6-12-2013

Analyzing Return on Investment in Public Health: Implications and Future Directions

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Analyzing Return on Investment in Public Health: Implications and Future Directions

Glen Mays, PhD, MPH
University of Kentucky
Realizing Greater Value from ROI Analysis

- Gaining a deeper understanding of costs: accuracy & variability
- Compared to what: going beyond pre-post
- Attribution issues: using stronger designs
- Improving the ROI: opportunities for efficiency
Why a stronger focus on costs?

“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 & returns

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 levels and flow of funds

• Expand **research on costs and effects** of public health delivery

Key questions for cost analysis

- What level of resources are required to deliver a given bundle of public health activities for a given population?

- How do delivery costs vary across communities and population groups?

- What delivery system characteristics influence costs?
Robert Wood Johnson Foundation’s Public Health Delivery and Cost Studies (DACS)

- Conducted by PBRNs
- Focus on high-value programs, services, & infrastructure
- Compare costs across multiple public health settings
- Use a standard cost estimation methodology
Costing methods used in DACS

- Direct observation methods
- Time studies and time-and-motion methods
- Activity logs
- Analysis of administrative records
- Staff & manager surveys
- Group process methods with vignettes

Results and Policy Implications of the Resource-Based Relative-Value Study

William C. Hsiao, Ph.D., Peter Braun, M.D., Daniel Dunn, Ph.D., Edmund R. Becker, Ph.D., Margaret DeNicola, M.P.H., and Thomas R. Ketcham, M.P.H.

Costing methods used in DACS

Don’t overlook...

- Resources that are hard to measure or value
- Resources used in small amounts
- Resources shared by multiple programs/activities
- Resources procured without money
  - Volunteer time
  - Parent/caregiver time
  - Intervention recipient time
  - In-kind contributions/donated materials
  - Existing resources
Analytic methods used in DACS

- Attributing cost impact
  - cost function estimation

- Estimating cost heterogeneity & efficiency
  - Stochastic frontier analysis
  - Data envelopment analysis

Fig. 4 Relative efficiency of 771 LHDs with nonzero inputs and outputs

Mukherjee, Santerre and Zhang 2009
Improving ROI: Economies of Scale & Scope

Source: Mays et al. 2012
Improving ROI: Using simulation for scenario analysis

Simulated Effects of Regionalization

<table>
<thead>
<tr>
<th>Percent Change</th>
<th>Per Capita Cost</th>
<th>Scope</th>
<th>Quality</th>
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<td>&lt;25,000</td>
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<td>&lt;50,000</td>
<td>-15%</td>
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<td>-10%</td>
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<td>&lt;150,000</td>
<td>-5%</td>
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<td>Source: Mays et al. 2012</td>
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Finding ROI Partners: Public Health PBRNs

First cohort (December 2008 start-up)
Second cohort (January 2010 start-up)
Affiliate/Emerging PBRNs (2011-13)

(New in 2013)
Informing practice and policy decisions

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