Integrating Health Services & Systems: What We Know, Think We Know, and Need to Learn

Glen P. Mays, University of Kentucky
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Healthy People in Healthy Communities Conference • 8 March 2016
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

- U.S. white
- France
- Germany
- U.K.
- U.S. Hispanic
- Canada
- Australia
- Sweden

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

>100% Difference

Commonwealth Fund 2012
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
  - Resource commitments
  - Infrastructure requirements

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: • Fragmentation • Variability in practice • Resource constrained • Limited reach • Insufficient scale • Limited public visibility & understanding

Public Health: • Fragmentation • 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></th>
<th>Cost to Medicare and Medicaid $</th>
<th>Total cost to US health care $</th>
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<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Midpoint</td>
</tr>
<tr>
<td>Failures of care delivery</td>
<td>$26</td>
<td>$36</td>
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<tr>
<td>Failures of care coordination</td>
<td>21</td>
<td>30</td>
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<tr>
<td>Overtreatment</td>
<td>67</td>
<td>77</td>
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<tr>
<td>Administrative complexity</td>
<td>16</td>
<td>36</td>
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<tr>
<td>Pricing failures</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td>Subtotal (excluding fraud and abuse)</td>
<td>166</td>
<td>235</td>
</tr>
<tr>
<td>Percentage of total health care spending</td>
<td>6%</td>
<td>9%</td>
</tr>
</tbody>
</table>

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
Creating a Culture of Health

1. Shared Value
2. Cross-sector Collaboration
3. Healthier Communities
4. Integrated Systems

http://www.cultureofhealth.org
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
Can public health help solve collective action problems?

Foundational Public Health Services

Assess needs & risks

Recommend actions

Engage stakeholders

Develop plans & policies

Mobilize multi-sector implementation

Monitor, evaluate, feed back

How do we deploy foundational public health services across the US?

2012 Institute of Medicine Recommendations

- Identify the components and costs of a minimum package of public health services
  - Foundational capabilities
  - Basic programs
- Create shared federal-state financing
- Identify how to implement these services in every U.S. state and community
- Expand research on costs and effects of public health delivery

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

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

Access to public health

47.2% of population served by a comprehensive public health system

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).

What do we know about the benefits of Comprehensive Public Health Systems?

- Greater concordance with national recommendations
  - IOM Core Functions
  - Essential Public Health Services
  - PHAB national accreditation standards
  - Foundational Public Health Services

- Fewer governmental resources per capita: more for less

- Over time, larger gains in population health
What do we know about multi-sector work in public health?

- Which organizations contribute to the implementation of core public health services and supports 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 public 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
Average public health system structure in 2014

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

Prevalence of Public Health System Configurations 1998-2014

Scope
- High
- Mod
- Low

Centrality
- Mod
- Low
- High

Density
- High
- Mod
- Low

Comprehensive
- (High System Capital)

Conventional

Limited

Cluster 1: High, High, High
Cluster 2: High, Mod, Low
Cluster 3: High, High, Mod
Cluster 4: Mod, High, Mod
Cluster 5: Mod, High, Low
Cluster 6: Low, High, Mod
Cluster 7: Low, Low, Low
## Changes in system prevalence and coverage

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Comprehensive systems</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<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>
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<td><strong>Conventional systems</strong></td>
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<td>% of communities</td>
<td>50.1%</td>
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<td>49.0%</td>
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<tr>
<td>% of population</td>
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<td>47.3%</td>
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<td><strong>Limited systems</strong></td>
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<td>% of communities</td>
<td>25.6%</td>
<td>29.2%</td>
<td>19.9%</td>
<td>20.6%</td>
<td>16.7%</td>
</tr>
<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>
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</table>
Changes in intensive and extensive margins during the Great Recession

% Change 2006-2012

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

Scope of Delivery 2012

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 Delivery

Delivery of recommended public health activities, 2006-14

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

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

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

Fixed Effects and IV Estimates: Effects of Comprehensive System Capital on Mortality and Spending

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 Public Health Systems in Low-Income vs. High-Income Communities

Log IV regression estimates controlling for community-level and state-level characteristics
Comprehensive systems do more with less

Expenditures per capita

% of recommended activities performed

Type of delivery system

Expenditures per capita

Comprehensive: $80
Conventional: $70
Limited: $60
Very limited: $50

Recommended activities performed

Comprehensive: 90%
Conventional: 80%
Limited: 70%
Very limited: 60%
New incentives & infrastructure are in play

Next Generation Population Health Improvement

- Hospital community benefit regs
- Value-based payment
- Health insurance expansions
- Community Transformation Grants
- Innovation Center Funding
- Funding constraints
- ACOs and PCMHs
- Employer wellness incentives
- 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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