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From the SelectedWorks of Glen Mays

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Using Practice-Based Research Networks for Next-Generation Public Health

Glen P. Mays, University of Kentucky

Available at: https://works.bepress.com/glen_mays/195/
Practice-Based Research Networks for Next-Generation Public Health

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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 resources & capabilities
- 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 delivery
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

Identify Common questions of interest

Engaged practice settings

Research partner

Apply Rigorous research methods

Translation & application

Analysis & interpretation

Data exchange
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)

Map showing the diffusion of Public Health PBRNs across the United States.
PBRNs as Research Mechanisms

- Baseline network analysis with 14 PBRNs to examine network structures for evidence production and translation.
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

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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity</th>
<th>PBRNs</th>
<th>National</th>
</tr>
</thead>
<tbody>
<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
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

<table>
<thead>
<tr>
<th>Type of delivery system</th>
<th>Expenditures per capita</th>
<th>Recommended activities performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehensive</td>
<td>$80</td>
<td>90%</td>
</tr>
<tr>
<td>Conventional</td>
<td>$70</td>
<td>80%</td>
</tr>
<tr>
<td>Limited</td>
<td>$60</td>
<td>70%</td>
</tr>
<tr>
<td>Very limited</td>
<td>$40</td>
<td>60%</td>
</tr>
</tbody>
</table>

Why next-gen now?

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
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.

Adjust
Use evidence to influence continual improvement.

Disseminate
Share results to improve care for everyone.

Implement
Apply the plan in pilot and control settings.

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

Internal and External Scan
Identify problems and potentially innovative solutions.

More Information - Always Open

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