

Linkage and Enhancement of Public Health Datasets and All Payer Claims to Further Population-Level Opioid Research

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Learning Objectives

- Data sources to better understand opioid risk factors and harms.
- Procedure to create a robust opioid research database
- Methodology prepare All Payer Claims Data to link to other sources

Background

- The opioid epidemic persists
- Fewer overdoses involve prescriptions written to the patient; more are non-medical use or illicit opioids (fentanyl, heroin)
- Does someone's home address affect their overdose risk?
 - Do household members affect overdose risk?
 - Does community/neighborhood affect overdose risk?

Background

- Population-level opioid research using administrative data is good, but often limited
 - Breadth or depth
 - Restricted to a subset of a population (e.g. single payer type)
 - Restricted to a subset of records (e.g. paid pharmacy claims)
- **Our objective was to link, at an individual patient level, public health datasets with all-payer claims and census data**
 - Create rich administrative dataset
 - Enable multifaceted approach to assess prescription opioid risk

Team

- Principal Investigator: Scott Weiner, MD, MPH, Brigham and Women's Hospital



Partner:

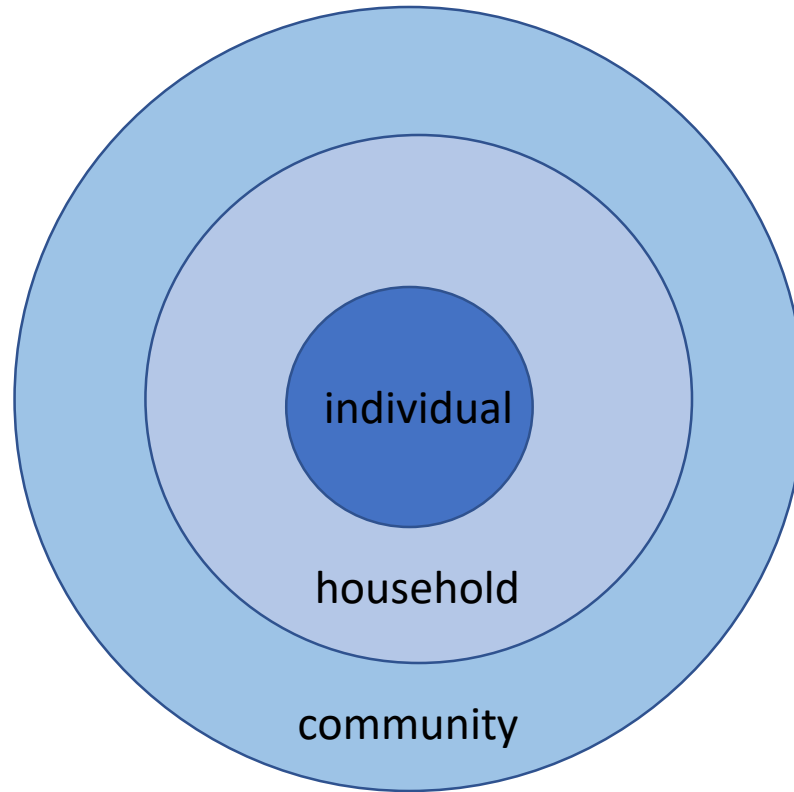


Funding

- NIH/NIDA 1-R01-DA044167-01A1
 - PAR 16-234: Accelerating the Pace of Drug Abuse Research Using Existing Data (R01)



Aims



Data Sources

Data source	Description	Owner	Dates
Voluntary All Payer Claims Data (APCD)	Medical and pharmacy claims and enrollment data for most Commercial, Medicaid, and Medicare Advantage plans in Oregon.	Comagine Health Oregon Data Collaborative	2013 - 2018

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Emergency Medical Services (EMS)	Contains EMS events for most EMS agencies in Oregon	Oregon Health Authority – Violence and Injury Prevention Program	2013 - 2018

Linkage Procedure

- *FastLink* run in R
- Probabilistic linkage using first name, last name, DOB
- Efficiently links and de-duplicates people in very large administrative datasets

Initial Population Inclusion Criteria

- Addresses in Oregon
- Valid zip codes
- Ages 2-100 as of 1/1/2014
- Commercial, Medicare Advantage, or Medicaid coverage

