Understanding the Value of Multi-Sector Partnerships to Improve Population Health

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publichealtheconomics.org
Losing ground in population health

1. Or latest year available.
Source: OECD Health Data 2010.
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
Losing ground in population health

Premature Deaths per 100,000 Residents

Commonwealth Fund 2012
Evidence-based public health strategies reach less than two-thirds of U.S. populations at risk:

- Smoking cessation
- Influenza vaccination
- Hypertension control
- Nutrition & physical activity programs
- HIV prevention
- Family planning
- Substance abuse prevention
- Interpersonal violence prevention
- Maternal and infant home visiting for high-risk populations

CDC Guide to Community Preventive Services 2014
Drivers of population health failures

>75% of US health spending is attributable to conditions that are largely preventable
  - Cardiovascular disease
  - Diabetes
  - Lung diseases
  - Cancer
  - Injuries
  - Vaccine-preventable diseases and sexually transmitted infections

<5% of US health spending is allocated to prevention and public health

CDC 2008 and CMS 2011
How do we support effective population health improvement strategies?

- Designed to achieve large-scale health improvement: neighborhood, city/county, region

- 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...

Proportional Contribution to Premature Death

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

...But existing systems often fail to connect

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

**Social Services & Supports**

**Public Health**  
- 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**
...Resulting in significant economic & social burden

<table>
<thead>
<tr>
<th>Exhibit 1</th>
<th>Estimates of Waste in US Health Care Spending in 2011, by Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost to Medicare and Medicaid&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Failures of care delivery</td>
<td>$26</td>
</tr>
<tr>
<td>Failures of care coordination</td>
<td>21</td>
</tr>
<tr>
<td>Overtreatment</td>
<td>67</td>
</tr>
<tr>
<td>Administrative complexity</td>
<td>16</td>
</tr>
<tr>
<td>Pricing failures</td>
<td>36</td>
</tr>
<tr>
<td>Subtotal (excluding fraud and abuse)</td>
<td>166</td>
</tr>
<tr>
<td>Percentage of total health care spending</td>
<td>6%</td>
</tr>
</tbody>
</table>

<sup>a</sup>Cost to Medicare and Medicaid is based on data from the Centers for Medicare & Medicaid Services (CMS).<br><sup>b</sup>Total cost to US health care is based on data from CMS and the Kaiser Family Foundation.
The connection between social needs and medical outcomes

- Unmet social needs have large effects on medical resource use and health outcomes

- Most primary care physicians lack confidence in their capacity to address unmet social needs

- Linking people to needed health and social support services is a core public health function that can add health and economic value

Shier et al. *Health Affairs* 2013
Challenge: overcoming collective action problems across systems & sectors

- Incentive compatibility → 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
What services and supports are needed to support collective actions in health?

Need a chief health strategist for communities & populations:

- Articulate population health needs & priorities
- Engage community stakeholders
- Plan with clear roles & responsibilities
- Recruit & leverage resources
- Develop and enforce policies
- Ensure coordination across sectors
- Promote equity and target disparities
- Support evidence-based practices
- Monitor and feed back results
- Ensure transparency & accountability: resources, results, ROI
Catalytic functions to support multi-sector actions in health

Foundational Capabilities for Population Health

- Assess needs & risks
- Recommend actions
- Engage stakeholders
- Develop plans & policies
- Mobilize multi-sector implementation
- Monitor, evaluate, feed back

What do we call a system that delivers a broad scope of foundational capabilities through a dense network of multi-sector relationships?

COMPREHENSIVE
One of RWJF’s 41 Culture of Health National Metrics

Access to public health

Overall, 47.2 percent of the population is covered 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).

47.2% of population served by a comprehensive public health system

What do we know about multi-sector work in population health?

- Which organizations contribute to the implementation of population health activities in local communities?
- How do these contributions change over time?
  - Recession | Recovery | ACA implementation
- What are the health and economic effects attributable to these multi-sector activities?
What do we know about multi-sector work in public health?

