OREGON HEALTH AUTHORITY

April 23, 2025

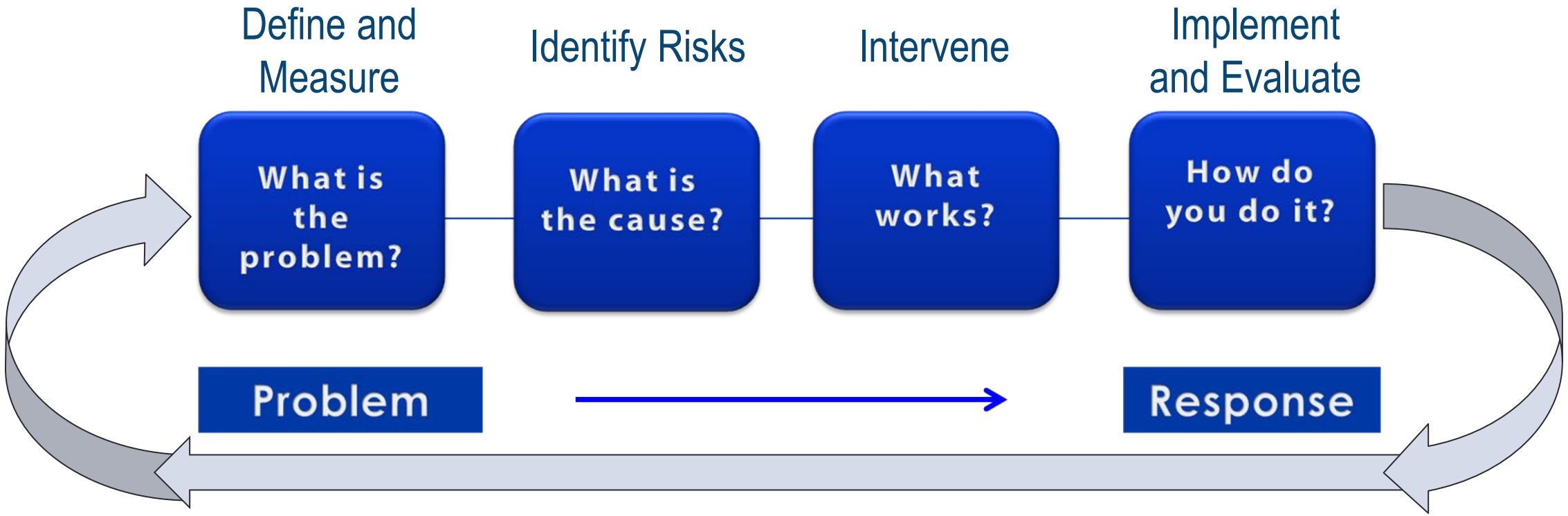
Informatics 101

An intro to public health informatics in Oregon

OREGON HEALTH AUTHORITY

Concepts and Definitions

The Public Health Approach



Infor-WHAT-ics??

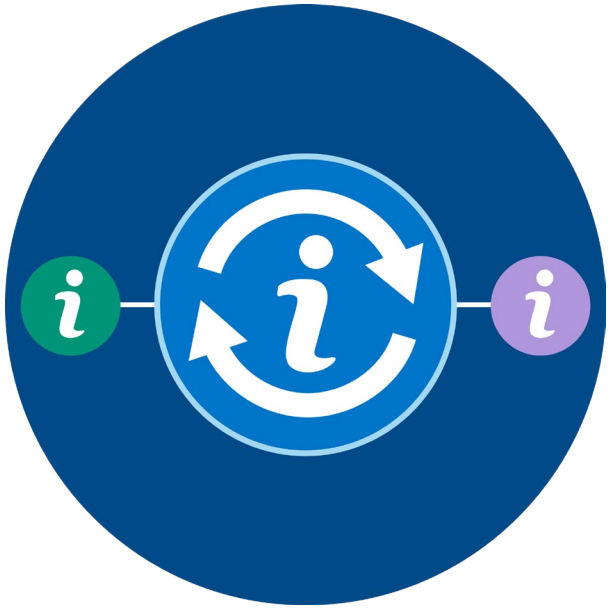
"Public health informatics is the systematic application of information, computer science, and technology to public health practice, research, and learning."

Yasnoff WA, O'Carroll PW, Koo D, Linkins RW, Kilbourne EM. Public health informatics: improving and transforming public health in the information age. J Public Health Manag Pract 2000;6:67–75.
Riegelman R, ed. Public health 101: healthy people—healthy populations. Sudbury, MA: Jones & Bartlett Learning; 2010: 40.

Public Health Informatics Metaphors

Public Health Data Logistics

Public Health Knowledge Architects



Public Health Information Translation


Public Health Informatics:
Knowledge
Architects

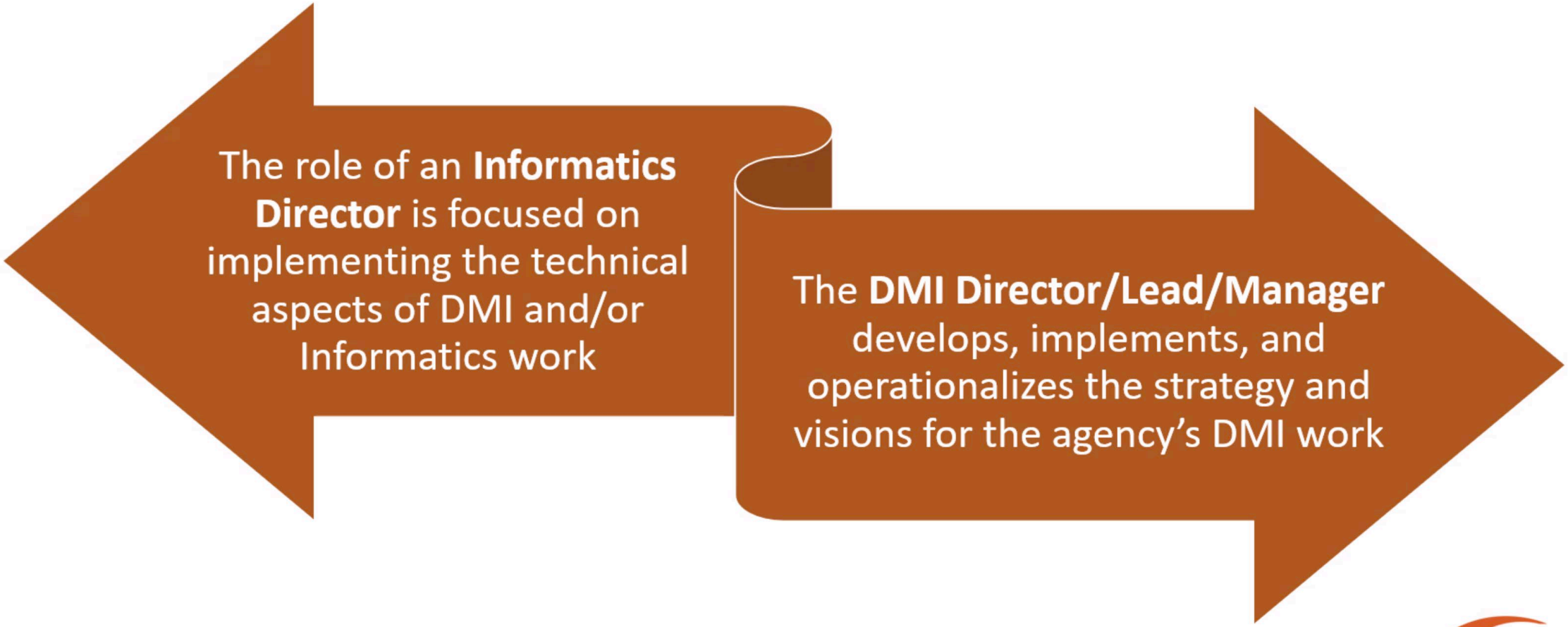
Public Health Knowledge Architects

This metaphor affirms the need for **the person, not just the tool**

Data systems are built by people who understand:

- The **needs of the people** who will use them
- How to **connect** to existing infrastructure
- What's required to ensure **security**

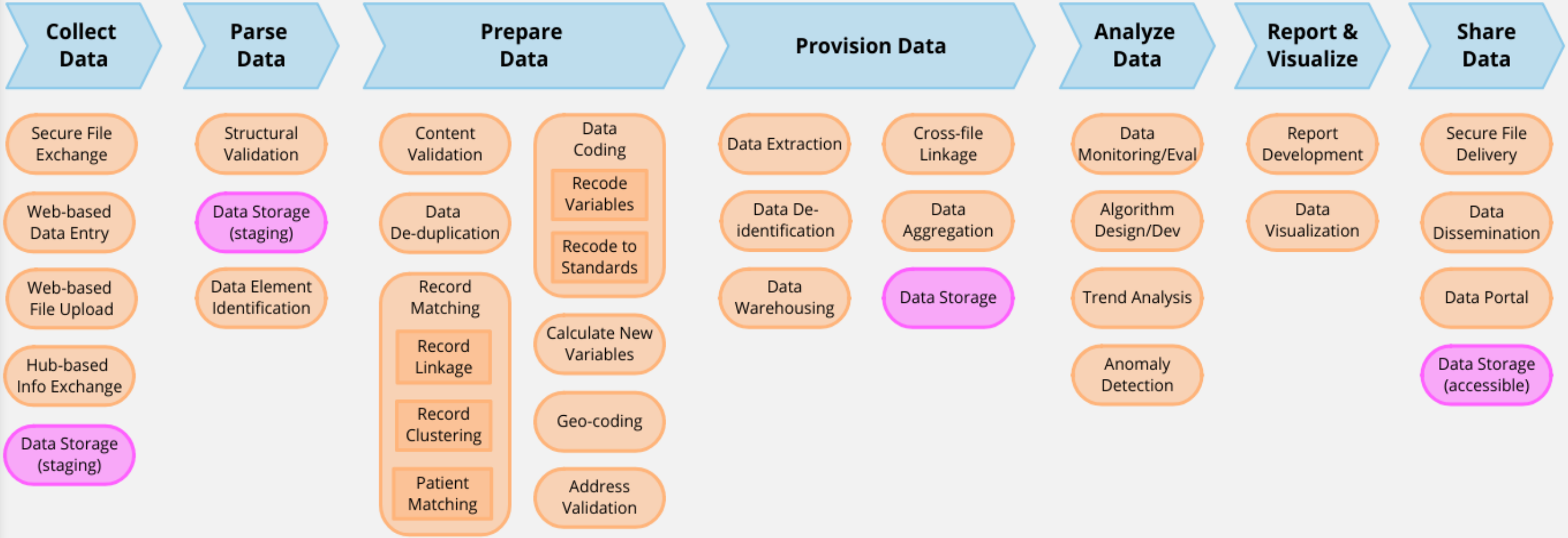
Informaticians: (+) >


The role of an **Informatics Director** is focused on implementing the technical aspects of DMI and/or Informatics work
The **DMI Director/Lead/Manager** develops, implements, and operationalizes the strategy and visions for the agency's DMI work

Public Health...

- ***Informatics*** is the effective use of information and technology to improve population health outcomes.
- ***Informaticians*** are people with knowledge, skills, and expertise of both public health practice and information technology.
- ***Informatics Savvy Organizations*** are those that have a competent and skilled informatics workforce, a vision and strategy for how to use information and technology to improve population health and effectively uses well-designed systems to achieve their mission.

Public Health Surveillance Capabilities



Data Quality Management | Master Data Management

Data Governance | Information Governance

Grant Management | Funding Management

Public Health Data Governance

Policies, procedures, and roles to manage data assets, ensuring availability, accuracy, security, and appropriate use.

Why does it matter?

Without Governance

- Data fragmentation, silos, or duplication of effort, data, or systems.
- Privacy risks or lack of clarity around data use and sharing.
- Poor data quality affecting decision-making.

With Governance

- Access, use, and sharing stewardships
- Improved timeliness, quality, and completeness.
- Enhanced security, compliance, enforcement.
- Reliable data for informed public health responses.

Governance Strategy

Considerations

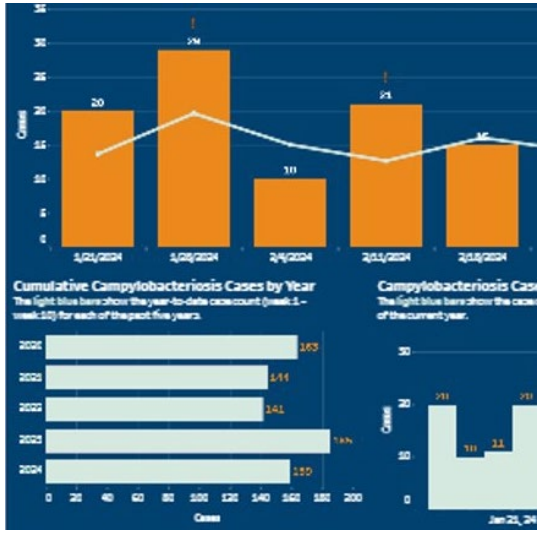
- Legal & Regulatory Compliance – Federal, state, and tribal laws.
- Data Ownership & Stewardship – Who can access, modify, and share data?
- Standards & Interoperability – Aligning with national standards (FHIR, HL7).
- Privacy & Security – Encryption, role-based access, and de-identification.
- Data Quality Management – Accuracy, completeness, and timeliness.

Implementation

- ✅ Governance Workgroup
- ✅ Standard Operating Procedures
- ✅ Train Public Health Staff
- ✅ Evaluate and Enforce Compliance
- ✅ Engage Partners

Funding & Sustainability

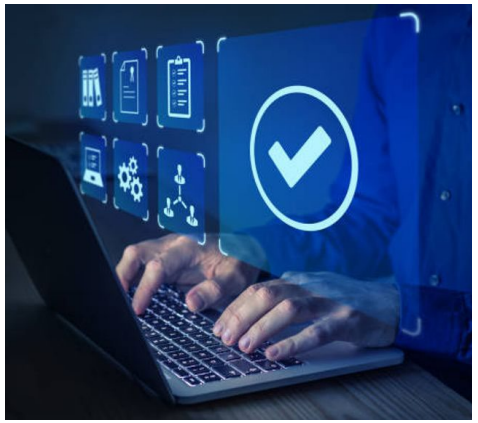
- Challenges of grant-driven funding vs. long-term investment
- The importance of advocating for sustainable informatics funding
- PHIG, ELC, EIP – but that's just us
  - Braided funding for federal support
  - Dancing with big tech that "solve our problems for us"
  - General fund
  - Building a team and nurturing the work



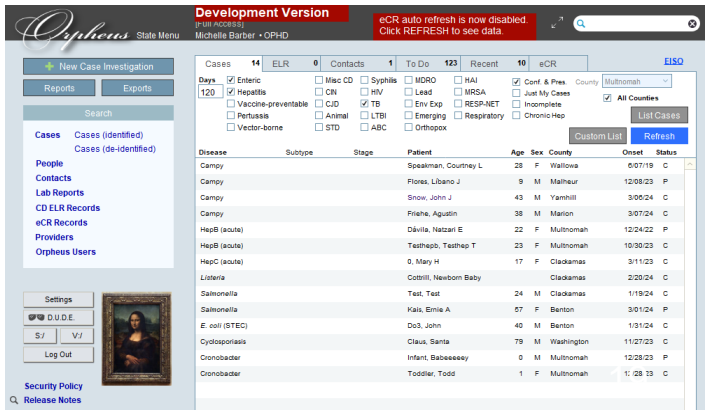
Vocabulary and Standards

```
MSH|^~\&|EPIC|GOOD SAMARITAN HOSPITAL LAB
7EC84_28_0_FE3C|T|2.5.1|||||USA||||PHLabReport-N
SFT|Epic Systems Corporation^L^^^^ANSI^1.2.840^IS
PID|1||10140280^^^EPICMRN^1.2.840.114350.1.1.1^
1^1.2.840.114350.1.13.341.3.7.2.696570^ISO
ORC|RE|63977128^EPIC|19G-063M0001^Beaker|19
MEDICINE^PHYSICIAN^~76879601^FAMILY MEDICIN
```

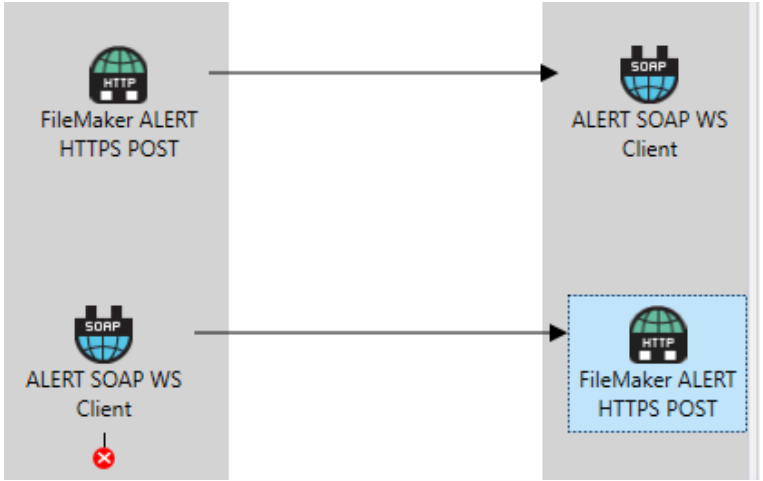
Validation and Quality Assurance



Information Systems



Inter-operability

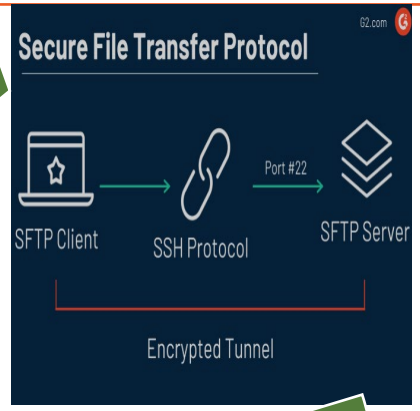


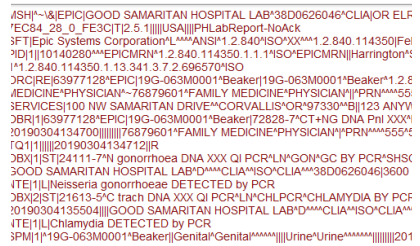
Analytics and Reporting

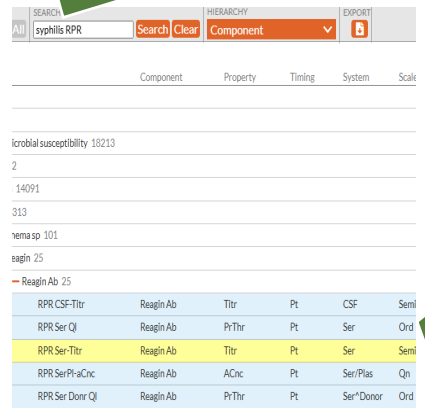
Standards and Integration

- **Organizational:** Policies, agreements, and governance frameworks
- **Technical**: Data transport and security protocols (e.g., API, HL7 v2, FHIR)
- **Syntactic:** Standard formats and structures (e.g., HL7, CSV, XML)
- **Semantic:** Common vocabularies and coding systems (e.g., SNOMED CT, LOINC, ICD-10)

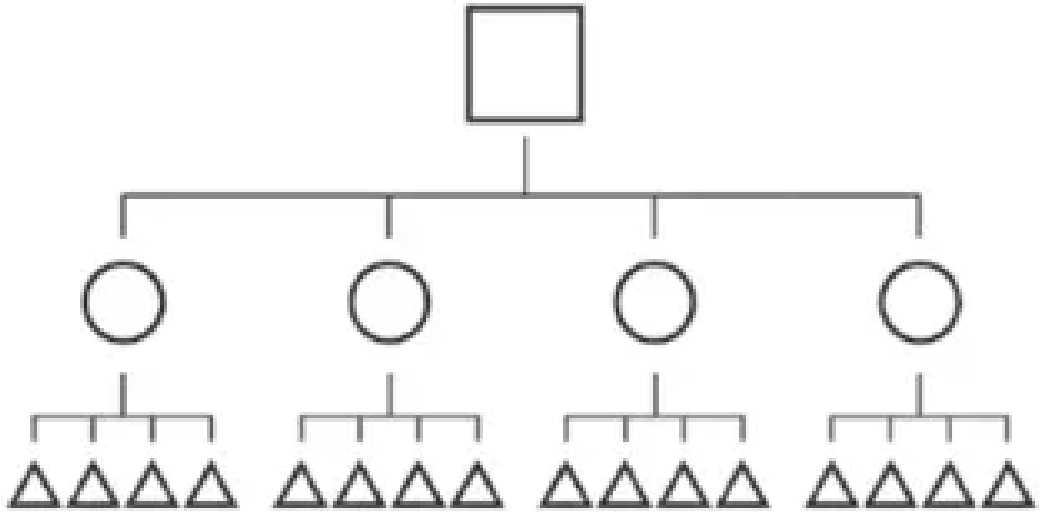
OAR 333-018-0013 Electronic Laboratory Reporting

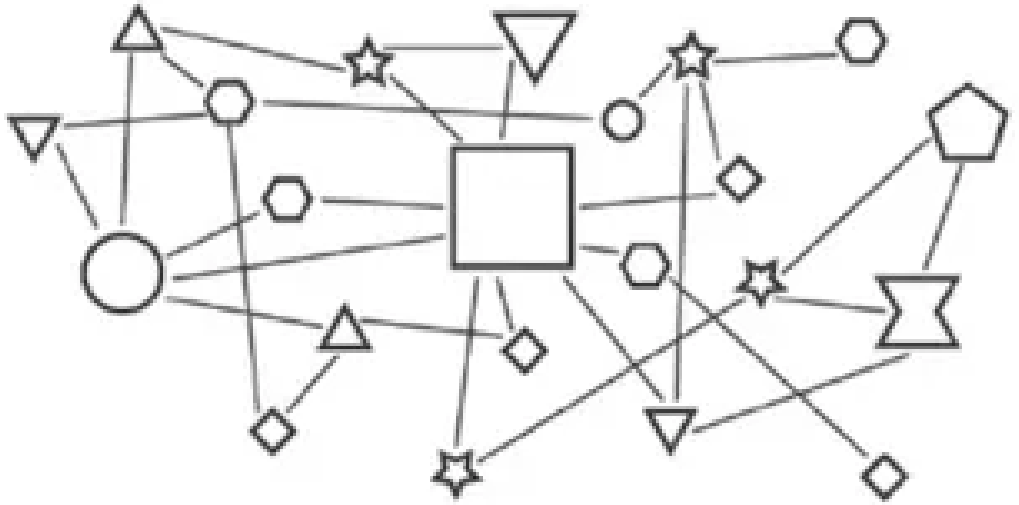






Interoperability





What we were designed for

What we were facing

[Team of Teams: New Rules of Engagement for a Complex World | McChrystal Group]

Collect

Parse

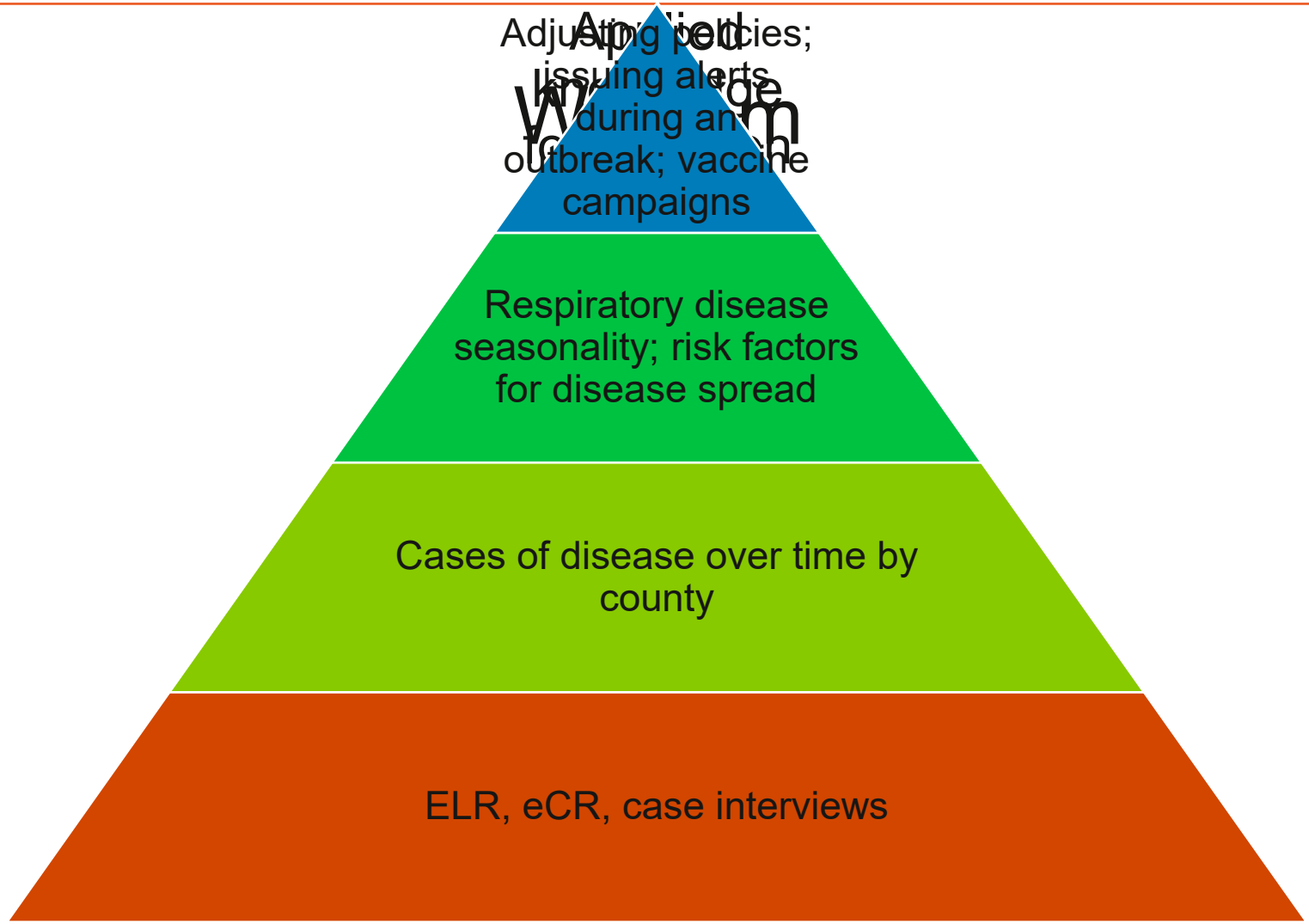
Prepare

Provision

Analyze, Interpret, and Explain

Share and Make Use

From Data to Wisdom



Shared Priorities to Help Advance Public Health

USCDI & USCDI+

Prioritize and harmonize data most crucial to the needs of public health and beyond

FHIR Advancement and Strategy

Adopt standards that can be more easily extended and reused as conditions change

TEFCA

Develop common, pre-negotiated agreements to simplify data exchange nationwide

North Star Architecture

Help public health jurisdictions share and analyze data with each other and CDC

Certification of IT & Data Systems

Ensure IT & data systems used by public health are sustainable and meet baseline requirements for security and functionality

To adapt to the changing landscape

Public Health Information Systems must be…

- **Scalable**…to receive, process, and send unpredictable volumes of data
- **Agile**…to respond to rapid changes in data, workflows, users, and user needs
- **Standardized and Interoperable**…to easily exchange data with other systems
- **Sustainable**…be maintained, enhanced, and operated with reliable funds
- **Reusable or Modular**…for both routine and emerging events
- **Easy to Use**…by appropriate new staff with minimal training

Informatics can mean many things

- Working with data senders to set up new feeds
- Building processes to route data appropriately

- Working with users to define requirements
- Designing, building refining databases

- Developing actionable reports, data stories
- Enabling data-driven public health intervention

OREGON HEALTH AUTHORITY

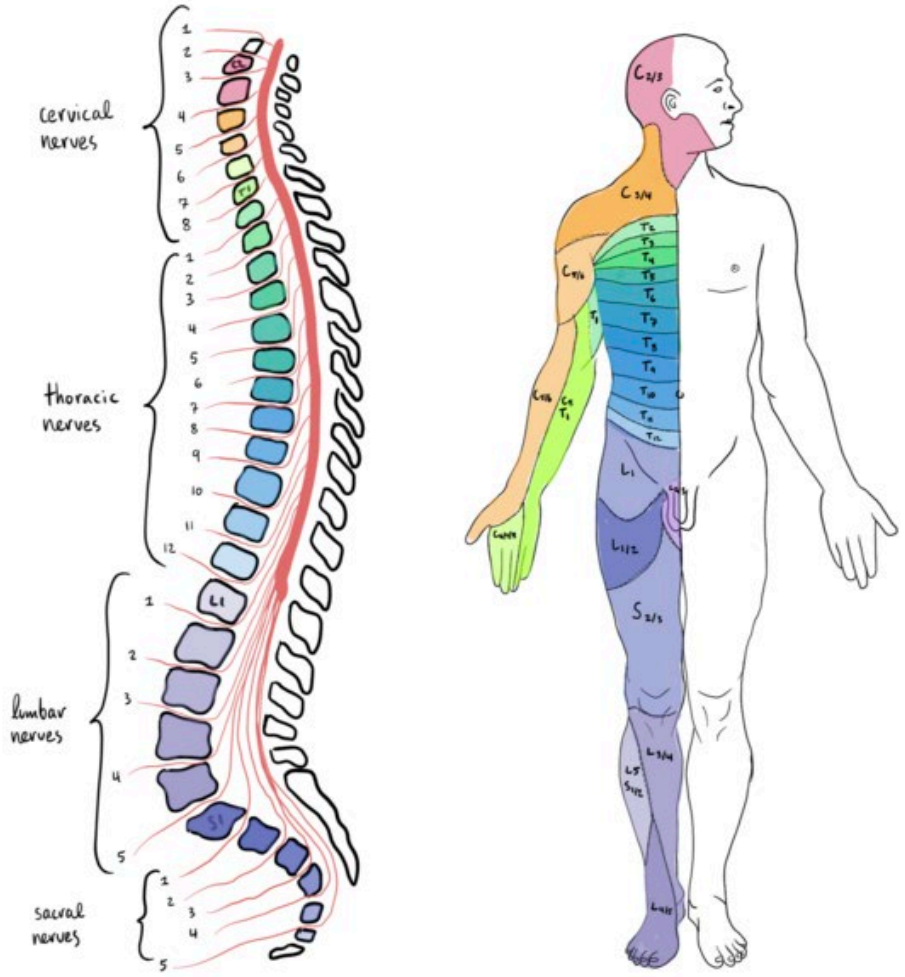
Data Inputs

What Keeps Public Health Systems Running Smoothly?

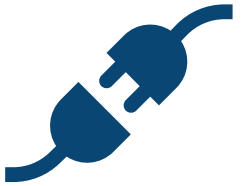
- Data driven decision-making, powered by informatics.
- Like the nervous system, public health informatics collects, transmits, processes, and responds to information.

