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A WEB-BASED REGISTRY OF COST-UTILITY ANALYSES.

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"The registry currently contains information on 539 individual cost-utility analyses and 1500 standardized cost-utility ratios."

Do we get good value for money in health care? Many people suspect that we do not. But how can we tell? Cost-effectiveness analysis (CEA) gives us a standard, well-accepted methodological technique for judging the answer.

CEAs show the relationship between the resources used (costs) and the health benefits achieved (effects) for an intervention compared to an alternative strategy. Cost-utility analysis (CUA) is a special case of cost-effectiveness analysis in which health effects are measured in terms of quality-adjusted life years (QALYs) gained. CUA is advantageous for several reasons: it captures in a single measure gains from both prolongation and quality of life; it incorporates the value or preferences people place on different health outcomes; and it provides a convenient means of comparing analyses of diverse interventions and conditions.

In 1996 the US Public Health Service convened an expert Panel on Cost Effectiveness in Health and Medicine to formulate a set of standard recommendations for conduct of cost-effectiveness studies. The Panel recommended the use of QALYs in order to incorporate both the prolongation and quality of life.

In recent years, researchers at the Harvard School of Public Health have developed a comprehensive, web-based registry of published cost-utility analyses **(http://www.hsph.harvard.edu/cearegistry/)**. The objectives are to:

1) Understand society's best opportunities for improving health with our limited resources;

2) Help standardize methods of cost-effectiveness analysis; and

3) Provide a unique and enduring web-based tool for researchers and policymakers.

The registry was developed through an exhaustive search of the published peer-reviewed medical literature through 2001. More detail on the development and contents of the registry is provided elsewhere (See "For Further Reading"). Two readers independently collected data on each article and then convened for a consensus review to resolve discrepancies. Using a standard data collection form, we collected data on over 80 items for

CUA database research team. From left to right: John Nadai, M.D.; Allison Rosen, M.D., M.P.H.; Pei-Lung Lin; Peter Neumann, Sc.D.; Natalia Olchanski, M.S.; Mandy Patrick; Dan Greenberg, Ph.D.

each article, including data on the study methodology and reporting in estimating costs, health effects, preference weights, modeling assumptions, and study results and limitations.

Previously, we reported on the state of the field through 1997. We have now fully updated all of the data through 2001, bringing the total number of studies in the registry to 539 and the number of standardized cost-utility ratios to over 1,500. The studies cover a wide range of interventions, including pharmaceuticals (40%), surgery (16%), screening procedures (12%), and health education programs (7%). The studies also cover a diverse array of illnesses and conditions (Table 1).

The work highlights the tremendous growth in cost-utility analyses over time and the ongoing improvement in the quality of published studies (Figures 1 and 2). Study quality is measured by determining how well an analysis adhered to recommended protocols for the field.

The registry project has also revealed the many opportunities to optimize health benefits in the face of limited resources (See Table 1). The research should be useful to a broad array of decision makers from clinical guideline developers, managed care organizations, health insurers, public health departments, and the Medicare program.

Key data elements from the registry are accessible on the World Wide Web for easy access for researchers and policymaker. For more information contact Natalia Olchanski at nolchans@hsph.harvard.edu.

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Table 1: Selected cost-utility ratios from the CEA registry

Intervention vs. comparator in target population	CU ratio in 2002 US dollars*
Elective cesarean section vs. vaginal delivery in 25 year old HIV-infected women with detectable HIV RNA	Cost-saving
Treatment with interferon alpha for 6 months vs. no treatment (conventional management only) in 40 year-old patients with chronic hepatitis C infection	$5,000/QALY
Initial screen for presence of protective antibody with vaccination against hepatitis A if susceptible vs. no vaccination in 2-year-old healthy children in developed countries	$8,100/QALY
Combined outreach initiative for pneumococcal and influenza vaccination vs. usual vaccine availability in people 65 years and older	$13,000/QALY
Statin therapy vs. usual care in patients aged 75-84 with a history of myocardial infarction	$21,000/QALY
Intensive school-based tobacco prevention program over 50 year period, assumes 30% smoking reduction, dissipates in 4 years vs. Status quo (Current average national tobacco educational practices) in every 7th and 8th grade in the U.S.	$22,000/QALY
Driver side air bag vs. no air bags in driving population and car passengers	$30,000/QALY
Systematic screening for diabetes mellitus vs. none (usual practice) for all individuals aged 25 and older	$67,000/QALY
Tamoxifen chemoprevention vs. surveillance in women at high risk for breast cancer	$84,000-160,000/QALY
Annual screen of primary care patients for depression vs. no screening in 40 year old primary care patients	$210,000/QALY
Biphosphonates vs. no treatment in women aged 50 with average risk of hip fracture	$300,000/QALY
National regulation against using a cellular telephone while driving vs. no regulation in United States population in 1997	$350,000/QALY
Varicella vaccination without testing vs. Varicella antibody testing followed by vaccination if negative in 20-29 year-old adults with no history of chickenpox	$2,300,000/QALY
Examination and culture for herpes virus vs. examination only in pregnant women with a history of genital herpes, active disease during pregnancy, or sexual partners with a proven history of genital herpes	$57 million/QALY
Thrombolysis vs. surgery in 65 year-old patients presenting with acute lower extremity ischemia	Dominated*

* CU ratios are calculated by dividing the incremental cost of an intervention by its incremental effectiveness, relative to the comparator. The intervention is classified as ***cost-saving*** if the intervention is at least as or more effective as the comparator and costs less than the comparator. An intervention is ***dominated*** if it is less effective and costs more than the comparator.

