Estimating the Costs of Public Health Services

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Estimating the Costs of Public Health Services

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What’s the big deal?

“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**.”

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
What we know, sort of…

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

- Percent of NHE (x100)
- Percent of GDP (x1000)
- Per capita ($100s nominal)
- Per capita ($100s constant)

U.S. Centers for Medicare and Medicaid Services, Office of the Chief Actuary
What we know, sort of...

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
Understanding cost variation

- Expenditures per capita, 2010
- Change in per-capita expenditures ($)

Graph showing the distribution of expenditures per capita and change in per-capita expenditures among communities.
Cost data collection methods

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

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

- Retrospective “cost accounting” methods
  - Modeling and decomposition using administrative records
  - Surveys with staff and/or administrators
Examples: Survey methods

Four dimensions of work:
- Time
- Cognitive effort
- Physical effort
- Stress

Additional cost components:
- Practice expense
- Malpractice expense
Examples: Survey methods

SASCAP™
Substance Abuse Services Cost Analysis Program

- Surveys program managers
- Refers to expenditure records (not budgets)
- Explicit allocation of resources across multiple programs
- Available at:


Examples: Medicaid administrative claiming

- Public health agencies that claim Medicaid reimbursement for outreach and enrollment activities
- Requires periodic time studies to document agency time and effort devoted to reimbursable activities
Key issues: cost of capabilities

- Delineating state vs. local roles and division of effort
- Identifying scale and scope effects
  - By population served
  - By range of programs supported (portfolio effect)
- Identifying input factors that affect costs
  - Resource prices
  - Case mix
- Identifying key output differences across settings
  - Intensity
  - Quality
  - Reach
Defining what to cost: the public health package

Washington State’s Foundational Public Health Services

Ohio’s Public Health Futures Committee: Minimum Package of Services

Colorado’s Core Public Health Services

National Workgroup on Foundational Public Health Capabilities
Defining what to cost:

Washington Public Health Improvement Partnership

<table>
<thead>
<tr>
<th>Additional Important Services</th>
<th>Communicable Disease Control</th>
<th>Chronic Disease &amp; Injury Prevention</th>
<th>Environmental Public Health</th>
<th>Maternal/Child Family Health</th>
<th>Access/Linkage with Clinical Health Care</th>
<th>Vital Records</th>
</tr>
</thead>
</table>

FOUNDATIONAL PUBLIC HEALTH SERVICES

Foundational Programs

← ACROSS ALL PROGRAMS →

Assessment (surveillance and epidemiology)
Emergency preparedness and response (all hazards)
Communications
Policy development and support
Community partnership development
Business competencies
## Washington’s Cost Estimates (preliminary)

### Estimated Cost of Providing Foundational Public Health Services Statewide

<table>
<thead>
<tr>
<th>Services Ranked By Cost</th>
<th>Total Estimated Cost of FPHS</th>
<th>State Dept. of Health</th>
<th>Local Health Jurisdictions</th>
<th>State DOH</th>
<th>LHJs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundational Capabilities</strong></td>
<td>75,700,000</td>
<td>27,750,000</td>
<td>47,945,000</td>
<td>37%</td>
<td>63%</td>
</tr>
<tr>
<td>A. Assessment</td>
<td>11,350,000</td>
<td>5,410,000</td>
<td>5,935,000</td>
<td>48%</td>
<td>52%</td>
</tr>
<tr>
<td>B. Emergency Preparedness and Response</td>
<td>10,825,000</td>
<td>3,620,000</td>
<td>7,205,000</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>C. Communication</td>
<td>3,960,000</td>
<td>750,000</td>
<td>3,210,000</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>D. Policy Development and Support</td>
<td>4,415,000</td>
<td>1,115,000</td>
<td>3,300,000</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>E. Community Partnership Development</td>
<td>4,885,000</td>
<td>860,000</td>
<td>4,025,000</td>
<td>18%</td>
<td>82%</td>
</tr>
<tr>
<td>F. Business Competencies</td>
<td>40,265,000</td>
<td>15,995,000</td>
<td>24,270,000</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Foundational Programs</strong></td>
<td>252,290,000</td>
<td>134,890,000</td>
<td>117,405,000</td>
<td>53%</td>
<td>47%</td>
</tr>
<tr>
<td>A. Communicable Disease Control</td>
<td>33,760,000</td>
<td>9,010,000</td>
<td>24,750,000</td>
<td>27%</td>
<td>73%</td>
</tr>
<tr>
<td>B. Chronic Disease and Injury Prevention</td>
<td>24,855,000</td>
<td>12,590,000</td>
<td>12,265,000</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td>C. Environmental Public Health</td>
<td>95,800,000</td>
<td>33,760,000</td>
<td>62,045,000</td>
<td>35%</td>
<td>65%</td>
</tr>
<tr>
<td>D. Maternal/Child/Family Health</td>
<td>25,175,000</td>
<td>13,765,000</td>
<td>11,410,000</td>
<td>55%</td>
<td>45%</td>
</tr>
<tr>
<td>E. Access/Linkage with Clinical Health Care</td>
<td>65,585,000</td>
<td>62,145,000</td>
<td>3,440,000</td>
<td>95%</td>
<td>5%</td>
</tr>
<tr>
<td>F. Vital Records</td>
<td>7,115,000</td>
<td>3,620,000</td>
<td>3,495,000</td>
<td>51%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td>327,990,000</td>
<td>162,640,000</td>
<td>165,350,000</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Source: DOH, 2013; Participating LHJs, 2013; and BERK, 2013.