The Brain Behind the Data: Informatics as the Nervous System		
Nervous System Component	**Public Health Informatics Equivalent**	**Function**
Sensory Receptors (Eyes, Skin)	Data Sources (Hospitals, Labs)	Detects disease outbreaks
Nerves	Data Transmission (ELR, HL7, APIs)	Sends data quickly between systems
Spinal Cord	Data Intermediaries (HIEs, Health Departments, CDC)	Directs information efficiently
Brain	Data Analysis & Decision-Making (AI, Epidemiologists, Dash boards)	Detects patterns & coordinates response
Reflexes	Automated Alerts (ELR, Surveillance)	Triggers quick response to outbreaks

Nervous System Similar to Data Systems



Where is the data coming from?



- Labs, hospitals, clinics generate data from patient interactions
- Data are packaged and sent to ACDP
- {mild freak out about what to do with all this data}
- {in steps Informatics team}
- Here's how we think about the incoming data

HL7 in Action: Powering Public Health Data Exchange

- **Founded in 1987, Health Level Seven International (HL7) is a standards developing organization.**
- **Creates frameworks for health information exchange and Interoperability.**
- **Common standards: HL7 v2.5.1, Clinical Document Architecture (CDA), FHIR, XML**
- **Supports transmission of data for ELR, eICR, Syndromic Surveillance, Immunizations, etc.**
- **The term Value Sets refers to the use of PHIN-VADS (CDC/HL7 created code sets) or LOINC codes (Laboratory Order & Observation Value Sets).**

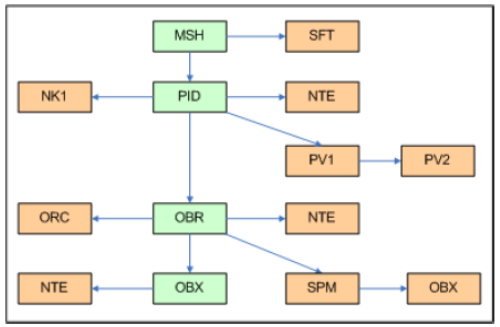


Figure 4-1. 2.5.1 ELR Message

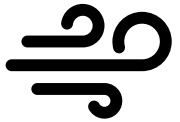
Chapter 5: Segment and Field Descriptions

TABLE 5-5. PATIENT IDENTIFICATION SEGMENT (PID)

Seq	Len	DT	Cardinality	Lab Result Sender Usage	ELR Receiver Usage	NHSN Receiver Usage	Lab to EHR Receiver Usage	Value Set	HL7 Element Name	Description/Comments
7		TS	[0..1]	RE	RE	RE	RE		Date/Time of Birth	Patient's date of birth. The time zone component is optional. Note that the granularity of the birth date may be important. For a newborn, birth date may be known down to the minute, while for adults it may be known only to the date. Birth date may be used by the lab to calculate an age for the patient, which may affect what normal ranges apply to particular test results. Format: YYYY[MM[DD[HH[MM[SS[.S[S[S[S]]]]]]]]] +/-ZZZZ] Note: If a birth date is not provided in the PID, then the patient age at specimen collection must be reported as an observation associated with the specimen.
8	1..20=	IS	[0..1]	RE	RE	RE	RE	HL70001	Administrative Sex	Patient's gender.
9		XPN	[0..0]	X	X	X	X		Patient Alias	Deprecated as of *HL7 Version 2.4*. See PID-5 Patient Name.
10		CWE	[0..*]	RE	RE	RE	RE	HL70005	Race	One or more codes that broadly refer to the patient's race(s).
11		XAD	[0..*]	RE	RE	O	O		Patient Address	NHSN Cardinality: NHSN currently supports a single patient address.
12	1..20=	IS	[0..0]	X	X	X	X		County Code	Deprecated as of *HL7 Version 2.3*. See PID-11 - Patient Address, component 9 County/Parish Code.

What types of data are reported?





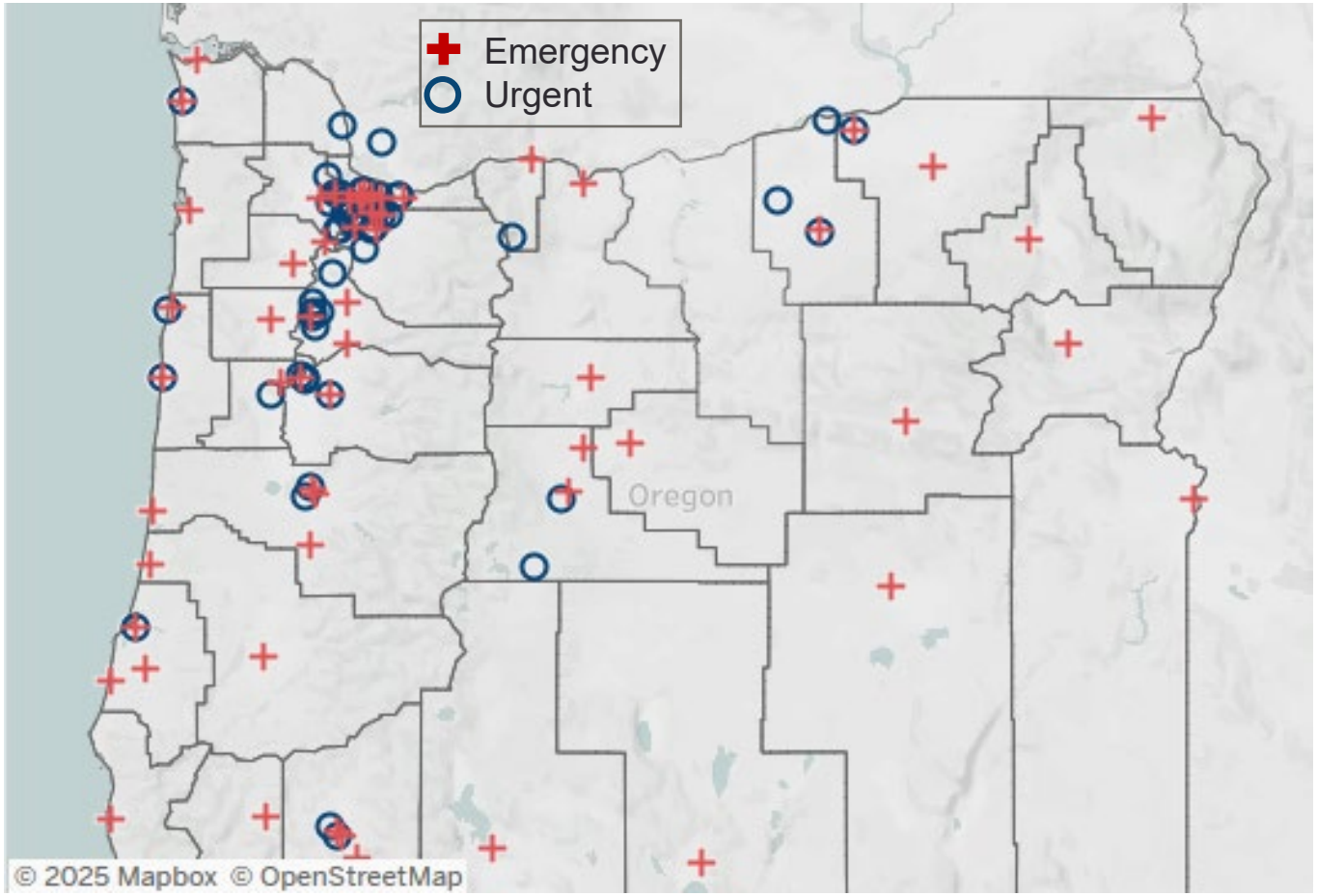






Syndromic Surveillance

- Emergency department
- Urgent care
- Poison
- Mortality
- Weather
- EMS
- Laboratory



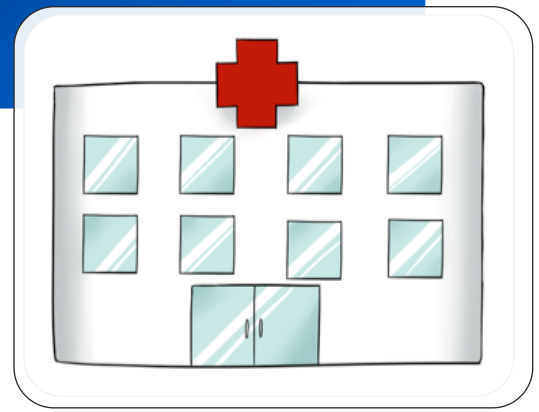
Syndromic Concept

Dinner

Symptoms

- Diarrhea, fever, abdominal cramps

Emergency department



Syndromic Concept

Patient

- "My stomach hurts!"

Chief Complaint

ESSENCE

- GI Syndrome

EXAMPLES OF SYNDROMIC SURVEILLANCE IN ACTION

Using syndromic surveillance, public health officials can:

- Detect illness, injuries, and health care needs after major disasters such as hurricanes
- Characterize extent of opioid and other drug-related overdoses in communities
- Monitor for early signs of outbreaks associated with crowding and compromised sanitation at mass gatherings like concerts, conventions, or large festivals
- Respond to foodborne outbreaks such as the identification of fish poisoning that resulted in a product recall

WHY DO
SYNDROMIC SURVEILLANCE?

Provides public health officials a digital platform to detect, characterize, monitor, and respond to potential public health threats

Provides regional and national situational awareness about public health concerns

Supports more informed public health decisions and interventions

Contributes to protecting the health of communities

NSSP National Syndromic Surveillance Program
BioSense Platform

U.S. Centers for Disease Control and Prevention
Office of Public Health Data, Surveillance, and Technology

Data Workflows - Syndromic

People seek treatment in a medical facility, such as emergency department or urgent care.

Medical facility sends de-identified data including chief complaint, diagnosis codes, patient characteristics, and location to state and local health departments or to data aggregators such as Health Information Exchanges.

NSSP National Syndromic Surveillance Program BioSense Platform

DATA

Public health departments and Health Information Exchanges contribute data to the NSSP BioSense Platform.

CDC provides

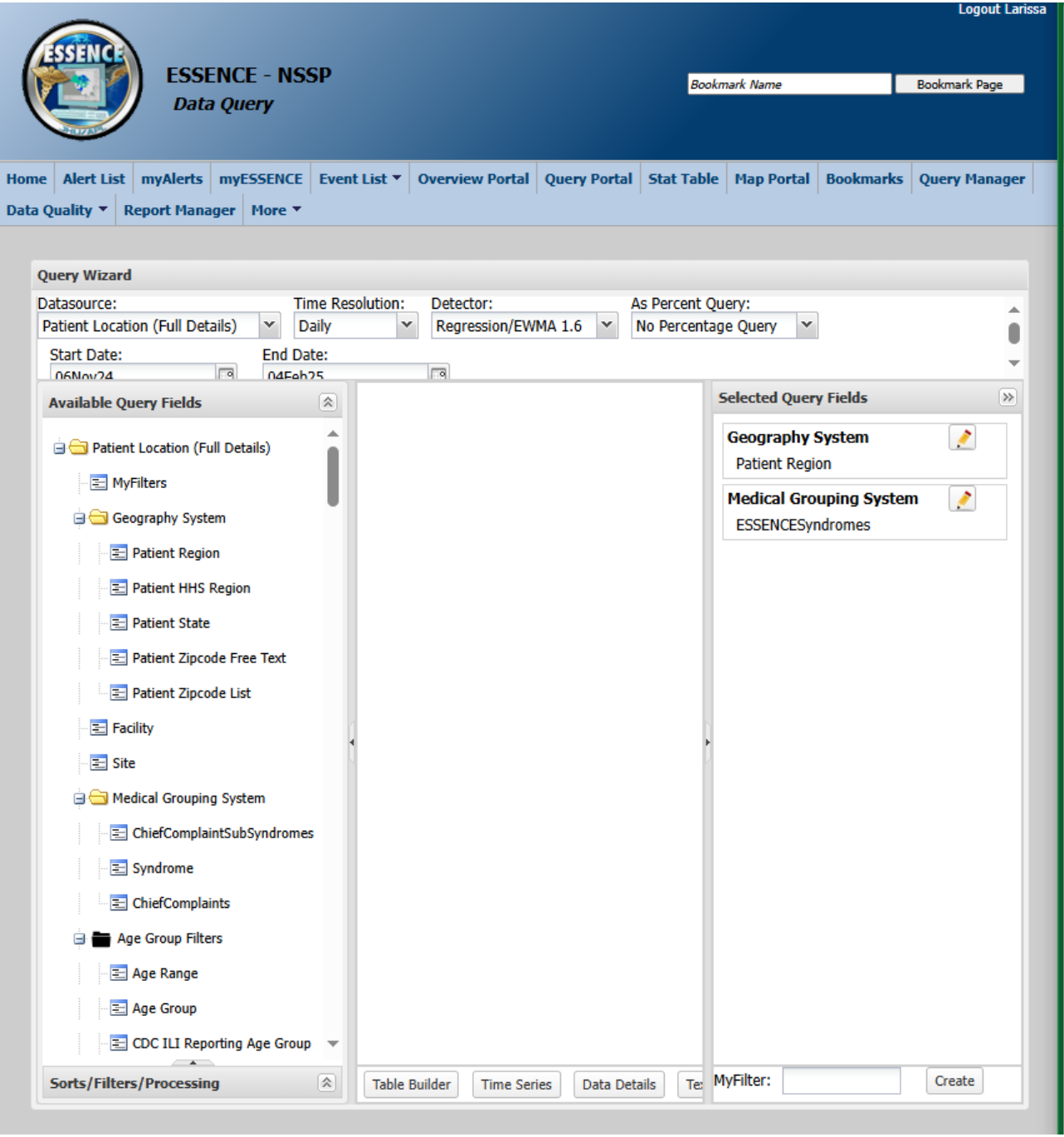
- Analytic tools, services, and system infrastructure
- Funding to health departments
- Technical assistance and training
- Data analysis support
- Collaboration on specific projects

NSSP Community of Practice

- Conduct syndromic surveillance to monitor public health
- Share data via NSSP BioSense Platform
- Share knowledge
- Build skills via webinars, trainings, and workgroup participation
- Collaborate to develop methods and respond to emergencies

(Syndromic) Surveillance: it's a trade-off

- **Timeliness** vs. **accuracy** vs. **completeness**
  - Excels at timeliness, less so with accuracy and completeness
- Must be analyzed in the context of other information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Bookmark Page
Home
Alert List
myAlerts
myESSENCE
Event List
Overview Portal
Query Portal
Stat Table
Map Portal
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Data Quality
Report Manager
More
Query Wizard
Datasource:
Patient Location (Full Details)
Time Resolution:
Daily
Detector:
Regression/EWMA 1.6
As Percent Query:
No Percentage Query
Start Date:
End Date:
Available Query Fields
Patient Location (Full Details)
MyFilters
Geography System
Patient Region
Patient HHS Region
Patient State
Patient Zipcode Free Text
Patient Zipcode List
Facility
Site
Medical Grouping System
ChiefComplaintSubSyndromes
Syndrome
ChiefComplaints
Age Group Filters
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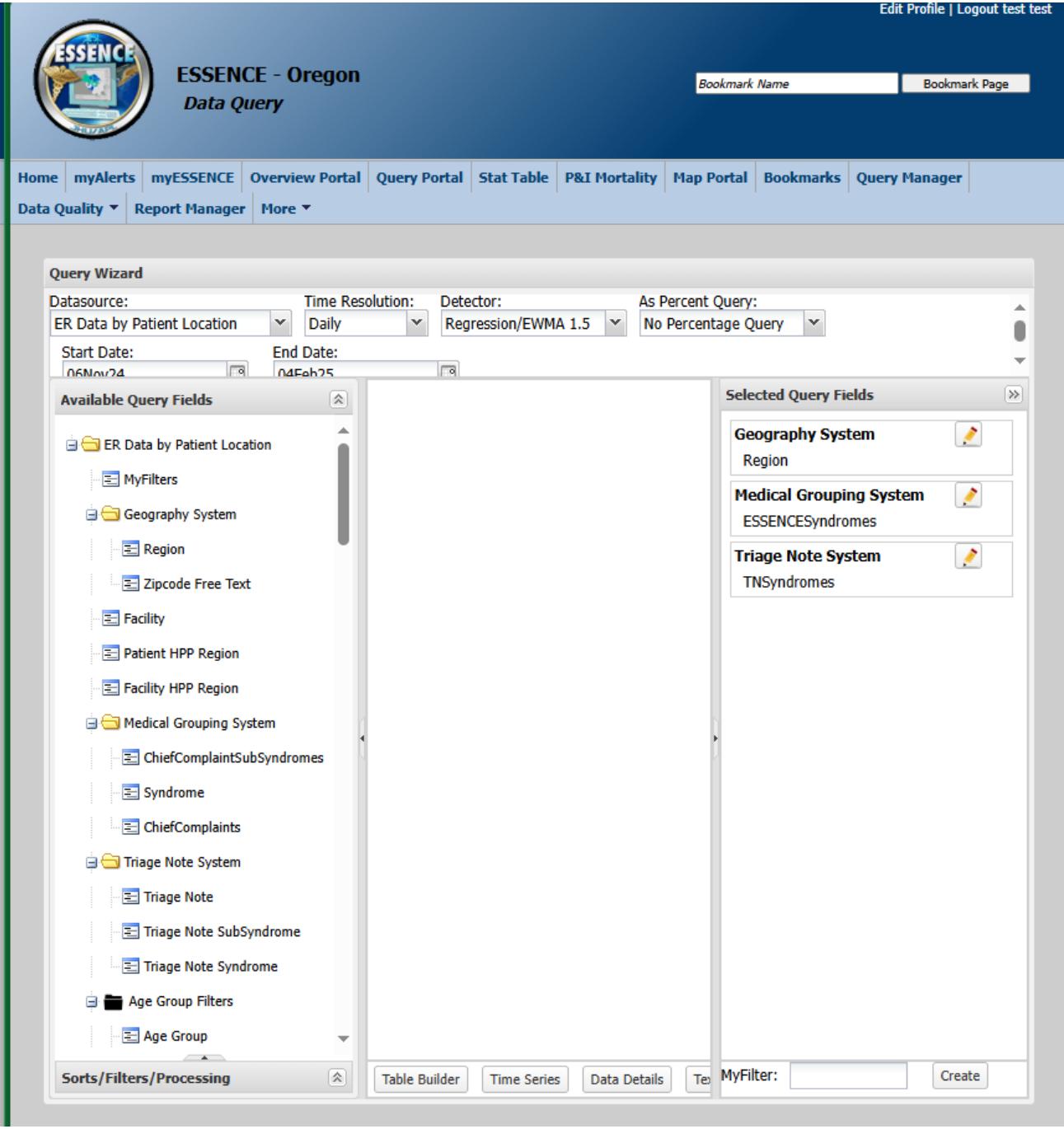
Edit Profile | Logout test test
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myESSENCE
Overview Portal
Query Portal
Stat Table
P&I Mortality
Map Portal
Bookmarks
Query Manager
Data Quality
Report Manager
More
Query Wizard
Datasource:
ER Data by Patient Location
Time Resolution:
Daily
Detector:
Regression/EWMA 1.5
As Percent Query:
No Percentage Query
Start Date:
End Date:
Available Query Fields
ER Data by Patient Location
MyFilters
Geography System
Region
Zipcode Free Text
Facility
Patient HPP Region
Facility HPP Region
Medical Grouping System
ChiefComplaintSubSyndromes
Syndrome
ChiefComplaints
Triage Note System
Triage Note
Triage Note SubSyndrome
Triage Note Syndrome
Age Group Filters
Age Group
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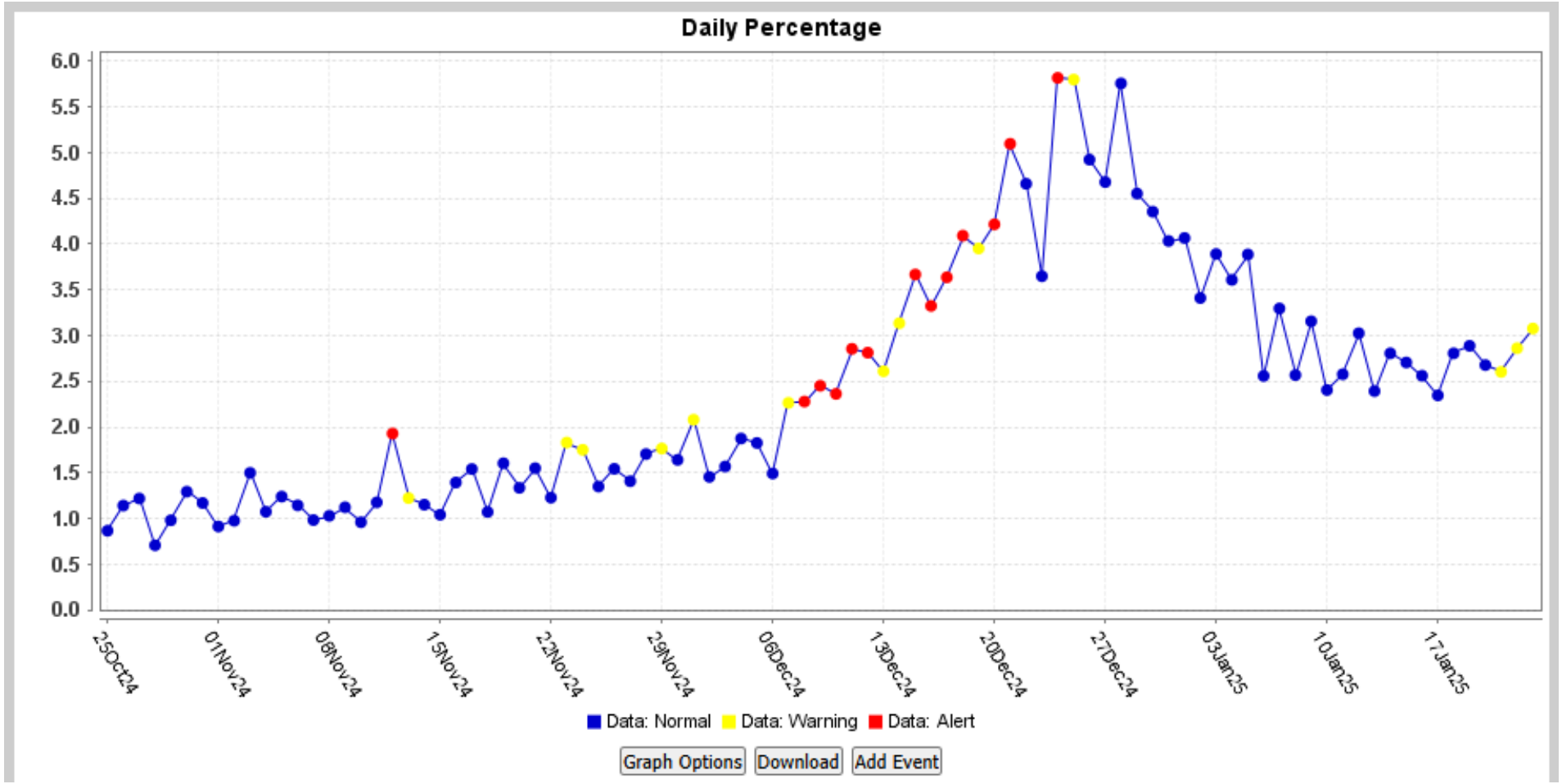
Visualize Syndromes



Data Details

ChiefComplaintOrig	ChiefComplaintParsed	Category_flat	SubCategory_flat	Discharge Diagnosis	CCDD
Flu Like Symptoms Emesis	FLU LIKE SYMPTOMS EMESIS	;GI;ILI;	;Vomiting;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;NVD;	;J101-10;;	FLU LIKE SYMPTOMS EMESIS | ;J101-10;;
Fever Cough	FEVER COUGH	;Resp;ILI;Fever;	;ILI;P_and_I;P_and_I_Without_Exposure;FeverOrChills;FeverPlus;Cough;	;R509-10;;	FEVER COUGH | ;R509-10;;
Flu Like Symptoms	FLU LIKE SYMPTOMS	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J101-10;;	FLU LIKE SYMPTOMS | ;J101-10;;
t/weakness FLU LIKE SYMPTOMS	T WEAKNESS FLU LIKE SYMPTOMS	;ILI;Bot_like;	;Influenza;ILI;MuscleWeakness;P_and_I;P_and_I_Without_Exposure;	;J101-10;U071-10;N179-10;;	T WEAKNESS FLU LIKE SYMPTOMS | ;J101-10;U071-10;N179-10;;
Flu Like Symptoms Chest Pain	FLU LIKE SYMPTOMS CHEST PAIN	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J069-10;K047-10;;	FLU LIKE SYMPTOMS CHEST PAIN | ;J069-10;K047-10;;
flu-like symptoms	FLU LIKE SYMPTOMS	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J111-10;;	FLU LIKE SYMPTOMS | ;J111-10;;
Flu Like Symptoms	FLU LIKE SYMPTOMS	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J111-10;R52-10;R5383-10;;	FLU LIKE SYMPTOMS | ;J111-10;R52-10;R5383-10;;
Flu Like Symptoms	FLU LIKE SYMPTOMS	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J4521-10;;	FLU LIKE SYMPTOMS | ;J4521-10;;
Flu Like Symptoms Chest Pain	FLU LIKE SYMPTOMS CHEST PAIN	;ILI;	;Influenza;ILI;P_and_I;P_and_I_Without_Exposure;	;J101-10;Z3493-10;;	FLU LIKE SYMPTOMS CHEST PAIN | ;J101-10;Z3493-10;;

NSSP BIOSENSE PLATFORM
BY THE NUMBERS

More than 6,900 health care facilities covering 50 states, the District of Columbia, and Guam contribute data to NSSP daily.

80% of U.S. emergency departments send data to NSSP, often within 24 hours.

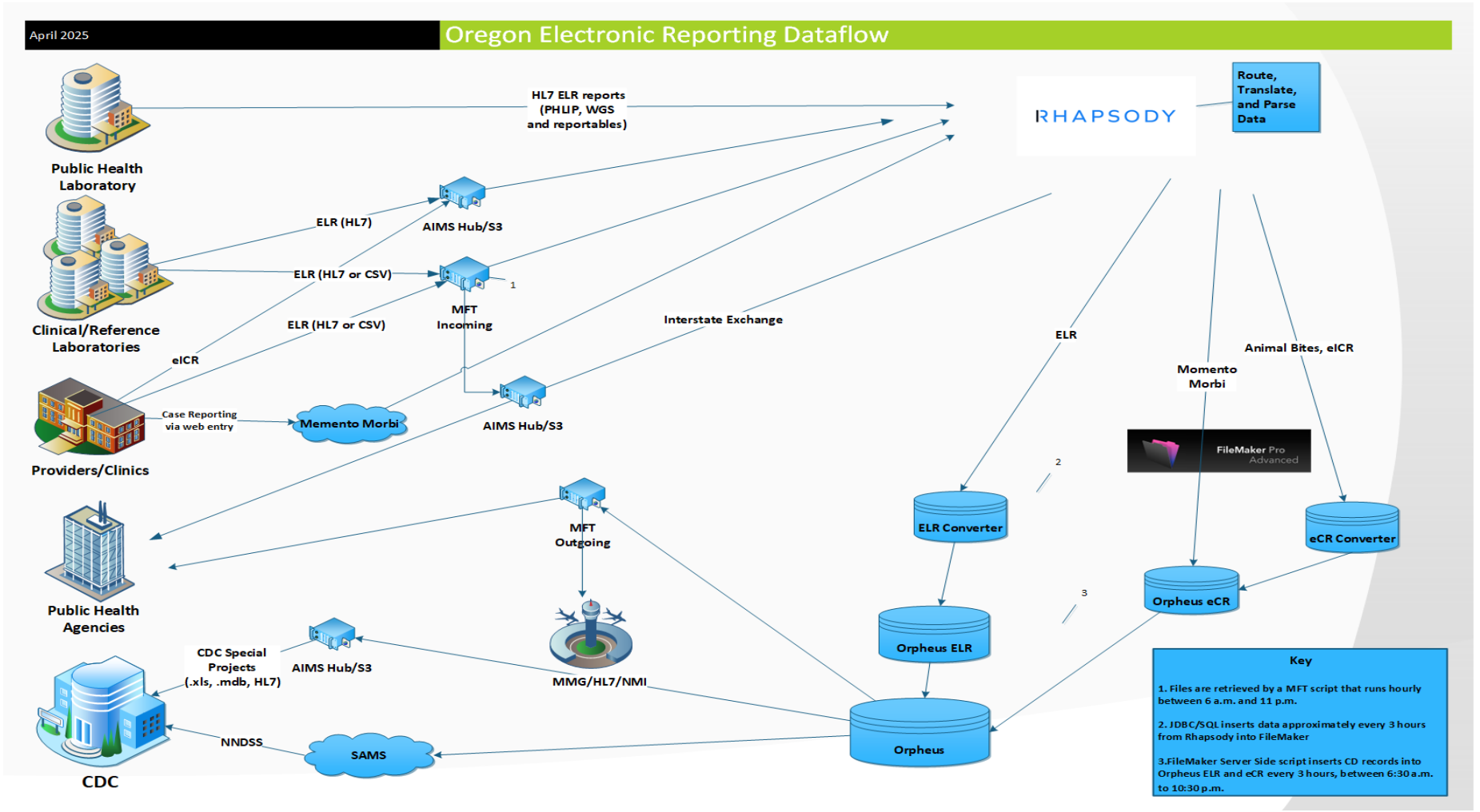
Within 24 hours of a patient's ED visit, data are available to NSSP for analysis.

More than 9.6 million electronic health messages are received by NSSP everyday.

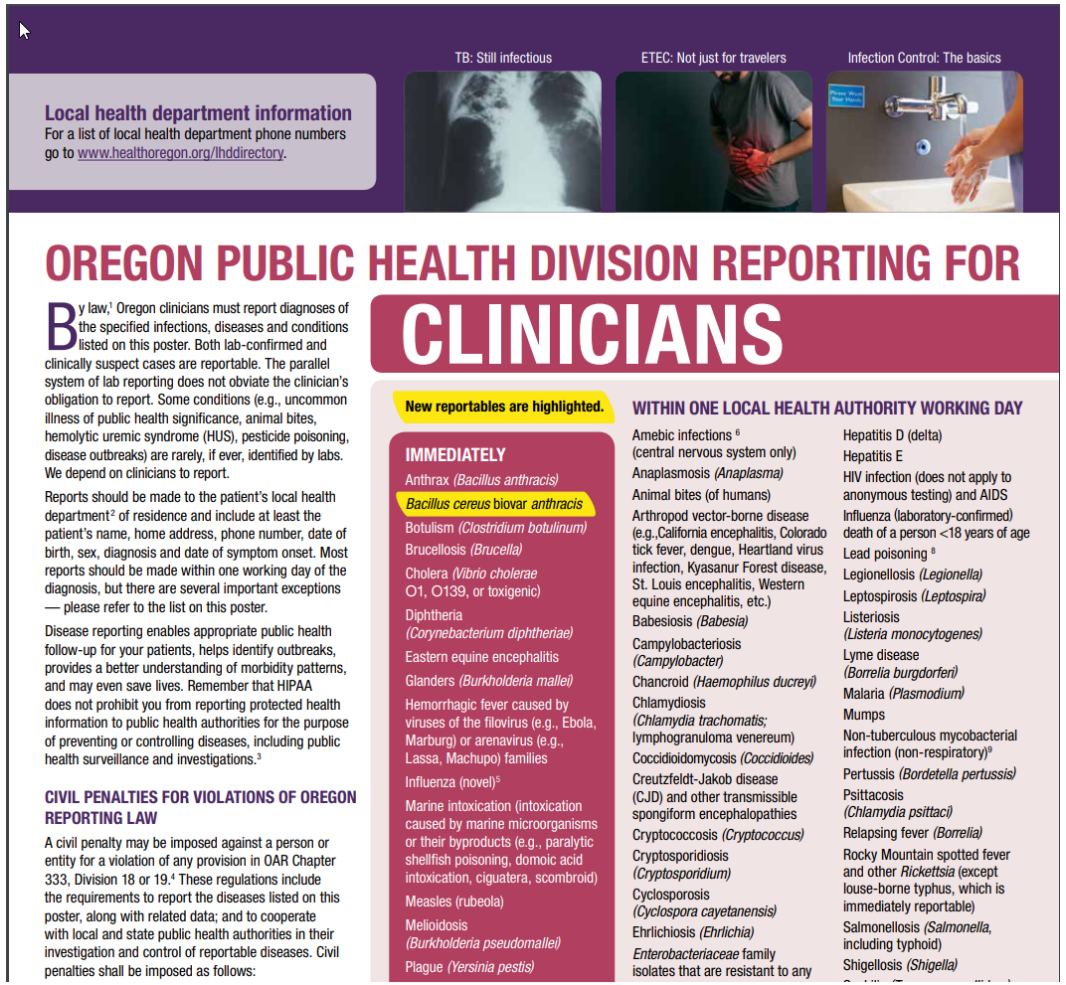
NSSP National Syndromic Surveillance Program BioSense Platform

U.S. Centers for Disease Control and Prevention
Office of Public Health Data, Surveillance, and Technology

Data Workflows – Public Health



What is Reportable to ACDP?



