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Practice-Based Research Networks for Next-Generation Public Health

Glen P. Mays
University of Kentucky, glen.mays@uky.edu

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Practice-Based Research Networks for Next-Generation Public Health

Glen Mays, PhD, MPH
University of Kentucky

glen.mays@uky.edu

ASPPH Annual Meeting • Alexandria, VA • 23 March 2015
Missed opportunities in public health delivery

Evidence-based public health strategies reach less than half of U.S. populations at risk:

- Smoking prevention & cessation
- Influenza vaccination
- Hypertension control
- Family planning
- Substance abuse prevention
- Interpersonal violence prevention
- Nutrition & physical activity programs
- HIV, STI, Hepatitis prevention/control
- Maternal and infant home visiting for high-risk populations
Vicious cycles to learning systems

Limited public understanding & political support

Incoherence in missions, Complex, fragmented, variable responsibilities & expectations 
financing & delivery systems

Large inequities in Variable productivity resources & capabilities and efficiency

Resources incongruent with preventable disease burden

Gaps in reach & implementation Difficulties demonstrating of efficacious strategies impact, value & ROI

Translate evidence for policy, programs & advocacy

Discover causes & consequences of variation in population health delivery
A field of inquiry examining the organization, financing, and delivery of public health services at local, state and national levels, and the impact of these activities on population health.

Strategies to promote health and prevent disease & injury on a population-wide basis: programs, policies, administrative practices.

Mays, Halverson, and Scutchfield. 2003
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 translational research in public health

- Common questions of interest
- Engaged practice settings
- Research partner
- Data exchange
- Analysis & interpretation
- Translation & application
- Apply Rigorous research methods

Translation & application

PBRNs as mechanisms for translational research in public health

Identify Common questions of interest

Engaged practice settings

Research partner

Data exchange

Analysis & interpretation

Translation & application

Apply Rigorous research methods
Diffusion of Public Health PBRNs

>1900 public health agencies
56 universities
>60 CBOs

First cohort (December 2008 start-up)
Second cohort (January 2010 start-up)
Affiliate/Emerging PBRNs (2011-14)
PBRNs as Research Mechanisms

Baseline network analysis with 14 PBRNs to examine *network structures* for evidence production and translation.
## Studying PBRNs as Mechanisms

### Network Structures Associated with Perceived Benefits

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Coeff.</th>
<th>S.E.</th>
</tr>
</thead>
<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>
</tr>
</tbody>
</table>

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>PBRNs</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%/Mean</td>
<td>%/Mean</td>
</tr>
<tr>
<td>Identifying research topics</td>
<td>94.1%</td>
<td>27.5%</td>
</tr>
<tr>
<td>Planning/designing studies</td>
<td>81.6%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Recruitment, data collection &amp; analysis</td>
<td>79.6%</td>
<td>50.3%</td>
</tr>
<tr>
<td>Disseminating study results</td>
<td>84.5%</td>
<td>36.6%</td>
</tr>
<tr>
<td>Applying findings in own organization</td>
<td>87.4%</td>
<td>32.1%</td>
</tr>
<tr>
<td>Helping others apply findings</td>
<td>76.5%</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>
</tbody>
</table>

Reach by the numbers

- 139 competitively awarded research projects
- 104 articles in peer-reviewed journals
- 244 presentations and conferences & meetings
- 51 reports & tools in the grey literature
- >2000 organizations engaged in PBRNs
- >39,000 downloads of Frontiers in PHSSR articles
- >8,000 downloads from Research Archive
- >9,000 page views on PublicHealthEconomics.org blog
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
| 65 | Winter 2011
Can PBRNs help transform public health to Next-Gen Population Health?

- 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

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
PBRNs and D&I Science

Successful strategies to scale up and spread complex community-level interventions require an understanding of the resources required for implementation, how best to distribute them among supporting institutions, and how resource consumption and distribution varies across settings.
Overall Patterns of Variation in Local Public Health Implementation

Results from Multi-Nework Practice and Outcome Variation Study (MPROVE)

Estimates from random effects regression models
Integrated public health systems do more with less


Expenditures per capita

% of recommended activities performed

Type of delivery system

Comprehensive | Conventional | Limited | Very limited

Expenditures per capita

$80

$70

$60

$50

$40

$30

$20

$10

$0

$80

$70

$60

$50

$40

$30

$20

$10

$0

% of recommended activities performed

90%

80%

70%

60%

50%

40%

30%

20%

10%

0%
Why next-gen now?

Next Generation Population Health Improvement

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

In a learning health care system, research influences practice and practice influences research.

**Evaluate**
- Collect data and analyze results to show what does and does not work.

**Implement**
- Apply the plan in pilot and control settings.

**Adjust**
- Use evidence to influence continual improvement.

**Disseminate**
- Share results to improve care for everyone.

**Design**
- Design care and evaluation based on evidence generated here and elsewhere.

**Internal and External Scan**
- Identify problems and potentially innovative solutions.

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Glen P. Mays, Ph.D., M.P.H.
glen.mays@uky.edu

Email: publichealthPBRN@uky.edu
Web: www.publichealthsystems.org
Journal: www.FrontiersinPHSSR.org
Archive: works.bepress.com/glen_mays
Blog: publichealtheconomics.org

University of Kentucky College of Public Health
Lexington, KY