Using Data to Support Local Overdose Response and Prevention Work

Part 2: A Deeper Dive Into Oregon ESSENCE

Public Health Division, Oregon Health Authority

June 3, 2024
Agenda

- Welcome & introductions
- Oregon ESSENCE
- Oregon EMS & Trauma Systems
- ESSENCE and injury epidemiology
- Q&A
Oregon ESSENCE: Public Health Applications of Syndromic Surveillance

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Preparedness, Surveillance & Epidemiology Team
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Public Health Division
Oregon Health Authority
ESSENCE Overview

ESSENCE
Electronic Surveillance System for the Early Notification of Community-based Epidemics

- Key words!
  - Early
  - Community-based

- Strength: a near real-time look at key data we may not otherwise be alerted to

- Utility: community-based, population-level birds eye view of what’s happening in our EDs and urgent care centers

- When we first learn of an emergent public health issue in the community, we look to ESSENCE
EXAMPLE: H1N1, 2009

New York City Department of Health and Mental Hygiene Health Alert #27: Pandemic (H1N1) 2009 influenza update, revised reporting requirements and testing procedures
ESSENCE Data Sources

- Emergency Department and Urgent Care
- Poison Control Center
- Death Records
- EMS
- Orpheus (reportable disease)
- Air Quality
- Weather

[Map of Oregon showing data sources across different regions]
Oregon ESSENCE System

Emergency Department → Continuous Chief Complaint and Patient Demographics In HL7 messages → Categorize Into Syndromes/Symptoms → Continuous Daily Totals → Daily Totals Higher Than Expected? → Anomaly

Review Trends → Valid Anomaly? → Historical Models

Initiate Response

Source: Bill Storm, Ohio Department of Health
Potential areas of interest

• Injury
  – Motor vehicle accidents
  – Snake bites
  – Mammal bites (bats)
  – Intoxication
  – Alcohol
  – Fireworks/burns
  – Firearm injury

• Communicable disease
  – Food storage, handling
  – Respiratory outbreaks
  – Vector-borne illness

• Environmental
  – High heat, dehydration, sun exposure
  – Altitude sickness
  – Wildfire smoke (respiratory issues)
  – Evacuation for fires

• Event-related, e.g. eclipse
  – Eye injury
  – Diseases/threats specific to locations in arch of totality (examples: snake bites, mushroom poisoning)
Syndromic Surveillance

- **Real-time** collection, analysis, interpretation and dissemination of health data
- Not based on laboratory confirmed diagnosis of a disease but disease “syndrome”
- 12 primary syndrome groupings “pre-loaded” into system
  - Exposure
  - Fever
  - GI
  - ILI
  - Injury
  - Neurological
  - Rash
  - Respiratory, and others…
- Apply syndrome of interest to components of medical record, e.g. chief complaint
Hospital Surge and Capacity

Use ESSENCE to run queries for encounters associated with symptoms over the past 90 days.

i.e., Advance query: medication refill

Medication Refill Query

Yikes look at that spike!!!
Medication requests following hurricane Wilma

Total cases: 801; Avg. age: 40
“Water” visits and media coverage of cyanotoxins

Emergency alert
**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](#).

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

In this chart, we see an increase in heat-related illness (HRI) visits in May 2023 which is typical to see at this time of year as temperatures rise.
OK, but what’s IN the data?

- Varies by data stream—ED is not the same as EMS etc.
- NOT individually identifiable
  - Remember, it’s for detection of “community-based epidemics”
- ED/UC data:
  - Age, sex, zip code, race, ethnicity
  - Chief complaint
  - Discharge diagnoses
    - ICD-10 codes
  - Clinical impression
  - Triage notes
Querying ESSENCE

• Queries can be simple, or very complex
• Pre-loaded queries for 12 primary syndromes, many more subsyndromes, and many specific queries created by CDC or OHA
• Write your own!
Querying ESSENCE

^;992^,or, ^;T67^,or, ^;E900^,or, ^;X30^,or, ^heat^,or, ^heatcramp^,or, ^heatex^,or, ^heatst^,or, ^heat-exhaust^,or, ^heat-related^,or, ^heat-stroke^,or, ^hypertherm^,or, ^overheat^,or, ^over heat^,or, ^sun stroke^,or, ^sunstr^,or, ^sun-str^,or, ^too hot^,or, ^too hot^,or, (, (^, ^hot^,or, ^heat^,),) and, (, ^excessive^,or, ^exhaust^,or, ^expos^,or, ^fatigue^,or, ^cramp^,or, ^stress^,or, ^in car^,or, ^outside^ or ^prostration^,),) andnot, (, ^heater^,or, ^heatrate^,or, ^cheat^,or, ^wheat^,)}
CDC All Drug v1 Query

Level 3 - Restricted
Who can access ESSENCE?

- Public health!
  - Specifically, entities outlined as public health in HIPAA 45 CFR 164.512
- Access granted to individuals, not organizations
- OHA and LPHA employees
- Tribal health employees
- Academia—staff and students at Oregon-based institutions
  - *For public health purposes only, NOT research
- Additional, more stringent access requests for data streams beyond ED/UC
Contact Us!