TB: Still infectious | ETEC: Not just for travelers | Infection Control: The basics

Local health department information
For a list of local health department phone numbers go to www.healthoregon.org/lhddirectory.

OREGON PUBLIC HEALTH DIVISION REPORTING FOR CLINICIANS

By law,[1] Oregon clinicians must report diagnoses of the specified infections, diseases and conditions listed on this poster. Both lab-confirmed and clinically suspect cases are reportable. The parallel system of lab reporting does not obviate the clinician's obligation to report. Some conditions (e.g., uncommon illness of public health significance, animal bites, hemolytic uremic syndrome (HUS), pesticide poisoning, disease outbreaks) are rarely, if ever, identified by labs. We depend on clinicians to report.

Reports should be made to the patient's local health department[2] of residence and include at least the patient's name, home address, phone number, date of birth, sex, diagnosis and date of symptom onset. Most reports should be made within one working day of the diagnosis, but there are several important exceptions — please refer to the list on this poster.

Disease reporting enables appropriate public health follow-up for your patients, helps identify outbreaks, provides a better understanding of morbidity patterns, and may even save lives. Remember that HIPAA does not prohibit you from reporting protected health information to public health authorities for the purpose of preventing or controlling diseases, including public health surveillance and investigations.[3]

CIVIL PENALTIES FOR VIOLATIONS OF OREGON REPORTING LAW

A civil penalty may be imposed against a person or entity for a violation of any provision in OAR Chapter 333, Division 18 or 19.[4] These regulations include the requirements to report the diseases listed on this poster, along with related data; and to cooperate with local and state public health authorities in their investigation and control of reportable diseases. Civil penalties shall be imposed as follows:

New reportables are highlighted.

IMMEDIATELY

- Anthrax *(Bacillus anthracis)*
- *Bacillus cereus* biovar *anthracis*
- Botulism *(Clostridium botulinum)*
- Brucellosis *(Brucella)*
- Cholera *(Vibrio cholerae* O1, O139, or toxigenic)
- Diphtheria *(Corynebacterium diphtheriae)*
- Eastern equine encephalitis
- Glanders *(Burkholderia mallei)*
- Hemorrhagic fever caused by viruses of the filovirus (e.g., Ebola, Marburg) or arenavirus (e.g., Lassa, Machupo) families
- Influenza (novel)[5]
- Marine intoxication (intoxication caused by marine microorganisms or their byproducts (e.g., paralytic shellfish poisoning, domoic acid intoxication, ciguatera, scombroid)
- Measles (rubeola)
- Melioidosis *(Burkholderia pseudomallei)*
- Plague *(Yersinia pestis)*

WITHIN ONE LOCAL HEALTH AUTHORITY WORKING DAY

- Amebic infections[6] (central nervous system only)
- Anaplasmosis *(Anaplasma)*
- Animal bites (of humans)
- Arthropod vector-borne disease (e.g.,California encephalitis, Colorado tick fever, dengue, Heartland virus infection, Kyasanur Forest disease, St. Louis encephalitis, Western equine encephalitis, etc.)
- Babesiosis *(Babesia)*
- Campylobacteriosis *(Campylobacter)*
- Chancroid *(Haemophilus ducreyi)*
- Chlamydiosis *(Chlamydia trachomatis;* lymphogranuloma venereum)
- Coccidioidomycosis *(Coccidioides)*
- Creutzfeldt-Jakob disease (CJD) and other transmissible spongiform encephalopathies
- Cryptococcosis *(Cryptococcus)*
- Cryptosporidiosis *(Cryptosporidium)*
- Cyclosporosis *(Cyclospora cayetanensis)*
- Ehrlichiosis *(Ehrlichia)*
- *Enterobacteriaceae* family isolates that are resistant to any
- Hepatitis D (delta)
- Hepatitis E
- HIV infection (does not apply to anonymous testing) and AIDS
- Influenza (laboratory-confirmed) death of a person <18 years of age
- Lead poisoning[8]
- Legionellosis *(Legionella)*
- Leptospirosis *(Leptospira)*
- Listeriosis *(Listeria monocytogenes)*
- Lyme disease *(Borrelia burgdorferi)*
- Malaria *(Plasmodium)*
- Mumps
- Non-tuberculous mycobacterial infection (non-respiratory)[9]
- Pertussis *(Bordetella pertussis)*
- Psittacosis *(Chlamydia psittaci)*
- Relapsing fever *(Borrelia)*
- Rocky Mountain spotted fever and other *Rickettsia* (except louse-borne typhus, which is immediately reportable)
- Salmonellosis *(Salmonella,* including typhoid)
- Shigellosis *(Shigella)*

Oregon Public Health Division Reporting for Laboratories | Oct. 2024

By law, Oregon laboratories must report all human test results indicative of and specific for the diseases, infections, microorganisms, and conditions listed in Oregon Administrative Rules.[1] These results include microbiological cultures; assays for specific antibodies; and identification of specific antigens, toxins, or nucleic acid sequences. Laboratories should familiarize themselves with select biological agents and toxins that have potential to pose severe threats.[2] The laboratory reporting the result to the clinician is responsible for also reporting to public health, regardless of which lab performs the test.

Lab results for Oregon residents and people currently residing in Oregon must be reported within the timelines specified for each condition, typically immediately or within one working day.[3] Laboratories reporting an average of more than 30 records per month[4] must submit the data electronically, utilizing appropriate codesets and according to the standards in the Oregon Health Authority's (OHA) Manual for Mandatory Electronic Laboratory Reporting (ELR).[5] Laboratories reporting fewer than 30 records per month may choose to report results directly to the Local Public Health Authority (LPHA) of the patient's county of residence by fax or other approved option.[6] Laboratories required to report via ELR must have a state-approved continuity of operations plan to maintain reporting in emergency situations. These laboratories shall participate fully in OHA's Data Quality Control program.[5]

All reporting must include the patient's name, date of birth, county of residence, specimen

- Report by phone to **971-673-1111** immediately, day or night. Reportables since February 2018 are highlighted.
- Report within 24 hours to healthoregon.org/lhddirectory.
  Note: Those items below without a symbol next to them require reporting within one LPHA working day.
- Forward isolate to the Oregon State Public Health Laboratory (OSPHL).
- Forward isolate if cultured; otherwise, send the test-positive specimen to OSPHL.

healthoregon.org/diseasereporting

Bacteria
- *Acinetobacter,* carbapenem-resistant[8]
- *Anaplasma*
- *Bacillus anthracis*[2]
- *Bacillus cereus* biovar *anthracis*[2]
- *Bordetella pertussis*
- *Borrelia*
- *Brucella* (classical spp. only)[2,15]
- *Burkholderia mallei*[2]
- *Burkholderia pseudomallei*[2]
- *Campylobacter*
- Carbapenemase-producing, any organism
- *Chlamydia trachomatis*
- *Chlamydia psittaci*
- *Clostridium botulinum*[2]
- *Corynebacterium diphtheriae*
- *Coxiella burnetii*[2]
- *Cronobacter sakazakii* in an infant <1 year of age
- *Ehrlichia*
- *Neisseria gonorrhoeae*
- *Neisseria meningitidis*[19]
- *Rickettsia prowazekii*[2]
- *Rickettsia*, non-*prowazekii*
- *Salmonella*[10]
- *Shigella*[10]
- *Treponema pallidum* (syphilis)
- *Vibrio cholerae*[10]
- *Vibrio*, non-*cholerae*[10]
- *Yersinia pestis*[2,10]
- *Yersinia*, non-*pestis*[10]

Fungi
- *Candida auris*
- *Coccidioides*
- *Cryptococcus*

Parasites
- Amebic infections (central nervous system only)[11]
- *Babesia*
- *Cryptosporidium*
- *Cyclospora*
- *Giardia*
- *Leishmania*
- *Plasmodium*
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Hepatitis D (delta)
- Hepatitis E
- Hemorrhagic fever viruses[2,13]
- HIV infection and AIDS
- Influenza, avian or novel strain[14]
- Influenza, fatal case in person < 18 years[17]
- Measles (rubeola)
- Mpox
- Rubulavirus (Mumps)
- Newcastle disease virus (NDV)
- Polio
- Rabies
- Rubella
- SARS-CoV-1 (SARS)[2,18]
- Variola major (smallpox)
- West Nile
- Yellow fever
- Zika

The What, How, and Why of ELR Data

Who's Sending?

- Clinical & public health labs
- Hospitals & clinics
- Data aggregators (3rd-party vendors)

What Systems Are Involved?

- Laboratory Information Systems (LIS)
- Integration engines (IDE)
- Electronic Health Records

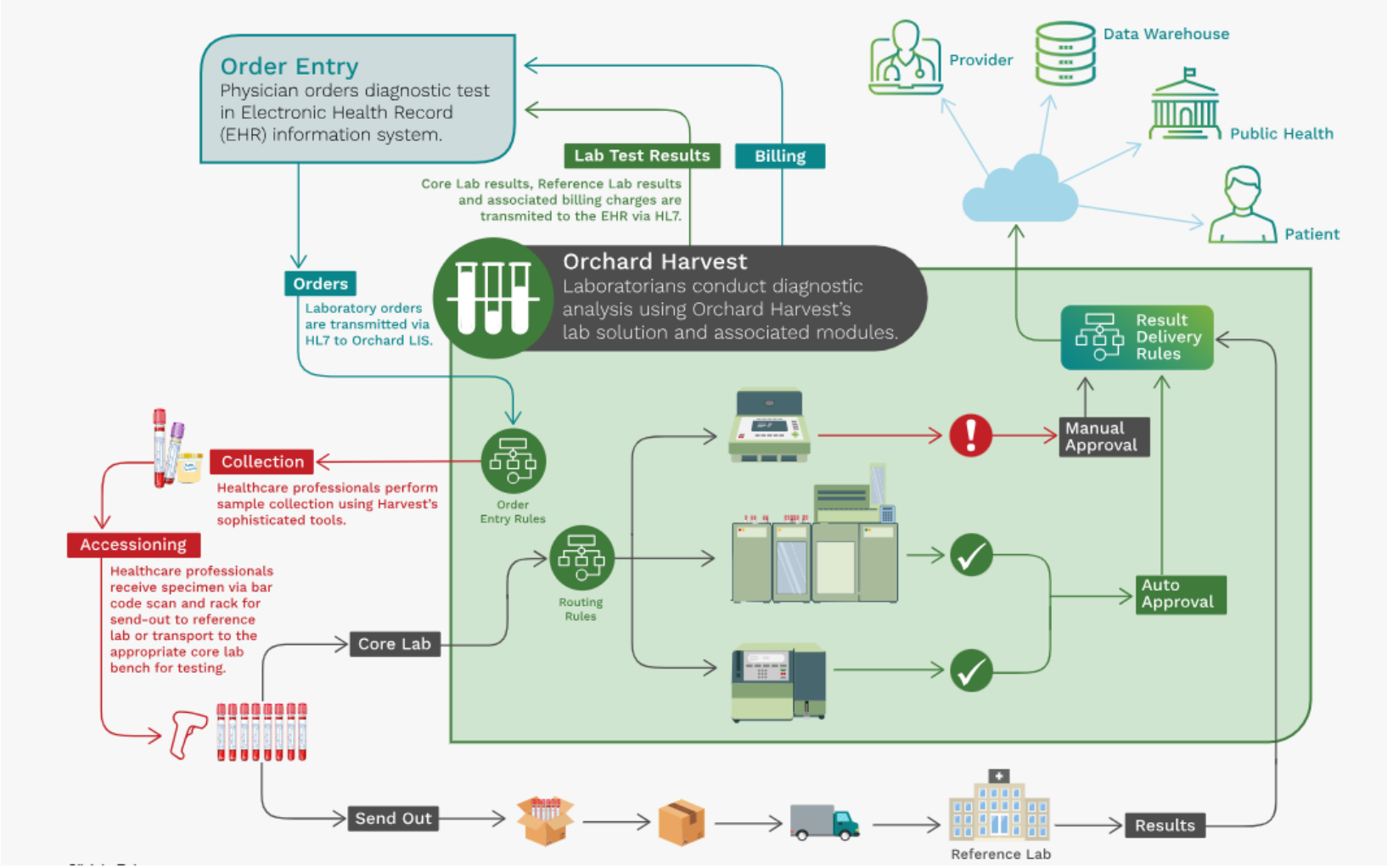
How Is Data Sent?

- HL7 messages
- Secure CSV files
- Fax (yes, still!)

Why It Matters

- Data quality and timeliness
- System interoperability
- Faster public health response

Data Workflows - Laboratory



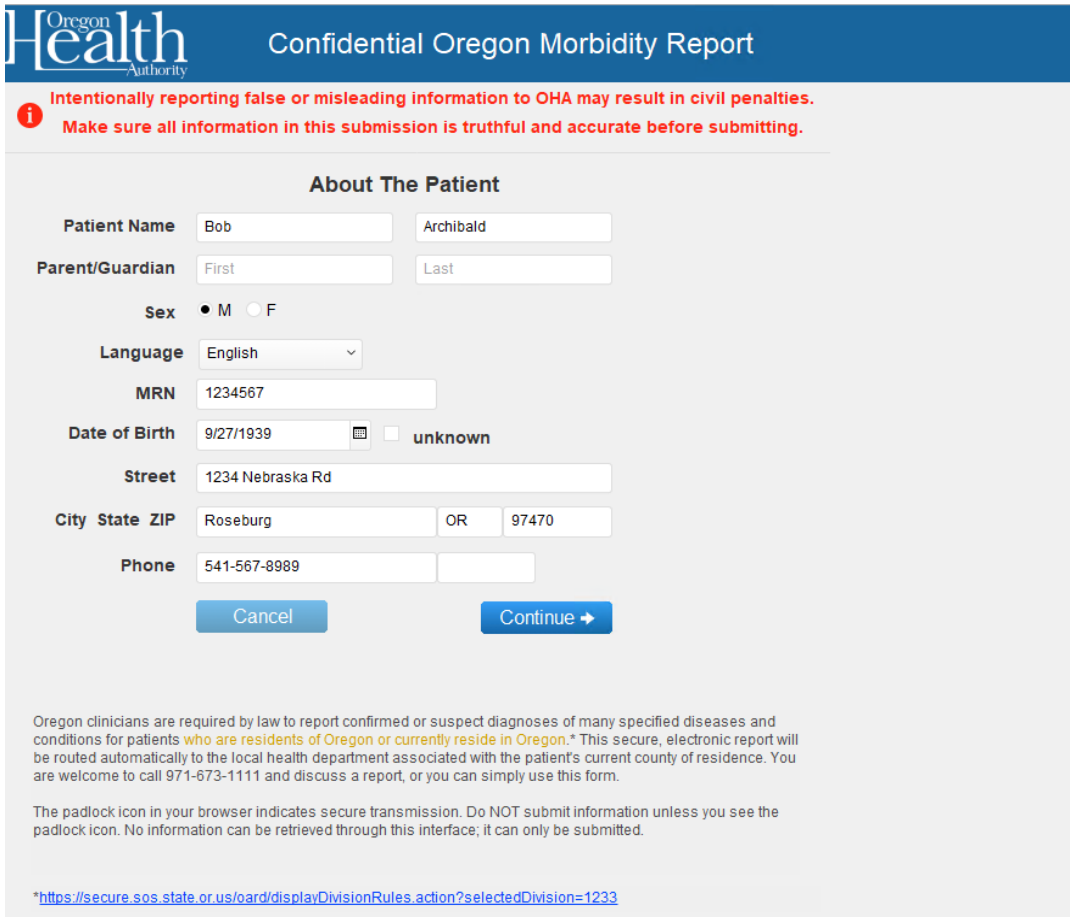
Every Field Counts: Building Reports that Matter

Required data for lab order	Required data for reporting to Public Health
Patient First Name	Patient First Name
Patient Last Name	Patient Last Name
Date of Birth	Date of Birth
Sex/Gender	Sex/Gender
Insurance Information/Subscriber ID	Patient Street address
Ordering Facility Name	Patient city
Ordering Clinician Name	Patient State
Test Order Code(s) CPT	Patient Zip Code
Diagnosis Code(s) ICD-10	Patient Phone Number
Specimen Collection Date	Reporting Entity Name (Facility/Person)
Specimen Type	Reporting Entity Phone Number (Facility/Person)
Specimen Site	Ordering Facility Name
	Ordering Facility CLIA ID
	Ordering Clinician name
	Ordering Clinician NPI
	Test Order Code(s) LOINC - can be a panel order code
	Test Code(s) - If panel ordered this should be split into a code for each test conducted
	Result(s)
	Specimen Collection Date
	Specimen Type
	Specimen Site
	Specimen Accession ID

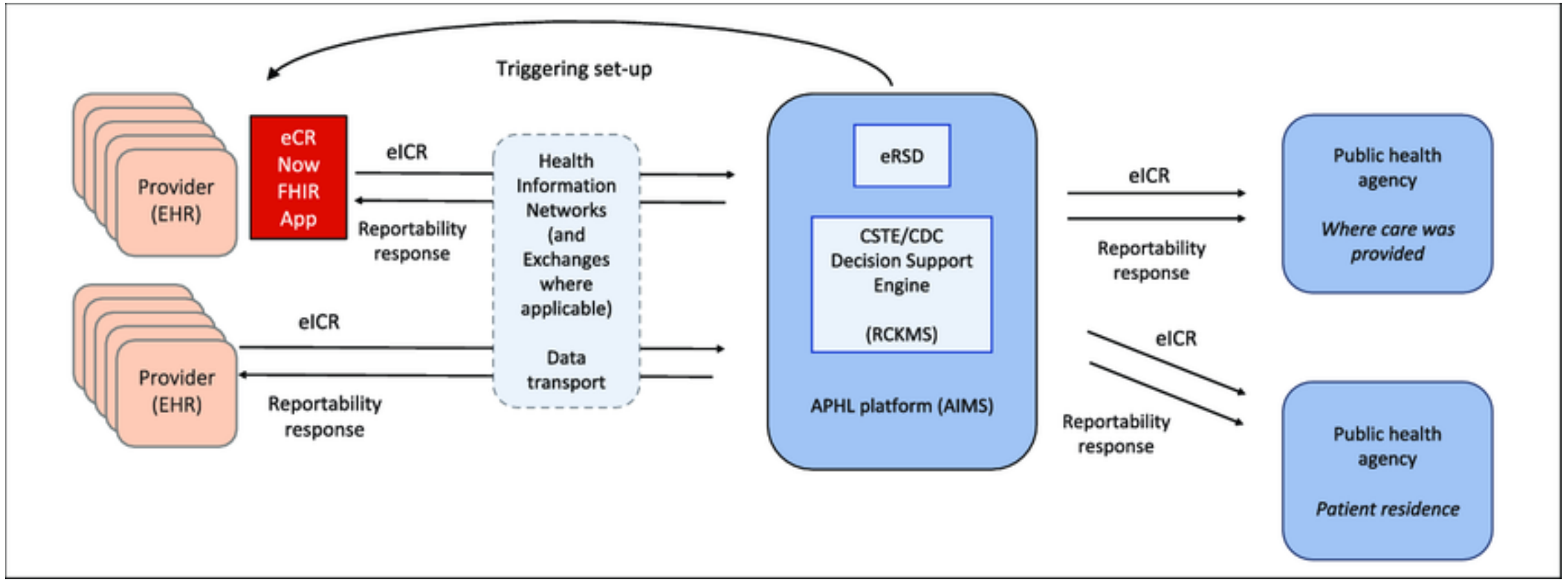
Electronic Case Reports (eCR)

Historically known as Momento Morbi, the Confidential Online Morbidity Portal has also been referred to as an eCR.

While technically correct, the Morb reports are electronic case reports they are not the same type of report we are receiving through automation from EHRs. These are Electronic Initial Case reports (eICRs)



Electronic Initial Case Reports (eICR)



Activity: From Patient Encounter to Public Health Action

- For each step in the process, we need to identify the following:
  - Data sources
  - Who is entering this data
  - What code sets or coded values are involved
  - How is this all managed

Activity: From Patient Encounter to Public Health Action

Step 1: Clinical Encounter

Patient visits provider, and data is captured in the EHR.

Step 2: Triggering Event

Reportable condition detected via trigger codes (e.g., ICD-10, LOINC, CPT, SNOMED).

Step 3: eICR Generation

EHR generates CDA or FHIR-based eICR with key patient and encounter data

Step 4: Transmission to Public Health

eICR sent securely to Public Health Authority (PHA) via AIMS

Activity: From Patient Encounter to Public Health Action

Step 5: PHA Processing

OHA receives, parses, maps reportable condition, and sends to Orpheus

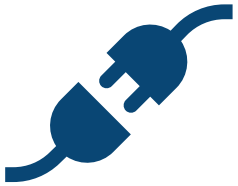
Step 6: Reportability Response

RR sent back to provider with reportability guidance.

Step 7: Public Health Follow-Up

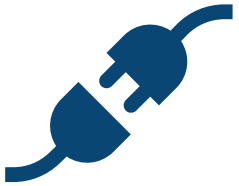
- Case is triaged and assigned to an **epidemiologist or investigator**.
- Additional info may be requested from providers or labs.
- Case investigation begins, possibly resulting in:
  - Case classification (confirmed/probable/suspect)
  - Control measures
  - Notifications to CDC or other entities

Activity: Requirement Gathering

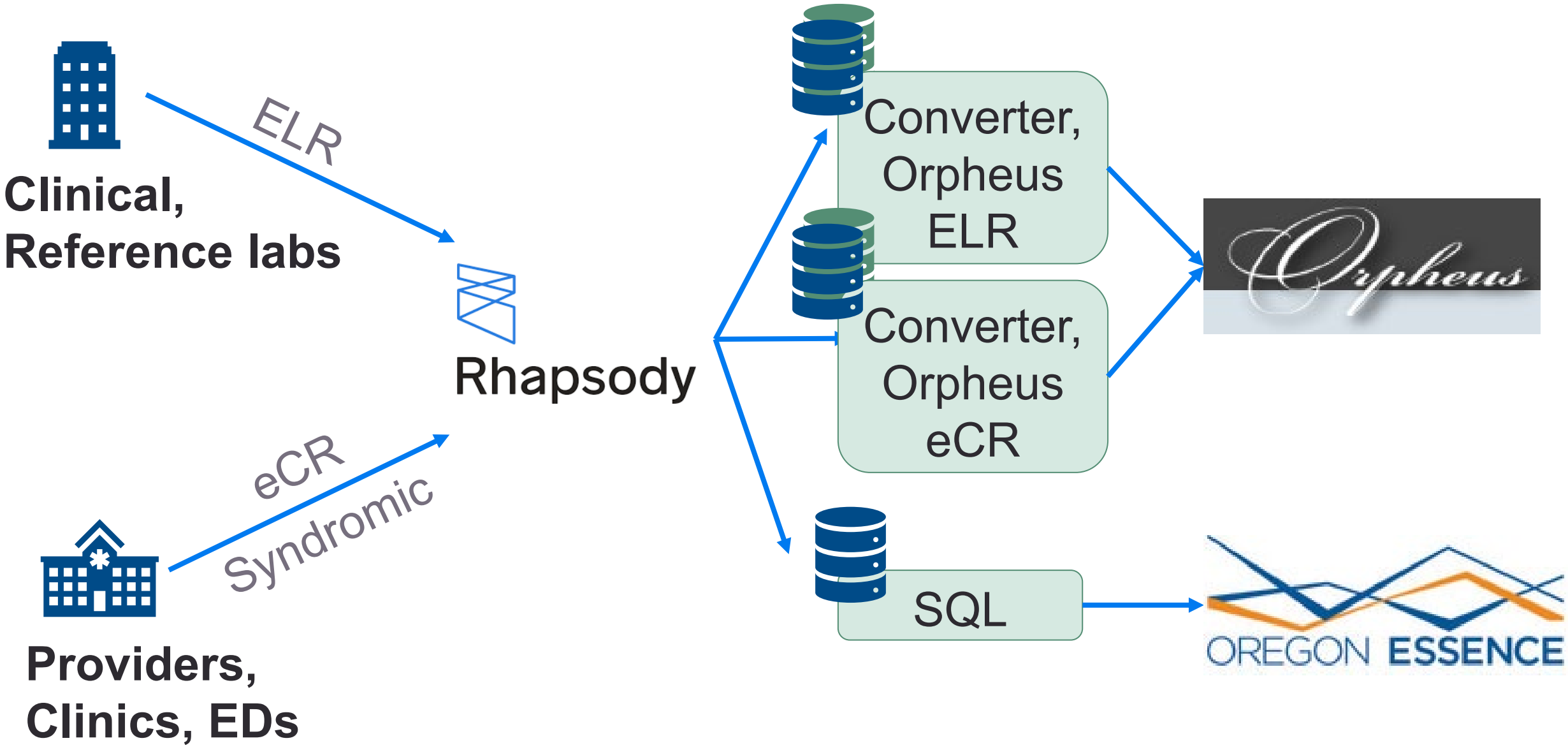


- Without speaking or consulting with each other, each person write down as many data elements that you need to adequately describe a PERSON with a REPORTABLE DISEASE – think about what you would need to aggregate, interview, describe, intervene...
- Think about who you want the data from and why.
  - If you want data from more than one source, do you want different things from different sources?

Activity: Refining Requirements



- Review the list of discrete data elements
  - Are they "discrete enough" -- in other words, will everyone interpret them in the same way? Should any of them be broken down into smaller bits?
- Now that you have a list of elements, how can you be sure the people sending you the information will be sending you what you want? How will you determine what is considered valid?


