposure Indicator	Coded	Yes No Unknown (YNU)
END: Epidemiological Exposures Repeating Group				
Name of Ship	TRAVEL53	Name of ship patient sailed on	Text	N/A
Workplace Critical Infrastructure	95373-7	If workplace exposure, is the workplace critical infrastructure? Workplaces classified as Critical infrastructure are defined at the state or local level.	Coded	Yes No Unknown (YNU)
Critical Infrastructure Workplace Setting	95374-5	If critical infrastructure, specify workplace setting	Coded	Critical Infrastructure Sector (NND)

Example values from repeating group

- Airport
- Child day care center
- Domestic
- School
- Recent cruise travel
- Mass gathering

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Now we'll walk through a few examples of how these three data concepts are represented in message mapping guides. These concepts are sometimes distinct from one another but in other cases, they are combined, either explicitly in descriptions or implicitly in value sets.

Example #1 is the COVID-19 message mapping guide, or mmg. Within this MMG, there is a repeating group for exposure, followed by individual DEs which capture more detailed information on these exposures.

At the top, highlighted with yellow on the left, is the repeating group for exposures. Within the repeating group, there are two DEs, the exposure which is defined by the "Exposure Setting (COVID-19)" value set, and the exposure indicator, which has a Yes/No/Unknown value set.

The COVID-19 Exposure Settings value set focuses on where a person might have been exposed to COVID, such as an airport, workplace, or daycare, as well as including whether or not the person had contact with a known case of COVID. The Y/N/U Exposure Indicator allows documentation of whether the case did or did not have the exposure or if that information is unknown.

For COVID, the period of interest is 14 days prior to illness onset, as specified in the Exposure data element description. Other mmgs have this specification in other places, for example the Foodborne and Diarrheal Diseases (FDD) MMG, has a separate individual DE named "Specify Different Exposure Window" that allows the jurisdiction to indicate the length of the exposure window they used.

The additional data elements that are not in the repeating block, highlighted with red on the left, convey additional information about the exposure settings. This is especially helpful to capture information that does not readily adhere to a Yes/No/Unknown value set. To note, these are not all of the other individual DEs in this mmg but just a couple examples.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 1: Covid MMG continued

Data Element (DE) Name	DE Identifier Sent in HL7 Message	Data Element Description	Data Type	Value Set Name (VADS Hyperlink)
START: Epidemiological Exposures Repeating Group				
START: Underlying Conditions and Risk Factors				
Did Underlying Condition(s) Exist	INV235	Did they have any underlying medical conditions and/or risk behaviors?	Coded	Yes No Unknown (YNU)
START: Risk Factor Repeating Group				
Patient Epidemiological Risk Factors	INV1117	Underlying medical conditions or risk behaviors for the case patient. Please provide a response for each underlying medical condition and risk.	Coded	Risk Factor (COVID-19)
Patient Epidemiological Risk Factors Indicator	INV1118	Provide a response for each value in the risk factors value set	Coded	Yes No Unknown (YNU)
END: Risk Factor Repeating Group				
Type of Disability	95377-8	If disability indicated as a risk factor, indicate type of disability (neurologic, neurodevelopmental, intellectual, physical, vision or hearing impairment)	Text	N/A
Type of Mental Condition	91391-3	If psychological/psychiatric condition indicated as a risk factor, indicate type of psychological/psychiatric condition	Text	N/A
END: Underlying Conditions and Risk Factors				

Example values from repeating group

- ADHD
- Cardiomyopathy
- Chronic renal disease
- Chemotherapy
- Misuses drugs
- Pregnancy
- Smoker
- Tuberculosis

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In addition to the exposure repeating group on last slide, the COVID MMG has both individual data elements and a repeating group that addresses underlying conditions and risk behaviors together.

The first data element, highlighted with yellow on the left, indicates whether there are any underlying conditions or risk behaviors and is a Yes/No/Unknown question.

The Risk Factor Repeating Group, highlighted by red on the left, combines risk factors and underlying conditions into one repeating question which is defined by the "Risk Factor (COVID-19)" value set. This value set includes a wide range of information from whether a case had ADHD or cardiomyopathy to whether they are pregnant or an ex-smoker. As with the Exposure repeating group, this question is paired with a Y/N/U indicator.

Additional individual data elements, highlighted in blue on the left, are included to capture specifics about a case's disability status or mental condition.

