Making the Case for Public Health: Estimating ROI and Value

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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

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
- 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
- Intervention-level analysis
- Process-level analysis
### NATIONAL RETURN ON INVESTMENT OF $10 PER PERSON
(Net Savings in 2004 dollars)

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

Source: Trust for America’s Health, 2009
Estimating ROI in public health: Intervention-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
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%
Projected effects of new ACA public health spending

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health cost</td>
<td>$7.2M</td>
</tr>
<tr>
<td>Medical cost offset</td>
<td>-$6.3M (Medicare only)</td>
</tr>
<tr>
<td>Deaths averted</td>
<td>175.8</td>
</tr>
<tr>
<td>Life years gained</td>
<td>1758</td>
</tr>
<tr>
<td>Net cost/LY</td>
<td>$546</td>
</tr>
</tbody>
</table>

Mays et al. forthcoming 2012
Preventable disease burden and national health spending

>75% of national health spending is attributable to chronic diseases that are largely preventable
  – 80% of cardiovascular disease
  – 80% of diabetes
  – 60% of lung diseases
  – 40% of cancers

(not counting injuries, vaccine-preventable diseases)

<3% of national health spending is allocated to public health and prevention

CDC 2011
Public health’s share of national health spending

USDHHS National Health Expenditure Accounts

$Billions

$0

$10

$20

$30

$40

$50

$60

$70

$80

$90

% of total health spending

%NHE

0.00%

0.50%

1.00%

1.50%

2.00%

2.50%

3.00%

3.50%


State and Local

Federal
Public Health in the Affordable Care Act

- Public Health & Prevention Fund: $15 billion in new federal public health spending over 10 years (cut by $5B this year)

- Incentives for hospitals, health insurers, employers to invest in public health and prevention
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.
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
Acknowledgements

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