

# Home care after elective vascular surgery: still more questions than answers

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Home care services support the goal of many patients and caregivers to live independently at home and to ‘age in place’. Home care referrals in the USA have increased nearly 60% from 2002 to 2016 resulting in an over 88% increase in spending to over US\$18 billion for Medicare beneficiaries.<sup>1</sup> In a recent 2015–2016 survey in Canada, an estimated 881 800 households, or just over 6% of all households, used home care services including nursing and personal/home support services.<sup>2</sup> Despite the widespread use of home care services in many countries, relatively little is known about how to optimise patient outcomes in home care. Many questions remain about which patients are most likely to benefit, which services (eg, nursing, therapies, personal care) are most beneficial for which patients and what intensity and duration of services are ideal for different patient populations.

Recently, de Mestral and colleagues identified that home care nursing was associated with lower odds of emergency department (ED) visits and rehospitalisations for patients discharged after elective vascular surgeries (ie, carotid endarterectomy, endovascular aortic aneurysm repair and bypass for lower extremity peripheral arterial disease) in Canada.<sup>3</sup> This study is important because it adds to the evidence by examining home care in a population very different from the majority of studies focused on the effect of home care on patient outcomes. Most studies focus on patients with heart failure (HF) and the results have been mixed. One major difference to highlight is that the risk for ED visits and rehospitalisations in patients following an elective vascular surgery procedure is lower compared with patients who have an unplanned

HF hospitalisation. The former population would have a lower risk of 30-day readmissions (~6%–19% readmission rate) compared with patients with HF who are readmitted more frequently (22%–26% readmission rate).<sup>4–8</sup>

Other evidence from studies of patients with HF include a systematic review of transitional care interventions in which home nursing visits reduced hospital readmissions and mortality for up to 6 months compared with usual care.<sup>9</sup> In a separate study, Murtaugh and colleagues found that Medicare beneficiaries with HF who received both home care nursing and physician follow-up within 1 week of hospital discharge had a lower probability of readmission by approximately 8% compared with those referred for home health who did not receive a nursing visit or physician follow-up.<sup>10</sup> In contrast, a recent observational study by Arundel and colleagues showed that Medicare beneficiaries with HF referred for home health after hospital discharge (21% of patients) were more likely to have a 30-day rehospitalisation (HR 1.52, 95% CI 1.29 to 1.80) and higher 30-day mortality (HR 2.32, 95% CI 1.58 to 3.41) compared with matched controls.<sup>11</sup> Given the variability in home care referrals and outcomes, many questions remain about how to optimise home care for HF, let alone in other patient populations.

The promising results from this study by de Mestral and colleagues brings up the question of whether home care may be able to meet the needs of elective vascular surgery patients in a unique way. For example, wound care is likely one of the home care services provided for the postsurgical patients, which is different than assessing and addressing symptoms related to volume status in



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HF. Could it be that the wound care provided by home care is a key to the lower ED visits and readmission rates observed in this study? The authors note that a limitation of their study is that the indication for nursing care was not available and the exact nursing care delivered in the home is not known. A further understanding of the services provided through home care and their association with the clinical outcomes could add much-needed context to better understand the results from the present study.

Another key finding of interest in the study by de Mestral and colleagues is the substantial variation in home care use (16%–84%) across the 14 health regions in Ontario, even when the authors accounted for case-mix differences across the regions. Prior studies of home healthcare use in the USA have also identified variability of home health use by census region and state which has been attributed to changes in Medicare payment policies and patient choice for postacute care.<sup>12–14</sup> An additional factor that is likely an important contributor to variable referral rates, but challenging to measure, is the lack of standardised clinician decision-making for home care referrals,<sup>15 16</sup> reflecting the lack of evidence for home care after hospital discharge.

In the present study, the number of home nursing visits was not correlated with the home care referral rates in the regions. However, the lowest risk for ED visits or rehospitalisations was in regions with the highest home care referral rates. For example, rates of ED visits and readmissions were consistently lower in regions where the home care referral rate was 37% and above. This highlights the quandary of what the right ‘dose’ of home care might be for different patients to optimise the clinical outcomes while minimising overprescription and excess cost. Home care in Canada has less restrictions than in the USA. Referrals in the USA are frequently guided by Medicare payment policies, including the need for a physician to certify that a patient is homebound (ie, confined to the home) and requires skilled nursing or therapies. US physicians must create and regularly review a home health plan for episodes lasting up to 60 days, after which a recertification is required.<sup>17</sup> In Ontario, the authors describe that home care is delivered through a single-payer regional healthcare system not restricted by standard criteria, can be ordered by physicians or nurse practitioners and can be stopped at the discretion of the patient or nursing team, without specific visit or duration limitations. Therefore, Canadian home care may be well-positioned to further explore some of these key questions around the ‘dose’ of home care practice without limitations related to payment policy.

Not surprisingly, postacute care and home care referral patterns after hospitalisation differ between Ontario and the USA. Few patients were excluded from the cohort in the present study because they were not discharged directly home—only 1281 (4.2%) of 30752 eligible (figure 1 from the study). Among patients discharged

after a peripheral artery bypass in this cohort, 68% had home care and 32% had no services. Therefore, most postacute care services following vascular surgery in Ontario are delivered through home care services. In comparison, among the ~48000 patients in the USA discharged after a peripheral artery bypass in 2014, 23.2% went to a nursing or rehabilitation facility, 21.2% received home care and 52.8% went home with no services (unpublished HCUPnet analysis). This suggests that in the USA, postacute care after a peripheral artery bypass surgery is more frequently delivered in institutional settings, and a higher proportion of patients go home without services compared with Ontario.

Given the frequency with which patients are discharged with home care services in Canada compared with the USA, it does introduce the question of whether it might be possible to deliver some of the care currently delivered in US postacute care facilities in the home care setting. Recently, Medicare bundled payment policies for lower extremity joint replacements have been associated with less institutional postacute care use with a non-significant increase in home care referrals without associated differences in readmissions or ED visits.<sup>18</sup> Therefore, instead of cutting home care spending by 5% as recommended in the most recent MedPAC report,<sup>1</sup> should Medicare be increasing the scope of home care and supporting rigorous evaluations to better understand which medical and surgical patients could receive home care in the community rather than in institutional settings? Such evaluations could be a key to understand how to optimise patient selection and home care service delivery after discharge.

Understanding home care outcomes in the postdischarge context is essential to answer many of the lingering questions about patient selection, service provision, clinical outcomes and costs. The study in this issue is one of few to evaluate home care in a surgical patient population and demonstrates that we continue to have many more questions than answers about how to optimise home care. Explanatory work to build on the present study could be helpful to understand exactly how home care referral decisions are made and how home care is delivered in the highest performing healthcare regions. Such work could help define how best to leverage home care services after elective vascular surgeries and move the field toward a robust evidence base to guide home care referrals and delivery.

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