Priorities Among Effective Clinical Preventive Services

Research Team
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Sponsors
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Robert Wood Johnson Foundation
WellPoint Foundation
Misplaced Priorities

- Prioritization of preventive services is happening, but it is rarely systematic or rational

- Misplaced priorities result in unnecessary illness & death
Time for Evidence-Based Prevention

• Time needed
  – 7.4 hours per day needed to satisfy USPSTF 49 recommended services in panel of 2,500 patients (Yarnall et al. 2003 AJPH)
    • 86% of physician patient services time
    • 42 minutes per patient per year

• Time spent
  – Physicians in a hospital-based clinic serving indigent population spent on 60 preventive services: (Rafferty 1998 West J Med)
    • 11% of patient services time for prevention
    • 7 minutes per patient per year
Need for Study

• The literature for evidence-based priority setting is enormous and amorphous making it very difficult to quantify and compare the value of services

• How do you go about setting health care priorities in a systematic/rational manner?
National Commission on Prevention Priorities

- Chaired by Eduardo Sanchez, MD, MPH

- 30 members representing decision-makers from
  - local, state and federal public health agencies
  - health insurance plans
  - employers
  - academia
Scope of Study

The study includes preventive services that are recommended by:

- USPSTF for the general population and individuals with risk factors for cardiovascular disease
- ACIP for the general population (vaccines)
Measuring Value

Based the ranking on 2 measures of value:

1. Clinically Preventable Burden (CPB)
   
   • measures health impact:
   
   • the disease, injury, and premature death prevented if the service were offered to all persons in the target population on a regular basis

   • measured as QALYs saved: years of life gained, adjusted for quality
Measuring Value

Based the ranking on 2 measures of value:

2. Cost Effectiveness (CE)

- measures economic value:
- the net cost per unit of health benefit if the service were delivered to all persons in the target population on a regular basis
- CE Ratio = \(
\frac{\text{Additional $s Spent} - \text{$s Saved}}{\text{QALYs Saved}}\)
Models were built to estimate CPB in all cases.

Used existing CE studies in a few cases, otherwise we built-up from CPB models.
Ensuring Consistency

- **Key Challenge**: Creating consistent estimates of CPB and CE for diverse services using vast quantities of disparate data

- **Solution**
  - Detailed definitions of CPB and CE with defining principles
  - Systematic and pragmatic literature collection, tracking, and data abstraction rules & tools
  - Consistency checks
5 Principles for Estimating CPB & CE

1. Include both morbidity and mortality prevented by the service, so we measured CPB in terms of QALYs

2. Include the total potential health benefits of the service among both those currently receiving the service AND the rest of the target population
5 Principles for Estimating CPB & CE

3. Take into account expected patient adherence for every service, thus providing a realistic estimate of services’ expected value when they are delivered as part of usual care.

- Adherence includes accepting a service once offered, completing follow-up, and changing behaviors
- Adherence data are limited for all services, especially counseling services
5 Principles for Estimating CPB & CE

4. CPB is measured for a birth cohort of 4,000,000 that is representative of the U.S. population. Why?

- The size of the birth cohorts that have reached each service’s recommended age group varies—we remove this variability

- The birth cohort approach reflects each service’s health benefit going forward in time, which is consistent with the vast majority of CE literature
5 Principles for Estimating CPB & CE

5. Include the **cumulative benefit** of offering the service over the recommended age range at recommended intervals.

- To account consistently for services full benefit, we estimate the benefit of multiple contacts over the years the service is recommended.

- Pneumococcal vaccine vs. breast cancer screening vs. tobacco cessation counseling
Additional Methods for Estimating CE

- Costs & QALYs are discounted in the CE ratio (QALYs are not discounted in CPB)
- Comparability is improved by adhering to the ‘reference case’ principles of the PCEHM:
  - Societal perspective, including time costs to receive services
  - 3% discount rate
- All CE ratios standardized to year 2000 dollars
Evidence Collection

- We used 2 standardized search strategies
  - One for effectiveness and cost effectiveness data
  - A second for burden of disease and cost data
- Each strategy defined 4 levels:
  - Level 1: most current literature and data sources
  - Each subsequent level extended to less current sources and those less likely to yield useful data
- We used abstraction forms with 2 reviewers & adjudication process for discrepancies
Model Structure

• Prior to 2007, models were ‘aggregate cohort’ models; now using Markov models evaluated using microsimulation

• Most calculations were performed using lifetime averages, including burden, effectiveness, and costs

• Special procedures for discounting future benefits and costs
Model Structure

- Models were adequate for assessing value of services compared to no service for the general population.

- Did not permit incremental analyses such as choosing frequency of delivery, ages for delivery of other population stratification, screening technology, etc.