ELR
Clinical,
Reference labs
Rhapsody
Converter,
Orpheus
ELR
Converter,
Orpheus
eCR
Orpheus
eCR
Syndromic
Providers,
Clinics, EDs
SQL
OREGON ESSENCE

OREGON HEALTH AUTHORITY

Ingestion and Integration


Public Health Informatics:
Data
Logistics

Public Health Data Logistics

The metaphor **reframes the Black Box of ingestion, ETL**

Informaticians design the complex systems that ensure people get the public health data “packages” they need, quickly and efficiently using:

- **Standard** packages and routes
- Inspecting, **repackaging**, forwarding
- Working with senders to **improve**

Data to Public Health

Phone, Fax, Secure email

+ Pros:

- Quick
- Detailed

- Cons:

- Requires manual intervention
- Doesn’t scale well
- Very prone to data-entry errors
- Requires data-entry interface that’s easy to navigate
- Doesn’t have discrete fields that can map

Secure and Managed File Transfer

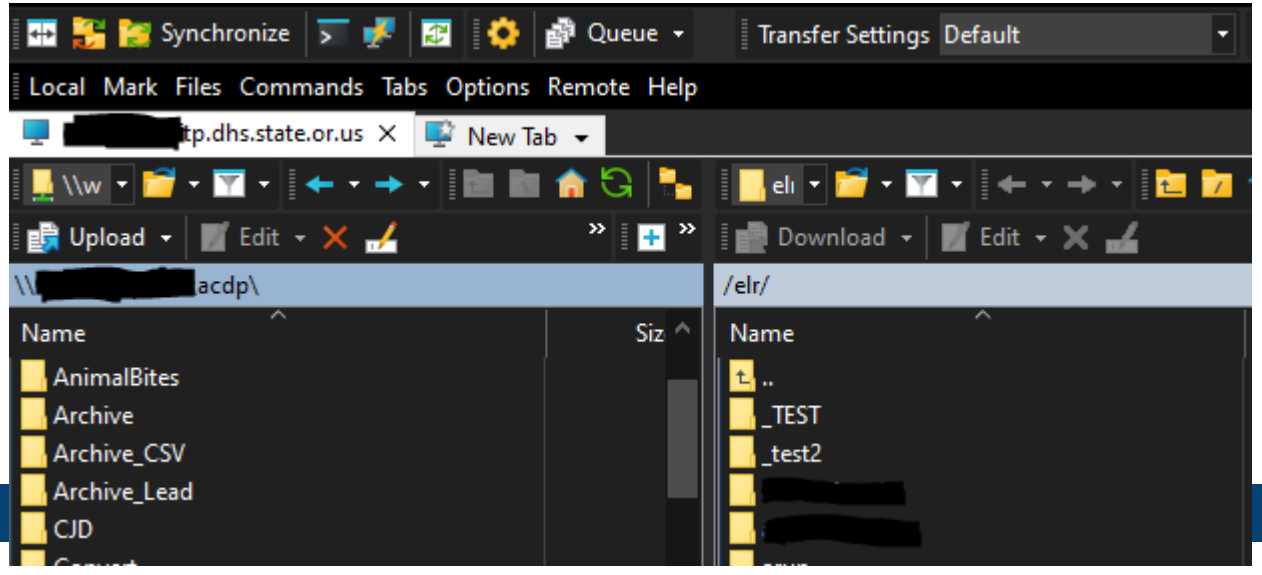
Secure File Transport Protocol (SFTP)

+ Pros:

- Secure
- Many formats supported
- Universal
- Can be automated
- Could use SSH keys
- Integrates well

- Cons:

- Requires set-up
- Requires maintenance if policies require periodic update of pw



Automated Data Transfer

Data API (Application Programming Interface)

+ Pros:

- Readily available
- Multiple formats supported
- Can be automated
- Integrates well
- Can be secured

- Cons:

- Requires set-up
- Requires maintenance if host changes API connection info

Other Transport Protocols

Other protocols: REST, SOAP

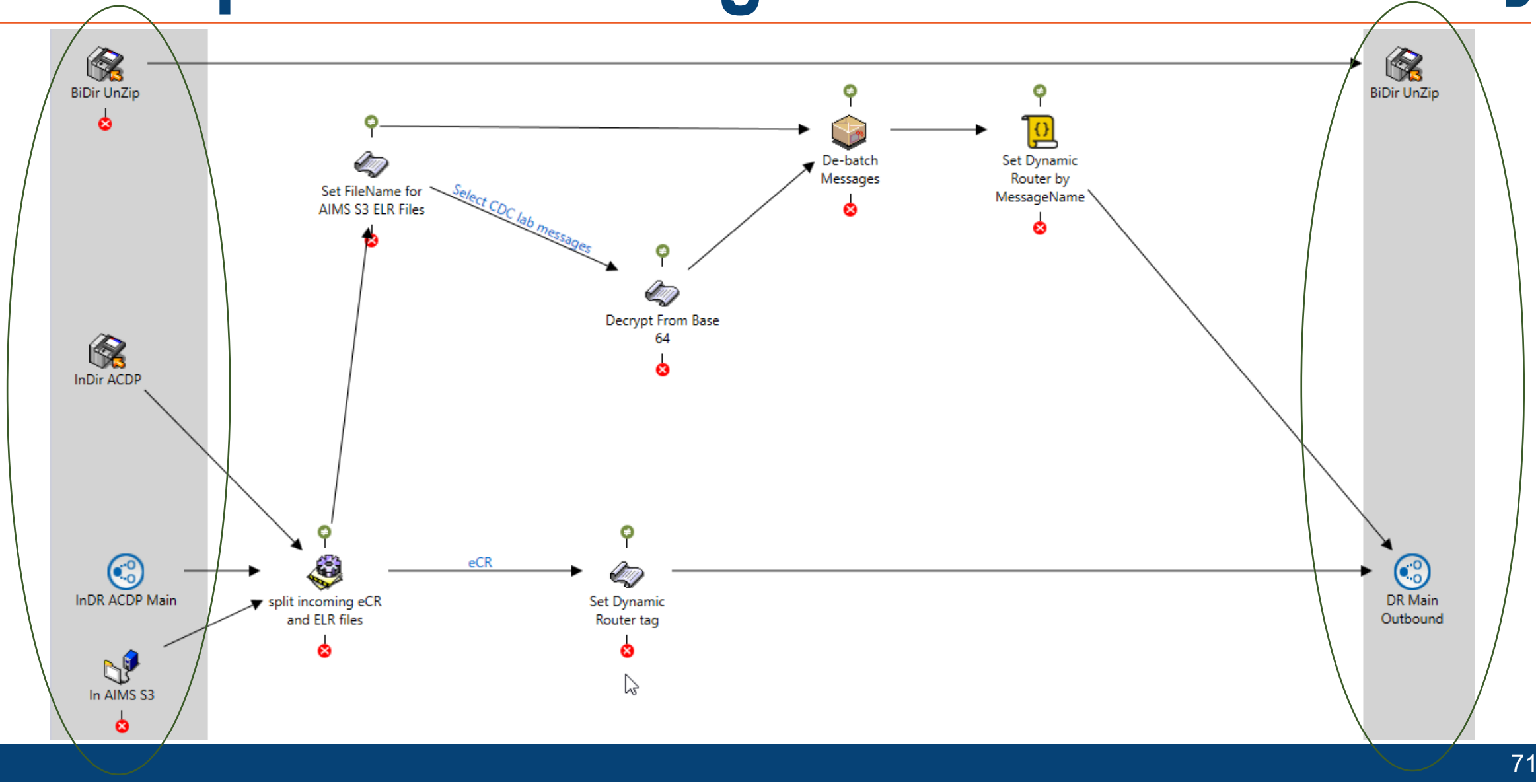
+ Pros:

- Readily available
- Multiple formats supported
- Can be automated
- Integrates well
- Can be secured

- Cons:

- Requires set-up
- Requires maintenance if host changes connection info
- May require pw periodic changes

Receipt and Routing



HL7 (very) Basics

Version 2

```
MSH|^~\&|HIS|GeneralHospital|EHR|GeneralHospital|20250324120000||ADT^A01|12345|P|2.5

PID|1||123456^^^GeneralHospital^MRN||Doe^John||19850712|M|||123 Main St^^Springfield^OR^97477
```

FHIR (JSON)

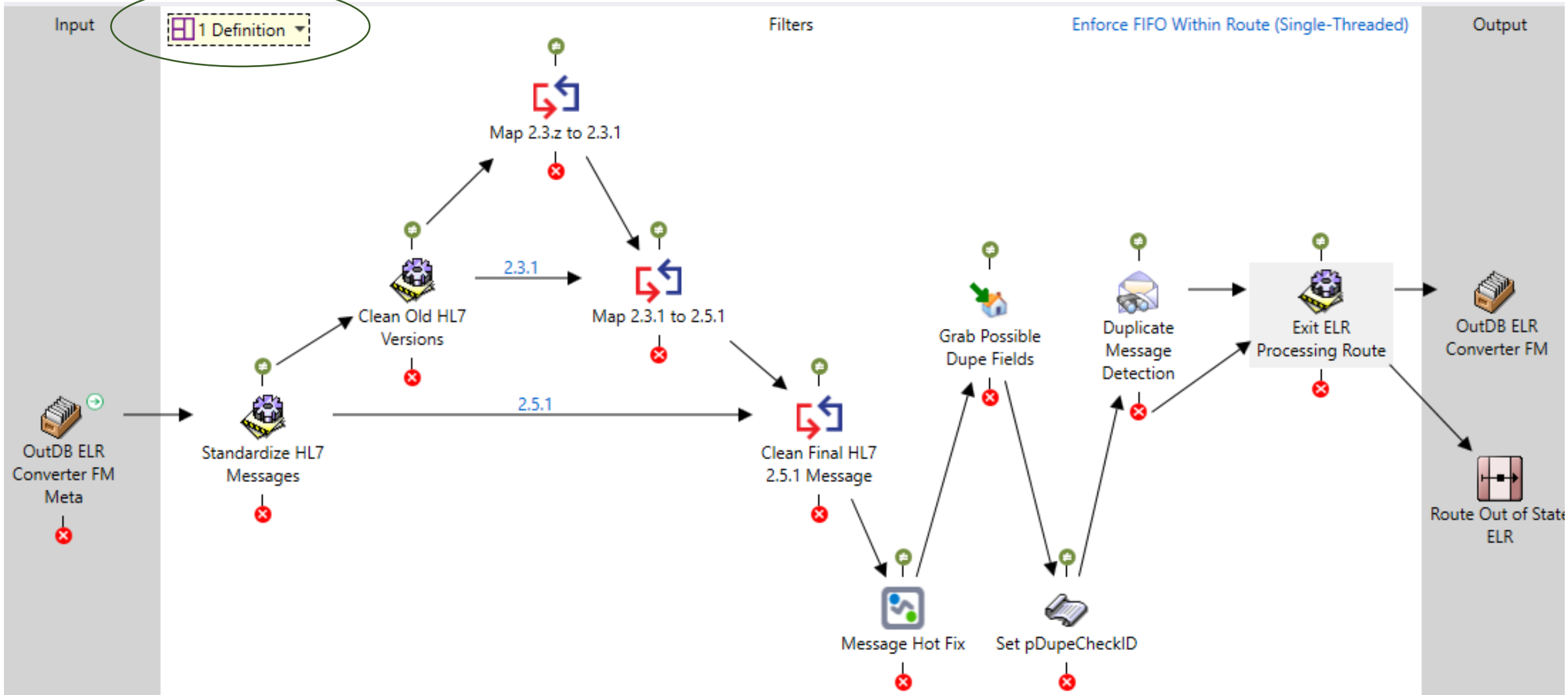
```
{
  "resourceType": "Patient",
  "id": "123456",
  "name": [
    {
      "use": "official",
      "family": "Doe",
      "given": ["John"]
    }
  ],
  "gender": "male",
  "birthDate": "1985-07-12",
  "managingOrganization": {
    "reference": "Organization/GeneralHospital",
    "display": "General Hospital"
  }
}
```

Version 3 (Clinical Document Architecture)

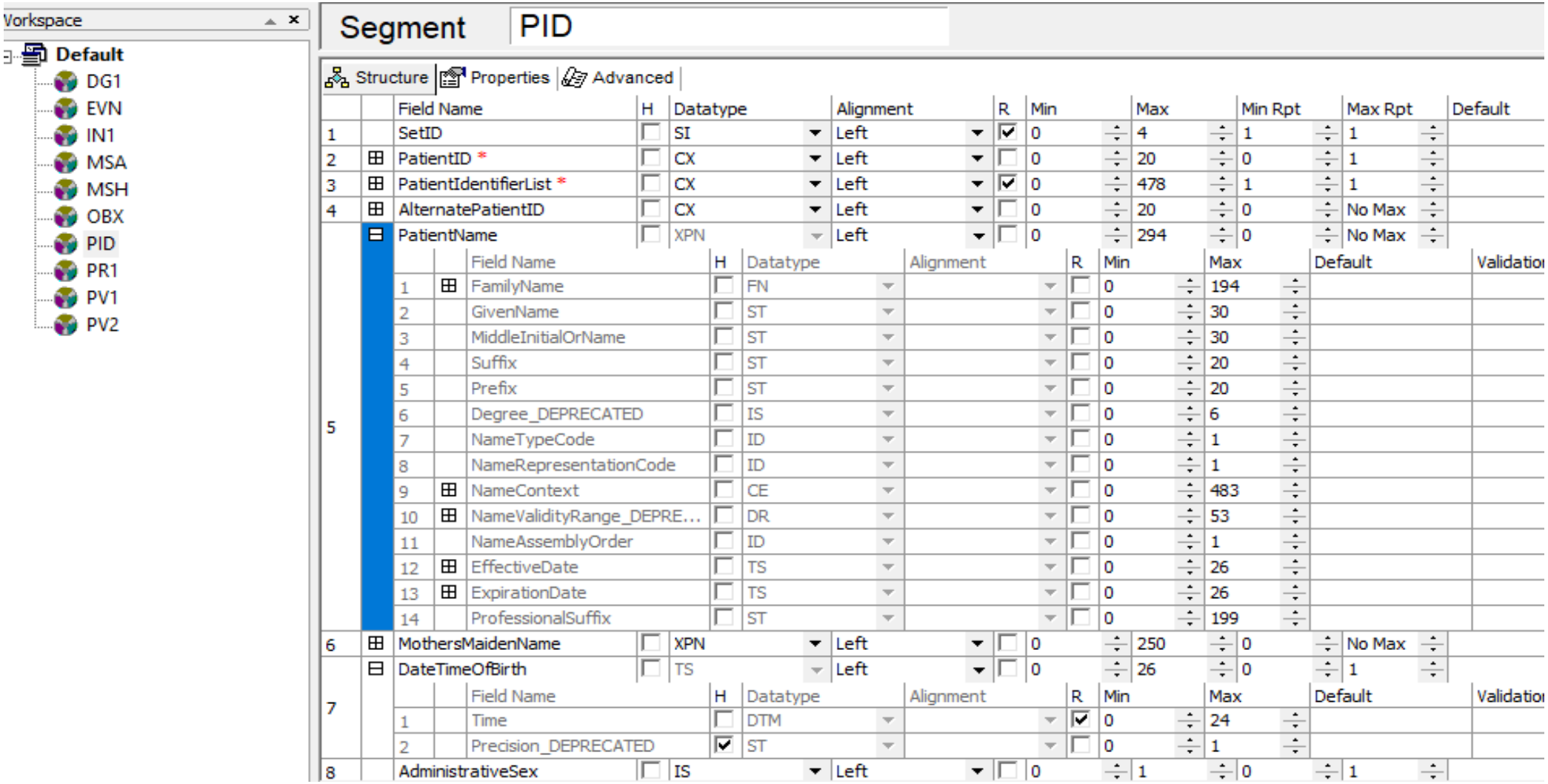
```
<PRPA_IN101001UV xmlns="urn:hl7-org:v3">
  <subject1 typeCode="SBJ">
    <patient classCode="PAT">
      <id root="1.2.840.114350.1.13.12345" extension="123456"/>
      <patientPerson>
        <name>
          <given>John</given>
          <family>Doe</family>
        </name>
        <birthTime value="19850712"/>
        <administrativeGenderCode code="M"/>
      </patientPerson>
    </patient>
  </subject1>
</PRPA_IN101001UV>
```

- Data Types (text, numeric, coded elements)
- Version (v2, v3, FHIR)
- Structure (pipe delimited, XML, JSON (or XML))
- Message Type (Event based, Object oriented, Resource based)
- Message Segments (PID, <patientPerson>, name)
- Fields and Components (delimiters, tags, name/value pairs)

