Aligning Clinical and Public Health Systems for Population Health: Networks, Governance & Incentives

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Aligning Clinical & Public Health Systems:
Networks, Incentives & Information

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Questions of interest

- How strong are the networks that support population health improvement work?
- What are the roles played by medical and public health stakeholders?
- How do these networks vary across communities and change over time?
- How do these delivery systems impact health and economic outcomes?
Losing ground in population health

U.S. LIFE EXPECTANCY FALLS

<table>
<thead>
<tr>
<th>Both sexes</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>78.8</td>
<td>78.9</td>
<td>76.3</td>
</tr>
<tr>
<td>81.2</td>
<td>81.3</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE CDC
Jim Sergent, USA TODAY

Published December 8, 2016
Losing ground in population health

Mortality rates, 45 to 54 age group, per 100,000 people

Mortality by cause for white non-Hispanics, 45 to 54 age group, per 100,000 people

- Drug/alcohol overdoses
- Lung cancer
- Suicides
- Chronic liver diseases
- Diabetes

Case A, Deaton A. Proceedings of the National Academy of Sciences 2015
Geographic & socioeconomic inequities in population health

Chetty et al. JAMA 2016
How do we implement effective population health improvement strategies?

- Designed to achieve large-scale health improvement: neighborhood, city/county, region
- Improve the mean and reduce the variance (equity)
- Target fundamental and often multiple determinants of health
- Mobilize the collective actions of multiple stakeholders in government & private sector
  - Infrastructure
  - Information
  - Incentives

Multiple systems & sectors drive health...

- Genetic predisposition: 30%
- Behavioral patterns: 40%
- Social circumstances: 15%
- Environmental exposure: 5%
- Health care: 10%

...But existing systems often fail to connect

Medical Care ☞ Social Services & Supports ☞ Public Health

- Fragmentation
- Duplication
- Variability in practice
- Limited accessibility
- Episodic and reactive care
- Insensitivity to consumer values & preferences
- Limited targeting of resources to community needs

- Fragmentation
- Variability in practice
- Resource constrained
- Limited reach
- Insufficient scale
- Limited public visibility & understanding
- Limited evidence base
- Slow to innovate & adapt

Waste & inefficiency
Inequitable outcomes
Limited population health impact
Challenge: overcoming collective action problems in implementation

- Incentive compatibility $\rightarrow$ public goods
- Concentrated costs & diffuse benefits
- Time lags: costs vs. improvements
- Uncertainties about what works
- Asymmetry in information
- Difficulties measuring progress
- Weak and variable institutions & infrastructure
- Imbalance: resources vs. needs
- Stability & sustainability of funding

Ostrom E. 1994
Widely recommended capabilities that support implementation of multi-sector health initiatives

- Engage stakeholders
- Assess needs & risks
- Identify evidence-based actions
- Develop shared priorities & plans
- Commit shared resources & responsibilities
- Coordinate implementation
- Monitor, evaluate, feedback

Foundational Capabilities

A useful lens for studying multi-sector work

National Longitudinal Survey of Public Health Systems

- Cohort of 360 communities with at least 100,000 residents
- Local public health officials report:
  - **Scope**: implementation of 20 recommended public health capabilities
  - **Network**: organizations contributing to each capability
  - **Centrality of effort**: contributed by governmental public health agency
  - **Quality**: perceived effectiveness of each capability

** Expanded sample of 500 communities<100,000 added in 2014 wave
Data linkages expand analytic possibilities

- **Area Health Resource File**: health resources, demographics, socioeconomic status, insurance coverage
- **NACCHO Profile data**: public health agency institutional and financial characteristics
- **CMS Impact File & Cost Report**: hospital ownership, market share, uncompensated care
- **Dartmouth Atlas**: Area-level medical spending (Medicare)
- **CDC Compressed Mortality File**: Cause-specific death rates by county
- **Equality of Opportunity Project (Chetty)**: local estimates of life expectancy by income
- **National Health Interview Survey**: individual-level health
- **HCUP**: area-level hospital and ED use, readmissions
Variation in implementing foundational public health capabilities

Mapping who contributes to public health capabilities

Node size = degree centrality
Line size = % activities jointly contributed (tie strength)

Comprehensive Public Health Systems
One of RWJF’s Culture of Health National Metrics

- **Broad scope** of population health activities
- **Dense network** of multi-sector relationships
- **Central actors** to coordinate actions

Access to public health

Overall, 47.2 percent of the population served by a comprehensive public health system. Individuals are more likely to have access if they are non-White (51.5 percent vs. 45.5 percent White) or live in a metropolitan area (48.7 percent vs. 34.1 percent in nonmetropolitan areas).

