Estimating the Costs of Public Health Services: Progress on the Institute of Medicine Recommendations

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Estimating the Costs of Public Health Services

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What’s the big deal?

“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
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

Percent of communities

Change in per-capita expenditures ($)

Percent of 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

- 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:

<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 Programs**

- Assessment (surveillance and epidemiology)
- Emergency preparedness and response (all hazards)
- Communications
- Policy development and support
- Community partnership development
- Business competencies

Washington Public Health Improvement Partnership
### 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></td>
<td></td>
<td></td>
<td></td>
<td></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></td>
<td></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></td>
<td></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
All local health departments should be responsible for providing the following services in their district, directly or by contracting:
- 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
Local health departments play a role in assuring these services are provided in their community, by public health or other organizations:
- 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
All local health departments should have access to the following skills and resources. Access can occur through cross-jurisdictional sharing:
- Quality assurance
- Information management and analysis
- Policy development
- Resource development
- Legal support
- Laboratory capacity
- Support and expertise for community engagement strategies

Source: Association of Ohio Health Commissioners, Public Health Futures: Considerations for a new framework for local public health in Ohio (June 15, 2012).
### 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>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated impact of agency features</td>
<td>Estimated impact of</td>
<td>Quick estimate</td>
<td>Actual</td>
<td>Computed estimate B</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of agency = city</td>
<td>-0.4340</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Type of agency = county</td>
<td>0.0000</td>
<td>0.0024</td>
<td>1.0000</td>
<td>0.0024</td>
<td></td>
</tr>
<tr>
<td>Population size (log)</td>
<td>0.8572</td>
<td>0.9053</td>
<td>0.9701</td>
<td>10.4096</td>
<td>9.4235</td>
</tr>
<tr>
<td>Percent population rural</td>
<td>0.2747</td>
<td>0.5795</td>
<td>0.7892</td>
<td>0.6458</td>
<td>0.3742</td>
</tr>
<tr>
<td>Percent population nonwhite</td>
<td>2.5749</td>
<td>2.7096</td>
<td>2.9770</td>
<td>0.0291</td>
<td>0.0790</td>
</tr>
<tr>
<td>Percent non-English speaking</td>
<td>1.0886</td>
<td>-5.5211</td>
<td>2.9770</td>
<td>0.0050</td>
<td>-0.0276</td>
</tr>
<tr>
<td>Percent 65+ years old (%)</td>
<td>-2.1059</td>
<td>0.3036</td>
<td>0.1407</td>
<td>0.0427</td>
<td></td>
</tr>
<tr>
<td>Income per capita ($100,000)</td>
<td>-2.3900</td>
<td>-1.1500</td>
<td>0.1984</td>
<td>0.2281</td>
<td></td>
</tr>
<tr>
<td>Percent uninsured (%)</td>
<td>-1.3601</td>
<td>3.4406</td>
<td>0.1095</td>
<td>0.3768</td>
<td></td>
</tr>
<tr>
<td>Physicians per 100,000 population</td>
<td>0.0006</td>
<td>0.0004</td>
<td>27.1000</td>
<td>0.0120</td>
<td></td>
</tr>
<tr>
<td>NACCHO % of Core Svc</td>
<td>1.0009</td>
<td>1.4116</td>
<td>0.6500</td>
<td>0.9175</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>4.9783</td>
<td>2.9009</td>
<td>3.0476</td>
<td></td>
<td>2.9009</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,127,485</strong></td>
<td><strong>1,059,516</strong></td>
<td><strong>929,085</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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