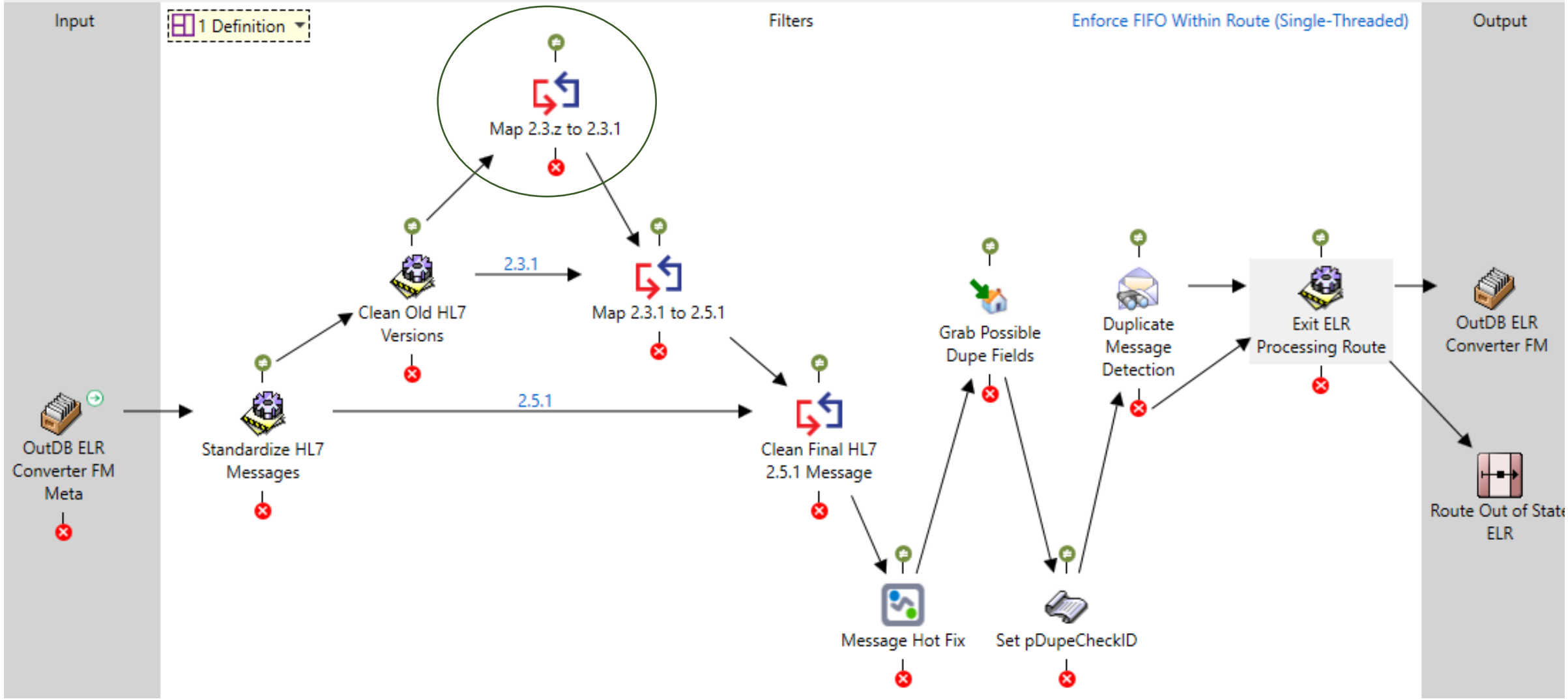
Message Processing



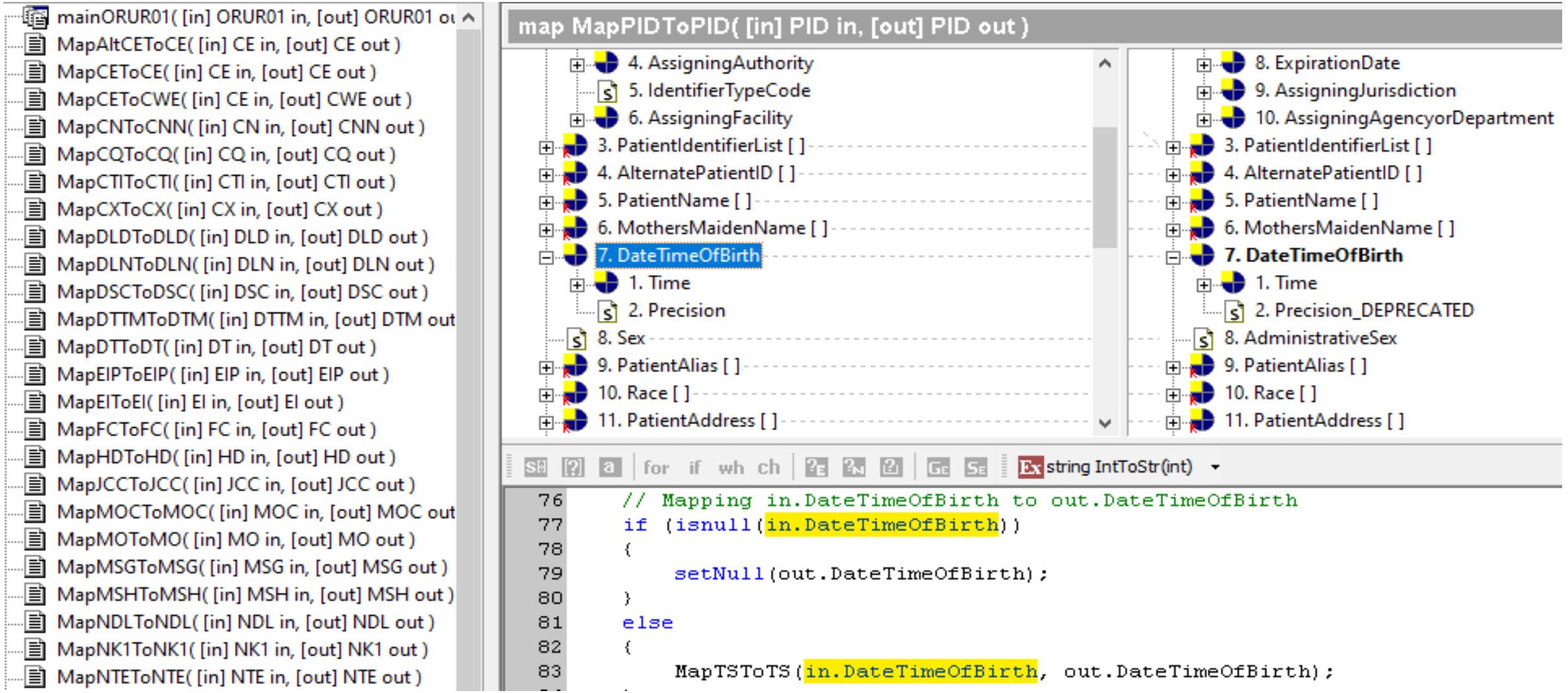
Structural Validation



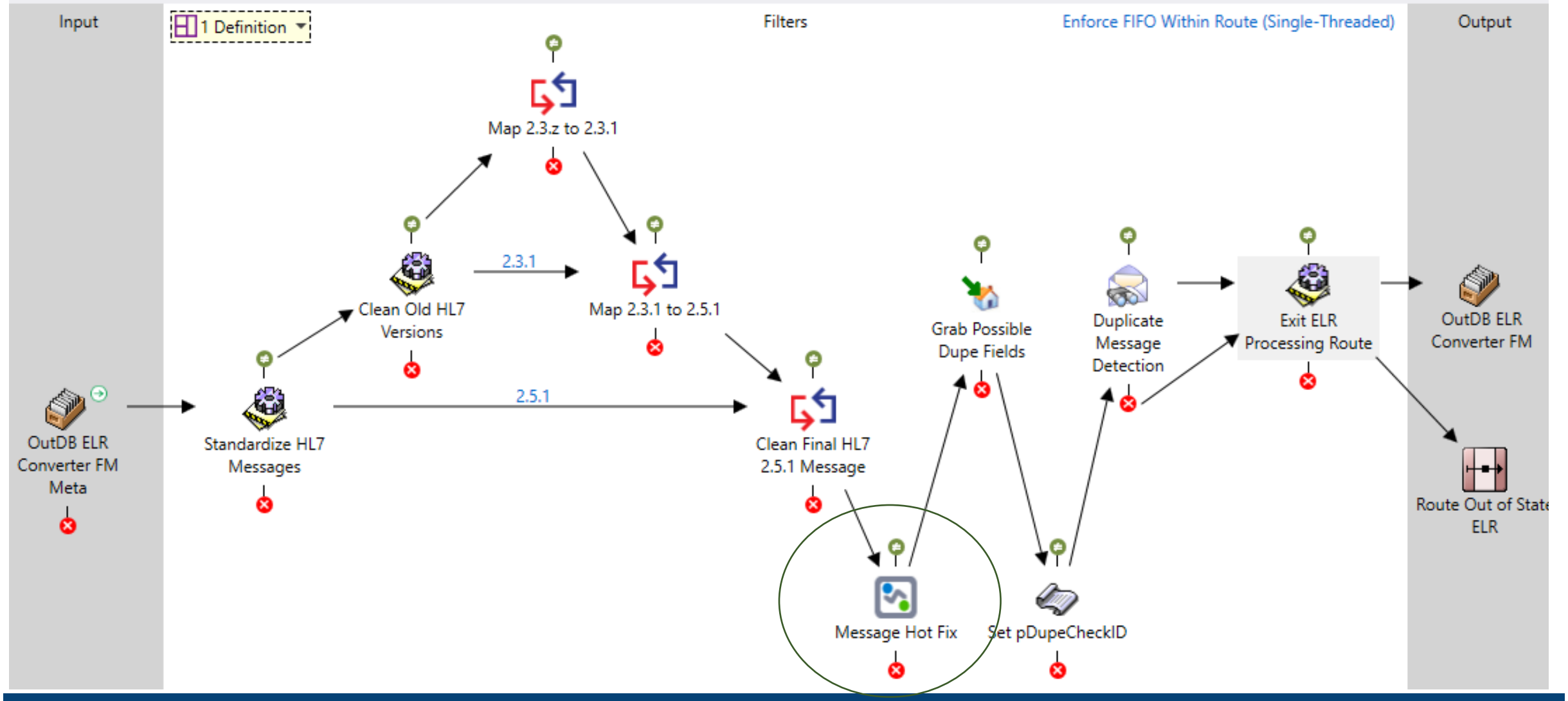
Message Mapping



Harmonization and Standardization



Message Cleaning



Code Translations

LOINC Codes

LOINC_NUM 24312-1

Clean ☐

OrpheusDiseaseID 700 **Syphilis**

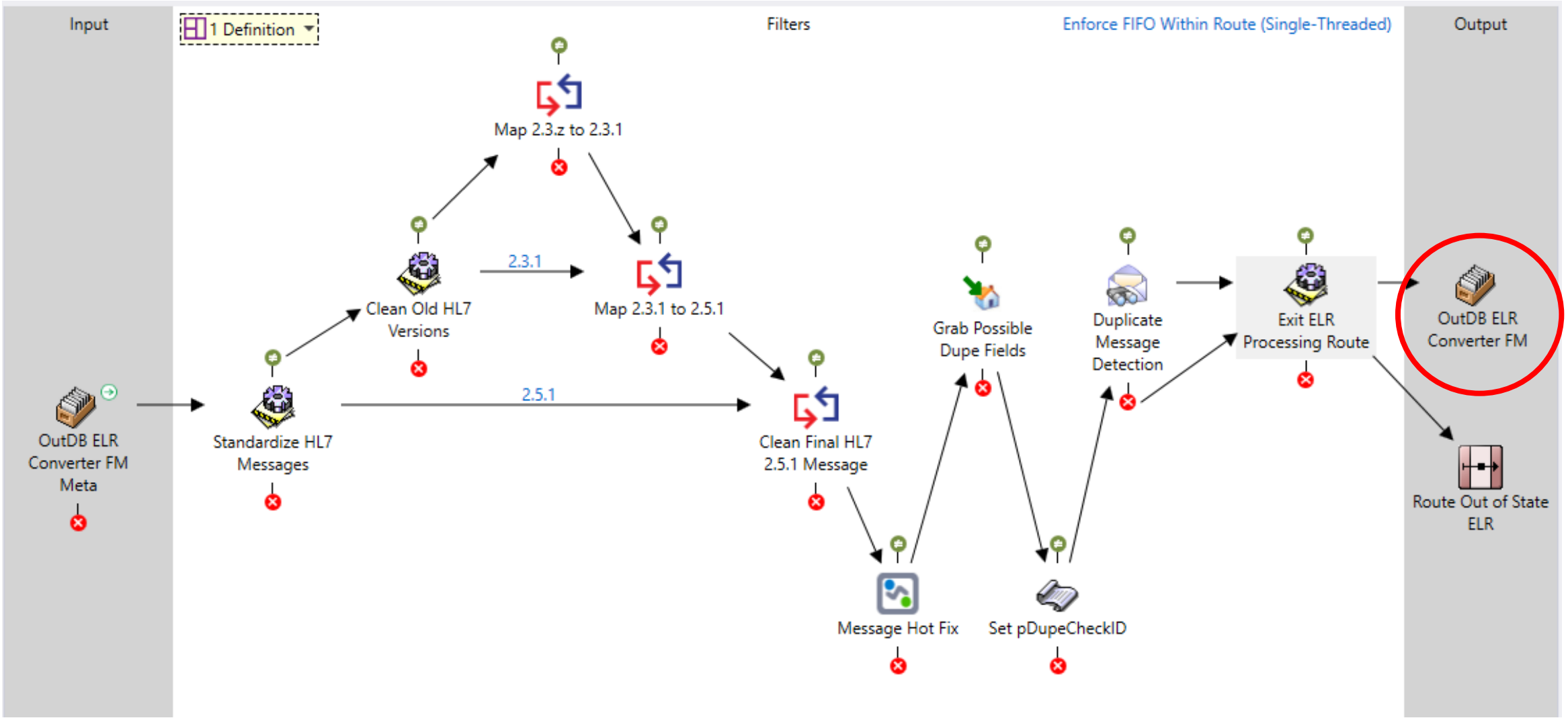
Code Info | Names | More

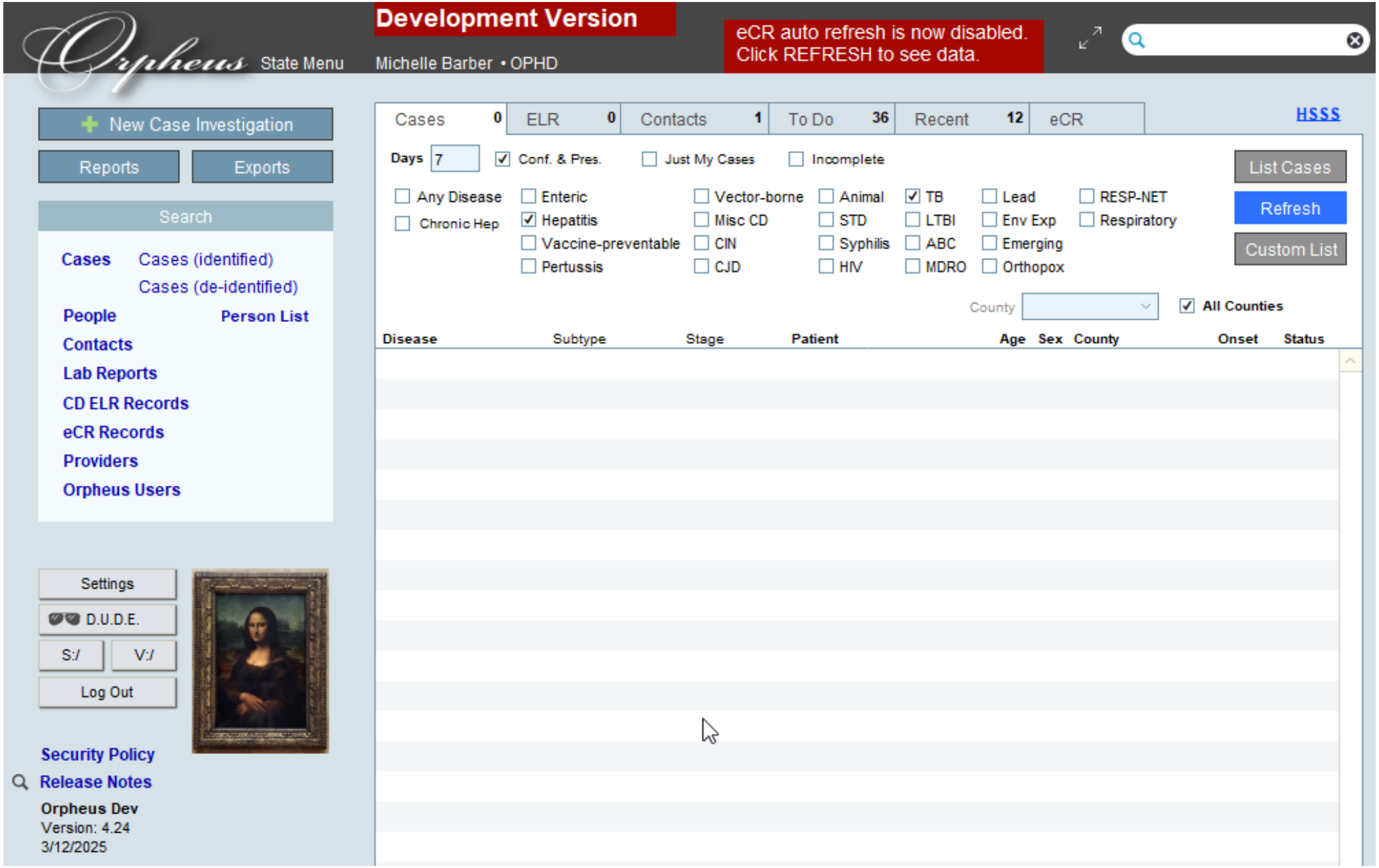
COMPONENT Treponema pallidum Ab

PROPERTY PrThr

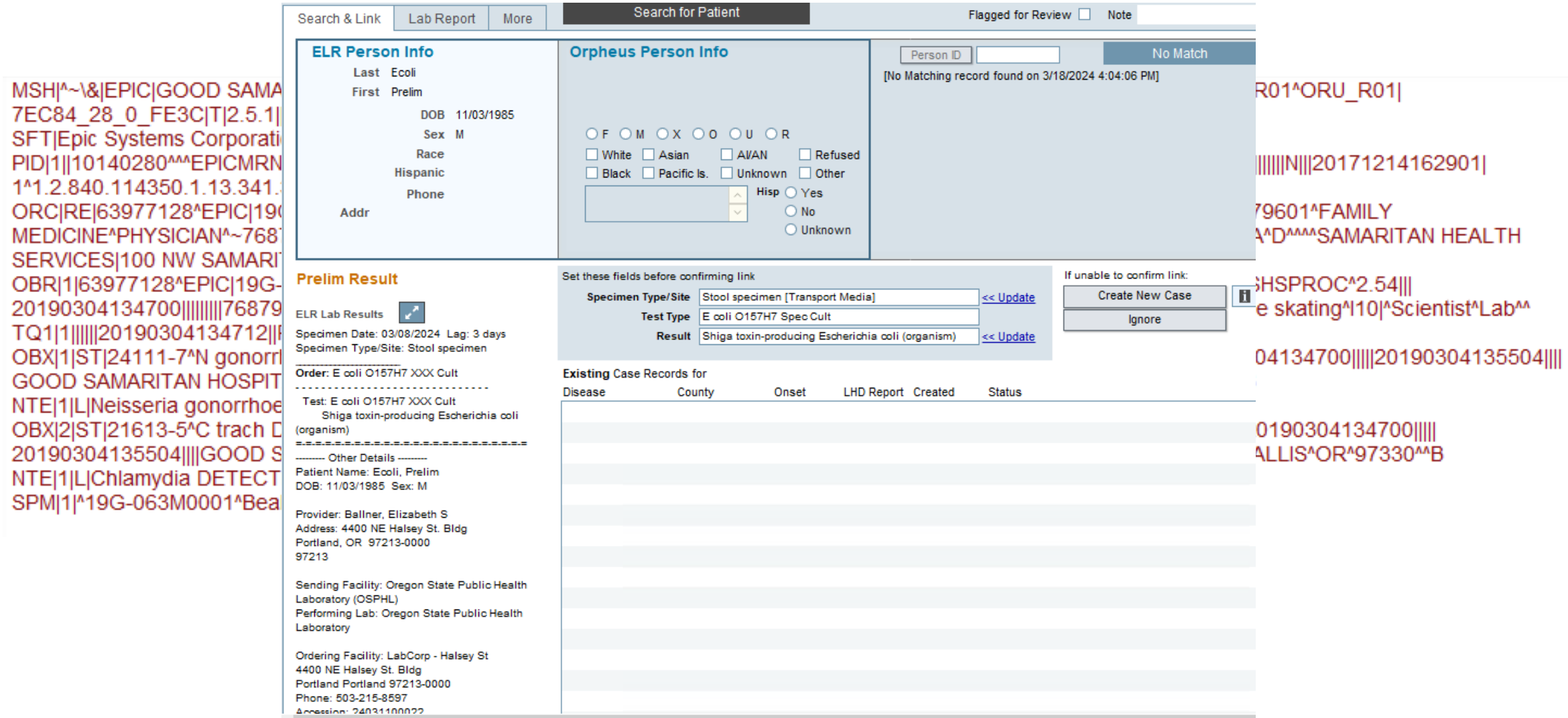
OrpheusDiseaseID	LOINC_NUM	COMPONENT	SHORTNAME
700	22594-6	Treponema pallidum Ab.IgM	T pallidum IgM Ser-aCnc
700	24110-9	Treponema pallidum Ab	T pallidum Ab Ser Ql IA
700	24312-1	Treponema pallidum Ab	T pallidum Ab Ser Ql Aggl
700	26009-1	Treponema pallidum Ab	T pallidum Ab Titr Ser HA
700	29310-0	Treponema pallidum	T pallidum XXX Ql IF
700	31146-4	Reagin Ab	VDRL CSF-Titr
700	31147-2	Reagin Ab	RPR Ser-Titr
700	34147-9	Treponema pallidum Ab.IgG+IgM	T pallidum IgG+IgM Ser Ql
700	34382-2	Treponema pallidum Ab	T pallidum Ab Titr Ser IF
700	34954-8	Treponema pallidum Ab.IgG & IgM panel	T pallidum IgG+IgM Pnl Ser
700	39015-3	Treponema pallidum Ab	T pallidum Ab Fld HA-aCnc
700	39231-6	Syphilis screen test status	
700	40679-3	Treponema pallidum Ab.IgG	T pallidum IgG Ser Ql IB
700	40680-1	Treponema pallidum Ab.IgM	T pallidum IgM Ser Ql IB
700	41122-3	Treponema pallidum Ab	T pallidum Ab XXX-aCnc
700	41163-7	Treponema pallidum DNA	T pallidum DNA XXX Ql NAA+prob
700	43238-5	Treponema pallidum Ab	T pallidum Ab Ser Donr Ql IF
700	47063-3	Treponema pallidum Ab.IgM	T pallidum IgM CSF IF-aCnc
700	46206-9	Treponema pallidum Ab	T pallidum Ab Ser Donr Ql
700	47051-8	Treponema pallidum Ab.IgG	T pallidum IgG CSF IF-aCnc
700	47236-5	Treponema pallidum Ab.IgG+IgM	T pallidum IgG+IgM Ser Ql IA
700	47237-3	Treponema pallidum Ab.IgM	T pallidum IgM Ser Ql IA
700	47238-1	Treponema pallidum Ab.IgG	T pallidum IgG Ser Ql IA
700	47361-1	Treponema pallidum Ab.IgG	T pallidum IgG Ser Donr Ql IA
700	47511-1	Treponema pallidum Ab	T pallidum Ab Fld-aCnc
700	47512-9	Treponema pallidum Ab.IgG	T pallidum IgG CSF-aCnc
700	47513-7	Treponema pallidum Ab.IgG	T pallidum IgG Ser Donr Ql
700	47514-5	Treponema pallidum Ab.IgM	T pallidum IgM CSF-aCnc
700	49799-0	Treponema pallidum DNA	T pallidum DNA CSF Ql NAA+prol
700	49800-6	Treponema pallidum Ab	T pallidum Ab CSF HA-aCnc

Message Provisioning

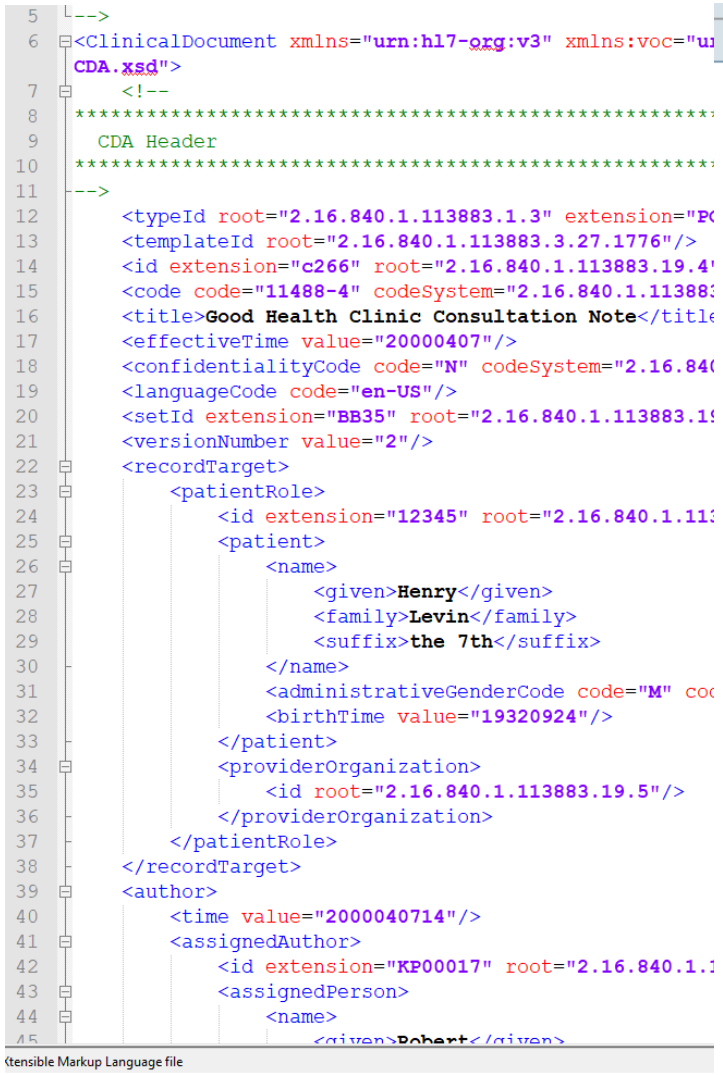


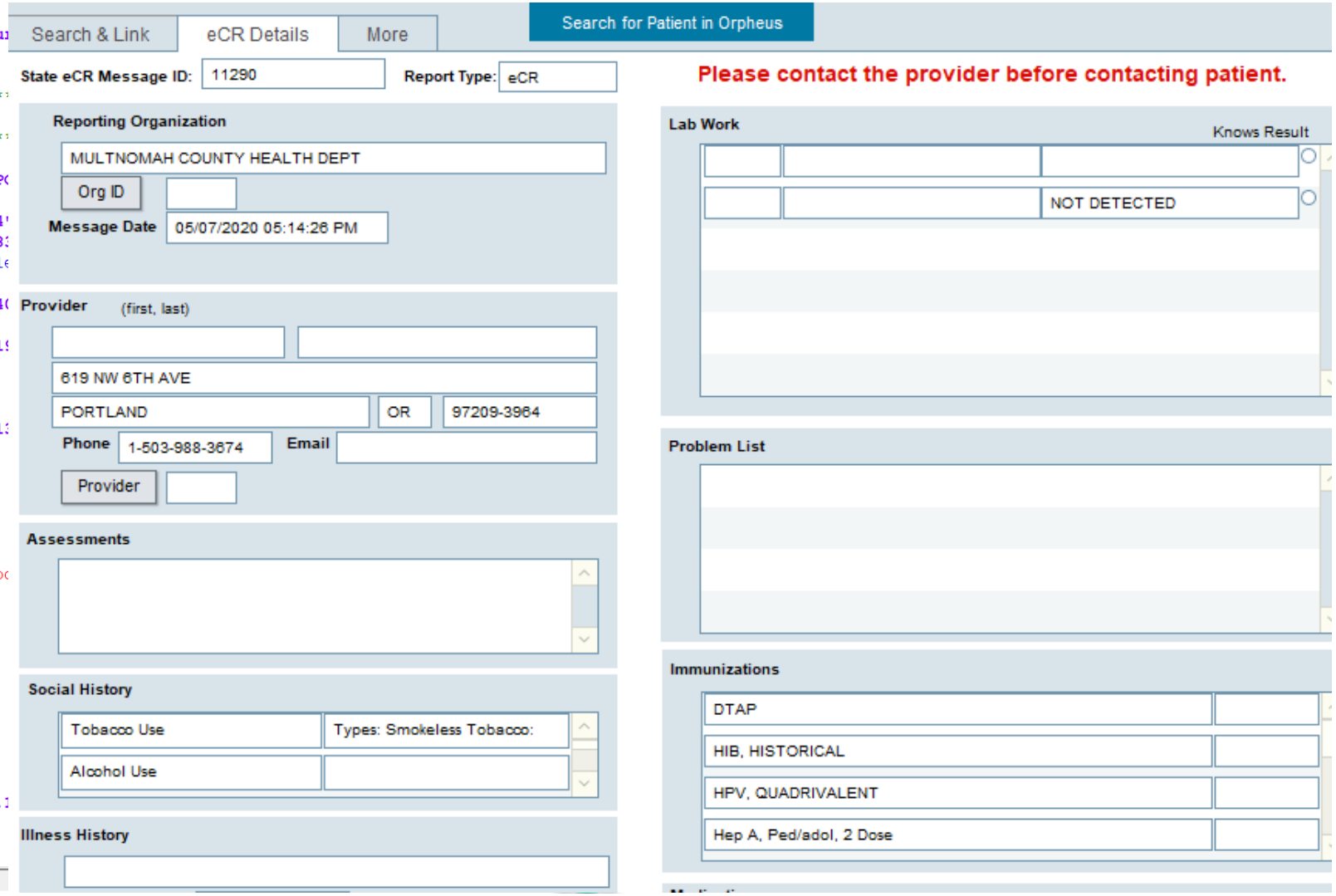

Orpheus
State Menu
Development Version
Michelle Barber • OPHD
eCR auto refresh is now disabled.
Click REFRESH to see data.
New Case Investigation
Reports
Exports
Search
Cases
Cases (identified)
Cases (de-identified)
People
Person List
Contacts
Lab Reports
CD ELR Records
eCR Records
Providers
Orpheus Users
Settings
D.U.D.E.
S:/
V:/
Log Out
Security Policy
Release Notes
Orpheus Dev
Version: 4.24
3/12/2025
Cases 0
ELR 0
Contacts 1
To Do 36
Recent 12
eCR
HSSS
Days 7
Conf. & Pres.
Just My Cases
Incomplete
List Cases
Refresh
Custom List
Any Disease
Chronic Hep
Enteric
Hepatitis
Vaccine-preventable
Pertussis
Vector-borne
Misc CD
CIN
CJD
Animal
STD
Syphilis
HIV
TB
LTBI
ABC
MDRO
Lead
Env Exp
Emerging
Orthopox
RESP-NET
Respiratory
County
All Counties
Disease
Subtype
Stage
Patient
Age
Sex
County
Onset
Status

ELR: Receipt to Use

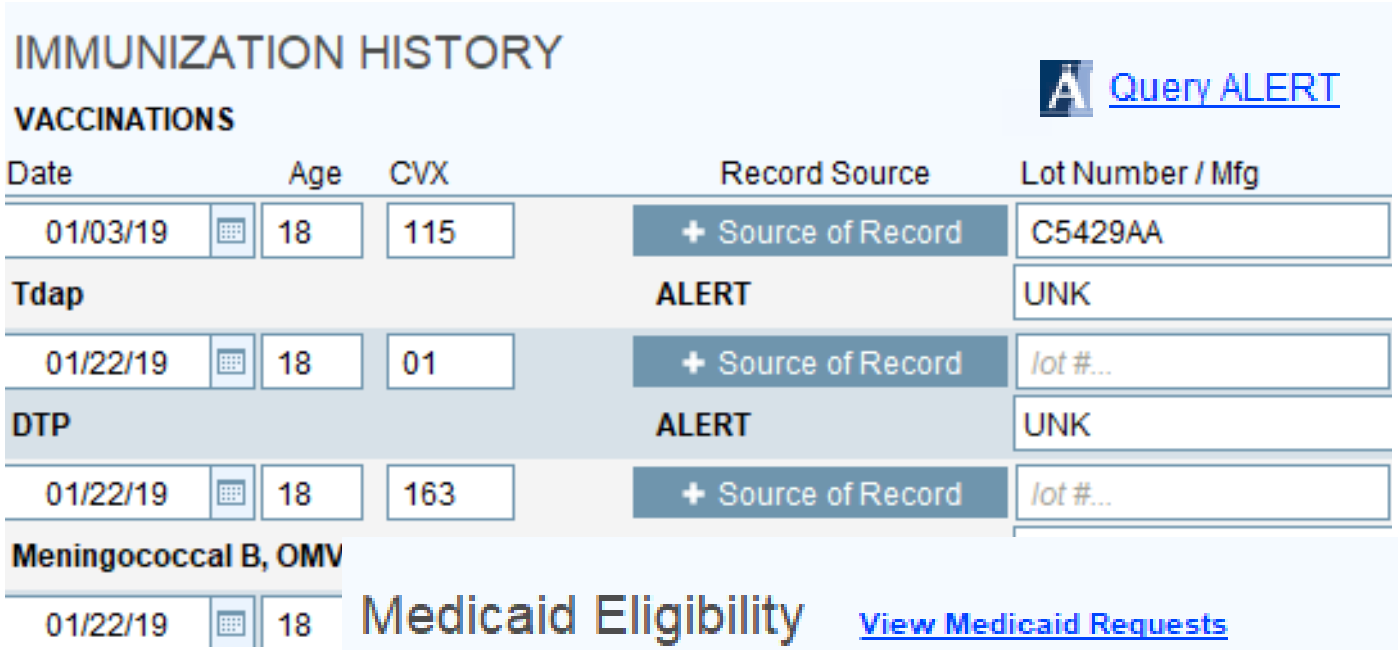


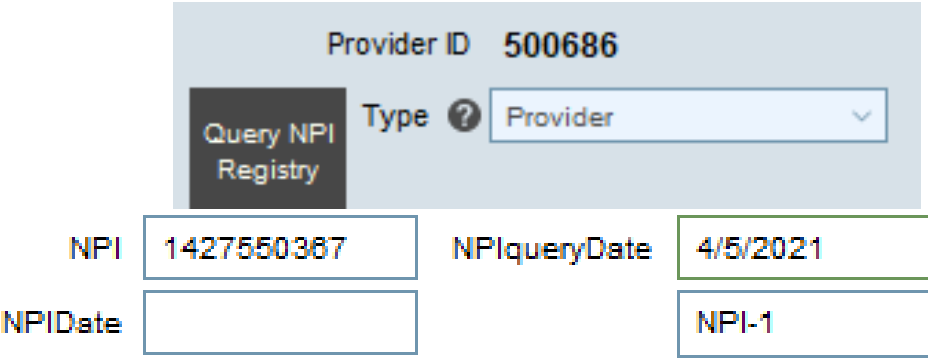
eCR: Receipt to Use

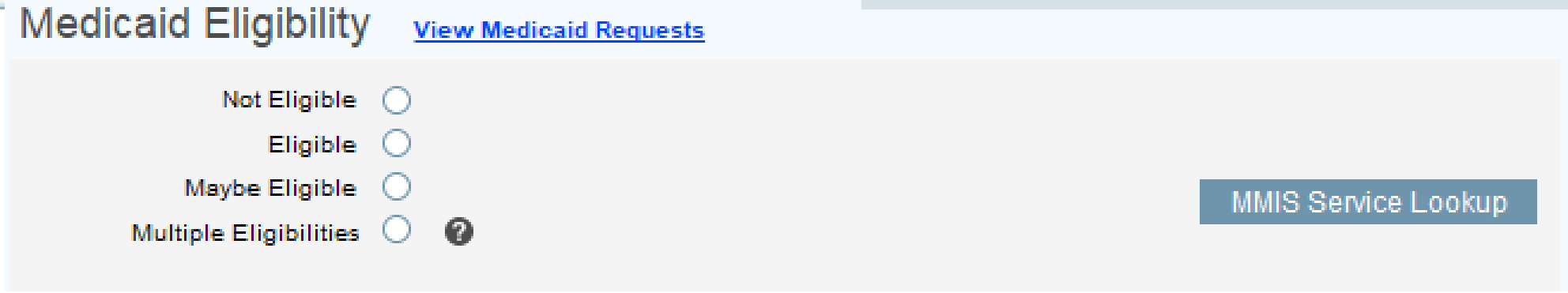


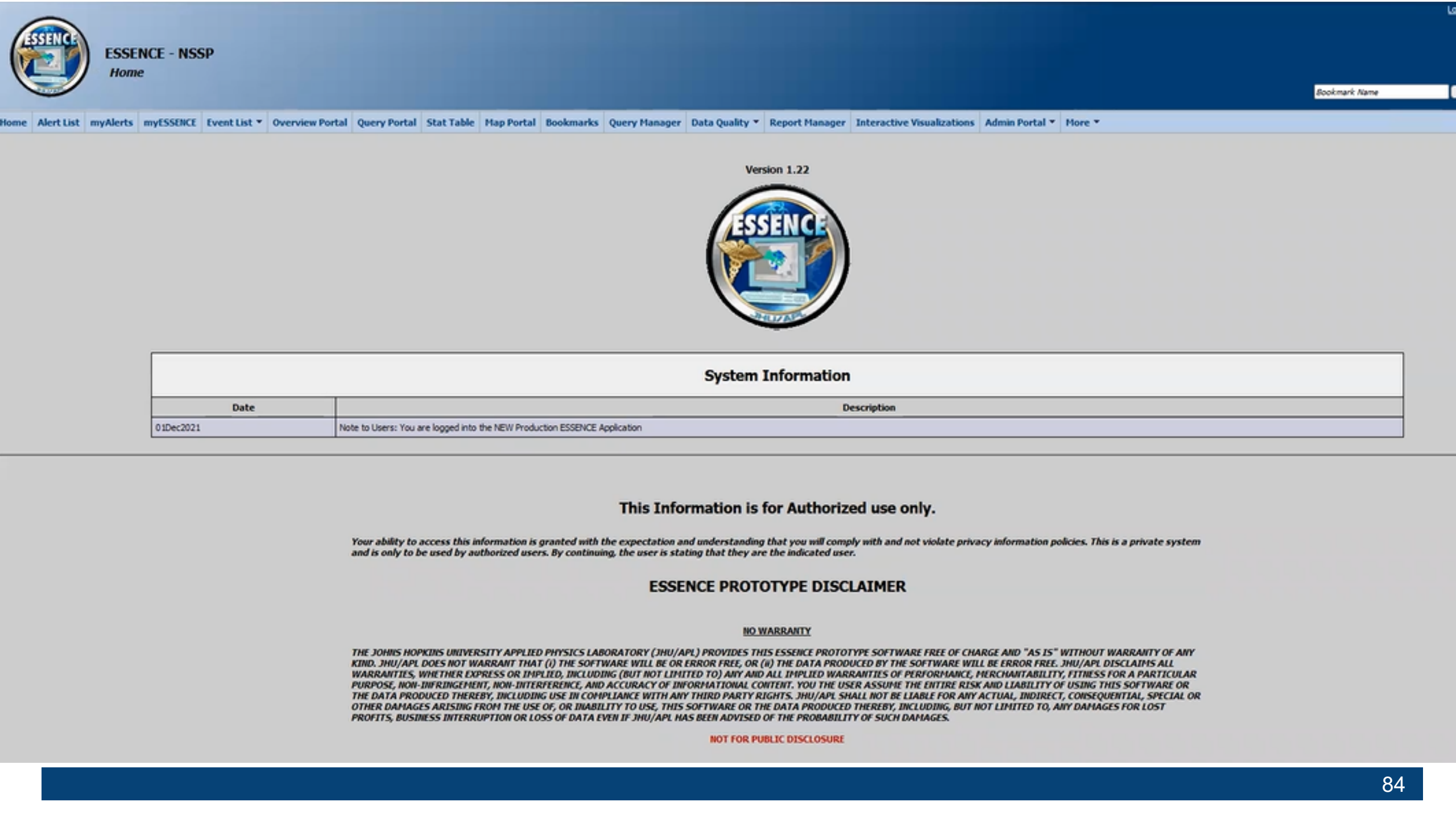


Other Orpheus Integrations








ESSENCE - NSSP
Home
Bookmark Name
Home
Alert List
myAlerts
myESSENCE
Event List
Overview Portal
Query Portal
Stat Table
Map Portal
Bookmarks
Query Manager
Data Quality
Report Manager
Interactive Visualizations
Admin Portal
More
Version 1.22
ESSENCE
System Information
Date
Description
01Dec2021
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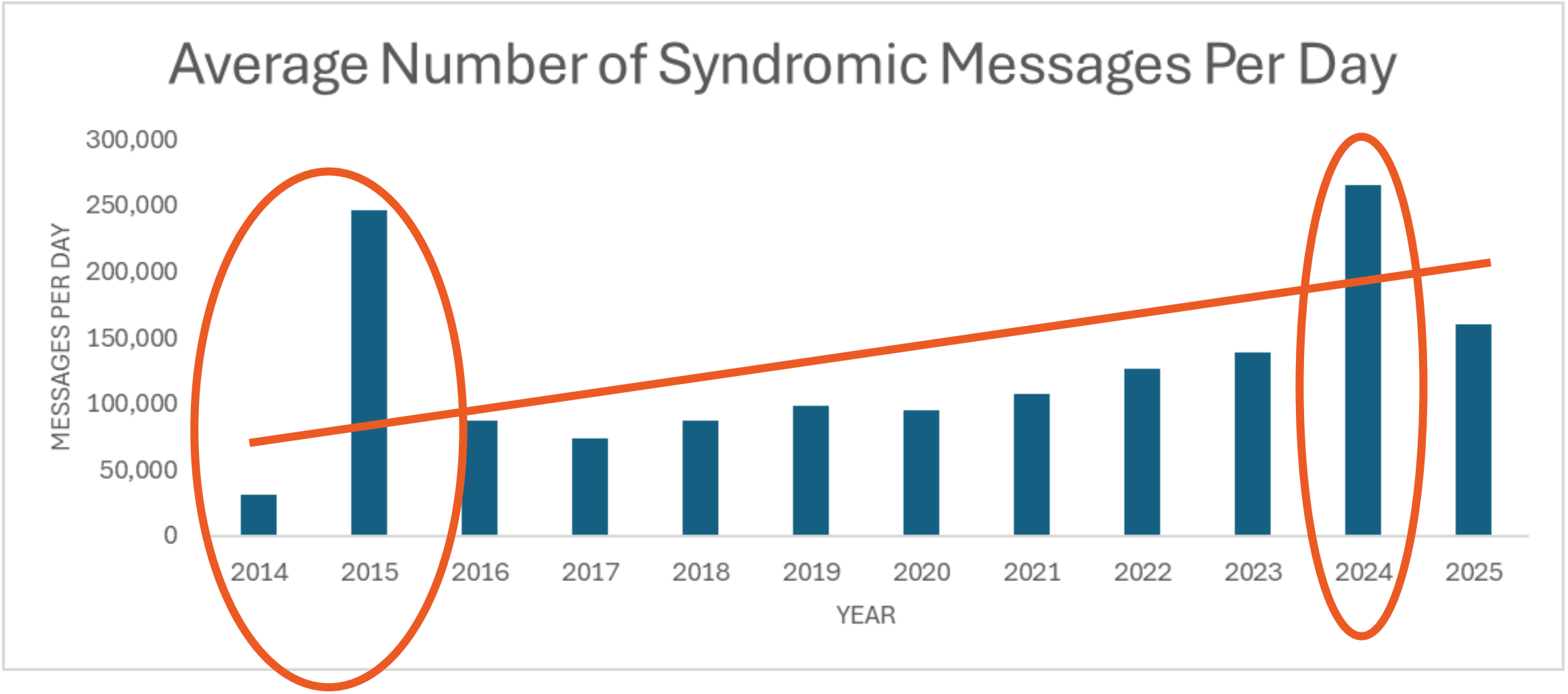
Syndromic Surveillance - ESSENCE

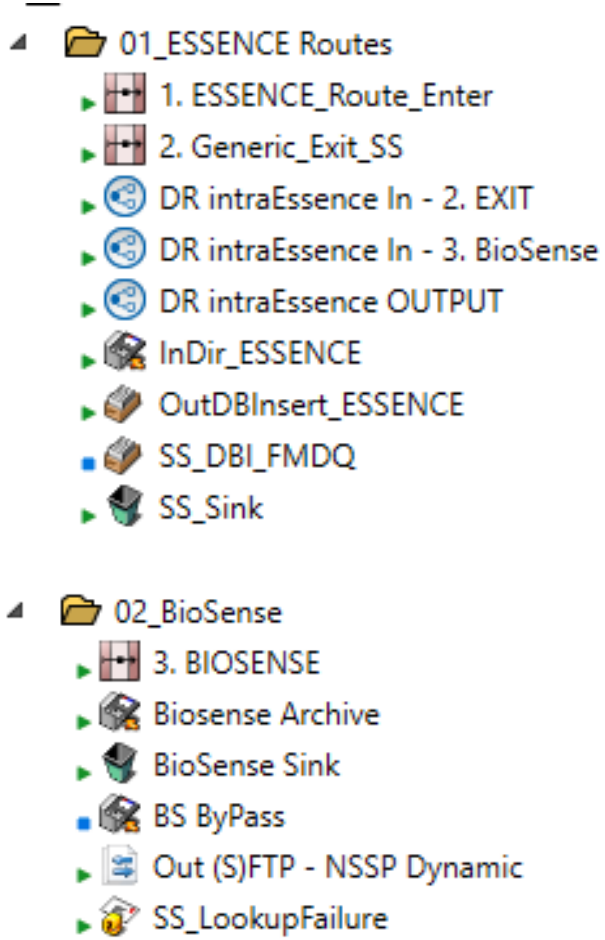


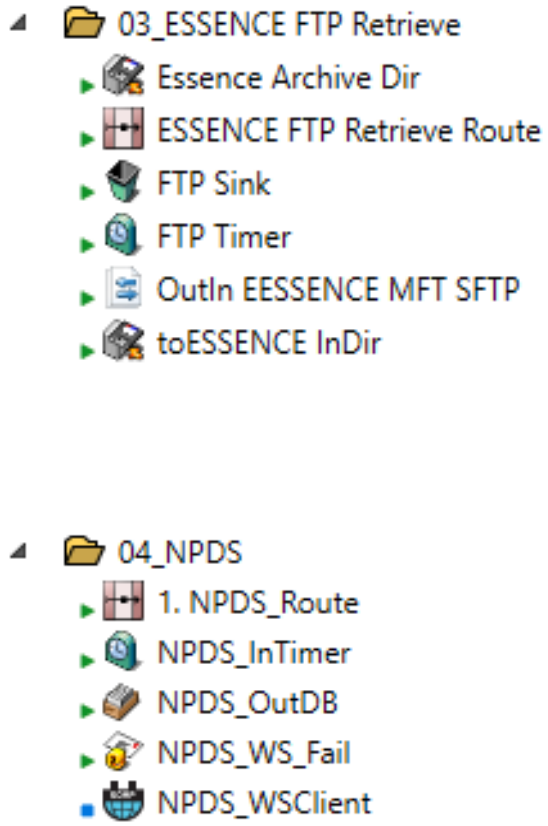
Syndromic Triggering Mechanism

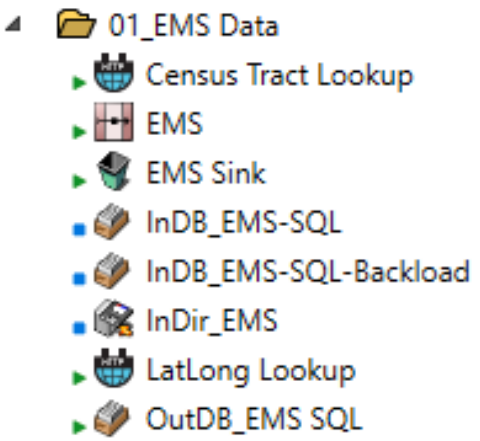
ADT Messages:

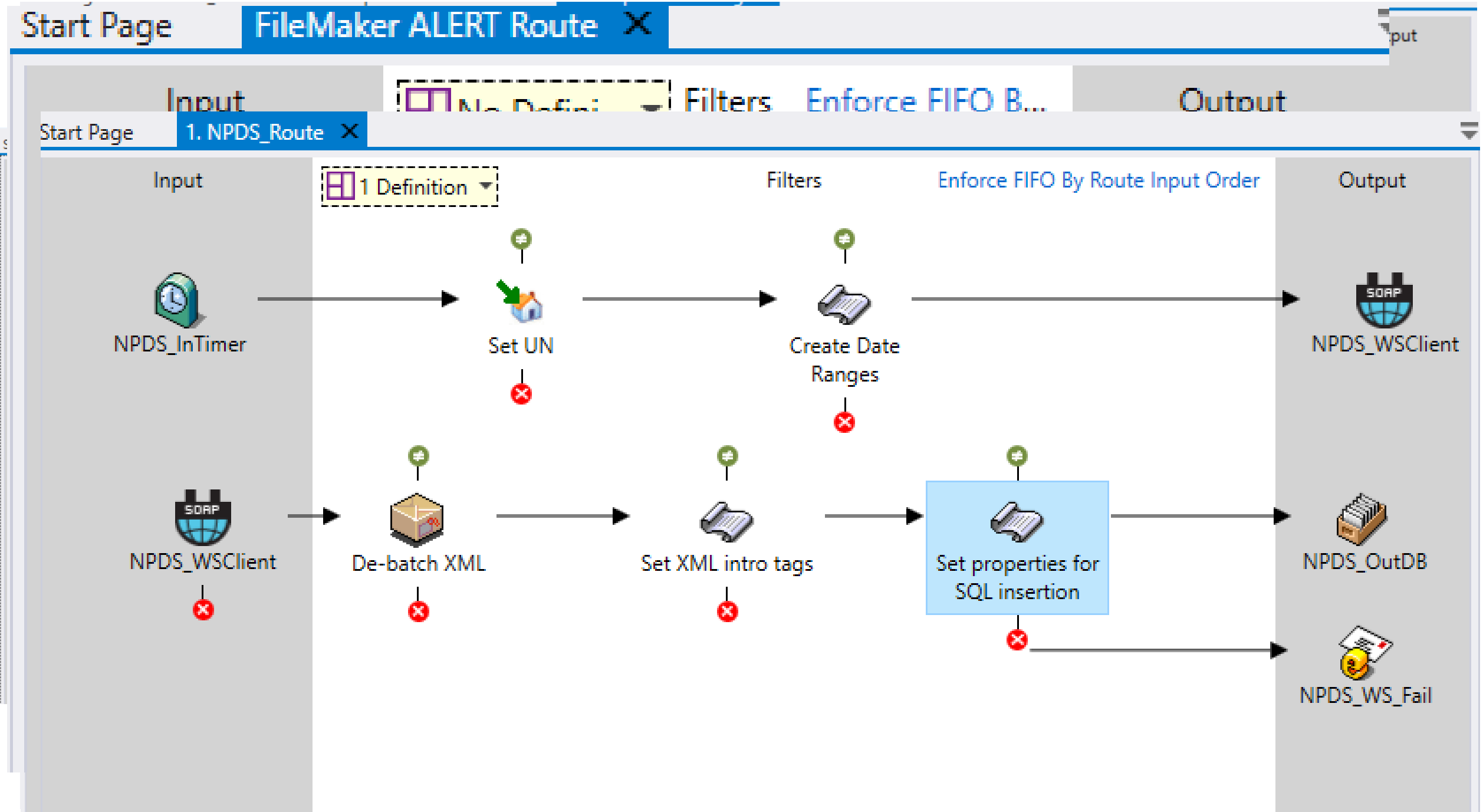
- **A04 = Registration**
- A05 = Pre-admit
- **A01 = Admit**
- **A08 = Medical record updates**
- A02 = Transfer
- **A03 = Discharge**

Syndromic Routes







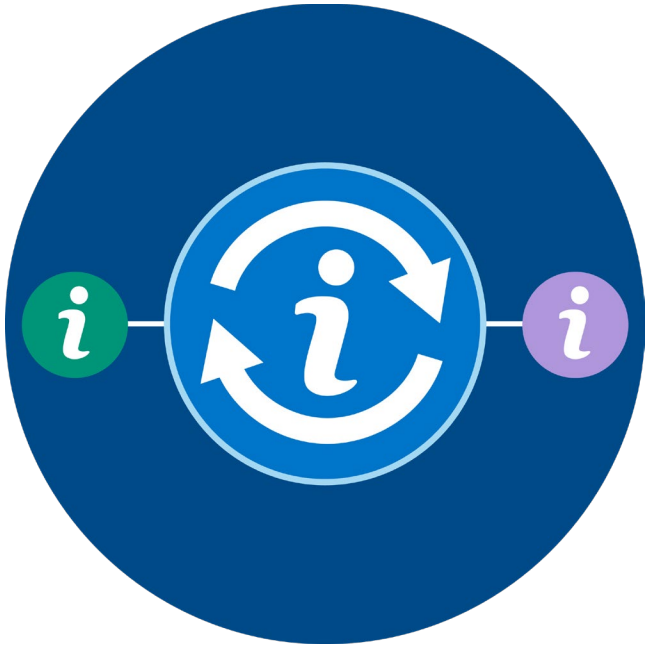

Start Page
FileMaker ALERT Route
Input
Filters
Enforce FIFO B...
Output
Start Page
1. NPDS_Route
Input
1 Definition
Filters
Enforce FIFO By Route Input Order
Output
NPDS_InTimer
Set UN
Create Date Ranges
NPDS_WSClient
NPDS_WSClient
De-batch XML
Set XML intro tags
Set properties for SQL insertion
NPDS_OutDB
NPDS_WS_Fail

OREGON HEALTH AUTHORITY

Data Out

Public Health Informatics:

Information Translation



Public Health Information Translation

This metaphor:

- Emphasizes **communication**
- **Data ≠ information**

Informaticians work with data users – analysts, epis, data scientists, public – to build systems, select the right data and tools to gain insights.

