Using data to transform community and clinical practice: Better integrated mental and physical healthcare

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“the tendency of unrelated animals and plants to evolve superficially similar characteristics under similar environmental conditions”

“the act of converging and especially moving toward union or uniformity”
Metro Denver Region
Is made up of 7 counties (Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson). The region is ~3,000,000 people consisting of urban, suburban, and rural environments.
Prioritizing Mental/Behavioral Health

• Metro Denver Partnership for Health (MDPH)
  • Tri-County Health Department, Boulder County Public Health, Broomfield City/County Department of Health and Human Services, Denver Public Health, Jefferson County Public Health
  • Identified mental health as a priority

• Local Public Health: Public Health Improvement Plans
  • 3 of 5 LHDs in Partnership prioritized mental/behavioral health

• Community Benefit (tax-exempt hospitals): Community Health Needs Assessment
  • Nearly all prioritized mental/behavioral health (25 hospitals)

• State Innovation Model Grant
SIM: State Innovation Model

• SIM is an initiative of the Center for Medicare & Medicaid Innovation
• Colorado was awarded a $65 million implementation grant to strengthen Colorado’s Triple AIM strategy

Vision: To create a coordinated, accountable system of care that will provide Coloradans access to integrated primary care and behavioral health in the setting of the patient’s medical home.
Local SIM Grant

MDPH Public Health Behavioral Collaboration Goals:

• Reduce stigma of behavioral health issues and increase openness to behavioral health care help-seeking attitudes and behaviors in low-income populations
• Increase access to screening and treatment for behavioral health issues for low-income populations through coordination of systems that improve integration of behavioral health services and primary care
MDPH Infrastructure Work Group

Compiled mental health indicators from:

- Behavioral Risk Factor Surveillance System
- Pregnancy Risk Assessment Monitoring System
- Healthy Kids Colorado Survey (YRBS)
- Colorado Child Health Survey
- Colorado Healthcare Access Survey
- Colorado Hospital Discharge Data
- Vital Statistics
- American Community Survey
Colorado Health Observation Regional Data Service (CHORDS)

- Distributed data network
- Retrieves data from each participating healthcare system’s EHR
- Allows questions to be asked
- Permits population-based monitoring and evaluation
- Measures change in priority health outcomes
- Integrates clinical, demographic, and/or place-based data
CHORDS—Federated Query Model

**Authorized Public Health Data User**
- Authorized requesters submit their data request using a web browser.
- Portal aggregates results from partners and returns data to requester.

**CHORDS PopMedNet Request Portal**

**Each CHORDS Data Partner Site:**
- Health Care and Mental Health Providers
- Site receives and reviews new request. If approved, site requests data from its virtual data warehouse, which includes information from electronic health records and is protected behind the site’s firewall.
- DataMart administrator reviews results and decides whether to release back to portal.

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Tri-County Health Department
## CHORDS (Current) Data Contributors

### Health Systems
- Children’s Hospital Colorado
  - Denver Health
- Kaiser Permanente Colorado

### Mental Health Centers
- Mental Health Center of Denver
- Jefferson Center for Mental Health

### Safety Net Providers
- Clinica Family Health
- Colorado Alliance for Health Equity and Practice
  - Colorado Coalition for the Homeless
  - High Plains Community Health Center
  - Metro Community Providers Network
    - Salud Family Health Centers
      - Clinica Tepeyac
The CHORDS Data Model

- **Diagnoses** (ICD-9 and 10 codes)
- **Encounters**
- **Health Behaviors** (e.g., tobacco, alcohol, and/or drug use)
- **Laboratory Results** (e.g., test type, date of test and result)
- **Patient Demographics** (e.g., age, gender, race)
- **Patient Residence and Community Factors** (e.g., census tract of residence, American Community Survey measured level of poverty and education)
- **Pharmacy** (e.g., outpatient pharmacy medication dispenses)
- **Prescribing** (e.g. written prescriptions; rxnorm; prescribing md, quantity, refills)
- **Procedures**
- **Vital Signs**
### Health Topics from CHORDS

<table>
<thead>
<tr>
<th>Health Topic</th>
<th>Example Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy Weight</td>
<td>% of children and adults obese</td>
</tr>
<tr>
<td>Tobacco Use and Exposure</td>
<td>% of adults using tobacco</td>
</tr>
<tr>
<td></td>
<td>% of children exposed to second hand smoke</td>
</tr>
<tr>
<td>Cardiovascular Disease Risk</td>
<td>% of adults with hypertension</td>
</tr>
<tr>
<td></td>
<td>% controlled</td>
</tr>
<tr>
<td></td>
<td>% on lipid Rx</td>
</tr>
<tr>
<td>Mental Health</td>
<td>% of adults with diagnosed depression</td>
</tr>
<tr>
<td>Substance Use</td>
<td>% of adults with opioid use disorder</td>
</tr>
<tr>
<td></td>
<td>% of adults who use Cannabis</td>
</tr>
</tbody>
</table>
Percent Families Below Poverty, 2016

U.S. Census American Community Survey 5-Year Estimates, 2016
Percent of Population Hispanic, 2016

Hispanic Origin 2016
- 0% - 6.97%
- 6.97% - 10.61%
- 10.61% - 17.97%
- 17.97% - 33.94%
- 33.94% - 85.04%

U.S. Census American Community Survey 5-Year Estimates, 2016
Depression Prevalence, 2016

CHORDS Depression Prevalence 2016
- 0% - 8.38%
- 8.38% - 9.72%
- 9.72% - 10.66%
- 10.66% - 12.10%
- 12.10% - 19.00%

Colorado Health Observation Regional Data Service 2016
Suicide Mortality, 2010-2015, Adams, Arapahoe, Douglas Counties, Colorado

Point locations are determined by geocoding residential addresses of the deceased (not the location where the event occurred). Geographically isolated events (less than 3) are not represented on this density surface to protect patient privacy. Cells appearing on the surface require clusters of three or more deaths. The following density surface is classified using natural breaks with an adjustment to mask individual events. The map indicates concentrations of events relative to the total number of events (in the selected time period).
Top Quintile Depression Prevalence and Mental Health Treatment Facilities, 2016

CHORDS Depression Prevalence 2016
- 12.10% - 19.00%

Mental Health Treatment Facilities - 2016

Colorado Health Observation Regional Data Service 2016; Substance Abuse and Mental Health Services Administration, 2016
Denver Metro Area Hospitals, 2016
Uses

• Share with community providers, health systems and hospitals to demonstrate mental health needs using data from health care providers

• Introduce community context (social determinants of health) into the conversation

• Show potential for using data to outreach to clients most at risk
Questions?

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Colorado Health Observation Regional Data Service

The Colorado Health Observation Regional Data Service (CHORDS) is a seven-county regional network in the Denver metro area that uses electronic health record data to support public health evaluation and monitoring efforts.

https://www.coloradohealthinstitute.org/research/colorado-health-observation-regional-data-service