

EDITORIAL COMMENT

Care Fragmentation After Hospital Discharge

Often Ignored, But Important*

Finlay A. McAlister, MD, MSc



Hospital care accounts for nearly one third of total health care spending and readmissions are a major contributor since they are common and costly: 15% to 20% of all patients discharged from medical wards are readmitted within 30 days, resulting in an extra \$20 billion in costs per annum in the United States alone.¹ While many approaches to reducing readmissions have been tested, few are effective,² and readmissions will continue to be an important issue in health care for the foreseeable future.

Multiple studies have demonstrated that outpatients with greater physician continuity were more likely to receive guideline-concordant care, were less likely to present to emergency departments or be hospitalized for preventable reasons, and were less likely to die.³⁻⁵ Moreover, individuals with chronic conditions and/or multiple comorbidities appear to benefit most from continuity of care.

However, the lessons from the outpatient literature base are too often forgotten when a patient requires readmission after hospital discharge. As Verma et al⁶ point out in this issue of *JACC: Advances*, even quality improvement programs specifically targeting readmissions, such as Medicare's Hospital Readmissions Reduction Program, do not address care fragmentation (the situation whereby a patient is readmitted to a different hospital than they were discharged from). This is a surprising omission since care fragmentation after discharge is common and

has been associated with prolonged lengths of stay, more diagnostic testing, higher costs, and increased mortality risk for readmitted patients in numerous studies.⁷ In fact, the frequency of care fragmentation (21%), the factors associated with increased risk of care fragmentation, and the negative impacts of care fragmentation reported by Verma et al⁶ for American patients with atrial fibrillation (8% longer length of stay, 13% increase in nonhome discharges, 18% increased mortality risk, and \$1,500 in extra costs per readmission) are consistent with the findings from studies in patients with other conditions and in other settings.⁷

For their analysis, Verma et al⁶ used data from the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project Nationwide Readmissions Database, which captures data on about 60% of all-payer hospitalizations in the United States and allows for the tracking of readmissions within the same state and calendar year. They were able to use International Classification of Diseases-10th Revision diagnosis codes to build comorbidity profiles for each patient and adjust for important comorbidities, such as congestive heart failure, coronary artery disease, and chronic kidney disease. It is not surprising that they found that patients were more likely to experience care fragmentation if they were residents of long-term care facilities, had Medicaid coverage rather than private insurance, had been admitted to smaller or rural hospitals for their index atrial fibrillation admission, or were readmitted for conditions other than their atrial fibrillation (especially for acute cerebrovascular or cardiac events, which are likely to have been diverted to hospitals with catheterization facilities). This mirrors findings from other studies of care fragmentation.⁷ It should also be recognized that, in the same way that not all readmissions are preventable,⁸ not all fragmented readmissions are inappropriate and future work should exclude those

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From the Division of General Internal Medicine, University of Alberta, Edmonton, Canada.

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fragmented readmissions which may well have been appropriate (such as the diversion of patients with acute cardiac or cerebrovascular events to centers with catheterization facilities).

Without data on patients' mode of presentation, the distance from their residence to initial and readmission hospital, their social and homecare supports, and their access to prompt outpatient follow-up after their initial discharge, Verma et al⁶ cannot explore other potential causes for the care fragmentation they document. For example, care fragmentation can also be driven by patient factors (patients who self-present choosing to go to a different hospital the second time to receive care), system factors (ambulances taking a patient to a different hospital due to capacity issues or smaller hospitals deferring patients with certain diagnoses to larger hospitals or regional centers of excellence), or geographic factors (proximity to patient residence). Further work with more granular data (including patient, caregiver, and clinician surveys) is needed to explore these other potential causes of care fragmentation and identify targets for mitigation strategies.

Verma et al⁶ speculate that inadequate health information transfer between centers is a major cause for the poorer outcomes in patients readmitted to nonindex hospitals. While they suggest that the adoption of universal medical record systems or interhospital health information exchange systems will help ameliorate this issue, I believe this is a hypothesis that needs to be tested rather than accepted at face value. To that end, it is important to note that a recent systematic review⁹ found only a handful of observational studies (and with conflicting results) on whether health information exchange impacted readmission rates and another study¹⁰ found that even direct communication between hospital and

outpatient physicians did not have any impact on readmission rates. Although Verma et al⁶ also suggest a role for more rigorous pre-discharge counseling and coordination of follow-up visits to mitigate care fragmentation, this is another approach that, while logical, has not yet been proven uniformly beneficial in randomized trials for patients discharged after hospitalizations for conditions other than heart failure.¹¹ The development and rigorous testing of strategies to minimize the frequency and impact of inappropriate care fragmentation is an urgent research priority.

In conclusion, Verma et al⁶ have contributed to the burgeoning literature base confirming that continuity of care is one of the fundamental building blocks for high-performing healthcare systems. However, hospitalizations remain a challenge to continuity. As pointed out by Chen and Saint, "while physicians are increasingly choosing to practice either in or out of the hospital, our patients regularly move back and forth across that divide."¹² The challenge for clinicians and researchers is to work to reduce inappropriate care fragmentation after hospitalizations, particularly for our patients with chronic conditions and complex care needs, such as those with atrial fibrillation, heart failure, coronary disease, or diabetes mellitus.

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ADDRESS FOR CORRESPONDENCE: Dr Finlay A. McAlister, University of Alberta, 5-134C Clinical Sciences Building, 11350 83 Avenue, Edmonton, Alberta T6G 2G3, Canada. E-mail: Finlay.McAlister@ualberta.ca.

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