MMWR

December 22, 2006 / 55(SUP02);17-19

Persons using assistive technology might not be able to fully access information in this file. For assistance, please send e-mail to: mmwrq@cdc.gov. Type 508 Accommodation and the title of the report in the subject line of e-mail.

Economics and Public Health at CDC

Mark L. Messonnier, PhD
Immunization Services Division, National Center for Immunization and Respiratory Diseases (proposed)

Corresponding author: Mark L. Messonnier, PhD, National Center for Immunization and Respiratory Diseases (proposed), CDC, 1600 Clifton Road, N.E., MS E-52, Atlanta, GA 30029. Telephone: 404-639-8218; Fax: 404-639-8614; E-mail: qzm3@cdc.gov.

What is Economics, Really?

Economics is the study of decisions---the incentives that lead to them and the consequences that result from them---as they relate to present and future production, distribution, and consumption of goods and services when resources are limited and have alternative uses (*1*). At CDC, economics is used to systematically identify, measure, value, and compare the costs and consequences of alternative prevention strategies. Costs and consequences in public health can be measured in various ways, including incidence or prevalence of disease; numbers of adverse events; utility measures, such as quality-adjusted life years; and monetary values. Because it deals with behavior, economics is not really about money at all. Money is just a convenient way to measure incentives and consequences.

Contributions of Economics to CDC and Public Health Research

Health economics has developed as a subdiscipline of economics and led to consideration of public health economics as its own field (*2*). Its developmental history is evident in milestone disciplinary publications (*3--11*). A few applied contributions illustrate the breadth to which economics has been used at CDC and in public health; a more expansive review of applied economic evaluation in public health (including methods) and the ways economic studies have affected decisions is available elsewhere (*12*).

Policy Analysis

Useful at various levels of decision-making responsibility, applied economic studies have been conducted to evaluate in-place policies and public health programs and practices. At the policy level, examples include the effects of tobacco excise taxes on cigarette consumption (*13*) and the effects of liquor taxes on rates of sexually transmitted diseases (*14*). Both studies found that increases in taxes result in decreases in

undesirable health outcomes. Cost-benefit and cost-effectiveness analyses of vaccines are explicitly considered by the Advisory Committee on Immunization Practices (ACIP) when it makes recommendations (*15*), although ACIP has never rejected a vaccine on the basis of the results of an economic evaluation. ACIP makes recommendations on vaccines and immunization practices, but it influences both government and private policy decisions. When ACIP votes to include vaccines in the Vaccines for Children (VFC) program, the decision is codified as a VFC resolution. A VFC resolution usually takes effect after a CDC contract is established for purchase of that vaccine. Hence, ACIP decisions on VFC have budgetary consequences. Recommendations also are often followed by private health-care providers and affect third-party payers.

Program Priority Setting and Analysis

In 2002, the National Center for Injury Prevention and Control (NCIPC) developed its *Injury Research Agenda* with input from its academic research centers, national nonprofit organizations, and other federal agencies with a stake in injury prevention (*16*). The agenda was intended to guide research in key areas of injury prevention and control. Among the criteria for including a topic area among the NCIPC research priorities were economic and social cost measures of public health burden. As a result, cost-of-illness studies were conducted in injury topic areas. Such studies are important, necessary starting points for subsequent economic evaluations used to finalize intervention implementation priorities.

Recent work at the National Center for Immunization and Respiratory Diseases (proposed) (formerly the National Immunization Program) illustrates program economic analysis that goes beyond cost analysis and economic evaluation. Economists there are studying the economics of vaccine supply to understand the costs of vaccine development, production, and pricing. Although manufacturers consider this information proprietary, it can be estimated and used by federal government negotiators to evaluate their negotiation strategies for vaccines purchased for the VFC program.