National Longitudinal Survey of Public Health Systems

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

** Expanded sample of 500 communities<100,000 added in 2014 wave
Mapping who contributes to population health

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

Classifying multi-sector delivery systems for population health 1998-2014

<table>
<thead>
<tr>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Cluster 5</th>
<th>Cluster 6</th>
<th>Cluster 7</th>
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</thead>
<tbody>
<tr>
<td><strong>Scope</strong></td>
<td><strong>Centrality</strong></td>
<td><strong>Density</strong></td>
<td><strong>Scope</strong></td>
<td><strong>Centrality</strong></td>
<td><strong>Density</strong></td>
<td><strong>Scope</strong></td>
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<tr>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Mod</td>
<td>Mod</td>
<td>Low</td>
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<tr>
<td>Mod</td>
<td>Low</td>
<td>High</td>
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<td>High</td>
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<td>Mod</td>
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<tr>
<td>High</td>
<td>High</td>
<td>Mod</td>
<td>Mod</td>
<td>Low</td>
<td>Mod</td>
<td>Mod</td>
</tr>
</tbody>
</table>

- **Comprehensive** (High System Capital)
- **Conventional**
- **Limited**
# Changes in system prevalence and coverage

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Comprehensive systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of communities</td>
<td>24.2%</td>
<td>36.9%</td>
<td>31.1%</td>
<td>32.7%</td>
<td>25.7%</td>
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<tr>
<td>% of population</td>
<td>25.0%</td>
<td>50.8%</td>
<td>47.7%</td>
<td>47.2%</td>
<td>36.6%</td>
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<tr>
<td><strong>Conventional systems</strong></td>
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<td></td>
<td></td>
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<tr>
<td>% of communities</td>
<td>50.1%</td>
<td>33.9%</td>
<td>49.0%</td>
<td>40.1%</td>
<td>57.6%</td>
</tr>
<tr>
<td>% of population</td>
<td>46.9%</td>
<td>25.8%</td>
<td>36.3%</td>
<td>32.5%</td>
<td>47.3%</td>
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<tr>
<td><strong>Limited systems</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>% of communities</td>
<td>25.6%</td>
<td>29.2%</td>
<td>19.9%</td>
<td>20.6%</td>
<td>16.7%</td>
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<tr>
<td>% of population</td>
<td>28.1%</td>
<td>23.4%</td>
<td>16.0%</td>
<td>19.6%</td>
<td>16.1%</td>
</tr>
</tbody>
</table>

Changes in intensive and extensive margins of system capital during the Great Recession

% Change 2006-2012

Scope of Delivery 2012

-50% -30% -10% 10% 30% 50%

Local health agency
Other local government
State health agency
Other state government
Hospitals
Physician practices
Community health centers
Health insurers
Employers/business
Schools
CBOs

Equity in population health delivery systems
Delivery of recommended population health activities

### Organizational contributions to recommended population health activities, 1998-2014

<table>
<thead>
<tr>
<th>Type of Organization</th>
<th>1998</th>
<th>2006</th>
<th>2012</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local public health agency</td>
<td>60.7%</td>
<td>66.5%</td>
<td>62.0%</td>
<td>67.4%</td>
</tr>
<tr>
<td>Other local govt agencies</td>
<td>31.8%</td>
<td>50.8%</td>
<td>26.3%</td>
<td>32.7%</td>
</tr>
<tr>
<td>State public health agency</td>
<td>46.0%</td>
<td>45.3%</td>
<td>36.4%</td>
<td>34.0%</td>
</tr>
<tr>
<td>Other state govt agencies</td>
<td>17.2%</td>
<td>16.4%</td>
<td>13.0%</td>
<td>12.7%</td>
</tr>
<tr>
<td>Federal agencies</td>
<td>7.0%</td>
<td>12.0%</td>
<td>8.7%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>37.3%</td>
<td>41.1%</td>
<td>39.3%</td>
<td>47.2%</td>
</tr>
<tr>
<td>Physician practices</td>
<td>20.2%</td>
<td>24.1%</td>
<td>19.5%</td>
<td>18.0%</td>
</tr>
<tr>
<td>Community health centers</td>
<td>12.4%</td>
<td>28.6%</td>
<td>26.9%</td>
<td>28.3%</td>
</tr>
<tr>
<td>Health insurers</td>
<td>8.6%</td>
<td>10.0%</td>
<td>9.8%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Employers/business</td>
<td>25.5%</td>
<td>16.9%</td>
<td>13.4%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Schools</td>
<td>30.7%</td>
<td>27.6%</td>
<td>24.9%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Universities/colleges</td>
<td>15.6%</td>
<td>21.6%</td>
<td>21.2%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Faith-based organizations</td>
<td>24.0%</td>
<td>19.2%</td>
<td>15.7%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Other nonprofits</td>
<td>31.9%</td>
<td>34.2%</td>
<td>31.6%</td>
<td>33.6%</td>
</tr>
<tr>
<td>Other organizations</td>
<td>8.5%</td>
<td>8.8%</td>
<td>5.4%</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Bridging capital in multi-sector delivery systems
Trends in betweenness centrality