It is also worth noting that other information that might fall within the realm of ERU is capture in other parts of the mmg, such as in occupational and workplace setting

data elements.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 2: Tuberculosis MMG

Data Element (DE) Name	DE Identifier Sent in HL7 Message	Data Element Description	Data Type	Value Set Name (VADS Hyperlink)
START: RVCT & TBLISS Risk Factor Repeating Group				
Patient Epidemiological Risk Factors	INV1117	Exposed risk factors for the patient - Please provide a response for all risk factors in the value set with an associated indicator.	Coded	Epidemiological Risk Factors (TB)
Patient Epidemiological Risk Factors Indicator	INV1118	Provide a response for each value in the patient epidemiological risk factors value set.	Coded	Yes No Unknown (YNU)
END: RVCT & TBLISS Risk Factor Repeating Group				
START: RVCT & TBLISS Additional TB Risk Factors Questions				
Type of Correctional Facility	INV1119	If patient was a Resident of Correctional Facility at Diagnostic Evaluation, indicate the type of correctional facility.	Coded	Type of Correctional Facility
Smoking Status	72166-2	What is the patient's current tobacco smoking status?	Coded	Smoking Status
END: RVCT & TBLISS Additional TB Risk Factors Questions				

Example values from repeating group

- Diabetic at diagnostic evaluation
- End-stage renal disease
- Heavy alcohol use in past 12 months
- Homeless ever
- Post-organ transplantation
- TNF antagonist therapy
- Resident of correctional facility at diagnostic evaluation

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The Tuberculosis MMG also includes a risk factor repeating group. But unlike COVID, which specifies "Underlying conditions or Risk factors" in the description, TB just refers to risk factors. However, the value set includes variables which could be considered Exposure, Risk Factor or Underlying Conditions, including those examples listed at the bottom of this slide.

Like the COVID MMG, the TB Risk Factor repeating group has some individual, follow-up data elements for more detailed or additional information.

This risk factor repeating group is situated within a larger Risk factor block, which also includes the more standard Industry and Occupation repeating block and a separate DE for all previous industry and occupation categories.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 3: Hepatitis B, Acute v2 MMG (draft)

Data Element (DE) Name	DE Identifier Sent in HL7 Message	Data Element Description	Data Type	Value Set Name (VADS Hyperlink)
Message Header				
START: Hepatitis B, Acute Risk Factors for Transmission Repeating Group				
Patient Epidemiological Risk Factors	IRV1117	In the 60 to 150 days (2 to 5 months) before symptom onset date, did the patient identify any of these risk factors? Please provide a response for each. Note: If the symptom onset date is unknown, then the date that the patient first tested positive for HBV can be used as a proxy for symptom onset date. Please note that risk factors refer to those that were present during the patient's exposure period, not at any point during their lifetime.	Coded	Patient Epidemiological Risk Factors (Hepatitis B)
Patient Epidemiological Risk Factors Indicator	IRV1118	Provide a response for each value in the risk factors value set.	Coded	Yes No Unknown (YNU)
END: Hepatitis B, Acute Risk Factors for Transmission Repeating Group				

Example values from repeating group

- Contact with a confirmed or suspected case
- Contact with drug sharing partner
- Homelessness or unstable housing
- Illicit drug use
- Medical worker
- Multiple sexual contacts
- STI diagnosis

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Acute Hepatitis B has a risk factor repeating group. Again, there is a data element for the risk factors and a separate data element for the yes/no/unknown indicator.

Although the Acute Hepatitis B mmg does not include a specific exposure repeating block, the Hepatitis B Risk Factor value set includes variables which are more commonly considered exposures such as "contact with a confirmed or suspected case". This mmg does not include any data elements or repeating groups for underlying conditions.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 4: Respiratory and Invasive Bacterial Diseases (RIBD)

Data Element (DE) Name	DE Identifier Sent in HL7 Message	DE Code System	Data Element Description	Data Type	CDC Prior	May Repe	Value Set Name (VADS Hyperlink)
Did Underlying Condition(s) Exist	INV235	PHINQUESTION	Did the subject have any underlying causes or prior illnesses?	Coded	P	N	Yes No Unknown (YNU)
START: Underlying Conditions Repeating Group							
Underlying Condition(s)	INV236	PHINQUESTION	Listing of underlying causes or prior illnesses	Coded	P	N	Underlying Condition (RIBD)
Underlying Conditions Indicator	INV662	PHINQUESTION	Underlying Conditions Indicator	Coded	P	N	Yes No Unknown (YNU)
END: Underlying Conditions Repeating Group							

- Coronary arteriosclerosis
- Diabetes mellitus
- Dementia
- Alcohol abuse
- Connective Tissue Disorder

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The previous examples have shown how Exposure, Risk and Underlying conditions can sometimes be combined in message mapping guides.

