Harnessing Community Engaged Scholarship for Collective Action to Improve Population Health

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Failures in population health
Failures in population health

Premature Deaths per 100,000 Residents

Commonwealth Fund 2012
Drivers of population health failures

Proportional Contribution to Premature Death

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

Missed opportunities for prevention

Less than 50% of the population at risk is reached by:

- Smoking cessation
- Aspirin use
- Influenza vaccination
- Hypertension control
- Nutrition and physical activity programming
- HIV prevention
- Family planning
- Substance abuse prevention
- Interpersonal violence prevention
Vicious cycles in population health

Limited public understanding & political support

Incoherence in missions, responsibilities & expectations

Complex, fragmented, variable financing & delivery systems

Variable productivity and efficiency

Large inequities in resources & capabilities

Lack of coordination

Resources incongruent with preventable disease burden

Gaps in reach & implementation of efficacious strategies

Difficulties demonstrating impact, value & ROI
Vicious cycles to learning systems

- Limited public understanding & political support
- Incoherence in missions, complex, fragmented, variable responsibilities & expectations, financing & delivery systems
- Large inequities in resources & capabilities, variable productivity and efficiency
- Resources incongruent with preventable disease burden
- Gaps in reach & implementation of efficacious strategies, difficulties demonstrating impact, value & ROI

Translate evidence for policy, programs & advocacy

Discover causes & consequences of variation in population health
What are Population Health 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
  - Usual and unusual suspects
Population Health vs. Public Health

Organized programs, policies, and laws to prevent disease and injury and promote health on a population-wide basis

- Epidemiologic surveillance & investigation
- Community health assessment & planning
- Communicable disease control
- Chronic disease and injury prevention
- Health education and communication
- Environmental health monitoring and assessment
- Enforcement of health laws and regulations
- Inspection and licensing
- Inform, advise, and assist school-based, worksite-based, and community-based health programming

...and roles in assuring access to medical care
What Makes Population Health Strategies So Hard?

- 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
Complexity in population health strategies

**Health System**
- Scale of operations
- Scope of activity
- Division of responsibility
- Compatibility of missions
- Participation incentives
- Distribution of effort
- Nature & intensity of relationships
- Breadth of organizations

**Public Health Agency**
- Scope of services
- Staffing levels & mix
- Intergovernmental relationships
- Funding levels & mix
- Leadership
- Legal authority
- Governing structure

**Needs**
- Perceptions
- Preferences
- Risks
- Threats

**Population & Environment**
- Resources
- Perceptions

**Strategic Decisions**
- Decision Support
  - Accreditation
  - Performance measures
  - Practice guidelines
  - Quality improvement

**Outputs and Outcomes**
- Reach
- Effectiveness
- Timeliness
- Adherence to EBPs
- Efficiency
- Equity

Mays et al 2009
Population health delivery systems

Organizations engaged in local public health delivery

-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

% Change 2006-2012
Scope of Delivery 2012

Seven types of population health delivery systems

Scope                High       High         High          Mod           Mod         Low          Low
Centralization       Mod        Low         High          High           Low         High         Low
Integration          High       High         Low           Mod           Mod         Low          Mod

Source: Mays et al. 2010; 2012

% of communities

Scope
Centralization
Integration

Comprehensive
Conventional
Limited

Source: Mays et al. 2010; 2012
Changes in health associated with delivery system

Percent Changes in Preventable Mortality Rates by System Typology

- Infant Deaths/1000 Births
- Cancer deaths/100,000 population
- Heart Disease Deaths/100,000
- Influenza Deaths/100,000
- Infectious Disease Deaths/100,000

Fixed-effects models control for population size, density, age composition, poverty status, racial composition, and physician supply.
Mortality reductions attributable to spending on public health, 1993-2008

Hierarchical regression estimates with instrumental variables to correct for selection and unmeasured confounding

Mays et al. 2011
Medical cost offsets attributable to spending on public health, 1993-2008

For every $10 of public health spending, ≈$9 are recovered in lower medical care spending over 15 years

Why population health now?

Next Generation Population Health Improvement

- Hospital community benefit regs
- Innovation Center Funding
- Funding constraints
- ACOs and PCMHs
- Employer wellness incentives
- Value-based payment
- Health insurance expansions
- Community Transformation Grants
- Public health Accreditation
- Health information exchange
How Can Community-Engaged Research Help?

