Public Health Return on Investment: Making the Case

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Public Health Return on Investment: Making the Case

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Why ROI?

Do outcomes achieved by public health interventions justify their costs?

Where should new investments be directed to achieve their greatest impact?
Related questions of value...

• How much health can we produce through public health investments?
• Can public health investments help “bend the curve” to contain medical costs?
Prevention Efforts Provide No Panacea on Health Costs

Preventing Chronic Disease: An Important Investment, But Don’t Count On Cost Savings

An overwhelming percentage of preventive interventions add more to medical costs than they save.

by Louise B. Russell

HEALTH AFFAIRS - Volume 28, Number 1

Prevention for a Healthier America:

INVESTMENTS IN DISEASE PREVENTION YIELD SIGNIFICANT SAVINGS, STRONGER COMMUNITIES
Public health spending and medical costs

Roehrig et al. Health Affairs 2011
Challenges in demonstrating ROI in public health

- **Time lag** between costs and benefits
- **Distribution** of costs and benefits: *concentrated* costs but *diffuse* benefits
- **Measurement** of costs and benefits requires good information systems
  - **Attribution** of benefits: the counterfactual
ROI Key Ingredients

Investments
- Costs of implementing public health interventions
- Who’s investments?

Returns
- Valuation of the outputs and outcomes attributable to public health interventions
- Who realizes returns?
- Over what time frames?
- Compared to what?
Managing ROI Expectations

- **Cost savings** – a high bar
- **Cost effectiveness** – value for dollars spent
  - Compared to status quo
  - Compared to other possible investments
  - Compared to doing nothing

...Key concept: **opportunity costs**
Estimating ROI in public health: Key Considerations

**Perspective**
- Federal, state, health system, or societal?

**Time Horizon**
- How long can you wait to realize returns?

**Types of Interventions**
- Primary, secondary or tertiary prevention
- Cross-cutting infrastructure
Estimating ROI in public health:
Key Considerations - Costs

**Direct costs**
- Cost of implementing intervention/infrastructure
- Cost savings attributable to the intervention

**Indirect costs**
- Economic value of productivity gains/losses or time savings/costs attributable to the intervention
Estimating ROI in public health: Key Considerations - Benefits

**Efficiency gains (captured in cost measures)**
- Reduced labor costs
- Reduced material costs

**Productivity gains (captured in output measures)**
- Services delivered • Time in process
- Cases detected

**Revenue gains (captured in financial measures)**

**Health gains (captured in outcome measures)**
- Deaths averted
- Cases prevented
- Quality-adjusted life years gained
Estimating ROI in public health: Key Considerations

Break even
- How long does it take to recoup investment?

Maintenance/Persistence
- How long do the benefits last?
- Recurring costs?
Achieving ROI in public health: Key Considerations

- **Economies of scale**: many public health interventions can be delivered more efficiently across larger populations

- **Economies of scope**: efficiencies can be realized by using the same infrastructure to deliver an array of related programs and services
Estimating ROI in public health: Types of Analyses

- Macro-level analysis
- Infrastructure-level analysis
- Program-level analysis
- Process-level analysis
Estimating ROI in public health: Macro-level Analysis

**Table: National Return on Investment of $10 per Person**

<table>
<thead>
<tr>
<th></th>
<th>1-2 Years</th>
<th>5 Years</th>
<th>10-20 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Total</td>
<td>$2,848,000,000</td>
<td>$16,543,000,000</td>
<td>$18,451,000,000</td>
</tr>
<tr>
<td>ROI</td>
<td>0.96:1</td>
<td>5.6:1</td>
<td>6.2:1</td>
</tr>
</tbody>
</table>

Source: Trust for America’s Health, 2009
Estimating ROI in public health: Program-level Analysis

- Smoking cessation interventions cost an estimated $2,587 for each life-year gained
- $1 spent on STD and pregnancy prevention produces $2.65 in medical cost savings
- $1 spent on preconception care for diabetic women produces $5.19 in medical cost savings
- $1 spent on childhood immunization produces $6.30 in medical cost savings

Source: Centers for Disease Control and Prevention 2008
Estimating ROI in public health: Program-level Analysis

• Washington State Comprehensive Tobacco Prevention and Control Program: $5 in health care savings per $1 investment

Source: Dilley et al., AJPH 2011
Mortality reductions attributable to local public health spending, 1993-2008

Mays et al. Health Affairs, 2011
Medical Care Offsets Attributable to Local Public Health Spending, 1993-2008

Medical Cost Offset = 0.088%

Mays et al. Health Services Research, 2009
Projected effects of new ACA public health spending

• 1.2% increase in public health spending in average community over 10 years:

- Public health cost: $7.2M
- Medical cost offset: -$6.3M (Medicare only)
- Deaths averted: 175.8
- Life years gained: 1758
- Net cost/LY: $546

Mays et al. forthcoming 2012
Implications for Policy and Practice

- Mortality reductions achievable through increases in public health spending may equal or exceed the reductions produced by similar expansions in local medical care resources.
- Increased public health investments help to reduce geographic disparities in population health and bend the medical cost curve.
- Gains from increased federal investments may be offset by reductions in state and local spending.
Estimating ROI in public health: Existing Tools

AHRQ Asthma ROI calculator
http://statesnapshots.ahrq.gov/asthma/Required.jsp

CDC Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC)
http://apps.nccd.cdc.gov/sammec/

CDC LeanWorks Obesity Cost Calculator
http://www.cdc.gov/leanworks/costcalculator/index.html

RWJF Diabetes Self-Management ROI Calculator
http://www.diabetesinitiative.org

HIMSS Electronic Health Record ROI
http://www.himss.org/ASP/ROI_Calc.asp
Estimating ROI in public health: National Public Health Improvement Initiative

- **Goal**: Develop ROI approaches to assess value of improvements in public health capacity, infrastructure, administrative processes

- **Near-term**: capture effects on labor costs, time costs, productivity

- ** Longer-term**: capture effects on program delivery (reach, effectiveness), population health

*astho*™
The Public Health ROI Calculator:

PUBLIC HEALTH RETURN ON INVESTMENT TEMPLATE

Demonstration Version

October 29, 2012

Prepared for:

The Association of State and Territorial Health Officials

Prepared by:

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The Public Health ROI Calculator: Demonstration Version

- Requires data on:
  - Operating costs before and after implementation of your public health strategy
  - Revenues (if any) before and after implementation of your public health strategy
  - Measures of outputs/services before and after
  - Measures of health and economic outcomes (if available) before and after
The Public Health ROI Calculator: Demonstration Version

- Examples: see spreadsheet
- Available at: http://works.bepress.com/glen_mays/64/
Conclusions: Advancing ROI Analysis in Public Health

- Enhanced tracking of public health expenditures
- Enhanced monitoring of program performance
  - Reach/targeting
  - Effectiveness
  - Efficiency
  - Equity
- Analysis of cross-cutting infrastructure needed to implement/maintain programs
Conclusions: Advancing ROI Analysis in Public Health

Resources to support ROI analysis in public health:

- Public Health PBRN Program: KPHReN
- National Coordinating Center for PHSSR
- CDC’s National Public Health Improvement Initiative
- NACCHO’s Public Health Uniform Data System
- Patient Centered Outcomes Research Institute
Acknowledgements

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