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Opinion

"Super-Utilizer" Interventions: What They Reveal About Evaluation Research, Wishful Thinking, and Health Equity

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It is well known that a small number of patients with complex medical and social needs account for a large proportion of health care costs. Numerous interventions and policy incentives have been implemented in an attempt to reduce the health care use and costs of these "super-utilizers." Many of these interventions attempt to better manage patients' complex physical, mental, and behavioral health issues while taking into account nonmedical problems such as poverty, food insecurity, housing instability, transportation challenges, and social isolation.

One such intervention is the "hot-spotting" and intensive case management approach of the Camden Coalition. Brought to popular attention by Atul Gawande in a 2011 *New Yorker* article, this innovative approach designed by physician Jeffrey Brenner aims to reduce health care costs by providing patients with the greatest medical, behavioral, and social needs with individualized care and services.[1] Using data to find the "hot spots" or highest-cost patients, the Camden model uses a multidisciplinary team of clinicians, social workers, community health workers, and health coaches that begins its work with patients in the hospital and then at home, with a primary goal of helping patients stay out of the hospital.[2]

Similar interventions that use data such as hospitalizations and emergency department visits to identify the highest users of expensive care have been spreading rapidly, including through "population health management" efforts.[3] Many health systems are using predictive risk models, algorithms, and other data analytic approaches to identify and intervene with high-cost patients. The results from simple pre-post comparisons of patients receiving these interventions, including the Camden approach, have appeared promising.

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However, a recently published randomized controlled trial (RCT) of the Camden Coalition intervention revealed that this intensive program had no impact on hospitalizations or associated costs in a 6-month follow-up period.[2] Despite high patient engagement, the intervention also had no impact on hospital readmissions or the use of social welfare programs. These much-anticipated findings have been described in the press and on social media as "surprising," "shocking," and "disappointing."

The unfortunate reality is that these evaluation results are not surprising at all. Red flags regarding the hype and overpromise of super-utilizer interventions have been waving for several years. In 2015, Johnson and colleagues used longitudinal data to warn that the super-utilizer population is not stable at the individual level.[4] The highest use/high cost population, regardless of how defined, is larger than point-in-time estimates capture, fluctuating significantly over time. This means that pre-post evaluations without a control group are overestimating or mistaking these fluctuations—and the phenomenon of "regression to the mean"—for positive intervention effects.

A 2019 systematic literature review of interventions aimed at super-utilizers of emergency department and other pre-hospital emergent services (of which I was a coauthor) also takes the surprise out of the Camden Coalition findings.[3] We reviewed 46 evaluations of nine types of interventions, the most common being case management in which nurses and social workers identify patient medical, behavioral, and social issues, and then facilitate connections to needed health care, social, and human services. Most studies used a simple pre-post test design; only eight (17%) were RCTs. Many of the pre-post evaluations showed significant declines in use and cost. However, while three of the RCTs demonstrated small yet significant reductions in subsequent expensive health care use, the other five studies revealed that decreases in utilization and costs in the treatment and control groups were not significantly different.[3]

Regression to the mean is a real and challenging problem when evaluating programs that focus on outliers in the outcomes an intervention is attempting to change. Thus, there are some important and well-known lessons about the need for rigorous research designs with strong control groups in evaluations of super-utilizer interventions.

Red flags also have been waving for many years regarding the limits of trying to address the upstream, social drivers of health through individual-level interventions aimed at complex patients.[5,6] The

majority of super-utilizers live in communities facing multiple socioeconomic challenges. They also have been exposed to decades of constrained opportunities, social/environmental risks, and chronic psychosocial stress, much of which stems from institutionalized discrimination and structural deprivation. We should not be surprised that the social determinants of health create high-need/high-cost patients who do not experience sudden improvements 6-12 months after a case management intervention. It is wishful thinking to expect that addressing chronic, individual social needs years after the onset of disease could quickly translate into improved health and reduced costs.

Many super-utilizer interventions claim to be addressing patient "social determinants of health" when they are, at best, identifying and struggling to remedy a subset of patient social risks and needs.[6] The truth is that hot-spotting interventions are primarily cost-containment strategies aimed at individual, very expensive patients. They are not interventions aimed at the macro- and community-level systems and institutions that drive social, political, and economic disadvantage and health inequities.

The increasing use of data analytics, predictive modeling, and screening of patients for "social determinants of health" signals growth in data-driven approaches that identify the highest risk, highest cost, and other "outlier" patients for interventions. Such approaches are vulnerable to the overestimation of intervention effects by evaluation efforts that lack strong control groups. These efforts also are vulnerable to the threat of wishful, downstream thinking that oversimplifies how exposures to social structures and systems over the life course manifest as social needs among complex, high-cost patients.

Super-utilizer interventions are extremely important for helping individual patients in times of critical need. They are not, however, solutions to the fundamental problems of the US health care system: extreme health care expenditures alongside serious inequities in population health outcomes. Reduced health inequities are not going to result from better care transitions from hospital to home or from tertiary care that attempts to connect patients to beleaguered social safety nets. Achieving health equity requires that we strengthen public policy and community investments to ensure education, economic, social and political resources, opportunities, and well-being over the life course, and that we prioritize evidence-based primary and secondary prevention interventions aimed at populations and communities.

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