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# Developing Service Delivery Measures for Studies of Practice Variation: The MPROVE Study

Glen Mays, *bepress (DC Admins)*

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# Developing Service Delivery Measures for Studies of Practice Variation: The MPROVE Study

Glen Mays, PhD, MPH
University of Kentucky

UK UNIVERSITY OF KENTUCKY
Center for Public Health Systems and Services Research

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Down the briar patch we go…

# Multi-Network Practice and Outcome Variation Examination Study (MPROVE)

- Identify service delivery measures for selected, high-value public health services
- Create a registry of measures collected consistently across local communities
- Profile geographic variation in the delivery of selected public health services across local communities
- Decompose variation into attributable components:
  - need-sensitive or preference-sensitive factors
  - supply-sensitive factors
- Examine associations between service delivery & outcomes

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# Participating MPROVE networks

| Network | State Agencies | Local Agencies* | Academic Units | Other | Total | Lead Institution |
|---|---|---|---|---|---|---|
| CO | 1 | 55 | 2 | 15 | 73 | Association |
| FL | 1 | 67 | 3 | 3 | 74 | Local agency |
| MN | 1 | 75 | 1 | 1 | 78 | State agency |
| WA | 1 | 36 | 2 | 1 | 40 | Local agency |
| NJ | 1 | 100 | 2 | 1 | 104 | Academic |
| TN | 1 | 16 | 2 | 1 | 20 | Academic |
| Total | 6 | 349 | 12 | 22 | 389 | |

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# Overview of Activities and Timeline

## Phase I

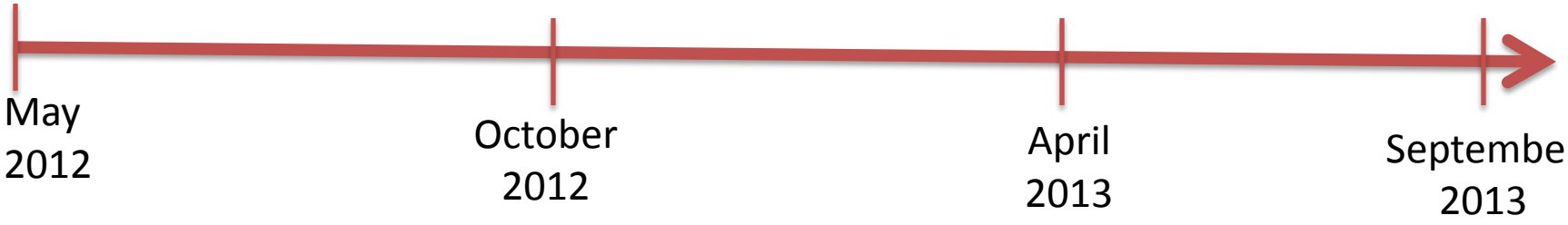
- Selection and specification of "core" measures to collect across networks
- Selection and specification of additional "local" measures to collect within networks
- Development of analysis plans

## Phase II

- Data collection
- Pooling data across networks

## Phase III

- Data analysis
  - Within network
  - Across networks
- Interpretation and translation
- Development of initial dissemination products
- Planning for future & follow-up studies



# MPROVE Measure Domains

- Communicable disease control
- Chronic disease prevention
- Environmental health protection

# MPROVE Measure Selection & Specification

- Call for measures to identify inventory of candidate measures
- Literature review to identify candidate measures
- Delphi expert rating of measures based on selection criteria
- Value of Information (VOI) analysis of first-tier measures
- Discussion and modification of ratings
- Final selection of "core" measures
- Development of measure specifications
- Final approval of measure specifications

# MPROVE Measurement Dimensions

- **Availability/scope**: are selected services/activities produced or performed by the public health agency or delivery system
- **Volume/intensity**: absolute or relative frequency of service delivery over a given unit of time
- **Capacity**: ratio of inputs to size of the relevant target population or risk (e.g. sanitarians per 1000 septic tanks, food safety inspectors per 1000 licensed food vendors)
- **Reach**: percent of the target population reached by the activity

# MPROVE Measurement Dimensions

- **Quality-Appropriateness**: Does the public health agency and/or system act based on objectively measured health needs and risk profiles of the population served? What is the degree of concordance between a community's documented health needs/risks and the scope of public health activities performed by the public health agency or the system as a whole?