Supplemental Public Health Datasets

Hospital Discharge

Vital Statistics

PDMP

Total APCD Members
N = 3,628,992

Population Universe, by year

2013

Members with valid addresses
n=1,970,320

Distinct households
n= 968,767

Communities
n= 827

2014

Members with valid addresses
n=2,417,888

Distinct households
n= 1,165,316

Communities
n= 827

2015

Members with valid addresses
n=2,538,576

Distinct households
n= 1,196,086

Communities
n= 827

2016

Members with valid addresses
n=2,621,223

Distinct households
n= 1,221,231

Communities
n= 827

2017

Members with valid addresses
n=2,657,851

Distinct households
n= 1,243,157

Communities
n= 827

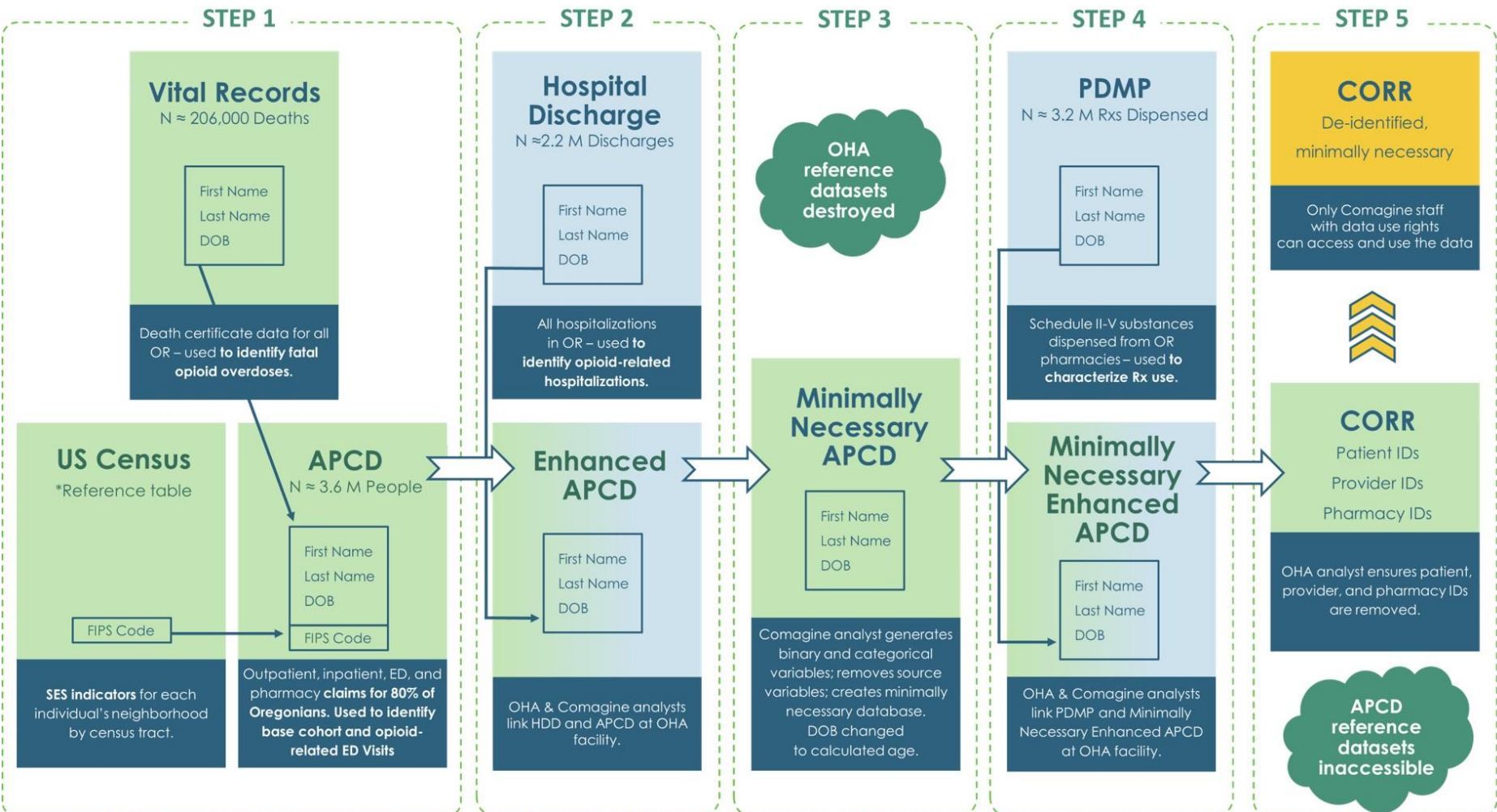
2018

Members with valid addresses
n=2,528,446

Distinct households
n= 1,209,236

Communities
n= 828

Comprehensive Opioid Risk Registry (CORR)



Defining Households

- Household grouper (Aim 2)
 - Unique patients linked with household members in 12-month periods (April-March)
 - Uses exact address, P.O. Box, apartment number, etc.
 - Create unique ID for every household in each 12-month period

Defining Communities

- Community identifier (Aim 3)
 - Code in R runs a cyclical process
 - Submits exact address to census website
 - Converts address to latitude, longitude and FIPS code
 - Resulting output is dataset with patient ID, address, latitude, longitude and FIPS code
 - FIPS code used to pull in census tract community characteristics from census data for each person in APCD cohort

Significance

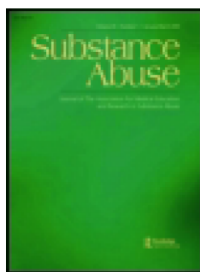
- Population-level data linkage requires substantial preparation and cleaning
- Linked datasets provide valuable information
 - Prescription and clinical history across payers with other factors predictive of overdose, and best capture of overdose events
- Other states could replicate our methodology to create a state-specific CORR

Gaps

- CORR currently only includes overdoses where person was either transported to the ED/hospital or died
 - We are planning to incorporate EMS data in CORR to fill this gap – it will provide information on opioid overdoses for patients who refused transport.

Manuscripts

- An article currently under review examines ambulance trips for substance-related issues before and after COVID-19
- Below is an in-press article examining mortality after treatment with naloxone by EMS



Substance Abuse



ISSN: 0889-7077 (Print) 1547-0164 (Online) Journal homepage: <https://www.tandfonline.com/loi/wsub20>

One year mortality of patients treated with naloxone for opioid overdose by emergency medical services

Scott G. Weiner , MD, MPH, Olesya Baker , PhD, Dana Bernson , MPH & Jeremiah D. Schuur , MD, MS

Thank you!

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