* Change from prior years is statistically significant at p<0.05
Health and economic impact of comprehensive systems

Models also control for racial composition, unemployment, health insurance coverage, educational attainment, age composition, and state and year fixed effects. N=779 community-years **p<0.05  *p<0.10
Making the case for equity: larger gains in low-resource communities

Effects of Comprehensive Population Health Systems in Low-Income vs. High-Income Communities

Log IV regression estimates controlling for community-level and state-level characteristics

Mortality
Medical costs
95% CI

Average all communities
Bottom 20% of communities
Top 20% of communities
Comprehensive systems do more with less

The diagram compares expenditures per capita and the percentage of recommended activities performed across different types of delivery systems: Comprehensive, Conventional, Limited, and Very limited. The expenditures per capita are shown on the y-axis, with values ranging from $0 to $80. The percentage of recommended activities performed is shown on the x-axis, ranging from 0% to 90%. The bar chart indicates that Comprehensive systems have the highest expenditures per capita and the highest percentage of recommended activities performed, followed by Conventional, Limited, and Very limited systems.
New incentives & infrastructure are in play

Next Generation Population Health Improvement

- Hospital community benefit regs
- Innovation Center Funding constraints
- ACOs and PCMHs
- Employer wellness incentives
- Value-based payment
- Health insurance expansions
- Community Transformation Grants
- Public health Accreditation
- Health information exchange
Some Promising Examples

Hennepin Social ACO

- Partnership of county health department, community hospital, and FQHC
- Accepts full risk payment for all medical care, public health, and social service needs for Medicaid enrollees
- Fully integrated electronic health information exchange
- Heavy investment in care coordinators and community health workers
- Savings from avoided medical care reinvested in public health initiatives
  - Nutrition/food environment
  - Physical activity

http://content.healthaffairs.org/content/33/11/1975.abstract
Some Promising Examples
Arkansas Community Connector Program

- Use community health workers & public health infrastructure to identify people with unmet social support needs
- Connect people to home and community-based services & supports
- Link to hospitals and nursing homes for transition planning
- Use Medicaid and SIM financing, savings reinvestment
- ROI $2.92

Source: Felix, Mays et al. Health Affairs 2011

www.visionproject.org
Some Promising Examples
Massachusetts Prevention & Wellness Trust Fund

- $60 million invested from nonprofit insurers and hospital systems
- Funds community coalitions of health systems, municipalities, businesses and schools
- Invests in community-wide, evidence-based prevention strategies with a focus on reducing health disparities
- Savings from avoided medical care are expected to be reinvested in the Trust Fund activities
New research program focuses on delivery and financing system alignment

http://www.systemsforaction.org
Conclusions: What we know and still need to learn

- Large potential benefits of system integration
- Inequities in integration are real & problematic
- Integration requires support
  - Infrastructure
  - Institutions
  - Incentives
- 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
For More Information

Systems for Action

National Coordinating Center

Systems and Services Research to Build a Culture of Health

Supported by The Robert Wood Johnson Foundation

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Archive: works.bepress.com/glen_mays
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References