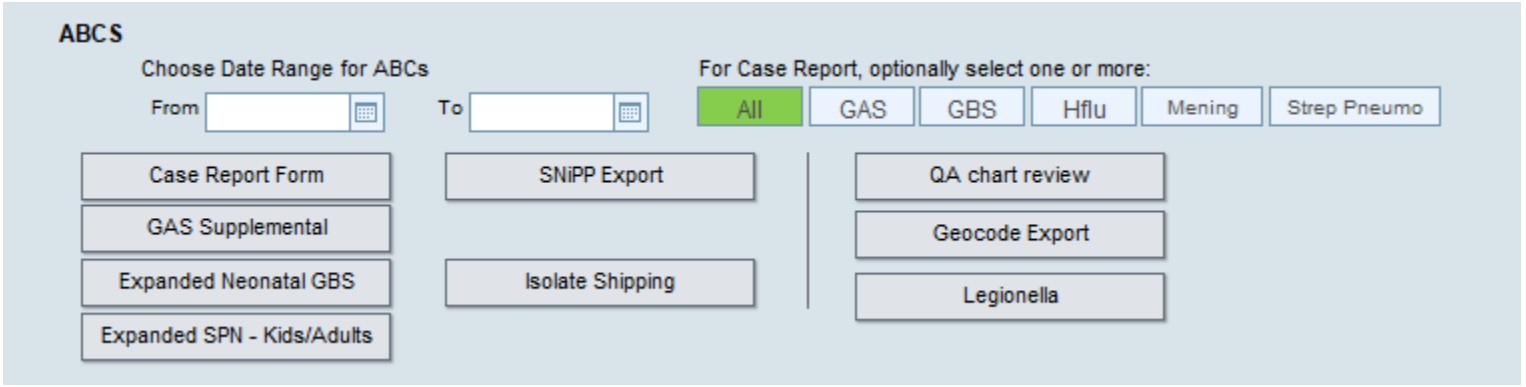
Revisit Data Governance a bit

- Who can access, use, distribute
- Who “owns” the data
- What does the law say
- Public vs. Authorized access
- Exporting and Reporting (data for analysis vs. visualization)
  - Data Quality
  - Data Aggregation (or disaggregation)
  - Only what’s needed

National Reporting Requirements

- Nationally Notifiable Disease Conditions (85 in Oregon) sent to CDC daily (or weekly)
  - HIV, Lead, Pesticide have similar but separate requirements
- Syndromic is not required by law, but we voluntarily report daily to NSSP
- Emerging Infections Program – numerous weekly or monthly exports (ABCs, RESP-NET, FoodNet)

MSH|^~\&|ACDP^2.16.840.1.114222.4.1.3676^ISO|OR-DHS^2.16.840.1.114222.4.1.3676^ISO|PHINCDS^2.16.840.1.114222.4.3.2.10^ISO|
PHIN^2.16.840.1.114222^ISO|20191113070107||ORU^R01^ORU_R01|20191113-OR-000607995|P|2.5.1|||||||
NND_ORU_v2.0^PHINProfileID^2.16.840.1.114222.4.10.3^ISO~TB_Case_Map_v2.0^PHINMsgMapID^2.16.840.1.114222.4.10.4^ISO
PID|1||607995^^^ACDP&2.16.840.1.114222.4.1.3676&ISO||~^^^^^^S||19910513|M||2028-9^Asian^2.16.840.1.113883.6.238|
^^^OR^97401^^^^OR039||||||||||2186-5^Not Hispanic or Latino^2.16.840.1.113883.6.238|||||||
OBR|1||607995^ACDP^2.16.840.1.114222.4.1.3676^ISO|PERSUBJ^Person Subject^2.16.840.1.114222.4.5.274|||
20180410110244|||||||||||||20191113070107|||C|||||10220^Tuberculosis^2.16.840.1.114222.4.5.277
OBX|1|CWE|DEM114^Birth Sex^2.16.840.1.114222.4.5.232||M^Male^2.16.840.1.113883.12.1||||||F
OBX|2|CWE|DEM126^Country of Birth^2.16.840.1.114222.4.5.232||CHN^China^1.0.3166.1||||||F
OBX|3|CWE|DEM152^Race Category^2.16.840.1.114222.4.5.232||2028-9^Asian^2.16.840.1.113883.6.238||||||F
OBX|4|CWE|DEM153^Detailed Race^2.16.840.1.114222.4.5.232||2034-7^Chinese^2.16.840.1.113883.6.238||||||F
OBX|5|CWE|DEM2003^US Born^2.16.840.1.114222.4.5.232||N^No^2.16.840.1.113883.12.136||||||F
OBX|6|TS|DEM2005^Date of Entry into US^2.16.840.1.114222.4.5.232||201199||||||F
OBR|2||607995^ACDP^2.16.840.1.114222.4.1.3676^ISO|NOTF^Case Notification^2.16.840.1.114222.4.5.274|||20180410110244|||||||||||||
20191113070107|||C|||||10220^Tuberculosis^2.16.840.1.114222.4.5.277
OBX|1|CWE|INV107^TB Reporting Area^2.16.840.1.114222.4.5.232||41^Oregon^2.16.840.1.113883.6.92||||||F
OBX|2|CWE|NOT116^Jurisdiction Area^2.16.840.1.114222.4.5.232||41^Oregon^2.16.840.1.113883.6.92||||||F
OBX|3|ST|TB199^Legacy CLIENTID TIMS^2.16.840.1.114222.4.5.232|||||||F
OBX|4|TS|INV177^Date First Reported PHD^2.16.840.1.114222.4.5.232||20180309||||||F
OBX|5|CWE|INV109^Case Investigation Status Code^2.16.840.1.114222.4.5.232||29179001^Closed^2.16.840.1.113883.6.96||||||F
OBX|6|SN|INV165^MMWR Week^2.16.840.1.114222.4.5.232||^15||||||F
OBX|7|TS|INV166^MMWR Year^2.16.840.1.114222.4.5.232||2018||||||F
OBX|8|CWE|NOT109^Reporting State^2.16.840.1.114222.4.5.232||41^Oregon^2.16.840.1.113883.6.92||||||F
OBX|9|ST|INV168^Record ID^2.16.840.1.114222.4.5.232||607995||||||F
OBX|10|CWE|TB154^Case Verification^2.16.840.1.114222.4.5.232||PHC653^Positive NAA^2.16.840.1.114222.4.5.274||||||F
OBX|11|ST|TB200^Legacy RVCTID^2.16.840.1.114222.4.5.232|||||||F
OBX|12|TS|INV111^Date of report^2.16.840.1.114222.4.5.232||20180309||||||F



State and Local Reporting

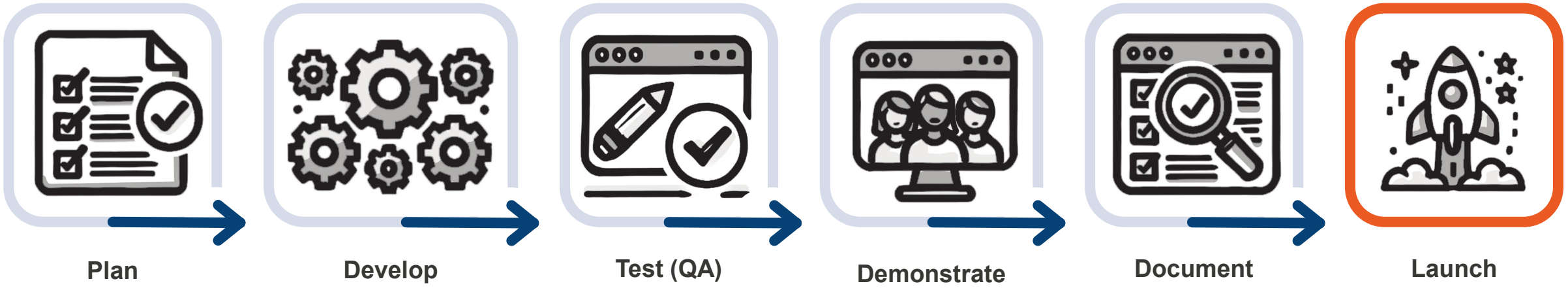
- Weekly, Monthly, and Annual Reports
  - Data are exported from Orpheus and visualized
- FileMaker to CSV to SQL (state and regional data mart)
  - The goal is to obviate the “canned reports” within Orpheus to a more robust environment
- Within Orpheus – reports that aren’t really reports, but are useful for reporting…
  - Case Counts (by county, disease, age, sex…)
  - Risks/Exposures (by disease)
  - Line lists (“report-like” for better case management)
  - Triennial review and data cleaning

OREGON HEALTH AUTHORITY

Reporting and Data Visualizations

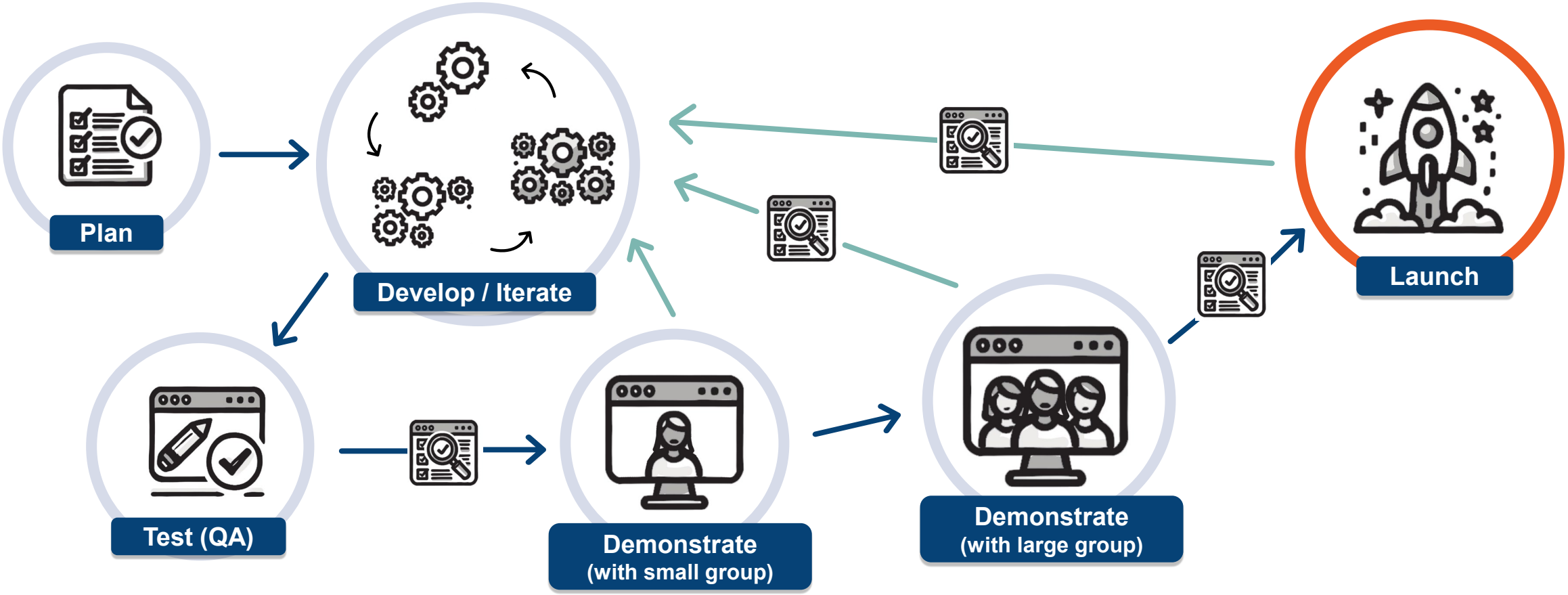
Where do we begin?

Our plan as a process map...



Where do we begin?

sometimes ends up like this.



Team Template

- Provide consistency
- The process map is back!
- Include written and visual elements

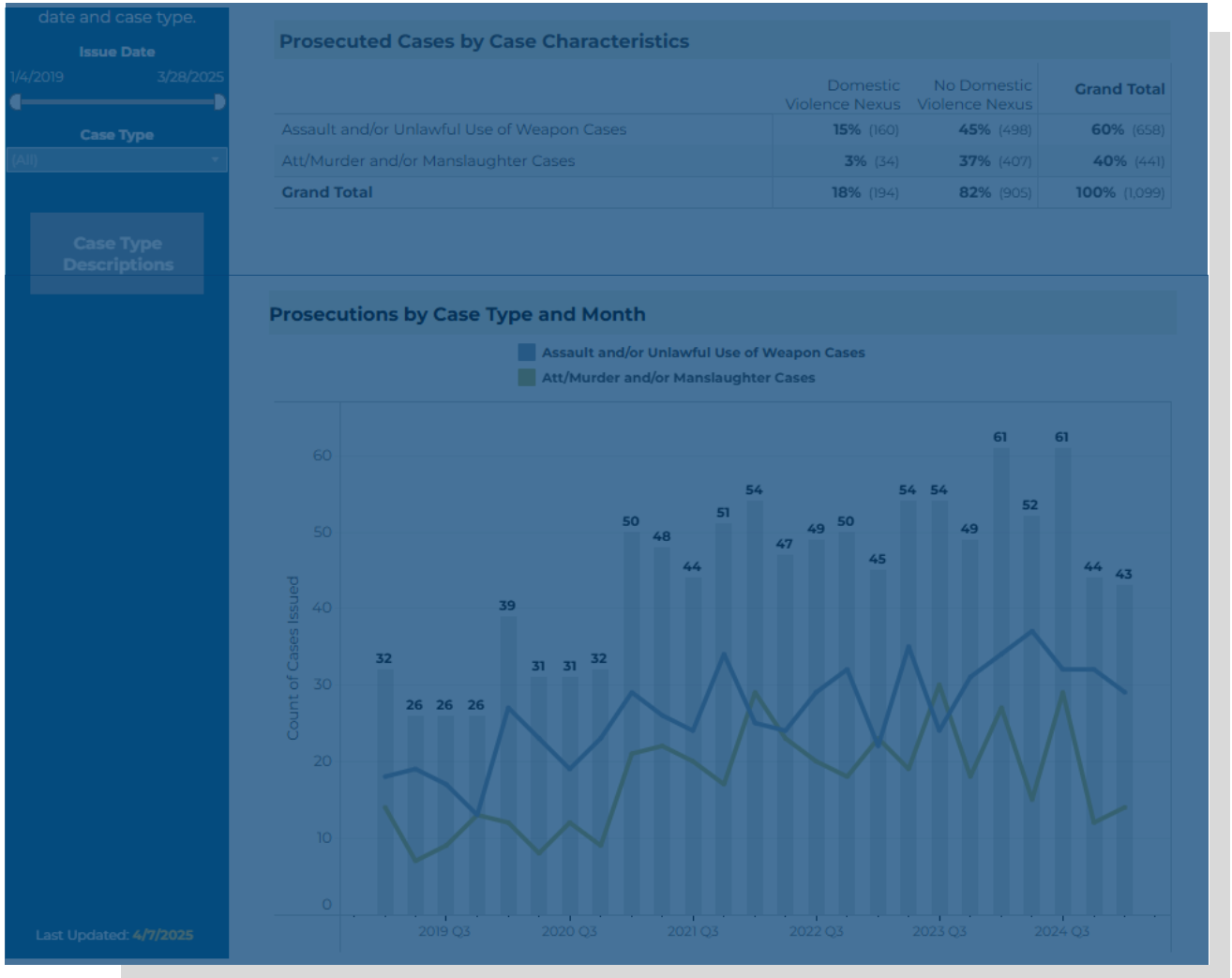
If "Internal, Restricted" was selected above, describe the different permissions required for each user type:

User type	Permissions
Viewer	
Publisher/Contributor	
Project Lead/Member	

9. **Sketch** a wireframe for the dashboard, report.
Looking for dashboard layout inspiration? Try one of the following:
   - Dashboard templates in Stephanie Evergreen's Data Visualization sketchbook
   - Browse example dashboards:
     - The Big Book of Dashboards
     - Tableau Public's Viz Gallery
     - Power BI Data Stories Gallery
     - R flexdashboard layouts and example projects

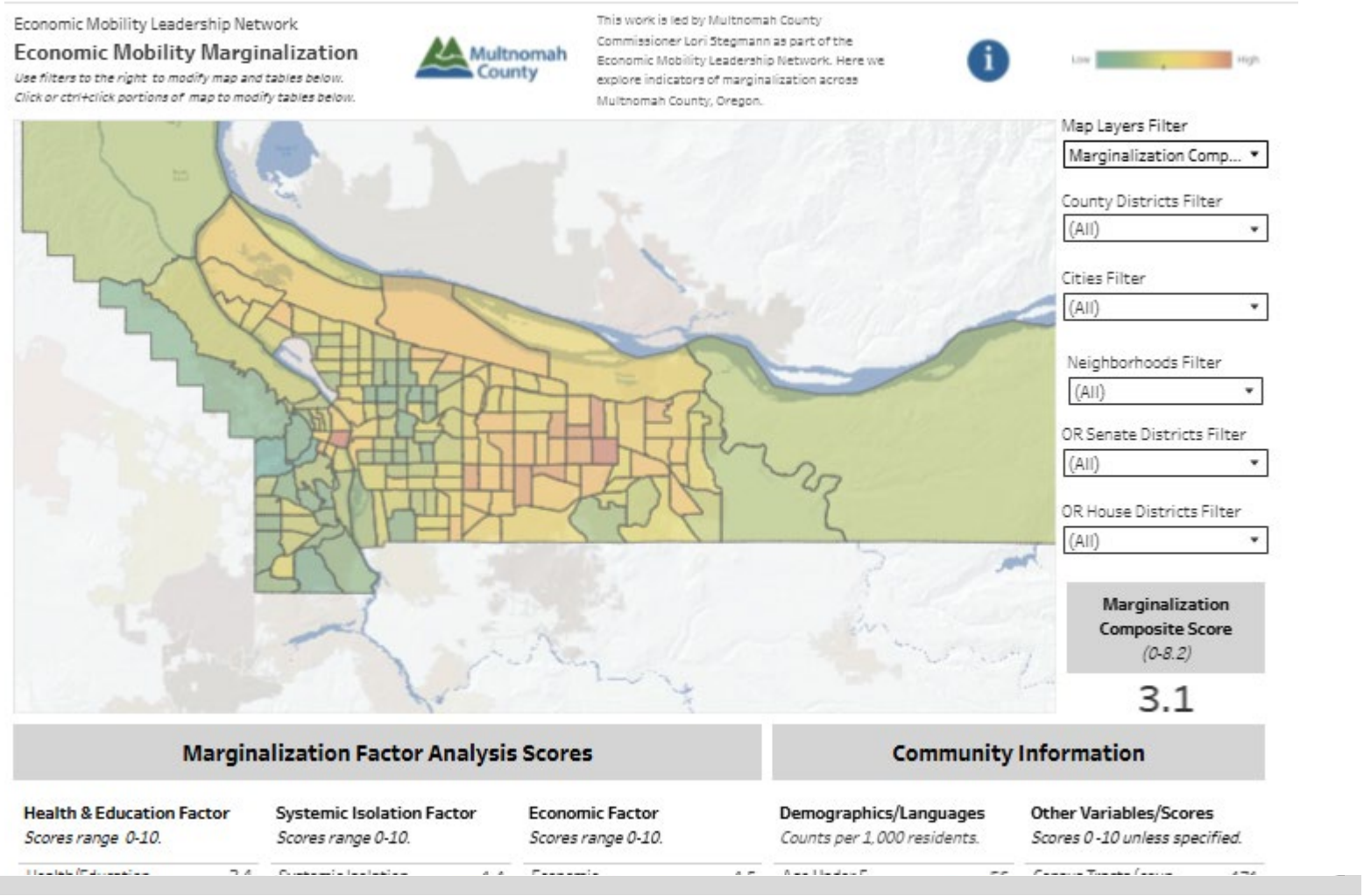
[Insert or attach picture]

Local Inspiration



- KPIs
- Line graph
- Additional data table

Local Inspiration

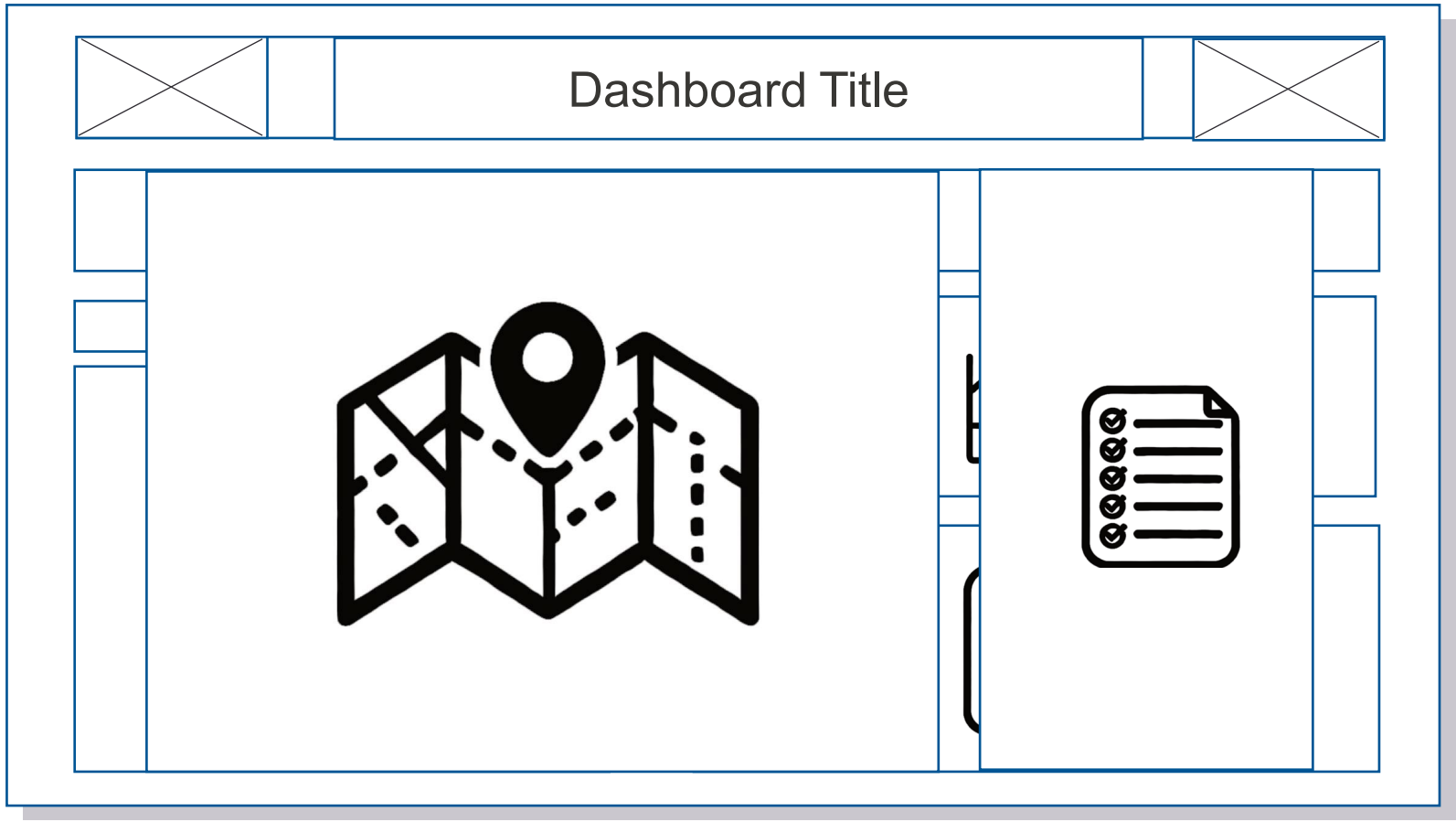


- Map with data points
- Narratives and resource links
- Tabbed navigation

Wireframing

Viz Types

kpi



- Start with a blank canvas
- Add the essentials
- Be flexible

Team Template Revisited

Planning

☑ **New** dashboard, report ☐ **Revised** dashboard, report

Roles

1. Define **roles** for development.
   - Decide who can make the final decision if consensus can't be reached.
   - Consider partnering with another organization if the message is better delivered from another source.

