Public Health Spending and its Contributions to the Total Spend on Health

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Public Health Spending and its Contributions to the Total Spend on Health

Glen P. Mays, Ph.D., MPH
“Poor costing systems have disastrous consequences. It is a well-known management axiom that what is not measured cannot be managed or improved. Since providers misunderstand their costs, they are unable to link cost to process improvements or outcomes, preventing them from making good decisions. Poor cost measurement [leads] to huge cross-subsidies across services...Finally, poor measurement of costs and outcomes also means that effective and efficient providers go unrewarded.”

Toward a deeper understanding of costs in public health

2012 Institute of Medicine Recommendations

- Identify the components and costs of a minimum package of public health services
  - Foundational capabilities
  - Basic programs
- Implement a national chart of accounts for tracking spending and flow of funds
- Expand research on costs and effects of public health delivery

Tools of the trade

- Prospective “expected cost” methods (micro-costing)
  - Vignettes
  - Surveys with staff and/or administrators
  - Delphi group processes

- Concurrent “implementation cost” methods (micro-costing)
  - Time studies with staff
  - Activity logs with staff
  - Direct observation

- Retrospective “cost accounting” methods (micro-costing or gross-costing)
  - Administrative records, financial reports, billing data
  - Decomposition, allocation or modeling
  - Surveys with staff and/or administrators
Public health economics in the U.S.

Governmental Expenditures for Public Health Activity, USDHHS National Health Expenditure Accounts

- State and local
- Federal

U.S. Centers for Medicare and Medicaid Services, Office of the Chief Actuary
Variation in Local Public Health Spending

Gini = 0.485
Changes in Local Public Health Spending
1993-2010

62% growth
38% decline
Mortality reductions attributable to investments in public health delivery, 1993-2008

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

Mays et al. 2011
Medical cost offsets attributable to investments in public health delivery, 1993-2008

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

Public health investments generate larger health & economic gains in low-resource communities

Impact in Low-Income vs. High Income Communities

Log IV regression estimates controlling for community-level and state-level characteristics

Mays et al. forthcoming 2014
Public health investments produce larger gains in communities with robust infrastructure

Impact in Communities with Low vs. High Public Health Infrastructure

- Mortality
- Medical costs

95% CI

Log IV regression estimates controlling for community-level and state-level characteristics

Mays et al. forthcoming 2014
Examples: Program Costing
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
- Costing with electronic time logs

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
Examples: Program Costing

By Holly C. Felix, Glen P. Mays, M. Kathryn Stewart, Naomi Cottoms, and Mary Olson

THE CARE SPAN

Medicaid Savings Resulted When Community Health Workers Matched Those With Needs To Home And Community Care

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
Examples: Program Costing

Three Year Aggregate Estimates

- Combined Medicaid spending reductions: $3.515 M
- Program implementation costs: $0.896 M
- Net savings: $2.629 M
- ROI: $2.92

Felix, Mays et al. 2011
http://content.healthaffairs.org/content/30/7/1366.abstract
Examples: Gross Costing

Performance and Efficiency in Local Public Health Delivery Systems

- Expenditures per capita
- Recommended activities performed

Expenditures per capita

% of recommended activities performed

Type of delivery system

Comprehensive

Conventional

Limited

Very limited

Mays et al. Milbank Quarterly 2010
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2888010/
Ongoing work: Public Health Delivery and Cost Studies (DACS)

- Set of 11 ongoing studies conducted by PBRNs
- Focus on 1 or more public health services: communicable disease control, chronic disease prevention, environmental health protection
- Estimate costs and cost variation across multiple institutional and community settings
- Identify factors that drive variation in costs
- Use standardized approaches to cost measurement and cost analysis: DO, time logs, manager surveys
Ongoing work: Costing Foundational Public Health Services

- Prospective “expected cost” & retrospective “cost accounting” methods

- Sampling strategy to empirically estimate scaling
  - Stratify based on state-local administrative structure
  - Sample based on population strata and density (rural/urban)

- Vignette-based questions for each domain
  - Elicit quantity, FTE and labor cost, non-labor cost, indirect cost components
  - Elicit staff time allocation across service areas
  - Elicit expectations about current level of attainment of each service

- Use “fuzzy set” costing approach to deal with uncertainty
  - Upper and lower bounds, most likely values
  - Monte Carlo simulation

Estimating the Costs of Foundational Public Health Capabilities: A Recommended Methodology
Available at http://works.bepress.com/glen_mays/128/
Costing Foundational Services: Estimation of “projected” costs from current attainment ratings

<table>
<thead>
<tr>
<th>Attainment level</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

A. Cost at current attainment level
B. Projected cost of full attainment

Estimating the Costs of Foundational Public Health Capabilities: A Recommended Methodology
Available at http://works.bepress.com/glen_mays/128/
Costing Foundational Services: Current vs. Projected Costs with Simulated Uncertainty Parameters

Current Costs

<table>
<thead>
<tr>
<th>5.0%</th>
<th>90.0%</th>
<th>78.3</th>
<th>5.0%</th>
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</table>

Projected Costs

<table>
<thead>
<tr>
<th>5.0%</th>
<th>90.0%</th>
<th>7.5</th>
<th>5.0%</th>
</tr>
</thead>
</table>

Estimated Resource Gap

Estimated the Costs of Foundational Public Health Capabilities: A Recommended Methodology
Transforming policy & practice with cost estimation

- Align resources with preventable disease burden
- Identify and address inequities in resources
- Improve productivity and efficiency
- Demonstrate value: linking costs to outcomes
- Strengthen fiscal policy: financing mechanisms
For More Information

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