Population Health and the Assessment of Value

By Joseph D. Jackson, PhD
Program Director, Applied Health Economics and Outcomes Research, Associate Professor, Jefferson School of Population Health, Thomas Jefferson University, Philadelphia, PA, and Deputy Editor, American Health & Drug Benefits

True managed care is based on the notion of an integrated delivery system, an industrialized system of care designed to enhance population, as well as individual health status. The Affordable Care Act (ACA) and the philosophy embodied in the Triple Aim (ie, the triangle of care, population health, and costs) are leading the evolution toward the integrated delivery system and away from the component-based episode of care strategy or the fee-for-service method, where goods and services are applied and reimbursed individually, usually during an episode of sick care.

The pace of change is, at times, frustratingly slow for the providers and industries that are entrenched in the fee-for-service method of healthcare delivery. However, the evolution toward what Fineberg calls a “health system” as opposed to a “healthcare system” is under construction. Fineberg makes the distinction between a system that is focused on health (ie, population and individual health system) and systems focused “only on the formal system of care designed primarily to treat illness.” He concludes that the current system, which focuses largely on sick care, is neither financially sustainable nor yielding the levels of population health that investments in the US healthcare system would suggest.

Increasingly, systems are bundled into care packages in which care is continuous across providers and settings to achieve and maintain optimal health status for the populations. George C. Halvorson, Chief Executive Officer of Kaiser Permanente, stated, “We sell care by the package, not by the piece.”

A widespread interest in outcomes research has flourished anew, stimulated by the push of integrated health systems. The passage of the ACA in 2010 is certainly part of the emerging change. New funds were appropriated and were authorized to support research on outcomes, effectiveness, and patient-centered outcomes research. Much of this work has been coordinated through the US Agency for Healthcare Research and Quality. Thus, outcomes research will play a prominent role in the restructuring of the US healthcare system.

Applied health economics and outcomes research (AHEOR) is a discipline that considers the evaluative clinical sciences and the roles they play in the quest for better value in the integrated health system, as outlined in the Table. The tools of AHEOR and integrated delivery systems are care pathways and heuristics grounded in the convergence of evaluative clinical sciences, such as epidemiology, risk assessment, wellness, e-Health and informatics, evidence-based medicine, healthcare quality and safety, comparative effectiveness research, patient-centered research, health services research, and cost-effectiveness analyses.

Practitioners of AHEOR apply the evaluative sciences to actual practice settings by converting structure, process, and outcome systems’ variables into strategies for more effective, patient-centered, and efficient care. Once an institution commits to restructuring for population health, many of the historical foundations of healthcare are challenged and are changed. For example, Kaiser maintains patient registries for dozens of conditions, such as spine surgery, cancers, and heart attacks, where patients are monitored over time for the total health impact, not limited to the condition that occasioned entry into the registry.

The evaluative clinical sciences are the means of applying these measurement principles and “making medicine more scientific.” The focus on population health is an essential aspect of the effort to reform the current healthcare system. Kindig and Stoddart defined population health as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.” The Triple Aim also deals with population health, by advocating for simultaneously “improving the experience of care, improving the health of populations, and reducing per capita costs of health care.”

In their guide to measuring the Triple Aim, Stiefel and Nolan present the following key measurement principles:

- The need for a defined population
- The need for data over time
- The need to distinguish between outcome and process measures, and between population and project measures
- The value of benchmark or comparison data

Therefore, the need to inventory, log, monitor, and compare health status over time in a systematic manner represents the kind of reengineering that the US healthcare system needs to be sustainable.
A more recent advocate of changing the medical population health framework is Jeffrey Brenner, MD. Dr Brenner is a 2013 MacArthur Fellow, an unrestricted $625,000 award that he received for his work on behalf of the Camden Coalition of Healthcare Providers to design and deliver population health in the underserved community of Camden, NJ.8 He defines population health as the delivery of “better care, at a lower cost, for everyone, every day.”9 Dr Brenner contends that medicine must industrialize to “build on what works.” In his opinion, population health is an organizing function, where cost is an essential component and can be characterized by the following 3 “big ideas”:

- **Data**: analytics and surveillance need to be contemporary with patient care, to facilitate guidance in real time with adaptive systems
- **Redesign**: industrialization is the theme where data incorporation leads to experimentation, innovation,
and refined processes to deliver better care, resulting in better outcomes and enhanced value

- Engagement: the focus is on patient-centered care, in which navigators (and the team) are engaged with patients to explain what is happening, and often why it is happening, in their setting.

Central to these accomplishments is collaboration between disciplines (eg, medicine, business, sociology, anthropology) or “consilience,” to accomplish better care at lower cost for everyone, every day. Dr Brenner’s experience represents a “systems framework” to reengineering healthcare.

The scope of outcomes research tends to be broader than traditional forms of clinical research and is applied more to real-world practice issues.

Kaiser Permanente Northern California supported a clinical experiment of integrated population health management over 10 years on a population subset of patients who had an acute myocardial infarction (MI). This Kaiser Permanente experience could be considered a disease-specific approach to reengineering managed care. The study design included the following elements:

1. Care guided by published evidence that was thoroughly reviewed, and best practices that were established for the management of acute MI
2. Systems that were developed, including an electronic medical record and a vertically integrated care team, to implement evidence-based practices
3. Engagement that was managed and monitored to ensure adherence to the care plan.