Variation and change in comprehensive delivery systems
## Organizational contributions to public health capabilities, 1998-2016

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>1998</th>
<th>2016</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local public health agencies</td>
<td>60.7%</td>
<td>67.5%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Other local government agencies</td>
<td>31.8%</td>
<td>33.2%</td>
<td>4.4%</td>
</tr>
<tr>
<td>State public health agencies</td>
<td>46.0%</td>
<td>34.3%</td>
<td>-25.4%</td>
</tr>
<tr>
<td>Other state government agencies</td>
<td>17.2%</td>
<td>12.3%</td>
<td>-28.8%</td>
</tr>
<tr>
<td>Federal government agencies</td>
<td>7.0%</td>
<td>7.2%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>37.3%</td>
<td>46.6%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Physician practices</td>
<td>20.2%</td>
<td>18.0%</td>
<td>-10.6%</td>
</tr>
<tr>
<td>Community health centers</td>
<td>12.4%</td>
<td>29.0%</td>
<td>134.6%</td>
</tr>
<tr>
<td>Health insurers</td>
<td>8.6%</td>
<td>10.6%</td>
<td>23.0%</td>
</tr>
<tr>
<td>Employers/businesses</td>
<td>16.9%</td>
<td>15.3%</td>
<td>-9.6%</td>
</tr>
<tr>
<td>Schools</td>
<td>30.7%</td>
<td>25.2%</td>
<td>-17.9%</td>
</tr>
<tr>
<td>Universities/colleges</td>
<td>15.6%</td>
<td>22.6%</td>
<td>44.7%</td>
</tr>
<tr>
<td>Faith-based organizations</td>
<td>19.2%</td>
<td>17.5%</td>
<td>-9.1%</td>
</tr>
<tr>
<td>Other nonprofit organizations</td>
<td>31.9%</td>
<td>32.5%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Other</td>
<td>8.5%</td>
<td>5.2%</td>
<td>-38.4%</td>
</tr>
</tbody>
</table>
Health effects attributable to multi-sector work

Impact of Comprehensive Systems on Mortality, 1998-2014

Fixed-effects instrumental variables estimates controlling for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects.  N=1019 community-years

Mays GP et al. Health Affairs 2016
Economic effects attributable to multi-sector work

Impact of Comprehensive Systems on Medical Spending (Medicare) 1998-2014

Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals.

Mays GP et al. Health Services Research 2017
Economic effects attributable to multi-sector work

Impact of Comprehensive Systems on Life Expectancy by Income (Chetty), 2001-2014

Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=1019 community-years. Vertical lines are 95% confidence intervals.

Mays GP et al. forthcoming 2017
Conclusions and implications

- Large health gains accrue to comprehensive systems
- Health gains are larger for low-income populations and low-income communities
- Dense collaborative networks do more than just plan: prioritize, invest, evaluate, repeat (crowd-sourcing)
- Equity and opportunity: two-thirds of communities currently lack comprehensive systems
- ACA incentives and resources may help:
  - Hospital community benefit
  - Value-based health care payments
  - Insurer and employer incentives
  - Public health agency accreditation
- Sustainability and resiliency are not automatic
Finding the connections

- Act on aligned incentives
- Exploit the disruptive policy environment
- Innovate, prototype, study – then scale
- Pay careful attention to shared governance, decision-making, and financing structures
- Demonstrate value and accountability to the public
Our research program focuses on delivery and financing system alignment.

http://www.systemsforaction.org
For More Information

Systems for Action
National Coordinating Center
Systems and Services Research to Build a Culture of Health

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