Oregon.Essence@dhsoha.state.or.us

- ESSENCE team:
  - Meagan McLafferty
  - Larissa Williams
  - Madeline LeVasseur
  - Amanda Faulkner
Oregon EMS & Trauma Systems
Using Data to Support Overdose Response & Prevention
Monday, June 3, 2024
OR-EMSIS / ESSENCE Integration

- The ESSENCE Integration relies on our EMS DataMart, which is a mirror of our vendor’s reporting database in our state data center.
- Data in DataMart is queried by Rhapsody, an integration engine solution hosted in the state data center.
- Data is then pushed to ESSENCE where it can be accessed by authorized personnel through the web portal.
OR-EMSIS / ESSENCE Integration

OR-EMSIS / ESSENCE Data Flow Diagram

Revised 05/30/24

Key
OR-EMSIS = Oregon EMS Information System
ESSENCE = Electronic Surveillance System for the Early Notification of Community-Based Epidemics

National Standards and Code Sets
- Oregon EMS State Dataset
- National EMS Information System (NEMSIS)
- International Classification of Diseases (ICD-10)

Ambulance Agencies

Data entry
Ambulance Agencies

ImageTrend Elite

OR-EMSIS Database

Oregon EMS DataMart

Rhapsody

ESSENCE

State Data Center

Key:
- Oregon EMS Information System
- ESSENCE = Electronic Surveillance System for the Early Notification of Community-Based Epidemics

PUBLIC HEALTH DIVISION
EMS and Trauma Systems
OR-EMSIS / ESSENCE Integration

Data Elements:

- Agency
- Response
- Times
- Patient
- Scene
- Situation
- Injury
- Arrest
- History
- Narrative

- Vitals
- Exam
- Medications
- Procedures
- Disposition
Access Request

You can request access to EMS data through our web form here:

https://app.smartsheet.com/b/form/4886c635ce73492aa96e9b2e5c2ac9ba
Access Request

EMS ESSENCE Data Request

Please ensure you have Oregon ESSENCE login access before completing this form. Visit the [ESSENCE website](#) for more information about login access.

Complete this form fully and completely. Direct any questions to the attention of the EMS & Trauma Data Team through our global email, EMS.Trauma@dhs.oregon.gov.

Acknowledgements

Please check the boxes to signify your understanding of the following conditions of data use:

- [ ] Data use is restricted to activities outlined in this data request.
- [ ] User accessing the ESSENCE data has signed the ESSENCE Confidentiality Oath.
- [ ] Data access is limited to named individual in this data request.
- [ ] EMS data provided through ESSENCE will solely be utilized for the intended project and may not be used for other projects. Publication of this data requires specific consent from the program.
- [ ] Use of EMS data for purposes outside of the statutorily defined acceptable uses, and the terms of this agreement will result in your access to the data being revoked.

PUBLIC HEALTH DIVISION
EMS and Trauma Systems
Access Request

• You must have Oregon ESSENCE login access before requesting access to the EMS data.
• Visit the ESSENCE website for more information about login access.
• The access request form will become the DUA between you and our program, so complete it fully and completely.
• Use of EMS data in ESSENCE is subject to all constraints on other ESSENCE data sets.
• There are additional constraints imposed by statute.
Access Request

Acknowledgements:

- Data use is restricted to activities outlined in this data request.*
- User accessing the ESSENCE data has signed the ESSENCE Confidentiality Oath.*
- Data access is limited to named individual in this data request.*
- EMS data provided through ESSENCE will solely be utilized for the intended project and may not be used for other projects.
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- Use of EMS data for purposes outside of the statutorily defined acceptable uses, or the terms of the data use agreement will result in your access to the data being revoked.*
Access Request

ESSENCE Acceptable Uses:

• To facilitate the interchange of information that can be used to coordinate responses and monitor events routinely and during a potential health event
• For early detection and characterization of events (or health-related threats) by building on state and local health departments systems and programs
• To provide health-related information for: (i) public health situation awareness, (ii) routine public health practice, or (iii) public health evaluation
• To improve the ability to detect emergency health threats by supporting the enhancement of systems to signal alerts for potential problems in collaboration with federal, state and local health jurisdictions and other potential stakeholders
Access Request

EMS Data acceptable uses under statute:
- Quality assurance
- Quality improvement
- Epidemiological assessment and investigation
- Public health critical response planning
- Prevention activities
Access Request

Information you will need to complete the form:
• Name and contact information
• Organization/Institution
• Authorizing Manager contact
• Project Name
• Duration
• Project
  – Description
  – Objectives
  – Dataset or report
  – Geography
Access Request

If you are looking to develop other syndromes using EMS data you will need to provide:

- Specific definitions and/or metrics
- Data elements needed for analysis
- Codes and criteria
Access Request

Data Security

- Physical and technical safeguards
- Plans for use of data
- Plans for ensuring confidentiality
Access Request

You may attach any supporting documents related to your project by dragging directly into the web form.
Access Request

Submitting your request
• You will receive a confirmation email that we received your request
• We will review your request within 10 business days
• Time to approval will depend upon complexity of the request.
Review Process

- Internal review of request
- Agency/Manager confirmation
- Clarification (if necessary)
- Generation of pdf documentation
- Signature (by Adobe Sign)
  - Requestor
  - Authorizing Manager
  - Oregon EMS & Trauma Medical Director
- Referral to ESSENCE team for permissions
Resources

EMS ESSENCE access request web form:
  https://app.smartsheet.com/b/form/4886c635ce73492aa96e9b2e5c2ac9ba

Oregon State EMS dataset:
  https://nemsis.org/media/nemsis_states/repository.html?repository=oregon
  &file=Resources/OR_StateDataSet.xml&at=refs%2Fheads%2Frelease-3.5.0
Questions?
Using Data to Support Overdose Response & Prevention

Robyn Ellis, Data to Action Coordinator
ESSENCE Data available on OHA public page

Opioid overdose visits to EDs and UCCs
SUDORS Data available on OHA public page

Oregon Opioid Overdose Deaths

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Connecting with Oregon Counties
Connecting with Oregon Counties