The results demonstrated a 24% decrease in mortality, and a more than 50% decrease in cardiovascular events for the post–acute MI cohort. The authors cautioned that organizational characteristics in the Kaiser Permanente setting could limit generalizability of this approach to other healthcare settings.

Medication nonadherence is a major deficit in our current healthcare system, with nearly 33% of initial prescriptions not being filled as prescribed, especially medications prescribed for the long-term prevention of specific conditions. Choudhry and colleagues collaborated with a health insurance company on a study that included 1 cohort of patients who received post-MI medications at no cost and a control group that was subject to copays. In the group receiving medications at no cost, adherence was 4% to 6% better than in the control group, and although the primary end point events and spending were not statistically less, both were reduced. Other subset costs were statistically lower, so much so that the program generated a positive cost balance for the free medicine group, and this strategy was eventually implemented across the entire health plan for post-MI medications.

Of note, only approximately 50% of the cohort receiving free medications adhered to the post-MI regimen, indicating a substantial need for further refinement in care, such as active monitoring by health professionals, depot formulations of medicines, and incentives to encourage adherence. These experiments by 2 different health plans represent bona fide outcomes research examples that highlight the translation of science into practice, and further the prospects for adjusting systems of care to enhance population health and the Triple Aim.

The basic premise of outcomes research is that choices between alternatives must be made to promote efficiency, without compromising quality of care. The determination of safety and efficacy remains essential to evidence-based clinical care, but patient-centered care strategies have broadened the scope to include programs such as wellness and navigator-encouraged health maintenance options, often involving incentives and disincentives to healthful practices. Patient-centered outcomes research makes use of the evaluative clinical sciences to extend the investigation of value in population health. The AHEOR discipline includes the measurement of effectiveness; real-world performance; considerations of quality of life and patient preferences; and the evaluation of benefits, risks, and costs.

The scope of outcomes research tends to be broader than traditional forms of clinical research and is applied more to real-world practice issues. Whereas traditional randomized clinical trials emphasize the biomedical perspective—the safety and efficacy of an intervention in a well-controlled experiment—outcomes research evaluates a wider spectrum of health interventions and consequences in actual practice care settings. Outcomes research-related disciplines—such as economics, epidemiology, and cost-effectiveness research—identify, measure, and compare the costs (ie, resources consumed) and consequences (ie, efficacy, safety, effectiveness, and quality of life [utility]) of health interventions. Outcomes research may also consider patient-centered outcomes, such as satisfaction and real-world care outcomes.

A variety of tools and methods are employed in the conduct of outcomes research. Assessments using patient-administered validated questionnaires, patient-reported outcomes assessments, multivariate analyses of nonexperimental data from large observational databases, meta-analyses, decision analysis, discrete event simulation, and economic modeling characterize efforts in outcomes research. Outcomes research continues to
draw on traditional areas of scientific research, including randomization when feasible, while incorporating techniques and methods of researchers in disciplines such as economics, epidemiology, health services research, operations research, pharmacy, psychology, psychometrics, and public health. Outcomes research is a discipline that studies the studies.

Findings from outcomes research add to the traditional foundation of evidence-based medicine and supplement randomized controlled trials evidence to provide information that is useful to care strategies among a variety of audiences and settings, especially integrated care delivery settings. The scientific evidence underlying 53 American College of Cardiology/American Heart Association clinical practice guidelines was evaluated for clinical usefulness, ranging from effective (class I) to ineffective/harmful (class III), and for the level of evidence supporting the recommendations, ranging from level A (multiple studies of randomized controlled trials) to level C (expert opinion, case studies, or standards of care). Only approximately 20% of the guidelines were supported by class I, level A evidence, such as those supporting the Kaiser Permanente’s investigation of acute MI. The focus must make our healthcare system sustainable. The fiscal limits of governmental funding and budgeting. Given the demographics of healthcare consumers, especially the baby boomers, “business as usual” will not work to improve patient care outcomes. Outcomes research represents a discipline that can further the Triple Aim, can highlight the interests of patients in cost-conscious care in the real-world settings, and can bring a rational focus to the value of health for populations.

Outcomes research can provide decision makers with the knowledge necessary to improve the efficiency of health interventions, while providing clinicians with data to improve patient care outcomes. ■

Acknowledgments
I wish to thank Juan Leon, PhD, Director of Online Learning, and Caroline Golab, PhD, Associate Dean, Academic and Student Affairs at the Jefferson School of Population Health, Thomas Jefferson University, for their thoughtful contributions.

Author Disclosure Statement
Dr Jackson receives a pension from Bristol-Myers Squibb and Hoechst-Roussel Pharmaceuticals, Inc.

References
4. Levine S. Integrating comparative effectiveness research into clinical practice—the Kaiser Permanente experience. Presented at the Third National Comparative Effectiveness Summit; October 12-14, 2011; Washington, DC.