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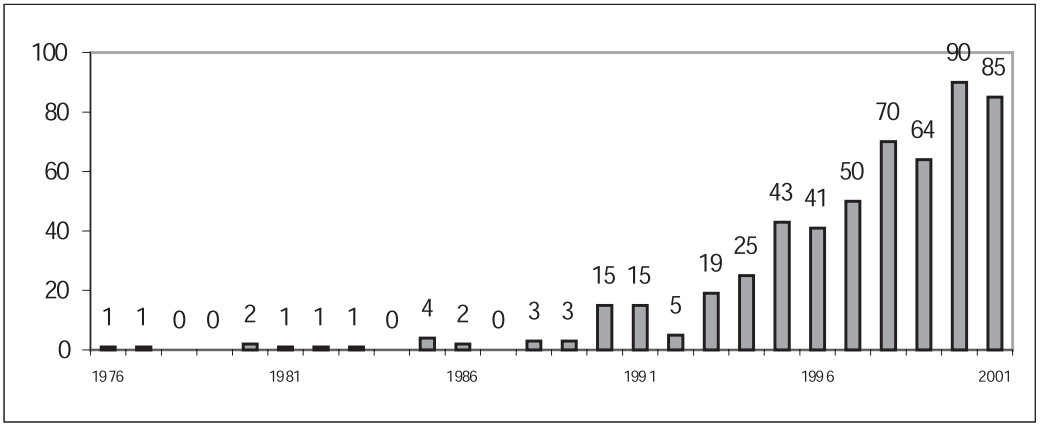
FOR FURTHER READING:

1. Gold MR, Siegel JE, Russell LB, Weinstein MC. *Cost-effectiveness in Health and Medicine.* Oxford, England: Oxford University Press; 1996.

2. Chapman RH, Stone PW, Sandberg EA, Bell C, Neumann PJ. A comprehensive league table of cost-utility ratios and a sub-table of "Panel-worthy" studies. *Medical Decision Making.* 2000;20:451-467.

3. Neumann PJ, Stone PW, Chapman RH, Sandberg EA, Bell CM. The quality of reporting in published cost-utility analyses, 1976-1997. *Annals of Internal Medicine.* 2000;132:964-972

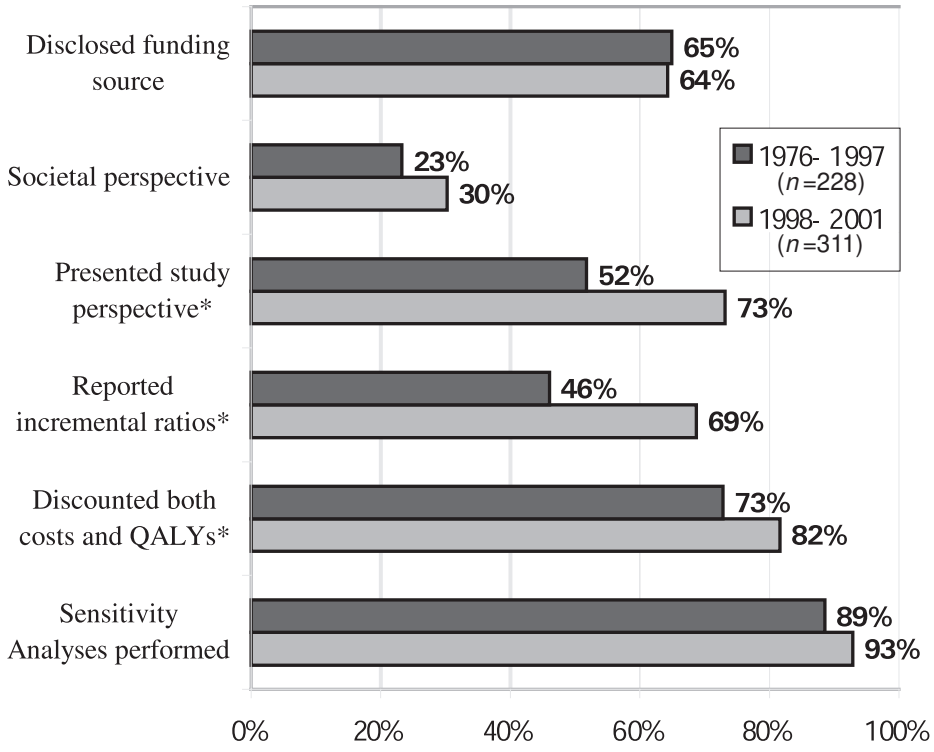
Figure 1: Growth in Published Cost-Utility Analyses, 1976-2001



Source: CUA Registry, Harvard School of Public Health, 2003

Figure 2: Cost-Utility Analyses (1976-2001) Following Selected Recommendations of the US Public Health Service's Panel on Cost Effectiveness in Health and Medicine

* $p < 0.05$



Source: CUA Registry, Harvard School of Public Health, 2003.