Cost-Effectiveness Analysis and the Implementation of Guidelines: Which comes first? (The Chicken and Egg Problem ...)

Pre-guideline CEA
- Immunization
- Cancer Screening

Post-guideline CEA
- Smoking Cessation
- Emergency Medicine

Immunization to Prevent Influenza

Guidelines:
(I) Immunization Practices Advisory Committee of CDC (1998)
- influenza vaccination annually for high risk persons 6 months or older
- medical-care personnel
- other persons wishing to reduce risk

(II) Medicare Coverage

"Because of these generally favorable results, influenza vaccine was made a covered benefit for all Medicare part B beneficiaries on May 1, 1995."

Models:
- Riddiough MA, Sisk JE, Bell JC. Influenza vaccination: Cost-effectiveness and Public Policy. JAMA 1983; 249: 3189 - 3195

Immunization to Prevent Pneumococcal Disease

Guidelines:
- The Advisory Committee of Immunization Practice (ACIP)
  - Age > 64
  - Age 2 - 65 with chronic illness (cardiovascular, pulmonary, diabetes, alcoholism, cirrhosis, asplenia, nursing home inhabitants)

...results of a cost-effectiveness analysis indicate that pneumococcal polysaccharide vaccine is cost-effective and potentially cost-saving among persons aged >= 65 for the prevention of bacteremia. The vaccine compare favorably with other standard preventative practices."

Models:
- Lin JD, Sisk JE, Moskowitz A, Fedso DS. The cost effectiveness of pneumococcal vaccine (Abstract)

Immunization to Prevent Varicella

Guidelines:
(I) Advisory Committee on Immunization (ACIP)
- All children between 12 - 18 months (unless history of varicella infection)
- all susceptible children by 13th birthday
- High-risk adults (day-care employees, non-pregnant woman of childbearing age, international travellers)

(II) The American Academy of Pediatrics (AAP)
- Same as ACIP

"Vaccine for universal use in early childhood and immunization in susceptible older children and adolescents is recommended based on the frequency of serious complications and deaths after infection with wild varicella, the excess to the family and

(Cited)

This model was later published as:


society incurred by varicella infection, and the efficacy and safety of the live attenuated varicella vaccine.”

Models cited in both the ACIP and AAP Guidelines:


Slide 5

Screening for Colorectal Cancer

Guidelines:

(I) The American Cancer Society (ACS)

- Annual Fecal Occult Blood Testing (FOBT)
- Flexible Sigmoidoscopy every 5 years or Colonoscopy every 10 years or Double contrast barium enema (DCBE) every 5 - 10 years

(No models cited.)

(II) AHCPR

- Annual FOBT or sigmoidoscopy or both

Consensus report from the American Gastroenteriological Association and 4 other medical societies

- Annual FOBT (colonoscopy for abnormal FOBT
- Flexible sigmoidoscopy every 5 years for low risk individuals over 50
- DCBE every 5 - 10 years
- Colonoscopy every 10 years

Models:


Ransohoff DF, Lang CA. Screening for colorectal cancer, NEJM 1991; 325: 37 - 41


Slide 6

Screening for Breast Cancer

Guidelines: (I) ACS, NCI and 9 other groups:

- Routine screening begin at age 40
- Annual clinical breast exams (CBE)
- Mammograph every 1 - 2 years
- After age 50: annual CBE & mammography

(No models cited.)

(II) The NIH Consensus Development Conference Statement (January 1997)

- Mammography every 1 - 2 years for woman 50 - 69
- Annual CBE for woman 50 - 69
- Insufficient evidence for routine mammography for ages 40 - 49.

(no models cited.)

(III) National Strategic Plan for the Early Detection and Control of Breast and Cervical Cancer; U.S. Department of HHS

Model cited for III:


Slide 7

Screening for Cervical Cancer

Guidelines:

(I) American Cancer Society

- Pap test and pelvic exam for woman who are or have been sexually active or have reached age 18.
- Annual screening for 3 years and after 3 normal exams less frequently.

(II) NCI Office of Cancer Communications

- Annual screening for woman beginning sexual activity or age 18.

(No models cited.)

(III) NIH Consensus Development Conference (April 1998)

Models for III

Slide 8

Smoking Cessation

Smoking Cessation: Clinical Practice Guideline (AHCPR, 1996)

- Based on meta-analyses and expert opinion
- Guideline identifies efficacious interventions for primary care clinicians and smoking cessation specialty providers
- 15 smoking cessation interventions

Fiore MC, Bailey WC, Cohen SC et al. Smoking Cessation: Clinical Practice Guideline No. 18, Rockville, MD: AHCPR, 1996 (No. 96-0692)
**Slide 9**

**CEA OF AHCPR GUIDELINE**
- Relative cost-effectiveness of 15 interventions
- Combined into global model of overall cost-effectiveness
- Assume the primary care clinicians screen all presenting adults for smoking status
- Advise and motivate all smokers to quit
- Smoking cessation interventions are provided to 75% of US smokers 18 years or older (willing to make a quit attempt within 1 year)
- Intervention modeling:
  - 3 counseling interventions for primary care clinicians
  - 2 counseling interventions for smoking cessation specialists
  - Modeled with and without transdermal nicotine and nicotine gum

**Slide 10**

**Results**
- Guideline would cost $6.3 billion to implement in its first year
- Gain 1.7 million new quitters
- $3779 per quitter
- $2587 per life-year saved
- $1915 for every QALY saved

**Slide 11**

**Conclusion:**
Smoking cessation is extremely cost-effective compared with other preventive measures.


**Slide 12**

**Emergency Medicine**
- Financial impact of practice guidelines on outpatient charges in the emergency department
- Cost-effective guidelines based on a patient’s chief complaint
- 23 guidelines and general recommendation for diagnostic test
- Pre-intervention and post-intervention data collected


**Slide 13**

**Results:**
- Total hospitalization charge ↓ 28%
- Laboratory hospital charge ↓ 46%
- Radiology hospital charge ↓ 20%
- Hospital supply charge ↓ 31%
- Pharmacy charge ↓ 11%

**Slide 14**

**Recommendation**
- Cost-effectiveness analysis
- Guideline development
- Guideline implementation
- Cost-effectiveness analysis