

The Challenge of Multiple Comorbidity for the US Health Care System

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THE AGING OF THE US POPULATION, COMBINED WITH improvements in modern medicine, has created a new challenge: approximately 75 million people in the United States have multiple (2 or more) concurrent chronic conditions, defined as “conditions that last a year or more and require ongoing medical attention and/or limit activities of daily living.”^{1,2} Is the 21st-century US health care system prepared to deal with the consequences of successfully treating patients who have conditions, often multiple, that they would not have survived in the early 20th century? Current indications suggest that it is not.

As the number of chronic conditions affecting an individual increases, so do the following outcomes: unnecessary hospitalizations; adverse drug events; duplicative tests; conflicting medical advice; and, most important, poor functional status and death.¹⁻⁵ Approximately 65% of total health care spending is directed at the approximately 25% of US population who have multiple chronic conditions.² Individuals with multiple chronic conditions also face financial challenges related to the out-of-pocket costs of their care, including higher prescription drug costs and total out-of-pocket health care spending.²

The knowledge base for interrelated or unrelated but concurrent illnesses is limited, in part because of reliance on a scientific method that maximizes internal validity but excludes patients with complicating comorbidities from both epidemiologic studies and therapeutic trials.⁶ As a consequence of these knowledge gaps, clinical practice guidelines rarely account for or contain modifications for patients with multiple chronic conditions.⁷ In addition, it is not clear that health care professional trainees are being adequately prepared to care for this population, specifically regarding interdisciplinary care.⁸

Improving the health status of this population should involve increased care coordination, but achieving this goal for patients with up to a dozen clinicians and prescribers has been difficult. The current model of fee-for-service medical care offers few financial incentives to provide care coordination, and in some cases, there are incentives to permit duplication of services, rehospitalizations, and additional unnecessary care. Although the

future of health care reform is uncertain, Congress has drafted legislation that includes experimental and pilot approaches to realigning such incentives and payments. Even if these necessary reforms were enacted, the effects of the clinician in improving health outcomes would remain dependent on the active participation of the individual patient. It is not clear whether the potential benefits of chronic disease self-care management; personal health records; and other health information exchange platforms, such as secure messaging, are being fully realized to maximize patient participation and health.

One area in which some initial progress is being made to reduce the burden of multiple chronic conditions on society is advancing evidence-based clinical decision making in the care for patients with comorbidities. In September 2007, the Agency for Healthcare Research and Quality (AHRQ) sought proposals for observational research and model-based studies with a focus on persons who have multiple chronic conditions.⁹ This funding opportunity used the list of 14 priority conditions in the Medicare Modernization Act and encouraged applications that included a mental health comorbidity and 1 or more physical conditions. Grants funded under this program are supporting work in several high-interest areas, including diabetes mellitus, mental illness, and preventive services.

Diabetes is common (10% prevalence in the US adult population), and more than 90% of persons with diabetes have 1 or more comorbid chronic conditions. One AHRQ-funded study is evaluating how flares of comorbid illnesses, such as chronic obstructive pulmonary disease, affect therapy for and outcomes of diabetes. Another study is investigating the relationships between comorbid conditions and diabetes treatment failure and mortality in patients with coexisting heart disease. A large, detailed database of patients with diabetes should provide information on how control of hemoglobin A_{1c}, lipids, and blood pressure is associated with short-term harms in patients with diabetes and those with comorbid renal or heart disease.

The coexistence of mental disease or disability with chronic medical illness is an area that has been understudied and

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one in which patient outcomes are known to be poor.¹⁰ One AHRQ-funded study is using a cohort design to investigate the effect of 8 prevalent chronic conditions that commonly occur with depression on the likelihood of receiving evidence-based depression care. Another study is investigating the implications of mental illness comorbidity for the quality of care provided to patients with diabetes, heart disease, and asthma, using state Medicaid files. A population-based registry of older patients with dementia is being used to describe the long-term mortality trajectories for persons with dementia, with and without complicating comorbid illnesses such as cardiovascular disease.

The use and efficacy of preventive services in patients with complex illnesses is of interest to recommendation-making groups such as the US Preventive Services Task Force. Two AHRQ-funded studies are addressing the issue of balancing potential harms and benefits of colorectal cancer screening in patients with multiple comorbid conditions, including the challenge of supporting patients' rights to make decisions about screening that correspond with their own values.

In addition, the 2009 American Recovery and Reinvestment Act (ARRA) directed \$400 million to the secretary of Health and Human Services to pursue elements of a national strategy for comparative effectiveness (now also referred to as patient-centered health research). The Federal Coordinating Council for Comparative Effectiveness Research identified patients with multiple chronic conditions as a priority population for whom the secretary of Health and Human Services should consider allocating research funds. As a result of this process, approximately \$20 million in ARRA funds has been allocated to increasing knowledge of effective management of this population and accelerating the rate of findings. This includes a new infrastructure-development grant of \$12 million to stimulate the development of data sets and methodological advances that can be used for the study of complex patient populations. This grant program requires that applicants plan for making the infrastructure they develop widely available, including creating deidentified data sets accessible to other researchers.

These studies, proposals, and programs are only a beginning. Opportunities to improve care for this clinically complex, heterogeneous population continue to be immense and

the challenges are unlikely to be resolved quickly. Basic epidemiological studies that will further understanding of the multiple chronic conditions that cluster in this population will also assist efforts to target interventions for potentially highly prevalent disease clusters. Simultaneously, public and private sector efforts are needed to address the training, payment, and care management concerns delineated earlier in this Commentary.

The tremendous efforts in the fight against chronic disease have inadvertently created individual disease "silos," which are reinforced by specialty organizations, advocacy groups, disease management organizations, and government at all levels. Transformation from a single chronic condition approach to a multiple chronic conditions approach is needed. Only then will the United States be better prepared to care for this increasingly large population. Indeed, the changing demographics of the US population will necessitate this transformation.

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