

Transforming Care for Complex Patients: Addressing Interconnected Medical, Social, and Behavioral Challenges

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For over half a century, scientists have examined the multitude of factors that influence healthcare utilization. In 1968, Ronald Andersen published a conceptual model describing how access to health services is influenced by patients' predisposing, enabling and need characteristics, as he later wrote, "to assist the understanding of why families use health services; to define and measure equitable access to health care... and, not incidentally, to pass my dissertation committee at Purdue."¹ Others followed, further elucidating social, behavioral, and environmental contributors to health service use.^{1–3} More recently, aging population demographics and increasing chronic disease prevalence have intensified interest in clinical complexity and its consequences. In particular, rising rates of multimorbidity⁴—and associated risks of hospitalization, health care expenditure, and mortality^{5,6}—have inspired efforts to understand the relationship between multiple concurrent medical diagnoses and future utilization and health outcomes.

In this issue of *JGIM*, Zullig et al. contribute to this ongoing discussion by illustrating the interconnectedness of medical, social, and behavioral factors that influence health service use. The authors review and synthesize patient complexity and multimorbidity frameworks published between 2004 and 2014.⁷ The Cycle of Complexity model that emerges from this process includes common constructs such as physical function and social support, as well as factors that have received less attention, such as patients' preferences and expectations for care, the burden generated by their self-management demands and other workload, and their resilience in the face of health deteriorations. The model also accounts for the dynamic nature of patients' needs and challenges, and highlights the role of acute "shocks"—including medical events or resource loss, but also positive events such as the entrance of a new caregiver—that can transiently or permanently affect patients' health care needs and their capacity to manage those needs.

The Cycle of Complexity is comprehensive in its breadth of constructs and recognizes that the factors comprising patient

complexity frequently change over time. The model's focus on interconnected medical, social, and behavioral challenges will likely resonate with clinicians who experience firsthand the way that patients' social stressors may exacerbate chronic conditions and vice versa, sometimes spiraling into a vicious cycle. At the same time, the model's number of domains, and the dynamic nature and relationships among individual constructs, present challenges for those who want to operationalize it for either research or clinical care purposes.

Qualities of the model that pose challenges for validation and operationalization also underscore the difficult path ahead for those charged with transforming care for complex patient populations. Indeed, one important conclusion of this cyclic model is that services focused on specific clinical or social needs may be insufficient when offered in isolation without a full understanding of the factors influencing individuals' health behaviors, self-management capacity, and preferences. Similarly, medical interventions are likely to be less effective if a patient's job stress, family tension, and neighborhood safety are ignored. To complicate matters further, providers cannot assume that these factors are independent or static; frequent reassessment will be necessary to account for acute changes in patient stressors and resilience over time.

Fortunately, a number of emerging interventions and models of care strive to address patients' interconnected challenges. Co-location of primary care, mental health, and social work services—techniques that have been widely studied and employed in geriatrics—encourages comprehensive assessments and integrated care plans. In contrast to traditional disease-focused paradigms, holistic approaches such as Whole Health Coaching and motivational interviewing to support behavior change can yield benefits across multiple different clinical conditions and non-health domains. For complex clinical scenarios where evidence to guide treatment is lacking, protocols that encourage defining care priorities and sharing decision-making can enhance patient and family involvement, leading to more goal-aligned care.

Another relatively new approach to complex patients is intensive outpatient management, a model popularized by Atul Gawande in his article, "The Hot Spotters."⁸ Many health systems are implementing such programs for their highest-risk patients, with the goal of improving clinical outcomes and containing escalating costs. Patients in these programs typically have access to a multidisciplinary team that manages

severe medical and mental health conditions, while attending to issues such as housing instability, caregiver strain, and transportation challenges. While these programs hold promise, to date there have been few published examples of rigorously established clinical benefit or meaningful savings. Given the patients' intensive needs, there is also a risk of inadvertently worsening care fragmentation; for example, by increasing the number of providers involved in an individual's care or by referring patients to services without an explicit plan for coordination. Further efforts are required to define optimal integrated case management strategies, and to identify which potential interventions are required for which patient (and at what time).⁹

Health informatics advances are likely to provide additional opportunities to understand and address the interconnected, dynamic elements comprising patient complexity. Electronic health records now facilitate data collection and integration on an unprecedented scale. Many systems alert providers to potentially dangerous clinical scenarios that might arise from medication-comorbidity interactions. Some of these systems also incorporate patient-reported information and telehealth-monitored health status changes. A recent Institute of Medicine report called for furthering these efforts by integrating social determinants of health into medical records,¹⁰ a step that is likely to be most effective if coupled with clinical protocols and decision-aid tools. Expanding the medical record to social and behavioral domains will also provide further opportunities for researchers to study relationships among clinical and non-clinical factors over time.

In the setting of an aging population, increasing chronic condition prevalence, and medical advances that are extending survival, the demand for interventions for complex patients has never been greater. Early conceptual frameworks laid the groundwork for delivery models that address social, behavioral, and environmental factors. Newer frameworks increasingly emphasize concurrent conditions and care utilization. Clini-

cally complex patients face challenges in all of these domains and will require innovative interventions that consider the dynamic and interconnected nature of their needs. Ongoing efforts to improve health care delivery must address these influences to effectively transform care for complex patients.

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