- Occasionally more complex variations on models were needed.
Ranking Services

- **Key Challenge**: Accounting for imprecision in estimates of CPB and CE

- **Solution**: Use a scoring system to indicate services’ relative value within broad categories

  - Services sorted on both CPB and CE and grouped by quintiles.
  - Assigned 1 to 5 points on each measure (CPB and CE) for a total score ranging from 2-10
## Prevention Priorities

<table>
<thead>
<tr>
<th>SHORT NAME</th>
<th>CPB</th>
<th>CE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss Daily Aspirin Use</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Childhood Vaccination Series</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Tobacco Cessation Counseling</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>SHORT NAME</th>
<th>CPB</th>
<th>CE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Drinking Screening &amp; Brief Counseling</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Colorectal Cancer Screening</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Hypertension Screening</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Influenza Immunization – older adults</td>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Vision Screening – older adults</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
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<th>SHORT NAME</th>
<th>CPB</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Cervical Cancer Screening</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Cholesterol Screening</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Pneumococcal Immunization – older adults</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Breast Cancer Screening</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Chlamydia Screening</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Calcium Chemoprophylaxis</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Vision Screening - children</td>
<td>2</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>
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<thead>
<tr>
<th>SHORT NAME</th>
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<th>CE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folic Acid Chemoprophylaxis</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Obesity Screening</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Depression Screening</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Hearing Screening - older adults</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Injury Prevention Counseling</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Osteoporosis Screening</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
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</table>
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<thead>
<tr>
<th>SHORT NAME</th>
<th>CPB</th>
<th>CE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholesterol Screening - high risk younger adults</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes Screening – high risk for CHD</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Diet Counseling - high risk for CHD</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Td Booster</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
## Impact of Decreasing Delivery Gaps

<table>
<thead>
<tr>
<th>SHORT NAME</th>
<th>% Currently Receiving</th>
<th>QALYs Saved if Increased to 90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco Cessation Counseling</td>
<td>35%</td>
<td>1.3 million</td>
</tr>
<tr>
<td>Discuss daily aspirin use</td>
<td>50%</td>
<td>590,000</td>
</tr>
<tr>
<td>Colorectal Cancer Screening</td>
<td>25%</td>
<td>340,000</td>
</tr>
<tr>
<td>Influenza immunization</td>
<td>36% &amp; 65%</td>
<td>110,000</td>
</tr>
<tr>
<td>Breast cancer screening</td>
<td>68%</td>
<td>91,000</td>
</tr>
<tr>
<td>Problem drinking screening</td>
<td>50%</td>
<td>71,000</td>
</tr>
<tr>
<td>Vision Screening – adults</td>
<td>50%</td>
<td>31,000</td>
</tr>
<tr>
<td>Cervical cancer screening</td>
<td>79%</td>
<td>29,000</td>
</tr>
<tr>
<td>Chlamydia Screening</td>
<td>40%</td>
<td>19,000</td>
</tr>
<tr>
<td>Pneumococcal immunization</td>
<td>56%</td>
<td>16,000</td>
</tr>
<tr>
<td>Cholesterol screening</td>
<td>87%</td>
<td>12,000</td>
</tr>
<tr>
<td>Hypertension screening</td>
<td>90%</td>
<td>0</td>
</tr>
</tbody>
</table>
Limitations

- Includes only clinical preventive services as recommended by USPSTF & ACIP
  - Excludes community preventive services
  - Excludes other potentially effective clinical preventive services
  - Recommended and modeled frequency and populations not necessarily optimal
  - Excludes disease management and treatment services
- Exclusion of productivity gains
- Societal perspective
- Little theoretical basis for making decisions based on added CPB and CE scores. Therefore, CPB and CE are presented separately.
- More detailed modeling may yield more precise results
Implementation in Context of US Health System

Implementation of evidence-driven practice complicated by:

1. Fragmented private insurance and employers’ roles in coverage decisions
2. Fragmented public insurance
3. Fragmented care delivery

As a result, widespread implementation of new evidence requires action by thousands of decision-makers.
Implementation

SMRTNET

• AHRQ HIT grant to implement community-wide electronic medical records in NE Oklahoma
• Used 2006 rankings to choose 5 preventive services to be targeted for improved delivery
• Reviewed Oklahoma BRFSS and disease burden data and crossed with rankings and measurement feasibility
• Dade County community EMR program using OK SMARTNET priorities materials
Implementation

• **Intermountain Healthcare, Salt Lake City:**
  Health plans guidelines for preventive care based on USPSTF. When deciding where to invest in improvement, they use two additional sources: HEDIS measures & the rankings.

• **Group Health of Puget Sound, Seattle:**
  Among other things, an important tool when discussions with employers regarding coverage and quality
Implementation

HealthPartners, Minneapolis

• Updated prevention guidelines though the Institute of Clinical Systems Improvement
• Updated long-term goals (Healthy Partners 2010)
• Updated performance measurement
• Reviewed product offerings for consistency with high ranking services and discussed with self-insured employers
• Planning update of health risk assessments
Future/Current Directions

• Maintain attention on preventive care over time through annual reports on clinical preventive services

• Create more detailed estimates for population groups to aid analysis of disparities and locally tailored results

• Analysis of community preventive services