EDITORIAL AND COMMENT

The Promise of Virtual Complex Care Management

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Caring for high-needs, high-cost (HNHC) patients represents one of the most vexing challenges for the US healthcare system. Not only do such patients represent a disproportionate amount of the morbidity and mortality that the system aims to reduce, but they account for a staggeringly high proportion of total healthcare expenditures. The most complex 20% of patients lead to 80% of total healthcare costs while the top 5% represent 50% of total costs.¹

Not surprisingly, health system leaders, policymakers, and researchers alike have devoted considerable attention to developing innovative models for managing these patients. Most commonly, these models include complex care management—or focused care coordination—superimposed on standard healthcare programs (though some models involve the development of dedicated clinics focused entirely on HNHC patients).² These programs have been developed and implemented by health systems,³ third-party payers,⁴ governmental agencies,⁵ and large employers alike.⁶

Interventions aimed at HNHC populations have intuitive appeal. Such efforts offer the possibility of improving outcomes for vulnerable patients while simultaneously avoiding unnecessary expenditures. These care models have received considerable attention from the media, for example Atul Gawande's widely circulated *New Yorker* article the "Hotspots."⁷

Unfortunately, however, rigorous studies of these models are scant. Though numerous non-randomized analyses have suggested that programs for HNHC populations improve outcomes while lowering healthcare utilization, the few randomized evaluations of these programs have often had disappointing results. At best, the rigorous trials have demonstrated modest improvements in quality metrics with minimal impact on health outcomes and cost.⁸ The discrepancy between randomized trials and less rigorous studies likely results from confounding factors as well as regression to the mean—the tendency for extreme trends to moderate over time.⁹

It is in this context that we consider the two studies in this issue of *JGIM* reporting on a tele-medicine intervention—referred to as the Extension for Community

Health Outcomes (ECHO) model—for managing economically vulnerable HNHC patients in New Mexico^{10, 11} The ECHO model, in which specialty clinicians based at hub sites offer guidance via teleconferencing to community primary care providers, has proven effective for supporting community-based specialty care without a specialty referral. For example, through the ECHO program, rural primary care clinicians have successfully treated patients with hepatitis C within the primary care setting, with only tele-guidance from specialists.¹²

In the two new *JGIM* papers, the authors report on the use of the ECHO model for providing specialty guidance via teleconferencing for HNHC patients in rural communities in New Mexico. Overall, the studies offer a favorable impression of this virtual complex care management program. As part of the intervention, several local community-based teams—consisting of a mid-level provider, a registered nurse, a mental health worker, and a community health worker—took care of almost 800 complex patients. To enhance their management, the team participated in weekly teleconsultations with a multidisciplinary group of specialists, including experts in addiction medicine, cardiology, infectious disease, palliative care, psychiatry, pharmacy, and case management and a hospitalist. The specialists offered guidance and support during these teleconsultation sessions.

The patients in the analysis were similar to other populations of HNHC patients that have previously been studied; the most common diagnoses included depression, pain, type 2 diabetes, anxiety/panic disorders, and hepatitis C. Some patients also suffered from social challenges, including housing insecurity and isolation or lack of support. Overall, more than three-quarters suffered from a chronic substance use disorder.

The analyses demonstrated that the community care teams adjusted their care plans based on the specialist teleconsultations 70% of the time, and 87% of the team members reported applying lessons learned from the case discussions to other HNHC patients. At first blush, the impact of the program on patient outcomes appears remarkable. A year after the intervention began, the odds of an inpatient admission and an emergency department visit each decreased by approximately 50%. Though some of this reduction was counterbalanced by an increase in utilization of ambulatory care and prescription medications (costs of running the program offset the savings from lower acute care utilization), the authors concluded that the program led to “decreased patient suffering and greater access to care.”

These results are encouraging—and certainly worthy of reporting. However, because this was not a randomized trial, it is possible—perhaps even likely—that confounding factors influenced the results. For example, one must wonder whether patients enrolled in this program at a time when they were activated and ready to improve their health. If so, this would offer an alternative explanation for the observed reductions in acute care utilization following program enrollment.

Moreover, as numerous prior studies of interventions for HNHC have demonstrated, because the program selected is for patients with high baseline utilization rates, these outcomes were likely to improve following enrollment simply due to regression to the mean.¹³ To their credit, the authors attempted to mitigate this possibility by “assessing pre-enrollment trends over an extended period and excluding claims data for the 6 months immediately preceding enrollment.” Nevertheless, even these efforts may not have been sufficient.

Given both the promise and the limitations of this work, what are the implications of these new findings? At the risk of being maddeningly restrained, we cannot yet give the ECHO care intervention an unqualified endorsement for broad dissemination. Simply put, these early studies, while intriguing, still leave doubt. Moreover, though intuitive, the other complex care management strategies have proven ineffective in other rigorous studies⁸. Nevertheless, the findings certainly justify continued health system experimentation and investment in a subsequent, better controlled study of the ECHO care model for HNHC populations.

More generally, we also need to gain a better understanding of the individual elements of complex care management that work best. To date, it seems that complex care management models involving regular in-person (rather than exclusively telephonic) interactions between care managers, patients, and primary care clinicians, as well as those targeting care transitions and medication management, are most effective.¹⁴ But key questions remain, such as (a) do these strategies cause favorable outcomes or are they simply markers of effective programs? and (b) are these approaches effective across a broad array of settings?

We applaud the ECHO team for taking on the vexing challenge of caring for HNHC populations in a high-quality, cost-effective manner. Even more laudable is their commitment to public access to their training materials and methods. Though it is quite possible that the favorable results were due to confounding factors and/or regression to the mean, the findings are encouraging and demonstrate the feasibility of applying complex care management approaches in remote rural settings through telecare.

Still, we must heed the lessons of the past and await better controlled evaluations before concluding that the ECHO care model is ready for widespread dissemination. Other innovators who have developed care delivery interventions targeting HNHC patients are subjecting their programs to more rigorous

assessment,¹⁵ and the ECHO investigators have also been leaders in the scrupulous assessment of their care delivery models¹⁰. In the meantime, ECHO for HNHC deserves further development and testing, but not yet widespread adoption.

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Compliance with Ethical Standards:

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