Practical Impact

Economic evaluation has proven influential at the public health practice level when alternative means exist of achieving a specific health goal. Different therapies, different populations, and different timing of interventions have been examined to determine the best use of resources. An analysis of drug therapy options for treating *Chlamydia trachomatis* infections in women indicated that a more costly, more effective drug than was in current use could be cost-saving when considered from a broad perspective (*17*). Use of the drug resulted in a net cost, however, when the more limited perspective of the budget of a publicly funded clinic was considered. Results of the analysis were used to negotiate a lower price for the more effective drug so clinics could consider adopting it for treatment.

Compilations of recommendations of clinical and community preventive services have used economic evaluations to varying degrees. The U.S. Preventive Services Task Force (*18*) and the Task Force on Community Preventive Services (*19*) make evidence-based recommendations on the use of preventive services. Both include economic information in their recommendations, but neither incorporates it as a criterion on which to base recommendations. Conversely, the National Commission on Prevention Priorities published a ranking of U.S. Preventive Services Task Force-recommended clinical preventive services based in part on cost effectiveness evidence (*20*).

Economics and Public Health Growing Together

Although the application of economics to health and public health issues did not begin at CDC, its use at the agency no doubt has accelerated its development and maturity in the field. Economics was introduced to public health research because of a desire to make transparent and fair decisions on the basis of the best tools and data possible. Beginning in the late 1970s, the Office of Program Planning and Evaluation was the agency's focus of economic evaluation and decision analysis. Economic expertise was brought to CDC under short-term interagency personnel agreements, and economic studies were conducted through contracts.

Interest increased throughout the 1980s, and in the early 1990s, economics began to be formally incorporated at CDC, beginning as an allied discipline with decision sciences under the rubric of prevention effectiveness. It continues in that role to this day, although one is more likely now to encounter the term "economics" than "prevention effectiveness" as more economists are embedded throughout CDC. A training course in prevention effectiveness methods was developed for the Epidemic Intelligence Service starting in 1992 and then for CDC staff. Thus far, these courses have attracted well over 2,000 attendees. The Prevention Effectiveness Fellowship Program (subsequently renamed in honor of Steven M. Teutsch for his contributions) welcomed its first class of five post-doctoral fellows in 1995 (http:www.cdc.gov/epo/fellow.htm). Since then, approximately 80 fellows have participated in the program, and nearly 50 have been employed throughout CDC. Fellows and alumni have published nearly 300 peer-reviewed articles. Initially the analytic tools employed proved satisfactory; however, as more of the early basic questions have been answered, research problems and topics have grown more complicated. Economists at CDC participate in the development and adaptation of methods and measures to meet new challenges.

The need for better tools for decision making recognized early on has not disappeared and may even have intensified. CDC's economists face no shortage of research opportunities. Public health policymakers and managers know they need to demonstrate the value of interventions when budgets are highly scrutinized and must be justified in detail. They also need to make decisions about resource use and understand that economics can help make more efficient use of resources. Recognizing the concept of opportunity cost, policymakers and managers also have come to understand that resources employed in one activity cannot be used in another.

The integration of economics into public health research has provided decision makers with a valuable tool. Economics cannot provide the answer to all decisions because all aspects of a decision cannot be quantified. However, a systematic, transparent analysis can demonstrate value and help make decisions that improve efficiency in providing public health services.

References

1. Wetzstein ME. Microeconomic theory: concepts & connections. Mason, OH: Thomson/South-Western; 2005:2--3.
2. Carande-Kulis VG, Getzen TE, Thacker SB. Public goods and externalities: a research agenda for public health economics. J Public Health Manag Pract. In press.
3. Mushkin S. Toward a definition of health economics. Public Health Rep 1958;73:785--93.
4. Arrow KJ. Uncertainty and the welfare economics of medical care. American Economic Review 1963;53:141--9.
5. Grossman M. On the concept of health capital and the demand for health. Journal of Political Economy 1972;80:223--55.
6. Cochrane AL. Effectiveness and efficiency: random reflections on health services. London: Nuffield