- Identify common interests, incentives & problems
- Mitigate asymmetries in power & information
- Use theory, evidence & experience to design strategies with high probability of success
- Measure progress & provide feedback
  - Fail fast
  - Continuously improve
- Evaluate health & economic impact
Toward a “rapid-learning system” in population health
What is Practice-Based Research?

- Research that tests effectiveness & impact of public health practices in real-world public health settings.
- Research designed to address uncertainties and information needs of real-world public health decision-makers.
- Research that evaluates the implementation and impact of innovations in practice.
- Research that uses observations generated through public health practice to produce new knowledge.
PBRNs as Mechanisms for Community-Engaged Scholarship

Identify Common questions of interest

Translation & application

Engaged practice settings

Research partner

Apply Rigorous research methods

Analysis & interpretation

Data exchange
Diffusion of Public Health PBRNs

- First cohort (December 2008 start-up)
- Second cohort (January 2010 start-up)
- Affiliate/Emerging PBRNs (2011-14)
Studying PBRNs as Mechanisms:
Roles played by participants in PBRN activities

- Help others apply findings
- Apply findings internally
- Disseminate findings
- Implement study
- Seek funding
- Plan & design study
- Identify topics
- Convene stakeholders

[Bar chart showing participation levels for each role]
Studying PBRNs as Mechanisms

Perceived benefits of PBRN participation

- Steer research to relevant questions
- Help others improve practice
- Raise stature of profession
- Motivate staff to improve
- Identify innovations in practice
- Compete for practice funding
- Compete for research funding
- Networking
- Demonstrate accountability
- Raise awareness about practice
- Improve practice
- Learning about research funding
- Learning about PHSSR
- Learning about PBRNs
Examples: Studying PBRNs as Mechanisms

- Baseline network analysis with 14 PBRNs to examine *network structures* for evidence production and translation
Examples: Studying PBRNs as Mechanisms

Network Structures Associated with Perceived Benefits

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Coeff.</th>
<th>S.E.</th>
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<tbody>
<tr>
<td>Network density</td>
<td>0.341</td>
<td>0.112**</td>
</tr>
<tr>
<td>Network centrality</td>
<td>-0.521</td>
<td>0.227**</td>
</tr>
<tr>
<td>History of collaboration</td>
<td>0.148</td>
<td>0.108</td>
</tr>
<tr>
<td>Practice orientation</td>
<td>0.283</td>
<td>0.144*</td>
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Estimates from ordered logit model controlling for PBRN random effects  **p<0.05       *p<0.10
## PBRNs and Delivery System Change

### Local Health Departments Engaged in Research Implementation & Translation Activities During Past 12 months

<table>
<thead>
<tr>
<th>Activity</th>
<th>PBRN Agencies Percent/Mean</th>
<th>National Sample Percent/Mean</th>
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</thead>
<tbody>
<tr>
<td>Identifying research topics</td>
<td>94.1% (27.5%)</td>
<td>27.5% (***)</td>
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<tr>
<td>Planning/designing studies</td>
<td>81.6% (15.8%)</td>
<td>15.8% (***)</td>
</tr>
<tr>
<td>Recruitment, data collection &amp; analysis</td>
<td>79.6% (50.3%)</td>
<td>50.3% (***)</td>
</tr>
<tr>
<td>Disseminating study results</td>
<td>84.5% (36.6%)</td>
<td>36.6% (***)</td>
</tr>
<tr>
<td>Applying findings in own organization</td>
<td>87.4% (32.1%)</td>
<td>32.1% (***)</td>
</tr>
<tr>
<td>Helping others apply findings</td>
<td>76.5% (18.0%)</td>
<td>18.0% (***)</td>
</tr>
<tr>
<td>Research implementation composite</td>
<td>84.04 (27.38)</td>
<td>30.20 (31.38) (***)</td>
</tr>
<tr>
<td>N</td>
<td>209</td>
<td>505</td>
</tr>
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Key elements of success with community engaged scholarship & collective action

- Clear goals
- Congruence between resources & objectives
- Explicit incentives & constraints
- Monitoring mechanisms
- Small wins
- Conflict resolution mechanisms
- Effective communication and information flow
- Nested & embedded activities

By John Kania & Mark Kramer

Winter 2011
More Information - Always Open

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