Local per capita: $24.0  State per capita: $23.6

Defining what to cost: Ohio

Figure 1.

Ohio Minimum Package of Local Public Health Services

**CORE PUBLIC HEALTH SERVICES**

- Environmental health services
- Communicable disease control
- Epidemiology services
- Access to birth and death records
- Health promotion and prevention
- Emergency preparedness
- Linking people to health services
- Community engagement

**OTHER PUBLIC HEALTH SERVICES**

- Clinical preventive and primary care services (e.g., immunizations, clinics)
- Specific maternal and child health programs (e.g., WIC, Help Me Grow)
- Non-mandated environmental health services (e.g., lead screening)
- Other optional services (e.g., home health, school nurses)

**FOUNDATIONAL CAPABILITIES**

- Quality assurance
- Information management and analysis
- Policy development
- Resource development

- Legal support
- Laboratory capacity
- Support and expertise for community engagement strategies

Ohio’s Cost Estimates (preliminary)

Exhibit 4. Model of Core Spending.

<table>
<thead>
<tr>
<th>Core spending</th>
<th>Multipliers</th>
<th>Sample Computation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Estimated impact of agency features</td>
<td>Estimated impact of population features</td>
<td>Quick estimate</td>
</tr>
<tr>
<td>Type of agency = city</td>
<td>-0.4340</td>
<td>0.0000</td>
</tr>
<tr>
<td>Type of agency = county</td>
<td>0.0000</td>
<td>0.0024</td>
</tr>
<tr>
<td>Population size (log)</td>
<td>0.8572</td>
<td>0.9053</td>
</tr>
<tr>
<td>Percent population rural</td>
<td>0.2747</td>
<td>0.5795</td>
</tr>
<tr>
<td>Percent population nonwhite</td>
<td>2.5749</td>
<td>2.7096</td>
</tr>
<tr>
<td>Percent non-English speaking</td>
<td>1.0886</td>
<td>-5.5211</td>
</tr>
<tr>
<td>Percent 65+ years old (%)</td>
<td>-2.1059</td>
<td>0.3036</td>
</tr>
<tr>
<td>Income per capita ($100,000)</td>
<td>-2.3900</td>
<td>-1.1500</td>
</tr>
<tr>
<td>Percent uninsured (%)</td>
<td>-1.3601</td>
<td>3.4406</td>
</tr>
<tr>
<td>Physicians per 100,000 population</td>
<td>0.0006</td>
<td>0.0000</td>
</tr>
<tr>
<td>NACCHO % of Core Svc</td>
<td>1.0009</td>
<td>1.4116</td>
</tr>
<tr>
<td>Constant</td>
<td>4.9783</td>
<td>2.9009</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Local per capita: $32.2

Source: Patrick Bernet and Ohio Research Association for Public Health Improvement.

www.raphi.org
Defining what to cost: Colorado

Colorado Core Public Health Services

- Core Services Promulgated into Rule October 2011:
  - Assessment, Planning, and Communication
  - Vital Records and Statistics
  - Communicable Disease Prevention, Investigation, and Control
  - Prevention and Population Health Promotion
  - Emergency Preparedness and Response
  - Environmental Health
  - Administration and Governance

...performed in accordance with the 10 Essential Public Health Services
Colorado’s Cost Estimates (preliminary)

Colorado Local Core Public Health Services, 2012

Total: $192.6M
Per capita: $37.1

Ongoing work: Public Health Delivery and Cost Studies (DACS)

- Set of 11 new studies conducted by PBRNs
- Focus on 1 or more public health services
- Estimate costs and cost variation across multiple settings
- Identify factors that drive variation in costs
- Use standardized approaches to cost measurement and cost analysis
Toward a “rapid-learning system” in public health

In a learning health care system, research influences practice and practice influences research.

**Evaluate**
Collect data and analyze results to show what does and does not work.

**Implement**
Apply the plan in pilot and control settings.

**Design**
Design care and evaluation based on evidence generated here and elsewhere.

**Adjust**
Use evidence to influence continual improvement.

**Disseminate**
Share results to improve care for everyone.

**Internal and External Scan**
Identify problems and potentially innovative solutions.

For More Information

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