Provincial Hospitals Trust; 1972.
7. Thacker SB, Koplan JP, Taylor WR, Hinman AR, Katz MF, Roper WL. Assessing prevention effectiveness using data to drive program decisions. Public Health Rep 1994;109:187--94.
8. CDC. A framework for assessing the effectiveness of disease and injury prevention. MMWR 1992;41(No. RR-3):1--15.
9. Gold MR, Siegel JE, Russell LB, Weinstein MC, eds. Cost-effectiveness in health and medicine. New York, NY: Oxford University Press; 1996.
10. Drummond MF, O'Brien B, Stoddart GL, Torrance GW. Methods for the economic evaluation of health care programmes. 2nd ed. Oxford: Oxford University Press; 1997.
11. Haddix AC, Teutsch SM, Corso PS, eds. Prevention effectiveness: a guide to decision analysis and economic evaluation. 2nd ed. New York, NY: Oxford University; 2003.
12. Grosse SD, Teutsch SM, Haddix AC. Lessons from cost-effectiveness research for United States public health policy. Annu Rev Public Health. In press.
13. Farrelly MC, Bray JW, Pechacek T, Woollery T. Response by adults to increases in cigarette prices by sociodemographic characteristics. Southern Economic Journal 2001;68:156--65.
14. Chesson H, Harrison P, Kassler WJ. Sex under the influence: the effect of alcohol policy on sexually transmitted disease rates in the US. Journal of Law and Economics 2000;43:215--38.
15. National Immunization Program, CDC. ACIP: Advisory Committee on Immunization Practices [Internet]. [updated 2006 Aug 29; cited 2006 Aug 29]. Available at http://www.cdc.gov/nip/ACIP/default.htm.
16. National Center for Injury Prevention and Control. CDC injury research agenda. Atlanta, GA: US Department of Health and Human Services, CDC; 2002. Available at http://www.cdc.gov/ncipc/pub-res/research_agenda/agenda.htm.
17. Haddix AC, Hillia SD, Kassler WJ. The cost effectiveness of azithromycin for *Chlamydia trachomatis* infections in women. Sex Transm Dis 1995;22:274--80.
18. US Preventive Services Task Force. Guide to clinical preventive services 2005: recommendations of the US Preventive Services Task Force. Rockville, MD: US Department of Health and Human Services, Agency for Healthcare Research and Quality; 2005.
19. Zaza S, Briss PA, Harris KW, eds. The guide to community preventive services. What works to promote health? New York, NY: Oxford University Press; 2005.
20. Maciosek MV, Coffield AB, Edwards NM, Goodman MJ, Flottemesch TJ, Solberg LI. Priorities among effective clinical preventive services: results of a systematic review and analysis. Am J Prev Med 2006;31:52--61.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

References to non-CDC sites on the Internet are provided as a service to *MMWR* readers and do not constitute or imply endorsement of these organizations or their programs by CDC or the U.S. Department of Health and Human Services. CDC is not responsible for the content of pages found at these sites. URL addresses listed in *MMWR* were current as of the date of publication.

Disclaimer All *MMWR* HTML versions of articles are electronic conversions from ASCII text into HTML. This conversion may have resulted in character translation or format errors in the HTML version. Users should not rely on this HTML document, but are referred to the electronic PDF version and/or the original *MMWR* paper copy for the official text, figures, and tables. An original paper copy of this issue can be obtained from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington, DC 20402-9371; telephone: (202) 512-1800. Contact GPO for current prices.

**Questions or messages regarding errors in formatting should be addressed to mmwrq@cdc.gov.

Date last reviewed: 12/18/2006

SAFER·HEALTHIER·PEOPLE™
Morbidity and Mortality Weekly Report
Centers for Disease Control and Prevention
1600 Clifton Rd, MailStop E-90, Atlanta, GA 30333,
U.S.A

USA.gov Government Made Easy
Department of Health and Human Services