Role	Name (a person may serve in multiple roles)
Requestor	Jane Doe
Data owner/Subject Matter Expert	
Lead developer	Jane Doe
Technical consultant	

Purpose

2. Determine the **purpose** of the dashboard, report.

Focus question	Answer
Who is the intended audience?	OrEpi Planners
What questions are we answering?	Informatics session
What is the value added?	attendee data
Is there anyone who may be harmed?	
In what format will the dashboard, report primarily be used?	[e.g., Desktop, mobile, social media, printed]

If "Internal, Restricted" was selected above, describe the different permissions required for each user type:

User type	Permissions
Viewer	
Publisher/Contributor	
Project Lead/Member	

9. **Sketch** a wireframe for the dashboard, report.
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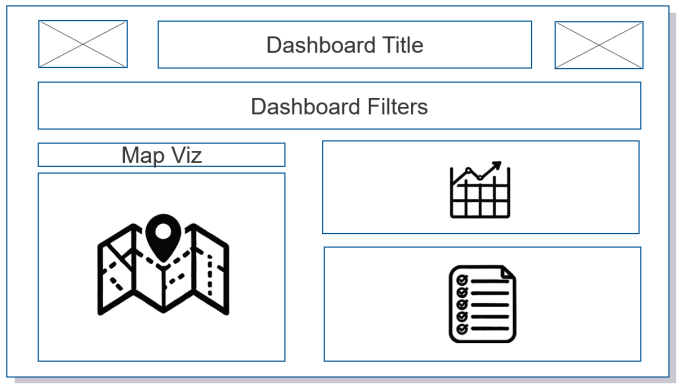
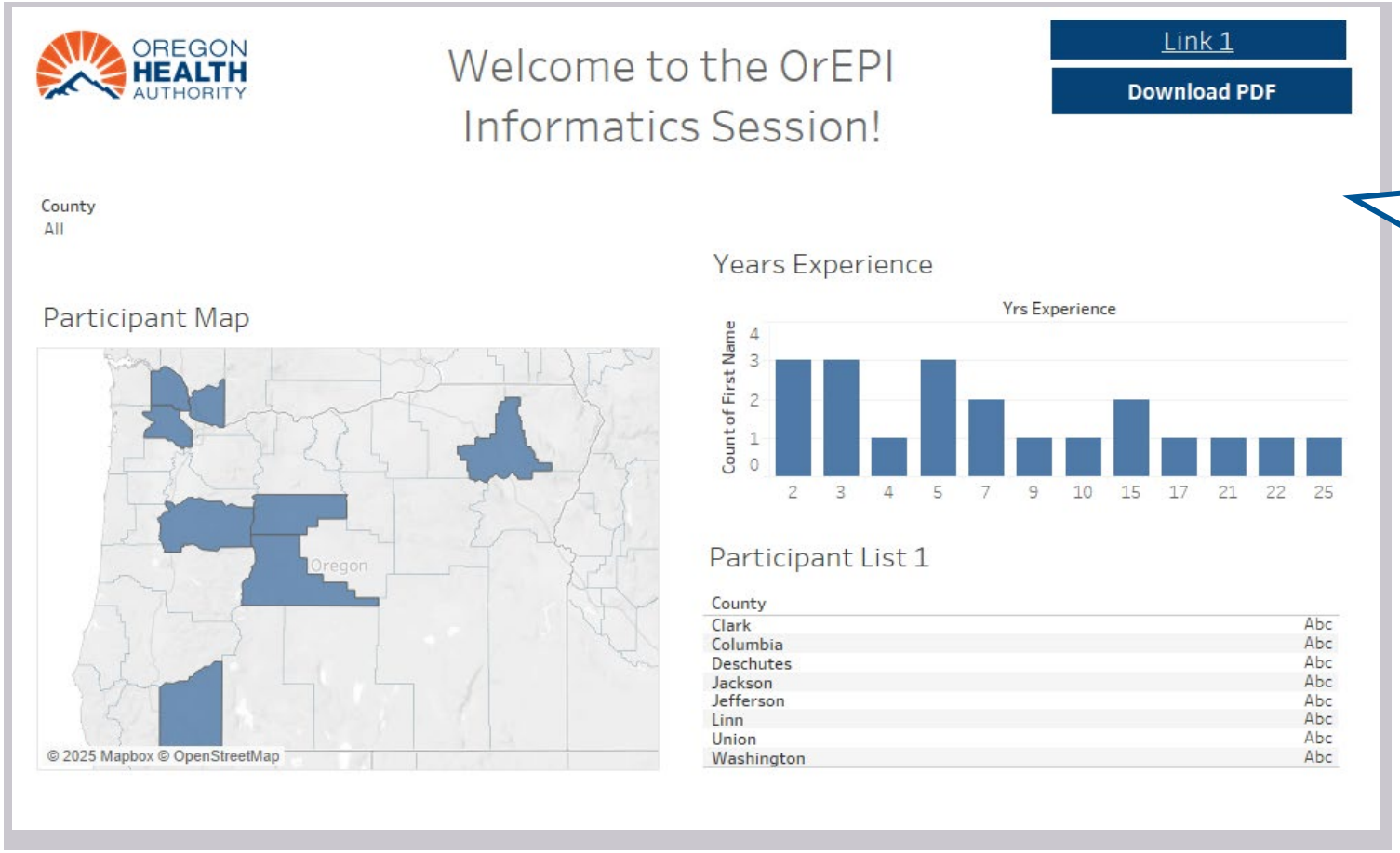
[Insert or attach picture]



Wireframe becomes a Prototype

Viz Types

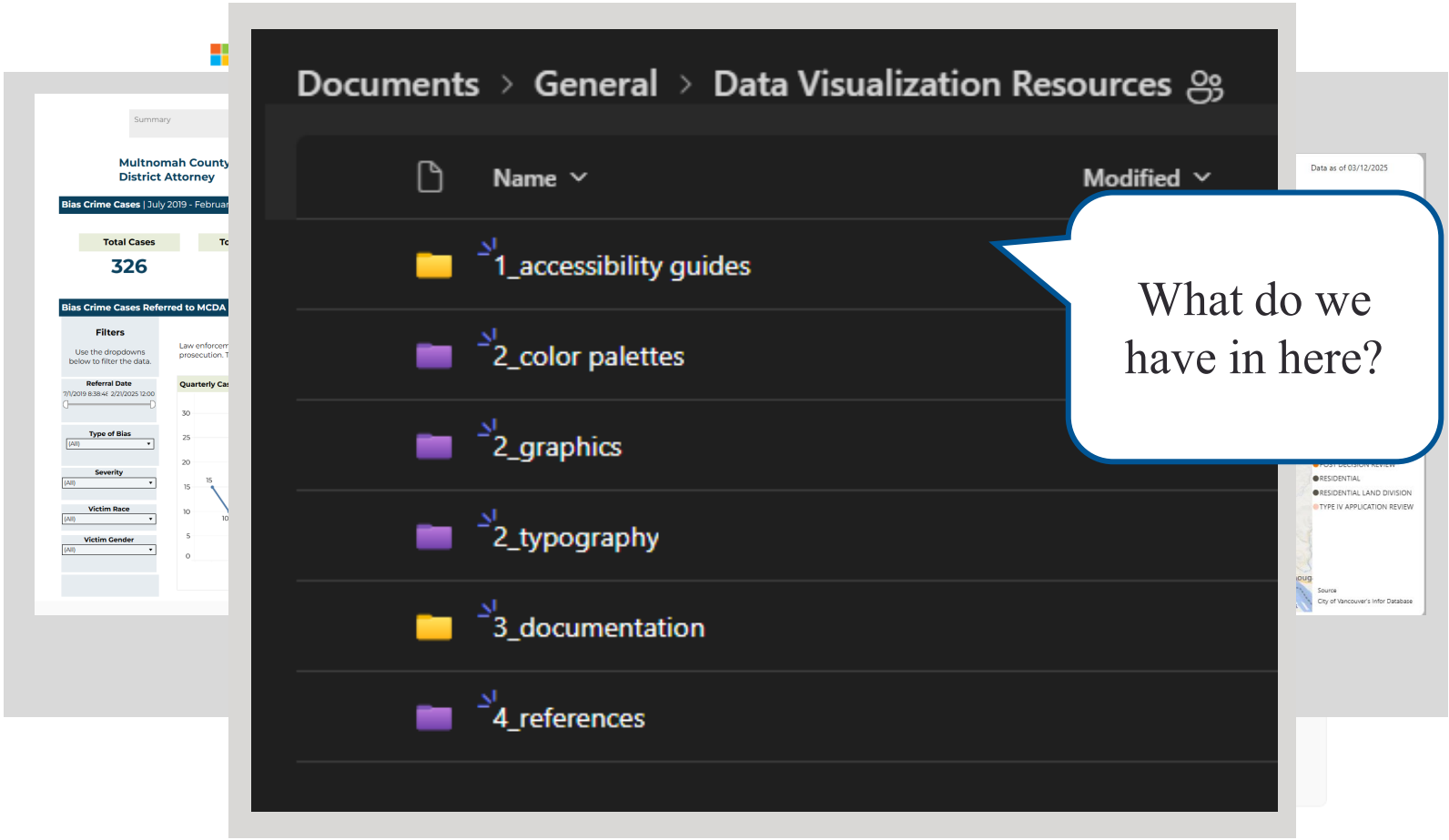
kpi



This is only the beginning!

Build your resources

- Color Palettes
  - Tableau
  - Power BI
- Save inspiration
- But where…
- Create a repository!



Universal design is good design

- Usable by all people, to the greatest extent possible, without the need for adaptation or specialized design

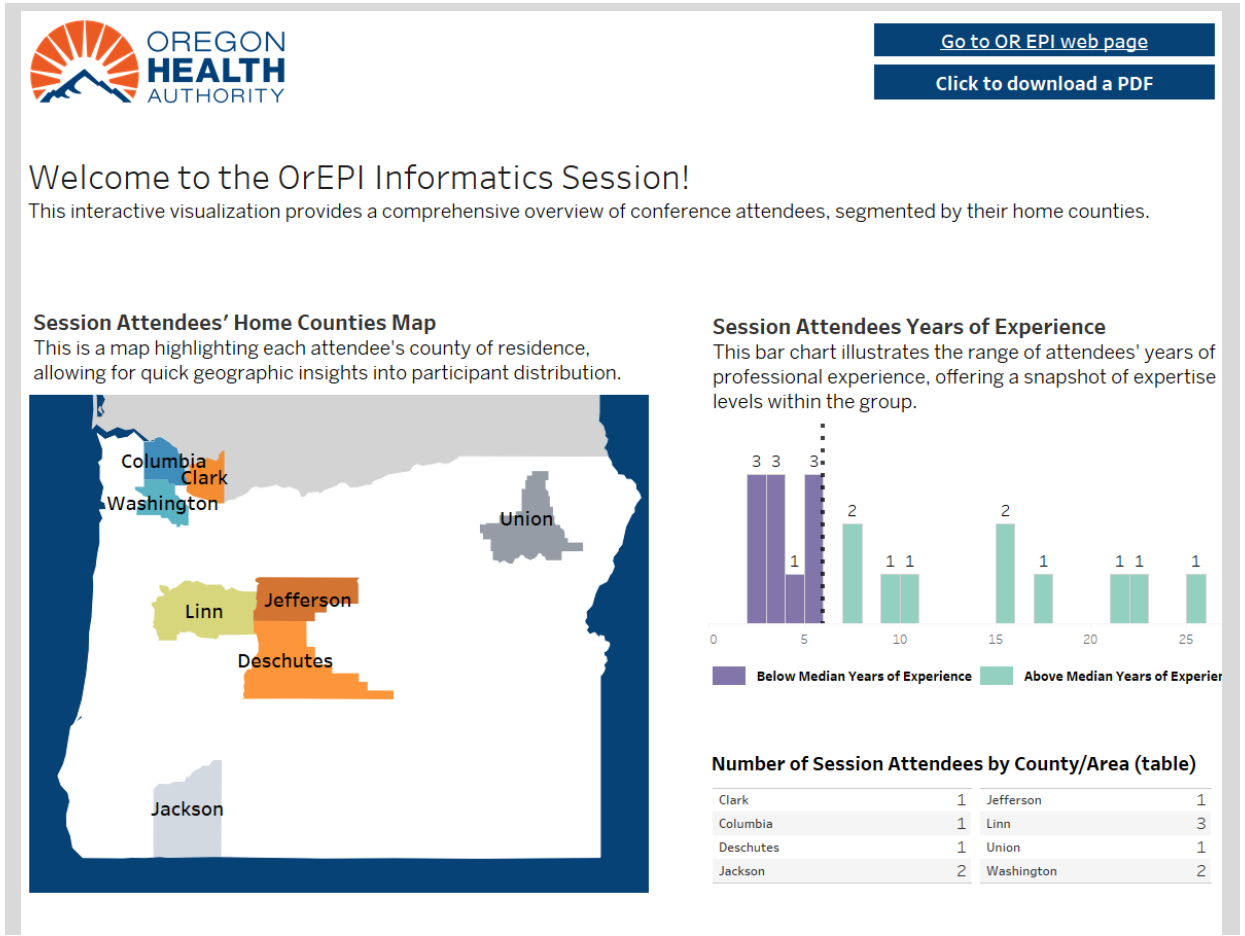
- Web Content Accessibility Guidelines (**WCAG**)
  - Principles: Perceivable, Operable, Understandable, Robust
  - Guidelines
  - Success Criteria (Level A – AAA)

Text alternatives

- Non-text content (**data viz!**) has a **text alternative** that serves the equivalent purpose (WCAG 1.1.1)
- Provide with the viz:
  - Meaningful **title** with interpretation, key takeaway
  - Visual **description** (chart type, dimensions/measures)
  - **Source**(s)
- **Data don’t speak for themselves**

Accessibility

Color contrast (and not by itself!)



- **Contrast** (WCAG 1.4.3, 1.4.11)
  - **3:1 for non-text**, like charts
  - **4.5:1 for text**

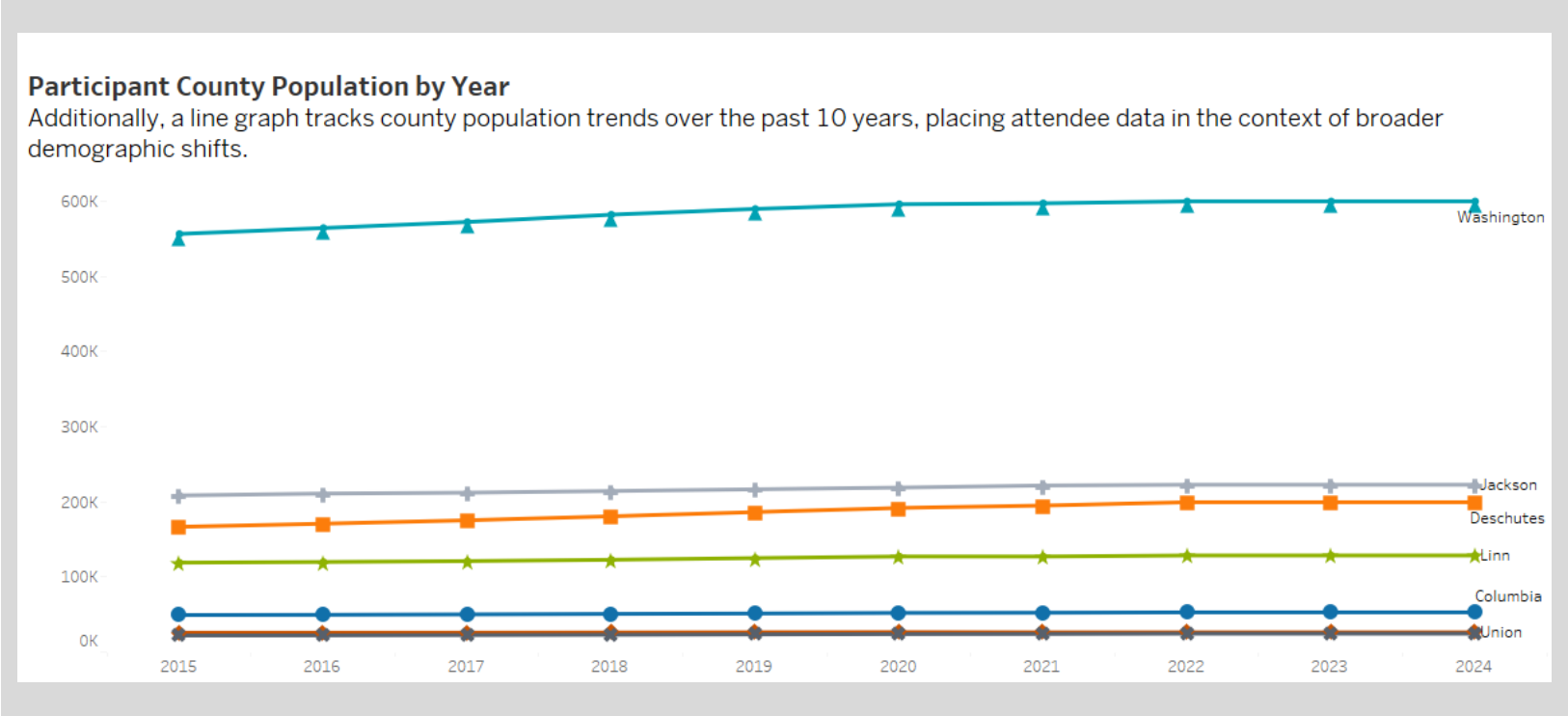
    (3:1 for 14pt bold, or 18pt +)

- **Color is paired with shape or text**

  WCAG 1.4.1

Accessibility

Text alternatives



✓ **Color contrast > 3:1**

Text 12.63:1

Lines 9.1:1, 4.23:1

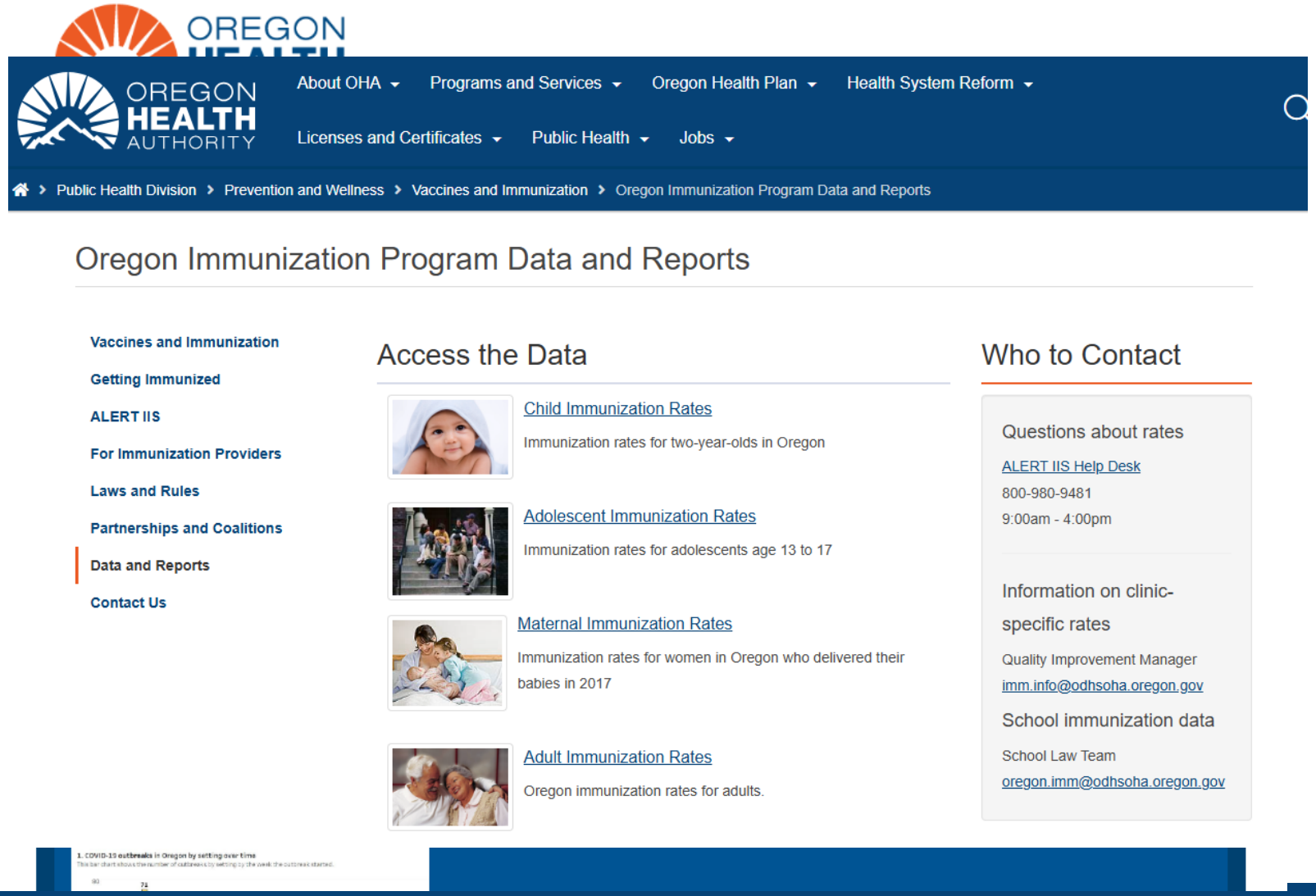
5.81:1

✓ **Color +**

1) color
2) mark shape
3) direct label

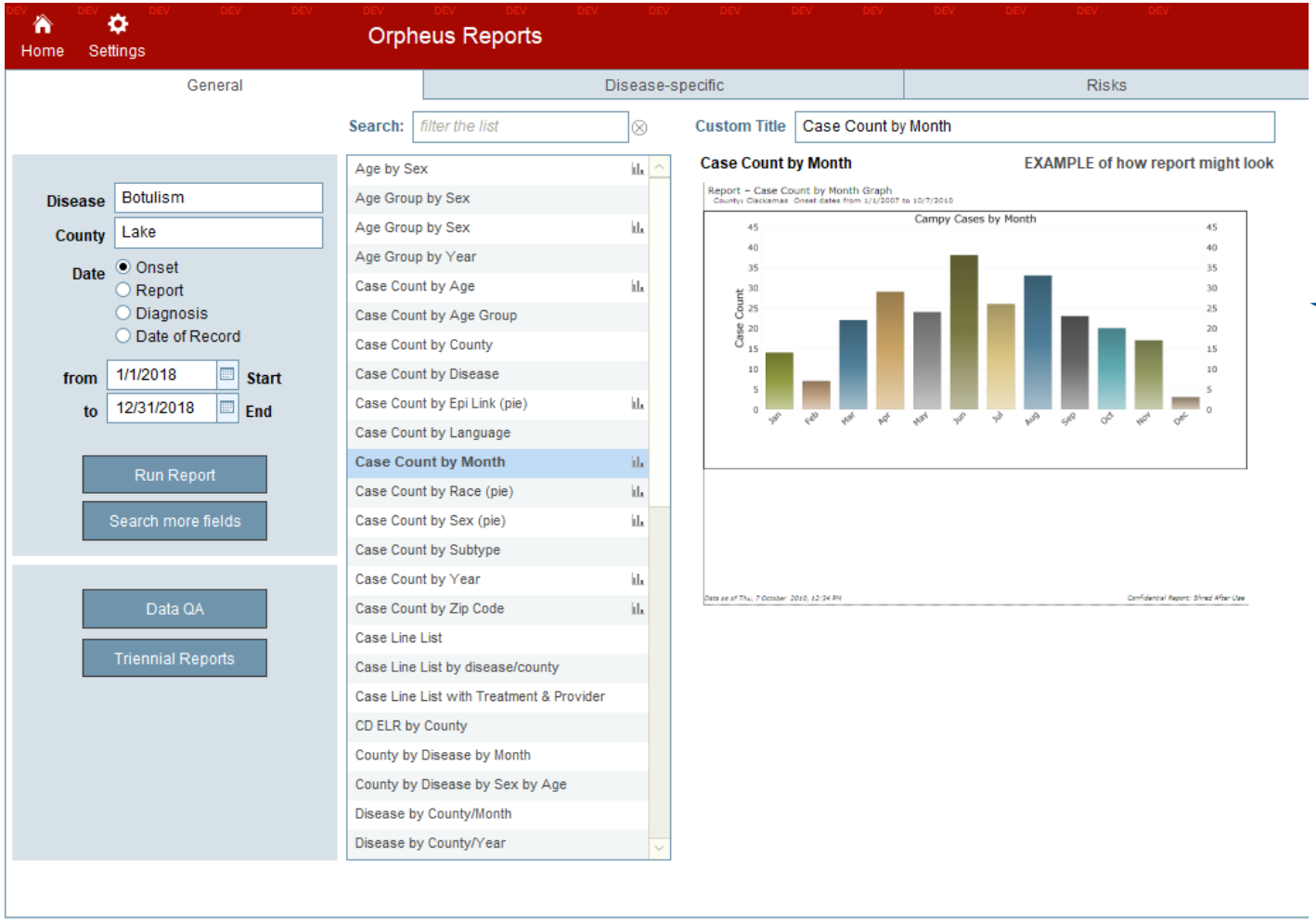
Accessibility

Data Hubs



- A viz hub on Tableau Public
- A data hub on your webpage

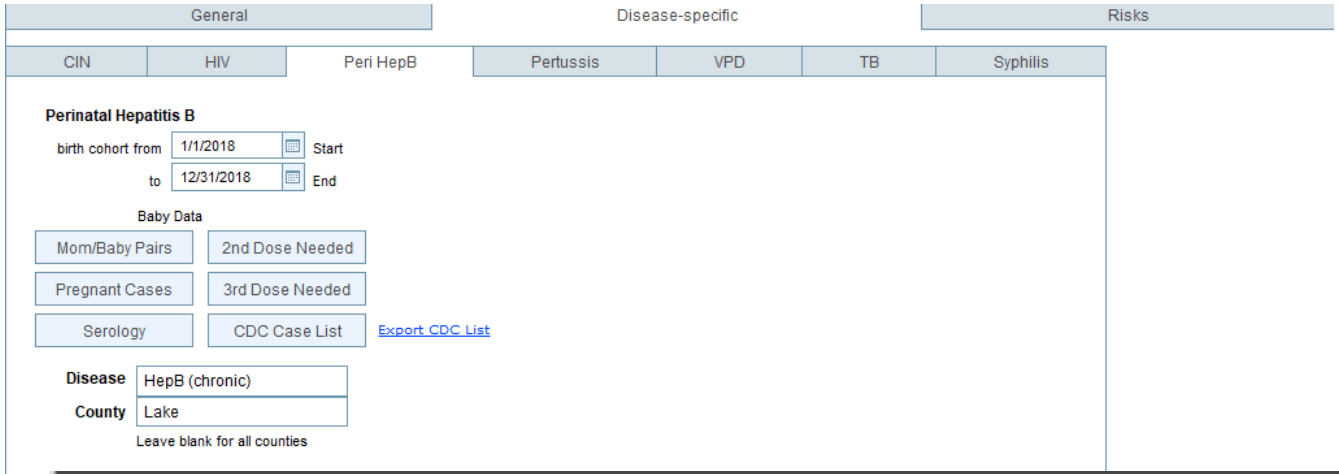
Canned Charts and Graphs



Meet with us!

- Orpheus User Group
- Orpheus Data Advisory Group

Canned Reports and Line Lists



Home | Export | Back to Reports

Perinatal Hepatitis Mom/Contacts

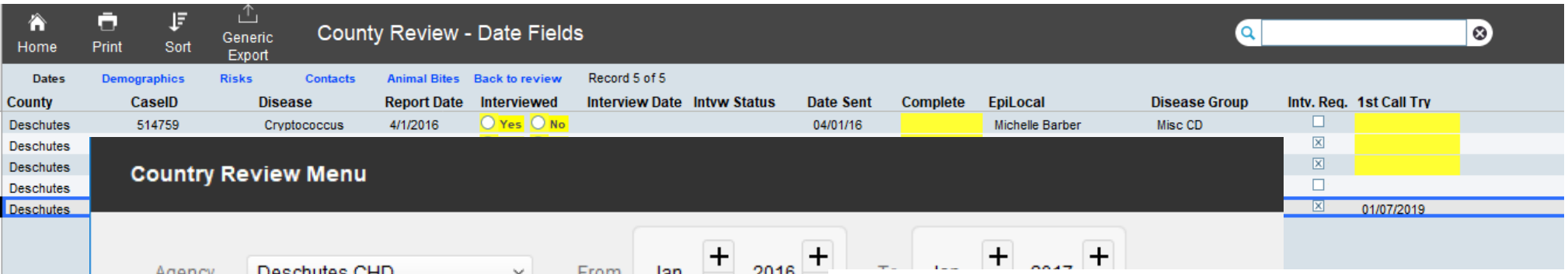
Record 1 of 6

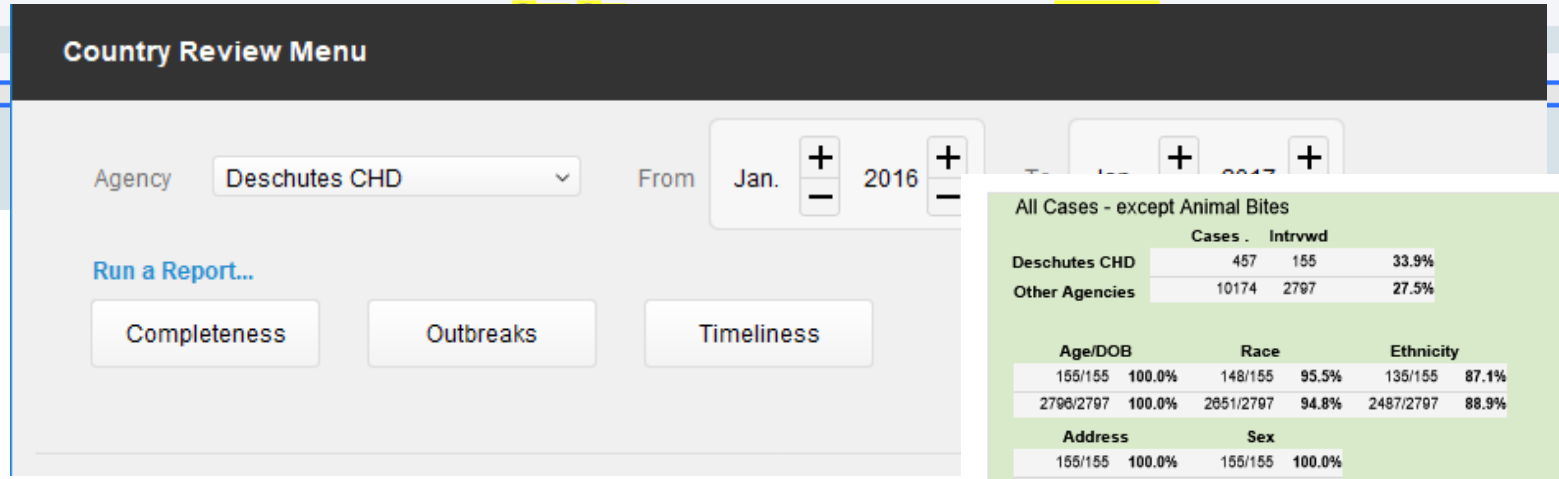
CDC List | Contacts | Vaccinations | Prophy | Serologies | Save to Excel

CaseID	Case County	Name	DOB	Baby (#): Name	DOB	Trimester	Closed	Insurance: Mom / Child	Follow-up County	HE
514858	Columbia	Madison, Billy	8/7/92	4 Madison, Penguin	7/25/16				Baker	
514858	Columbia	Madison, Billy	8/7/92	1 Madison, Baby6	1/5/16		3426		Curry	1
447086	Multnomah	Star, Shining	5/4/82	3 Star, Lucky	6/1/16		3000		Curry	6
447086	Multnomah	Star, Shining	5/4/82	Star, Newborn Baby	9/1/16					
447086	Multnomah	Star, Shining	5/4/82	Star, Newborn Baby	1/1/18					1
515612	Washington	Test, Person	1/1/80	1 Test, Newborn Baby	9/5/18	3rd				

[Total Pair(s) 6]

Triennial Review Reports





All Cases - except Animal Bites

	Cases .	Intrvwd	
Deschutes CHD	457	155	33.9%
Other Agencies	10174	2797	27.5%

Age/DOB		Race		Ethnicity	
155/155	100.0%	148/155	95.5%	135/155	87.1%
2796/2797	100.0%	2651/2797	94.8%	2487/2797	88.9%

Address		Sex	
155/155	100.0%	155/155	100.0%
2793/2797	99.9%	2797/2797	100.0%

...excluding chronic Hepatitis C

Occup		Hosp Stat		Outcome	
93/216	43.1%	200/216	92.6%	200/216	92.6%
1862/3976	46.8%	3757/3976	94.5%	3744/3976	94.2%

Cases Requiring Interview - excluding Animal Bites

	Cases requiring intv.	Intrvwd	
Deschutes CHD	112	81	72.3%
Other Agencies	2459	1910	77.7%

Age/DOB		Race		Ethnicity	
81/81	100.0%	78/81	96.3%	76/81	93.8%
1909/1910	99.9%	1793/1910	93.9%	1702/1910	89.1%

Address		Sex	
81/81	100.0%	81/81	100.0%
1907/1910	99.8%	1910/1910	100.0%

Occup		Hosp Stat		Outcome	
66/81	81.5%	81/81	100.0%	81/81	100.0%
1356/1910	71.0%	1902/1910	99.6%	1905/1910	99.7%

Occupation/Grade - Restrictable Diseases

	Diptheria	Measles	S. Typhi	Shigella
Deschutes CHD	/	/	/	3/3 100.0%
Other Agencies	/	/	2/2 100.0%	75/75 100.0%

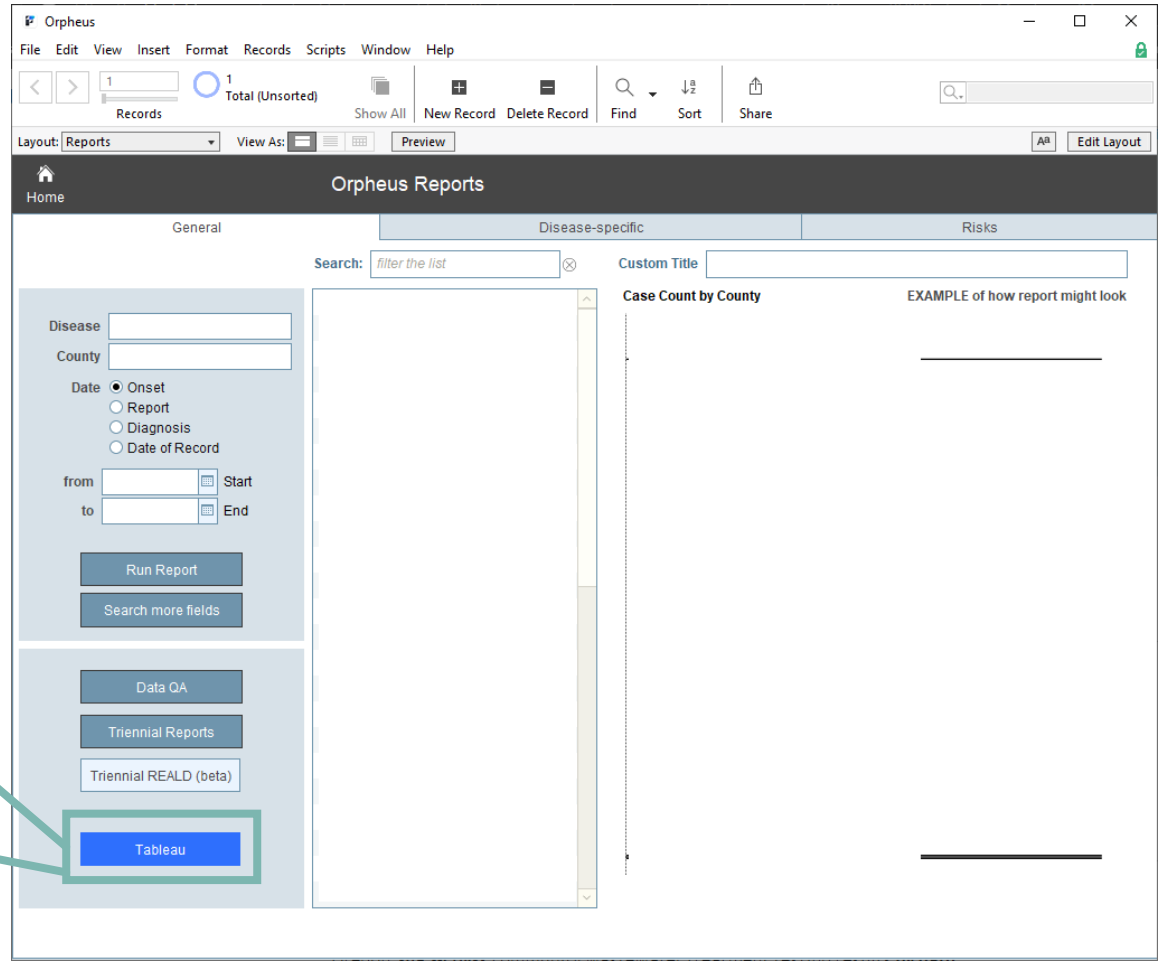
	E. coli	Hep A	Pertussis	Rubella
Deschutes CHD	11/11 100.0%	1/1 100.0%	3/3 100.0%	/
Other Agencies	173/174 99.4%	15/15 100.0%	198/202 98.0%	/

Outcome - Selected Diseases

	H. flu	Mening	Hep A
	2/2 100.0%	/	1/1 100.0%
	32/32 100.0%	21/21 100.0%	15/15 100.0%

Hep B acute	Hep C acute	Inf. Pertussis
/	/	/
17/17 100.0%	11/11 100.0%	19/19 100.0%

Internal Reporting



External Reporting

Use the right tool

- Repeated and consistent output
- Language-based read/write data science for reproducibility and transparency
- Click-based read-only reporting interfaces (Tableau, PowerBI)
- Considerations for compliance and sharing with partners

Visualizations: Public

Oregon Public Health Division - Acute and Communicable Disease Prevention

Oregon Health Authority - Public Health Division | Portland, Oregon, United States

The Acute and Communicable Disease Prevention Section (ACDP) at the Oregon Public Health Division collects data on communicable diseases from a variety of sources to inform physicians and the public about the...

