Food for Thought

How Occupational Surveillance could benefit from Electronic Health Records

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Today’s Goals

• Review the alignment between what data you need and what data you’ve got
• Talk through how EHR data might be able address some data gaps
• Describe 1 method for accessing EHR data
Why do occupational health surveillance?

- NIOSH studies trends in worker injuries and illnesses to improve worker safety and health by:
  - Tracking diseases, injuries and workplace exposures for further study
  - Identifying new and emerging problems in the workplace
  - Providing evidence used to direct intervention and prevention activities
  - Monitoring the overall impact of occupational health research
Background | Where We Are Now

• Occupational health stakeholders rely on traditional data sources to measure the burden of injury and illness, evaluate programs, and understand trends:
  - Workers compensation claims
  - Occupation specific national surveillance
  - Surveys about reportable events: SOII

• Limitations: under-reporting, delayed, limited clinical and outcome information, fragmented across systems, and excludes work-related health conditions.
Surveillance Current State

Border Challenging Health Conditions

- Obesity Prevalence among Truckers
- Anxiety and Hypertension among stock brokers

Occupational Illness and Injuries

- Workplace falls among construction workers
- Burns among fire fighters
Surveillance Current State

Border Challenging Health Conditions

Occupational Illness and Injuries

Injuries or illness reported to employers

SOII Employer Reported Injuries

Workers compensation claims

Data source

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Surveillance Current State

Border Challenging Health Conditions

Occupational Illness and Injuries

- Injuries or illness reported to employers
- SOII Employer Reported Injuries
- Workers compensation claims
- Firefighters
- Child agriculture
- Oil and Gas extraction
- Mining
- Hearing Loss
- Lung Disease
- Asthma

Data source

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Where are we now?

- The scope of occupational health surveillance has grown and evolved
- Existing occupational health surveillance data sources do not provide enough information
- Surveillance stakeholders have begun to explore how clinical data from electronic health records (EHRs) could be used to monitor health issues at the population level
- Should occupational health consider this resource?
Advantages of EHR data?

- **Large** repository of systematically collected, structured, detailed clinical data
- Available near real time
- Can be assigned to a geographic location based on patient residence
- Naturally longitudinal
- Inclusive of low and high acuity events (twisted ankles, asthma, stroke, and TBI)
Possible Future State

Border Challenging Health Conditions

Occupational Illness and Injuries

Injuries or illness reported to employers

Injuries or illness that are assessed by healthcare providers captured within EHRS (not everything is stored in an EHR)
Limitations of EHR Data for Occ Health

• **Finding the workers.** Occupation is not collected by providers or stored in most EHRs

• **Fragmented picture of care.** Individuals receive care across many institutions and occ clinics are often in specialty clinic settings

• **Identifying an occ event.** Few Providers are trained to identify occ illness or injury & EHRs do not currently have a mechanism to flag an occ illness or injury
How do you get EHR data?

EHR data can be accessed through partnerships with:

- A provider or healthcare system
- A health information exchange
- An EHR public health network
- A EHR vendor
CHORDS | What is it?

- CHORDS is a network conceived in 2011 that uses electronic health records (EHR) data to support public health monitoring and research efforts
  - Initial efforts were focused around tobacco and cardiovascular disease registry development
  - Denver Public Health and Kaiser Permanente Colorado began work on a BMI registry project
  - Now includes data from 11 healthcare providers across the Denver metro area
CHORDS | What is it?

• Distributed data network
• Retrieves data from participating healthcare providers’ EHRs
• Creates a common information image (Virtual Data Warehouse)
• Allows questions to be asked (PopMedNet)
• Permits population-based monitoring and research
• Measures change in health outcomes over time
• Integrates clinical, demographic, and place-based data
CHORDS | How does it retrieve data?

Data Requester Seeking Information
- Includes public health agencies, researchers, others.

CHORDS PopMedNet Query Portal
- Authorized requesters access the portal through a web browser and submit their data query.

Each CHORDS Data Partner Site: Health Care and Mental Health Providers
- PopMedNet Client and Administrator
  - Site receives new query. PopMedNet administrator reviews the query and decides whether to execute it.

- Firewall

- Partner DataMart Administrator
  - Query is run using a DataMart client software application. A site’s DataMart is regularly updated with standardized data from electronic health records.

- DataMart (Virtual Data Warehouse)
  - DataMart administrator decides whether to release results back to portal.
  - DataMart returns results to DataMart administrator.

Portal aggregates results from partners and returns data to requester.
CHORDS | What data is available?

- EHR data from metro Denver organizations includes:
  - Demographics: Birth date, gender, race
  - Encounters: Date, encounter type
  - Vital Signs: Height, weight, blood pressure
  - Diagnosis: Diagnosis codes
  - Location: Patient’s geocoded location

- Each year, CHORDS makes data on over half of Denver adults and children available or roughly 350,000 adults and 165,000 children.
Estimated Prevalence of Adults with Obesity (2012-2014):
City and County of Denver, Colorado

This map displays the percentage of adults 18 years and older with obesity, by census tract, based upon body mass index (BMI) measurements contributed to the Colorado BMI Monitoring System from multiple health care organizations. Obesity was defined as a BMI, calculated from height and weight, of 30 kilograms per meter squared (kg/m²) or greater. The percentage with obesity was calculated for each census tract by dividing the number of adults with a BMI of 30 kg/m² or greater by the total number of valid BMI measurements available in that census tract.

These data are comprised of adults 18 years and older who reside in the City and County of Denver. The total number of adults represented with valid BMI measurements is 144,067, or 29% of the total adult population of 503,377, as reported from the 5-year American Community Survey (2010-2014). Census tracts were designated as having insufficient data for display if: 1) the total population was fewer than 50 individuals; or 2) fewer than 50 valid BMI measurements were available; or 3) coverage was less than 10% of the adult population 18 years and older.

Denver County Average 31%

To request additional maps and/or aggregated data tables, please contact LeeAnn Rohm at: LeeAnn.Rohm@dphe.org

BMI Data Contributors: Denver Health, Kaiser Permanente Colorado, Children’s Hospital Colorado, Salud Family Health Centers and High Plains Community Health Center

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Questions?

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