An additional challenge in defining Underlying Conditions is demonstrated in the Respiratory and Invasive Bacterial Diseases mmg. Several conditions within this MMG have an “underlying conditions” repeating group.” While this value set primarily contains underlying medical conditions. It also contains products (such as corticosteroids) and devices (such as cochlear prosthesis). This conflation of conditions, products and devices is something to be considered as we approach this discussion.

For these conditions, potential exposure settings, such as whether the patient was a long-term care resident or attended day care, are captured in individual DEs and not as a part of a repeating group.

Case Notifications to CDC Message Mapping Guides (MMGs)



Example 5: Carbon Monoxide MMG

Data Element (DE) Name	DE Identifier Sent in HL7 Message	DE Code System	Data Element Description	Data Type	CDC Priority	May Repeat	Value Set Name (VADS Hyperlink)
START: Carbon Monoxide Poisoning Risk Factors							
Smoking Status	72106-2	LN	What is the patient's current tobacco smoking status?	Coded	2	N	Smoking Status
Average Number of Cigarettes Smoked Per Day	63629-0	LN	If a patient is a current smoker, please specify the average number of cigarettes smoked per day during the past 30 days (there are 20 cigarettes per pack)	Coded	2	N	Number of Cigarettes Smoked per Day (CO)
Marijuana Smoking Status	733460004	SCT	Does the patient currently smoke marijuana?	Coded	3	N	Yes No Unknown Refused (NND)
ICD Codes List	INV1106	PHINQUESTION	ICD Codes in patient's record	Coded	2	Y	ICD Codes List (CO)
END: Carbon Monoxide Poisoning Risk Factors							
START: Underlying Conditions Repeating Group							
Underlying Condition(s)	INV236	PHINQUESTION	Select the patient's preexisting condition(s)	Coded	2	N	Underlying Conditions (CO)
Underlying Condition(s) Indicator	INV662	PHINQUESTION	Indicator for underlying condition(s)	Coded	2	N	Yes No Unknown (YNU)
END: Underlying Conditions Repeating Group							

Example values from repeating group

- Chronic Obstructive Pulmonary Disease (COPD)
- Ischemic Heart Disease
- No underlying condition
- Other
- Unknown

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Lastly, the Carbon Monoxide MMG has a set of risk exposure data elements related to smoking. These are structured as individual data elements and not as a repeating group.

An additional DE captures the ICD-10 codes for diagnosis related to CO poisoning that may help explain the route of exposure, such as:

- Toxic effect of carbon monoxide from motor vehicle exhaust, intentional self-harm, initial encounter [T58.02XA]
- Accidental poisoning by and exposure to other gases and vapours [X47]

A separate Underlying conditions repeating group collects medical conditions which may increase the severity of the patient's prognosis. Examples include Chronic Obstructive Pulmonary Disease, Ischemic Heart Disease, and a value to capture No underlying conditions.

Discussion Points



1. Are exposure, risk, and underlying conditions separate **data concepts**?
 - a. If yes, how are they distinct from one another?
 - i. Timing component?
e.g. Recent vs. Ever?
 - ii. Medical vs. Social
2. Are these concepts core surveillance?
 - a. Are these **data concepts**, in general, part of core surveillance?
 - b. Within a concept, are there any core **data elements** that should be present for all conditions?
3. Is there an ideal message structure for transport of this type of data from jurisdiction to CDC?

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For the discussion of Exposure, Risk Factors and Underlying Conditions, we would like you to consider the following questions.

First, are these three data concepts three distinct things? If they are, what is it that separate the three?

Next, during our calls we will be discussion whether these concepts are reasonably included in a core surveillance place? And within each concept are there general question that would apply to all conditions? Or would these concepts be fully condition-specific.

Lastly, we will want to discuss message structure. What are the pros and cons of repeating block structure? Does this structure provide a lift or a roadblock?

Thank you for your time listening to this recording of the background information for Exposure, Risk and Underlying conditions, we look forward to hearing your thoughts and discussions beginning on Feb 9th.

Extra Slides: Jurisdictional example
and CDC program example



Jurisdiction example



- Wisconsin
 - Diseases within a program area share exposure/risk questions
 - Enteric illnesses
 - Vector-borne diseases
 - Respiratory virus hospitalizations
 - Pediatric deaths
 - Conditions with an MMG often do not have common sections

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Now we will look at how these mmgs impact what happens in a jurisdictional surveillance system.

