Special Section: Causality in Health Services Research

Introduction to Special Section: Causality in Health Services Research

In 2002, the Agency for Healthcare Research and Quality (AHRQ) defined health services research as “research [that] examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of health services research are to identify the most effective ways to organize, manage, finance, and deliver high quality care; reduce medical errors; and improve patient safety” (<http://www.academyhealth.org>). AcademyHealth’s (AH) definition is parallel but focuses more explicitly on the factors studied. Thus AH defines health services research as “the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being. Its research domains are individuals, families, organizations, institutions, communities, and populations” (<http://www.academyhealth.org>). Explicit in both definitions is the notion that health services researchers should strive to identify and estimate the causal effects on outcomes of interest of alternative organizational structures, management approaches, financing systems, provider practices, and personal choices regarding lifestyle and behavior. Without a focus on causal effects, it would be impossible to identify the most effective ways to achieve the outcomes we seek through clinical, management, or policy interventions.

Yet most health services researchers know from first-hand experience that identifying and estimating causal effects using observational data is extremely difficult, and that convincing others and even ourselves that we have successfully done so can be challenging. Most health services researchers—and certainly any who have worked in multidisciplinary teams—also know that even having conversations with research colleagues about causality

can be trying, and that different disciplines have different perspectives on these questions. In general, social scientists—and especially economists and sociologists—are more open than statisticians and physician health services researchers to the possibility that causal effects can be identified and estimated using observational data. These attitudinal differences arise early, as they are based on the training that students and fellows in different disciplines receive.

In this issue of *Health Services Research (HSR)*, we are pleased to publish a special section that includes an original article and two commentaries addressing why approaches to questions of causality in health services research are discipline-specific, often with little overlap or agreement. The article, written by Bryan Dowd, Ph.D., and titled “Separated at Birth: Statisticians, Social Scientists and Causality in Health Services Research,” traces the historical roots of these discipline-based differences and some recent attempts to remedy the situation. In tracing the history, the article also highlights and underscores the assumptions that underlie efforts to estimate causal effects using observational data. The two excellent commentaries, by Judea Pearl, Ph.D., and James O’Malley, Ph.D., provide additional insights into both the history of the separation between social scientists and statisticians and the challenges inherent in causal inference.

This special section of *HSR*, with its thoughtful discussion of the meaning of causality in the context of health services research and its implications for high-quality empirical work, is the first of an occasional series in *HSR* that will address cutting-edge methods in health services research and aim to help researchers improve the way they apply these methods in their research. We will describe and explain the intent and focus of this series in more detail in a future editorial, but for now we are pleased to present this inaugural special section on causality by three distinguished investigators:

Bryan Dowd, Ph.D., is Mayo Professor in the Division of Health Policy and Management, School of Public Health, at the University of Minnesota. Dr. Dowd’s research interests include Medicare policy, markets for health insurance and health care services, analysis of nonexperimental data, and application of econometric methods to health service research problems. He is the principal investigator for the Division’s CMS Master Research and Demonstration contract and cochairs the Program in Human Rights and Health at the University of Minnesota. He currently serves as chair of the Methods Council of AH. His Ph.D. in public policy analysis is from the University of Pennsylvania.

Judea Pearl, Ph.D., is professor of computer science and statistics at the University of California, Los Angeles (UCLA). Dr. Pearl directs the Cognitive

Systems Laboratory at UCLA and conducts research in artificial intelligence, causal inference, and philosophy of science. He has authored three books: *Heuristics* (1984), *Probabilistic Reasoning* (1988), and *Causality* (2000). A member of the National Academy of Engineering, and a Founding Fellow the American Association for Artificial Intelligence, he received the London School of Economics Lakatos Award for 2001, the ACM Alan Newell Award for 2004, the Benjamin Franklin Medal for Computer and Cognitive Science from the Franklin Institute in 2008, and the David Rumelhart Prize from the Cognitive Science Society last year. He is a graduate of the Technion, Israel.

James O'Malley, Ph.D., is associate professor of statistics in the Department of Health Care Policy, Harvard Medical School. Dr. O'Malley's methodological interests encompass Bayesian statistics, statistical inference for social networks, multivariate hierarchical models, and causal inference for both randomized and observational studies. His applied research interests include the relationship between health and social networks and the evaluation and estimation of quality of care. He was chair of the Health Policy Statistics Section of the American Statistical Association in 2008, and is cochair of the 2011 International Conference on Health Policy Statistics. He received his Ph.D. in statistics from the University of Canterbury, New Zealand.

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