Editorial

Introduction and Commentary for Special Issue Simulation Techniques in Health Services Research

At its core, simulation is an empirically based analytic exercise of “what if”. “What if” we implemented a specific public health care policy or a change in private business management? What would be the precise effects, for example, on health care costs, quality, and access? Decision makers often do not often have the ability, time or financial resources to contrive a specific trial of a contemplated change to answer their “what if” questions. Instead, these decision makers may opt to use existing data, existing literature, expert knowledge of health care behaviors and institutional knowledge to conduct analyses built on current resources and knowledge at hand. Simulation techniques, when thoughtful and rigorous, offer the chance to provide more timely, yet credible, evidence-based insights into the possible consequences of contemplated decisions. Simulation is a critical, parsimonious technique that brings current research capacity to bear on current policy questions.

Health Services Research and The Agency for Healthcare Research and Quality (AHRQ) have partnered to publish a Special Issue on Simulation Techniques in Health Services Research. The content of the Special Issue includes articles that highlight the use of simulation techniques in rigorous, empirical health services research. Specifically, the Special Issue includes articles which address methodological challenges and solutions to problems when using such techniques, as well as articles that feature simulations used to address important content areas in health services research such as supply-side simulation, health care costs, health care policy, and others. Where applicable, included articles highlight challenges and solutions in the context of applying simulations of phenomena of interest. Not unexpectedly, given the breadth of health services research, the selected articles demonstrate that simulation tech-

niques are applicable to many contexts. Taken collectively, the articles emphasize methodological innovation in the domain of simulation, provide concrete examples of the application of such methods, and address specific policy or intervention contexts.

As indicated, simulation techniques can be used to evaluate effects of proposed interventions before they are implemented in the real world, thus providing timely guidance to decision makers in the development of legislation, regulation, policy, and management. Important policy contexts for selected simulation articles include health care reforms, technological change, new global and public health challenges, market-driven organizational changes, and demographic changes. Modeled effects consider a broad range of simulated effects of public policy, management, organizational, and clinical interventions on health services costs, quality, and access. While simulations can be built on constructed data, the scope of the call for articles was limited to simulations that were firmly tethered to real world observations of individuals and organizations.

A significant gap in the application of simulation techniques exists in the context of supply-side behavior. Supply-side behavior includes that of hospitals, physicians, other health care providers, insurance plans, other risk bearing entities, etc. Most recent health care simulations have justifiably emphasized demand side simulations of insurance coverage and enrollment, reflecting the main policy debates in the development of health care reform legislation. However, the implementation of recent Federal health care reform also brings a new significance to understanding and assessing supply-side responses to upcoming policy changes. Thus, articles with supply-side behavioral foci have been developed and included in this Special Issue.

To provide further background and context on these issues, we have included a commentary "Using Micro-simulation Models (MSM) to Inform U.S. Health Policymaking," by Jean Marie Abraham. Drawing on her recent experiences with Federal policy making, she discusses (1) who uses health-related MSMs and for what purpose, (2) the constraints and challenges faced by potential users when making decisions about models and modeling strategy, and (3) some areas for improvement and investment for the development and use of health-related MSMs in future policy making activities.

AHRQ and health care policy making groups within the Federal government have a special interest in pushing for improvement in simulation methods. AHRQ in particular is authorized to conduct and support health services research and to disseminate it. Among the Agency's many activities are intramural research, data development, and grant support for external

researchers. Given the time lags in the development of various research activities, however, it is often a challenge to disseminate policy relevant research findings to specific audiences in timely ways. (Gold, M. "Pathways to the Use of Health Services Research in Policy," *Health Services Research*, Vol. 44, No. 4, August, 2009. pp. 1111–1136.) A major advantage of simulation is that, with relatively marginal effort, the techniques may use existing databases, analytic files, metrics, and published work to build on the underlying research and bring a more timely focus to the conduct and support of research. Thus, there is programmatic interest in improving simulation methods and in developing, sustaining, and integrating simulation capacity across AHRQ's diverse authorized research activities. Simulation provides an important additional pathway in which existing research capacity can be used to provide credible, timely answers to health care policy makers and other decision makers.

Manuscripts submitted for this Special Issue have undergone the usual *HSR* peer review process, coordinated by Special Issue Guest Editor Michael Hagan and Senior Associate Editor Bryan Dowd from *HSR*.

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