Read more

Follow

Vizzes 17 Favorites 0 Following 13 Followers 19

Link

Visualizations: Public

OREGON HEALTH AUTHORITY

Main page

Updated weekly. Data current as of 4/16/2025

Oregon Respiratory Viral Pathogen Wastewater Monitoring Dashboard

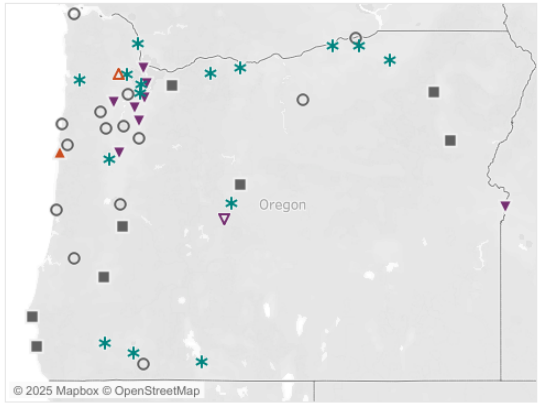
77% of Oregon community wastewater treatment centers were **positive** for SARS-CoV-2 on the most recent sample

23% of Oregon community wastewater treatment centers were **non-detectable** for SARS-CoV-2 on the most recent sample

Proportion of reporting community wastewater treatment centers by most recent **SARS-CoV-2 trend category**

Sustained increase: **4%**	Increase: **4%**	Plateau: **58%**	Decrease: **4%**	Sustained decrease: **31%**	Sporadic detections	Discontinued
▲	△	✳	▽	▼	○	■

Map of community wastewater treatment centers in Oregon by most recent **SARS-CoV-2 trend**



Select one or more SARS-CoV-2 trend categories to filter the map. The list of community wastewater treatment center locations will update based on the trend category selection.

SARS-CoV-2 trend categories	Locations
✔ Sustained Increase	All
✔ Increase	
✔ Plateau	
✔ Decrease	
✔ Sustained Decrease	
✔ Sporadic Detections	
✔ Discontinued	

Would you like to see trends over time for individual wastewater treatment centers, or statewide?

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The Oregon Public Health Division (OPHD) works to protect and promote the health of all Oregonians and the communities where they live, work, play and learn. Data presented here are from the OPHD Acute and Communicable Disease Prevention section (ACDP).

View the ACDP webpage View all dashboards from ACDP

Submit feedback

Oregon's Weekly Communicable Disease Report

Data current as of April 15, 2025 §

A weekly report presenting preliminary data on case counts and trends for selected reportable diseases in Oregon.

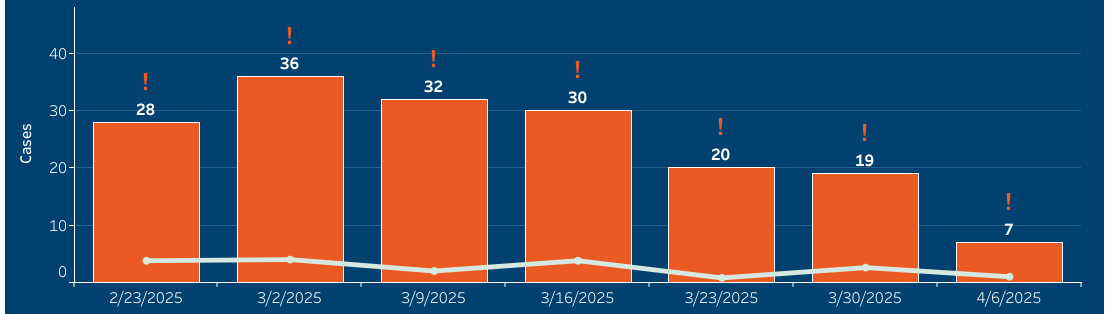
Weekly Report Charts | Disease Data Tables

Statewide Data for the Week of April 6, 2025

Select a disease to view	Weekly Total Case Count	Year to Date Case Count	Prior 4 Weeks Case Count
Pertussis	7	581	101

Pertussis Cases by Report Week*

Orange bars represent case counts for each report week over the past two months.
The **light blue line** shows the five-year average case count for that week.
Bars are marked with a ! if the case count is more than two standard deviations above the five year average.†



Year to date Pertussis cases, by year

The **light blue bars** show the year-to-date case count (week 1 – week 15) for each of the past five years.

Pertussis Cases by Report Week*

The **light blue bars** show the case count for each report week of the current year.

Oregon ESSENCE Summer Hazard Report

TOTAL VISITS | HEAT-RELATED | SUBMERSION | FIRE AND SMOKE | AIR QUALITY | ABOUT

HEAT-RELATED ILLNESS refers to a variety of conditions resulting from elevated body temperatures such as heat stroke, heat syncope (fainting), heat exhaustion, and heat cramps.

HEAT-RELATED ILLNESS (HRI) QUERY
This query looks for words like "heat," "sun stroke," and "hyperthermia" and HRI codes (including ICD-9 code 992 and ICD-10 code T67) among E.D. and urgent care patient chief complaints and discharge diagnoses.

SEASONAL HAZARD: HEAT-RELATED ILLNESS

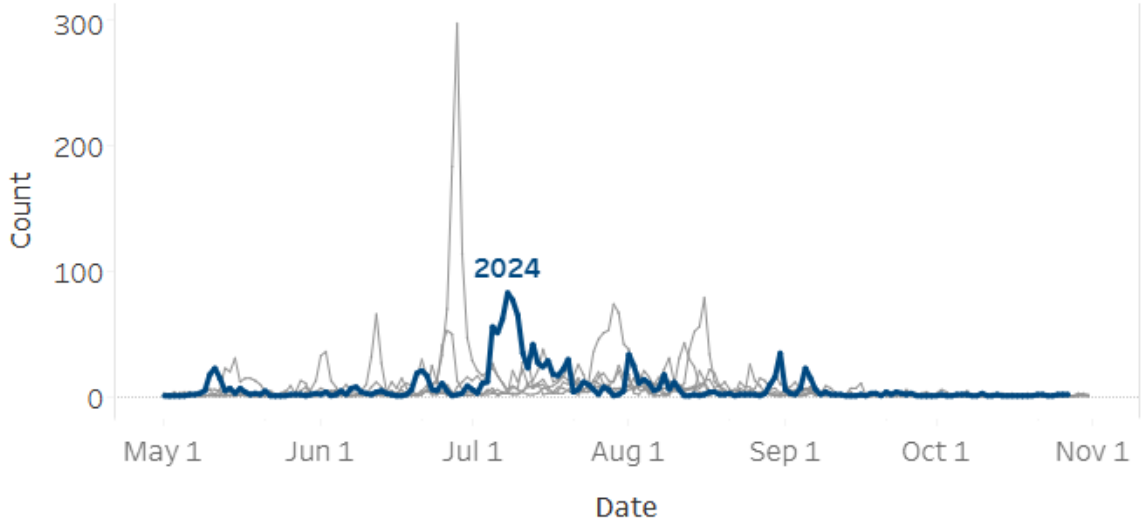
Extreme heat makes many groups -- including people with chronic disease, young children, older adults, and outdoor workers -- vulnerable to heat-related illness (HRI). To reduce the risk of HRI, drink plenty of fluids, wear light colored clothing and sunscreen, and schedule outdoor activities during cooler times of the day.

For more information, see the Oregon Health Authority's HRI prevention website here.

Learn more about how to stay safe during extreme heat conditions here.

E.D. and urgent care center visits for heat-related illness

In this chart for **2024** (bold, blue line) we see five small spikes in heat-related illness (HRI) visits throughout the season and a prolonged spike in HRI visits in the first half of July during a heat wave affecting much of the state. Data for all other years from 2018 to 2024 are shown with thin gray lines.



Select a year
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024

Published: 10/28/2024

Link

OREGON HEALTH AUTHORITY | OHSU | Portland State University | SCHOOL OF PUBLIC HEALTH

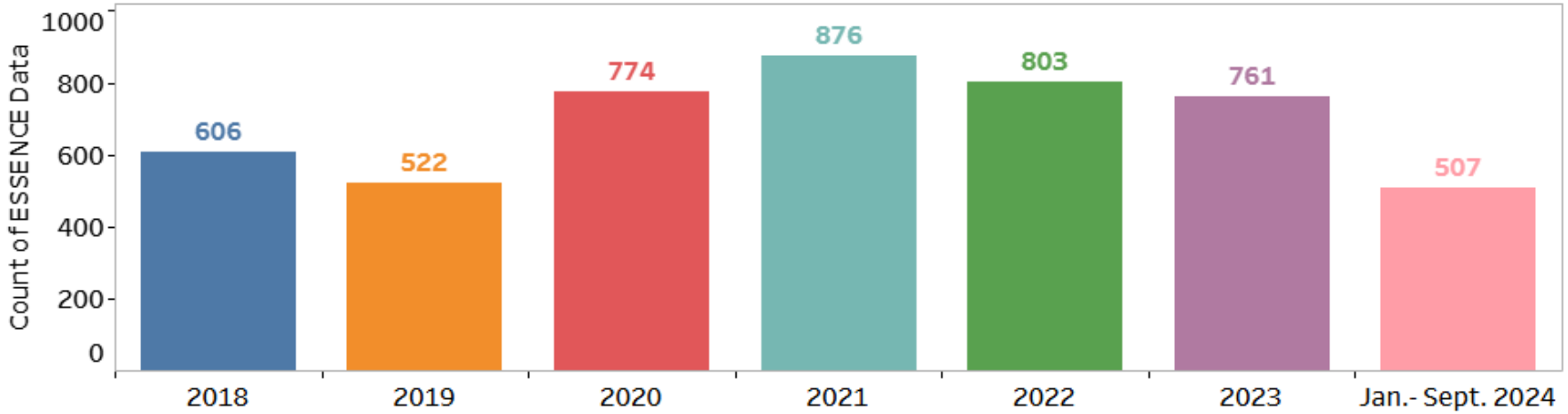
The Oregon FASTER Project Data Dashboard

FASTER Data Dashboard at a Glance

On December 31, 2024, FASTER data were updated through September 30, 2024.
On March 31, 2024, numbers and rates of firearm deaths were added to county maps for the years 2018-2022.

Click here for an in-depth view of each graph

Number of Oregon Firearm Injury Emergency Department Visits by Year
(OR-ESSENCE Data; January 1, 2018 to September 30, 2024)



Link

Injury Prevention

- Home
- State Trends
- County Trends
- Demographic Trends
- Data Description
- Definitions
- Technical Notes

Subscribe to receive e-mail notifications when data are updated.

Click to Subscribe

Submit questions or feedback on this dashboard below.

Questions/Feedback

Built and maintained by the Injury and Violence Prevention Program at the Oregon Health Authority

Oregon Health Authority

Customize Data to View

Select data type, outcome, and injury type. View matching trends on the map by clicking on the county.

Select data type:

- (●) 4-year Average Count
- ( ) 4-year Average Rate

Select outcome:

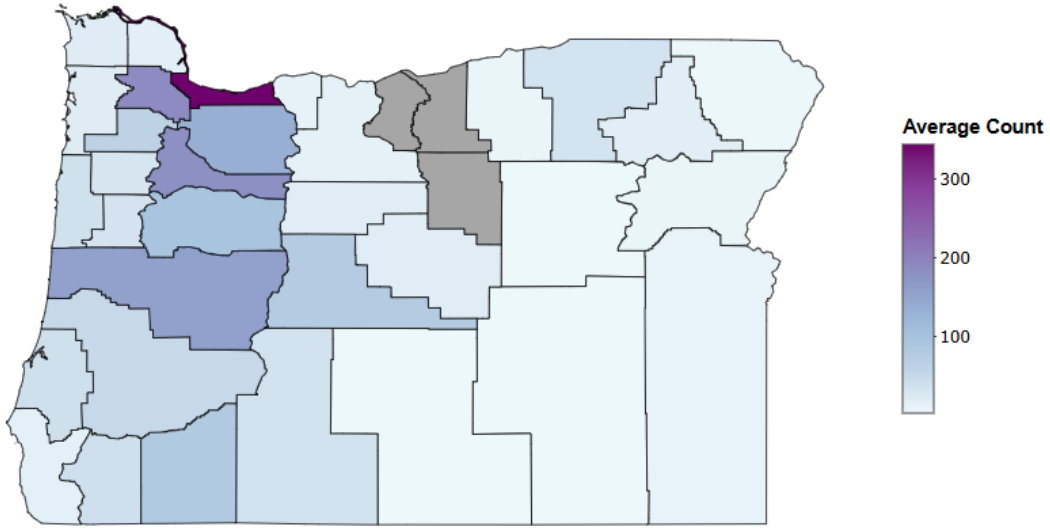
- ( ) Deaths
- ( ) Hospital Visits
- (●) Emergency Department Visits

Select injury type:

Poisoning

Average Emergency Dept. Injury Count (2020-2023)

Injury Type: Poisoning



Counts represent the average number of injuries yearly for Oregon residents.

Data represent average yearly injuries over 4 years (2020-2023).

Data Source: Hospital Association of Oregon

Additional Notes:

- Counts and rates are averaged across four years (2020-2023) to allow less common injury types to be reported. Despite this, some categories still may not have data.
- Values are based on Oregon residents that died in Oregon. Values do not include people who did not live in Oregon but died while in the state.
- A crude rate is defined as the total number of events (counts) divided by the total population of the selected geography, demographic, or community (per 100,000 people). The rates provided on this dashboard are crude rates.
- To protect individuals' privacy, data are not shown whenever the underlying four-year total counts fall below certain thresholds. Please see Technical Notes for more details.
- If you want to see additional data or learn more about the counts/rates presented, please contact us and we will work with you to provide the needed information.

Poisoning:
Includes injury due to the toxic effects of non-medicinal substances (examples: effects of phenol, toxic effects of other/unspecific substances, terrorism due to chemical weapons, and/or legal intervention involving gas). These injuries can be the result of a child getting into a medicine cabinet or other toxic household items.

Last Updated: 02/20/2025

Link

Hospital and Emergency Department (ED) Visit Data

Contents

Submit your questions and feedback below.

Questions

About the data

Hospitalization and Emergency Department discharge data includes information on all inpatient and ED visits with any associated charge. Information includes the diagnoses, procedures performed, total charges and patient demographics. If a person is first seen in the emergency department and later admitted during the same visit, the record will be included in the hospitalization discharge data and excluded from the ED discharge data. Information for outpatient visits are not included. Not all people who experience an overdose encounter the hospital/health care system and the counts below are an underrepresentation of the number of nonfatal overdoses.

Hospitalization and Emergency Department (ED) discharge data is collected and provided by the Hospital Association of Oregon and is provided to OHA IVPP team on a quarterly basis. Inpatient hospitalization data collection began in 2000 and ED discharge data began in 2018.

This dashboard contains information related to drug overdose deaths. Oregon's overdose crisis has affected every community across the state, and the highly sensitive and traumatic nature of these events have caused harm, trauma, and loss that impact the well-being of everyone.

Quarterly and Annual Trends in Oregon

Select your criteria and see the updated trends in the graphs and tables below.

Select data type:
- ○ Count
- ◉ Rate

Select outcome:
- ◉ Hospital Visits
- ○ Emergency Department Visits

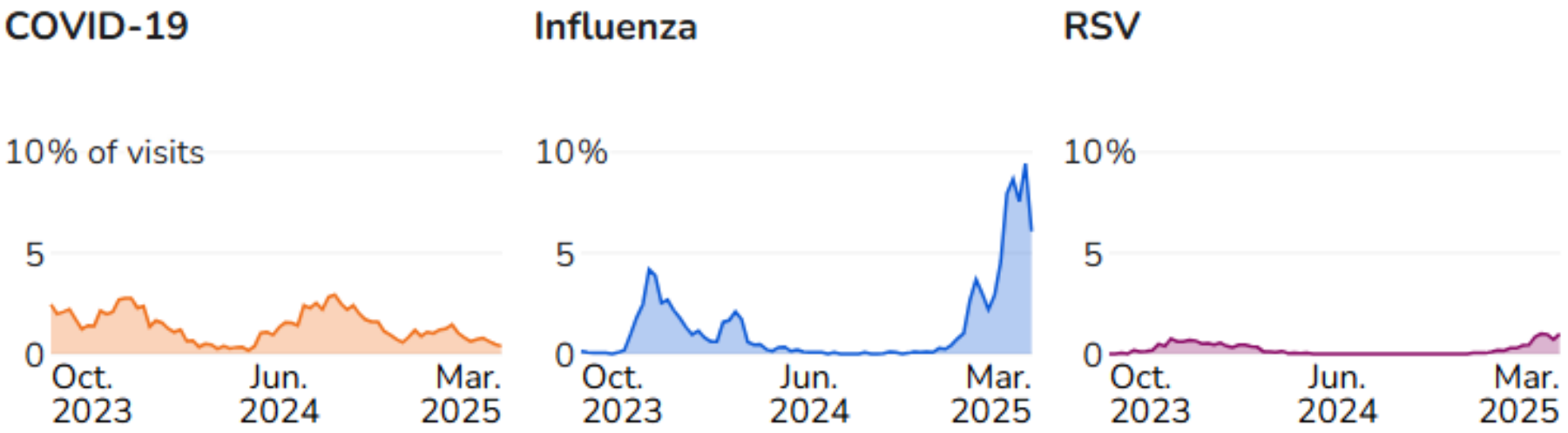
Select drug type:
- ◉ All Overdose
- ○ Any Opioid
- ○ Benzodiazepine
- ○ Heroin
- ○ Fentanyl
- ○ Methadone
- ○ Natural & Semi-Synthetic Opioids
- ○ Stimulants
- ○ Synthetic Opioid
- ○ Unintentional Overdose
- ○ Unspecified Opioid/Narcotic

Link

Respiratory Virus Activity by County

Emergency department visits in **Oregon**

Counties: **Jackson, Josephine**



Link

Note: Groups of counties often share healthcare resources. The data shown for the selected county include emergency department visit data collected for the entire area (which may include multiple counties).

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Discussion

Informatics can mean many things

- Working with data senders to set up new feeds
- Building processes to route data appropriately

- Working with users to define requirements
- Designing, building refining databases

- Developing actionable reports, data stories
- Enabling data-driven public health intervention

Thank you

You can get this document in other languages, large print, braille or a format you prefer free of charge. Contact ACDP at ohd.acdp@oha.oregon.gov or 971-673-1111. We accept all relay calls.

Public Health Division
Acute and Communicable Disease Prevention Program
971-673-1111
healthoregon.org/acd

OREGON HEALTH AUTHORITY

References

Links: Training

- Public Health Informatics Institute's Designing and Managing Public Health Information Systems: 8 Steps to Success

- Public Health Data Learning Center from Washington State Department of Health and Northwest Center for Public Health Practice
  - CDC's Public Health 101 Series – Introduction to Public Health Informatics

Links: Resources

- Reframing Public Health Informatics: A FrameWorks Communications Toolkit
- Public Health Informatics Institute
  - Self-Assessment Tools
  - Communications Toolkit, cross-posted from FrameWorks

- Journal of Public Health Management & Practice article What Is "Informatics"?
- Infection Control Today article The Surveillance, Informatics and Epidemiology Triangle

Links: Rule Makers, Standards

- The Office of the National Coordinator for Health Information Technology (ONC)
  - United States Core Data for Interoperability (USCDI)
  - Trusted Exchange Framework and Common Agreement (TEFCA)

- HL7
  - HL7 FHIR ACCELERATOR™ Program
  - Helios FHIR Accelerator for Public Health
  - MedMorph

Links: CDC, Professional Organizations

- CDC
  - Data Modernization Initiative (DMI)

    North Star Architecture
  - Public Health Data Strategy

- CSTE
  - Data Modernization Initiative – Stories from the Field
  - Data Science Team Training
  - Applied Public Health Informatics Fellowship

- NACCHO
- ASTHO
- APHL

Links: Data Visualization Resources

Trainings

- CSTE | Data Visualization and Health Equity Training Series
- astho | Designing Data Dashboards Using a Health Equity Lens

References, Blogs, Books

- Urban Institute | Do No Harm Guide: Applying Equity Awareness in Data Visualization
- Evergreen Data blog
- storytelling with data blog
- MIT Press | Data Feminism, by Catherine D'Ignazio and Lauren F. Klein
- We All County Data Equity Framework
- Health Equity in Injury Data: Approaches for Injury Data Communication and Dissemination With a Health Equity Lens ← Applies to non-injury data too!

Accessibility Resources

How to Meet WCAG (Quick Reference)
Digital Accessibility at Oregon Health Authority

Color

- WebAIM: Web accessibility in mind | Contrast Checker
- Contrast-ratio-based color palette generator Leonardo
- Coblis — Color Blindness Simulator and Emulate vision deficiencies in Edge

Focus Order, Assistive Tech

- Firefox Accessibility Inspector: Show Tabbing Order
- Screen readers: Windows Narrator, NVDA, JAWS

Links: Tableau Resources

- OHA CRRU Tableau Development Guide
- OHA Tableau Accessibility Guide, also:
  - Kelly Gupton's Accessibility FAQ and Applying WCAG to Data Visualizations webinar
  - Tableau Building Accessible Dashboards webinar, and slides
- Tableau User Group chapters; recordings are posted to Tableau's YouTube channel
  - Portland Tableau User Group
  - Tableau Newbies User Group
  - Data + Diversity
  - Accessibility Tableau User Group (a11ytug)

Links: R Resources

- The Epidemiologist R Handbook
- Data Visualization with R: Tips for debugging and cleaning broken code
- RMarkdown Driven Development: the Technical Appendix
  - Parameterized Reporting with RMarkdown
- Ggplot2
  - Ggplot2 Themes
  - Modify components of a ggplot2 theme
  - Graphics for communication
- Add custom styles to one or more cells

Key Acronyms & Vocabulary with Definitions and Sources

1. API (Application Programming Interface)

- **Definition**: A set of protocols and tools for building software and facilitating communication between applications.
- **Source**: Mozilla Developer Network. https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Client-side_web_APIs/Introduction

2. Data Governance

- **Definition**: The overall management of data availability, usability, integrity, and security within an organization.
- **Source**: Data Governance Institute. https://datagovernance.com

3. eCR (Electronic Case Reporting)

- **Definition**: The automated generation and transmission of case reports from electronic health records to public health agencies.
- **Source**: CDC eCR. https://www.cdc.gov/ecr

4. eICR (Electronic Initial Case Report)

- **Definition**: A standardized electronic report capturing initial patient encounter information for public health surveillance.
- **Source**: CDC eCR. https://www.cdc.gov/ecr

5. ELR (Electronic Laboratory Reporting)

- **Definition**: The electronic transmission of laboratory reports to public health agencies.
- **Source**: CDC ELR. https://www.cdc.gov/elr/index.html

Key Acronyms & Vocabulary with Definitions and Sources

6. eRSD (Electronic Reporting and Surveillance Distribution)

- **Definition**: A FHIR-based specification that distributes reporting guidance, trigger code value sets, and parameters to Electronic Health Record (EHR) systems to facilitate electronic case reporting (eCR).
- **Source**: HL7 FHIR Implementation Guide. https://build.fhir.org/ig/HL7/case-reporting/

7. ESSENCE (Electronic Surveillance System for the Early Notification of Community-based Epidemics)

- **Definition**: A tool within NSSP that enables analysis and visualization of syndromic surveillance data.
- **Source**: CDC ESSENCE. https://www.cdc.gov/nssp/php/onboarding-toolkits/essence.html

8. FHIR (Fast Healthcare Interoperability Resources)

- **Definition**: A standard describing data formats and elements for exchanging electronic health records.
- **Source**: Health Level Seven International. https://www.hl7.org/fhir

9. HL7 (Health Level Seven International)

- **Definition**: An organization that develops standards for the exchange of electronic health information.
- **Source**: Health Level Seven International. https://www.hl7.org

10. ICD-10 (International Classification of Diseases, 10th Revision)

- **Definition**: A coding system for diseases and health conditions, used globally for health statistics and billing.
- **Source**: World Health Organization. https://www.who.int/classifications/icd/en

Key Acronyms & Vocabulary with Definitions and Sources

11. Interoperability

- **Definition**: The ability of different information systems, devices, or applications to access, exchange, integrate, and cooperatively use data in a coordinated manner, within and across organizational, regional, and national boundaries, to provide timely and seamless portability of information and optimize the health of individuals and populations.
- **Source**: Office of the National Coordinator for Health IT (ONC). https://www.healthit.gov

12. LOINC (Logical Observation Identifiers Names and Codes)

- **Definition**: A universal standard for identifying health measurements, observations, and documents.
- **Source**: Regenstrief Institute. https://loinc.org

13. NSSP (National Syndromic Surveillance Program)

- **Definition**: A CDC initiative that collects and analyzes syndromic data for early detection of public health threats.
- **Source**: CDC NSSP. https://www.cdc.gov/nssp/index.html

14. Orpheus

- **Definition**: Oregon's public health data system for managing disease surveillance and reporting.
- **Source**: Oregon Health Authority. https://www.oregon.gov/oha/PH/DISEASESCONDITIONS/COMMUNICABLEDISEASE/Pages/Informatics.aspx

15. PHIN VADS (Public Health Information Network Vocabulary Access and Distribution System)

- **Definition**: A CDC-managed platform providing standardized vocabulary metadata for HL7 messaging and Clinical Document Architecture (CDA).
- **Source**: CDC PHIN VADS. https://www.cdc.gov/phin/php/phinvads/index.html

Key Acronyms & Vocabulary with Definitions and Sources

16. Public Health Informatics (PHI)

- **Definition**: The systematic application of information, computer science, and technology to public health practice, research, and learning.
- **Source**: Yasnoff WA, et al. *Public Health Informatics: Improving and Transforming Public Health in the Information Age*. J Public Health Manag Pract. 2000;6:67–75.

17. RCKMS (Reportable Conditions Knowledge Management System)

- **Definition**: A centralized decision support service that determines whether a case is reportable and to which jurisdiction(s), providing comprehensive information on public health reporting criteria.
- **Source**: RCKMS. https://www.rckms.org/about-rckms

18. RCTC (Reportable Conditions Trigger Codes)

- **Definition**: Standardized code sets (e.g., SNOMED CT, LOINC, ICD-10) used within EHR systems to identify reportable conditions, triggering the generation of electronic initial case reports (eICRs).
- **Source**: HL7 FHIR Implementation Guide. https://build.fhir.org/ig/HL7/case-reporting/Library-library-rctc-example.html

19. SFTP (Secure File Transfer Protocol)

- **Definition**: A secure protocol for transferring files over a network.
- **Source**: SSH Communications Security. https://www.ssh.com/academy/sftp

20. SNOMED CT (Systematized Nomenclature of Medicine – Clinical Terms)

- **Definition**: A comprehensive clinical terminology covering diseases, findings, procedures, and more.
- **Source**: SNOMED International. https://www.snomed.org