# MPROVE Measurement Dimensions

- **Quality-Effectiveness/Fidelity**: Does the public health agency and/or system implement its activities based on available scientific knowledge and fidelity to evidence-based guidelines? To what extent are programs and services concordant with evidence-based guidelines and professional consensus standards?
- **Quality-Timeliness**: Are public health activities implemented at the appropriate points in time to maximize health protection and minimize the risk of disease transmission or injury?
- **Quality-Community Centeredness/Engagement**: To what extent are relevant stakeholders engaged in planning, priority-setting, selection, and implementation of public health activities undertaken by the public health agency and/or system? To what extent are public health activities tailored appropriately to at-risk population groups based on the groups' values, preferences, needs, knowledge, skills, and resources?

# MPROVE Measurement Dimensions

- **Quality-Efficiency**: To what extent are public health activities implemented in ways that optimize the use of financial and human resources? To what extent do implementation processes avoid waste and delays in service? To what extent do the benefits of public health activities justify their costs?
- **Quality-Equity**: Are there disparities in the reach of public health activities to different population sub-groups defined by personal characteristics such as race, ethnicity, geography, or socio-economic status? Are there disparities in effectiveness, timeliness, community-centeredness, and/or efficiency?

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# MPROVE Measurement Dimensions

| HHS Quality Aims* | Measurement Dimensions |
|---|---|
| Population-centered | Community-centered |
| Equitable | Equity |
| Proactive | Timeliness |
| Health-promoting | Effectiveness/fidelity |
| Risk-reducing | Effectiveness/fidelity |
| Vigilant | Appropriateness |
| Effective | Effectiveness/fidelity |
| Efficient | Efficiency |

*Office of the Assistant Secretary for Health, U.S. Department of Health and Human Services. *Priority Areas for the Improvement of Quality in Public Health.* The Public Health Quality Forum. Washington, D.C.: U.S. Department of Health and Human Services; 2010.

# Selection Criteria

- **Domain**: Degree to which the measure falls within one of the three core domains of activity for this study: communicable disease control; chronic disease prevention; environmental health protection
- **Dimension**: Degree to which the measure addresses one or more of the key dimensions of service delivery for this study: availability, volume/intensity, capacity, reach, and/or quality.
- **Relevance/Control**: Degree to which the measure reflects an activity that local public health agencies and/or their partners have the authority (law) and organizational responsibility (mission) to implement

# Selection Criteria

- **Expected Health Impact**: Degree to which improvements in the measured activity are expected to result in improvements in population health.
- **Expected Economic Impact**: Degree to which changes in the measured activity are expected to result in changes in the cost of delivering public health services, changes in the cost of delivering other health care or social services (spill over), and/or other changes in the direct and indirect costs of preventable illness/injury/disability.

# Selection Criteria

- **Expected Variation**: Degree to which the measured activity is expected to vary across local public health settings, vary across states/PBRN networks, and vary over time.
- **Feasibility**: Degree to which it is economically and logistically feasible to obtain the data needed to construct the measure at the level of the local public health practice setting for all/most/many practice settings in each participating PBRN.
- **Expected Validity**: Degree to which the measure characterizes the public health activity of interest.
- **Expected Reliability**: Degree to which the measure characterizes the activity consistently across different local public health settings and over time

# Selecting Measures Based on Expected Health Impact: a VOI Approach

- Proportion of the population currently exposed to the risk factor(s) addressed by the measured activity [risk exposure]
- Proportion of the exposed population that is expected to be reached by the measured activity [expected reach]
- Relative risk of the health outcome(s) comparing the exposed to the unexposed population [preventable fraction]
- Relative risk of the health outcome(s) comparing the population reached by the measured activity to the population not reached [efficacy]

AL Siu, EA McGlynn, et al. 1992

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# Example VOI Calculation

- **Activity to Measure**: Community-wide campaigns to increase physical activity, rated as "Strong Evidence of Effectiveness" in Community Guide
- **Risk Exposure (Adults)**: 64% failure to receive recommended PA dose
- **Preventable fraction**: 24% reduction in premature mortality
- **Efficacy**: median net improvement of 4% in receipt of recommended PA
- **Expected Reach**: 30%
- **Impact fraction**: expected proportional reduction in the outcome attributable to improvement of the measured activity

$$= 0.64 * 0.30 * 0.04 * 0.24$$

$$= 0.00184$$

Task Force on Community Preventive Services. Recommendations to increase physical activity in communities. Am J Prev Med 2002;22 (4S):67-72.

# Conclusions

- Test the utility of the PBRN model for standardized measurement, data collection, and analysis
- Select “high value” measures to improve rigor and relevance of research
- Use geographic variation studies for hypothesis generation, QI targeting, cost studies, natural experiments, theory-driven sampling frames