

Priorities Among Effective Clinical Preventive Services

Research Team

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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 =
$$\frac{\text{Additional \$s Spent} - \text{\$s Saved}}{\text{QALYs Saved}}$$

CPB and CE Models

- 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

SHORT NAME	CPB	CE	TOTAL
Discuss Daily Aspirin Use	5	5	10
Childhood Vaccination Series	5	5	10
Tobacco Cessation Counseling	5	5	10

Prevention Priorities

SHORT NAME	CPB	CE	TOTAL
Problem Drinking Screening & Brief Counseling	4	5	9
Colorectal Cancer Screening	4	4	8
Hypertension Screening	5	3	8
Influenza Immunization – older adults	4	4	8
Vision Screening – older adults	3	5	8

Prevention Priorities

SHORT NAME	CPB	CE	TOTAL
Cervical Cancer Screening	4	3	7
Cholesterol Screening	5	2	7
Pneumococcal Immunization – older adults	3	4	7
Breast Cancer Screening	4	2	6
Chlamydia Screening	2	4	6
Calcium Chemoprophylaxis	3	3	6
Vision Screening - children	2	4	6

Prevention Priorities

SHORT NAME	CPB	CE	TOTAL
Folic Acid Chemoprophylaxis	2	3	5
Obesity Screening	3	2	5
Depression Screening	3	1	4
Hearing Screening - older adults	2	2	4
Injury Prevention Counseling	1	3	4
Osteoporosis Screening	2	2	4

Prevention Priorities

SHORT NAME	CPB	CE	TOTAL
Cholesterol Screening - high risk younger adults	1	1	2
Diabetes Screening – high risk for CHD	1	1	2
Diet Counseling - high risk for CHD	1	1	2
Td Booster	1	1	2

Impact of Decreasing Delivery Gaps

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

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, wide spread 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 through 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