Some Wisconsin programs have standard exposure/risk blocks that are used by multiple diseases within the program. This is done for enteric illnesses, Vector-borne diseases, and respiratory virus hospitalizations and pediatric deaths.

The lack of a common structure for collecting risk and exposure information across MMGs has prevented them from using this approach where they've implemented MMGs.

Next you will see screenshots of test templates showing the collection within Wisconsin's systems.

Jurisdiction example



- Wisconsin (Mycotics)

Risk
Patient Name: Test, Test - Patient DOB: 08/01/1975 - Incident ID: 40152830

Risk

Risk Factors

Did patient have any of the following chronic/immunosuppressive medical conditions? (check all that apply):

☐ COPD	☐ Diabetes	☐ Cancer	☐ Rheumatoid arthritis	☐ Organ transplant	☐ Steroid treatment
☐ Asthma	☐ Asplenia	☐ Other			

If other, please specify:

Is the patient a current smoker or has the patient ever smoked? (including but not limited to cigarettes, cigars, pipe)

☐ Smoking at time of diagnosis ☐ Smoked prior to diagnosis ☐ Never Smoked

If yes, for how many years? Quantity smoked per day (ie number of packs or cigars)

Has anyone else in the patient's household been diagnosed with blastomycosis/histoplasmosis?

☐ Yes ☐ No ☐ Unknown

If yes, specify who: If yes, when:

Has anyone else that patient knows been recently diagnosed with blastomycosis/histoplasmosis?

☐ Yes ☐ No ☐ Unknown

If yes, specify who: If Yes, when:

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The question template here asks about risk factors, including whether patient has selected chronic or immunosuppressive conditions, followed by questions about smoking status and known blastomycosis/histoplasmosis contacts

Jurisdiction example



- Wisconsin (Mycotics)

Recreational Exposure History

Did the patient participate in any of the following recreational outdoor activities during the past 3 months (90 days) before onset of illness?
Please provide date and specific location information for all yes responses.

Hunting	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Fishing from shore	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Visiting a cabin	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Camping	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Hiking/cross country running	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Trail Biking	☐ Yes	☐ No	☐ Unknown	Specify dates and location
ATV usage	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Visiting parks	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Kayaking, canoeing, tubing	☐ Yes	☐ No	☐ Unknown	Specify dates and location
Other	☐ Yes	☐ No	☐ Unknown	If Yes, specify

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Later on, they ask about various exposures, including this recreational exposure history which asks about a variety of pertinent activities.

There is a yes/no/unknown indicator for each exposure, as well as a free text field to capture dates and locations.

CDC example



• CDC's HIV Surveillance Branch (Adult case report)

VII. Patient History (respond to all questions) (record all dates as mm/dd/yyyy) ☐ **Pediatric Risk (enter in Comments)**

After 1977 and before the earliest known diagnosis of HIV infection, this patient had:

Sex with male	☐ Yes ☐ No ☐ Unknown
Sex with female	☐ Yes ☐ No ☐ Unknown
Injected nonprescription drugs	☐ Yes ☐ No ☐ Unknown
Received clotting factor for hemophilia/coagulation disorder Specify clotting factor: _____ Date received ____/____/____	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL relations with any of the following:	
HETEROSEXUAL contact with person who injected drugs	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL contact with bisexual male	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL contact with person with hemophilia/coagulation disorder with documented HIV infection	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL contact with transfusion recipient with documented HIV infection	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL contact with transplant recipient with documented HIV infection	☐ Yes ☐ No ☐ Unknown
HETEROSEXUAL contact with person with documented HIV infection, risk not specified	☐ Yes ☐ No ☐ Unknown
Received transfusion of blood/blood components (other than clotting factor) (document reason in Comments)	☐ Yes ☐ No ☐ Unknown
First date received ____/____/____ Last date received ____/____/____	
Received transplant of tissue/organs or artificial insemination	☐ Yes ☐ No ☐ Unknown
Worked in a healthcare or clinical laboratory setting	☐ Yes ☐ No ☐ Unknown
If occupational exposure is being investigated or considered as primary mode of exposure, specify occupation and setting: _____	
Other documented risk (include detail in Comments)	☐ Yes ☐ No ☐ Unknown

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On the CDC program side, here is an example of a data collection form with exposure and risk factor questions.

This is a screenshot from the adult HIV case report form maintained by the CDC's HIV Surveillance Branch. It includes a patient history section with risk factors and exposures, such as sex with male/female, injected nonprescription drugs, received blood transfusion, and worked in a healthcare or clinical lab setting.

For each, there is a yes/no/unknown indicator, and some risk factors ask for additional information such as a date.