



Outcomes of octogenarians discharged from the hospital after prolonged intensive care unit length of stay after cardiac surgery

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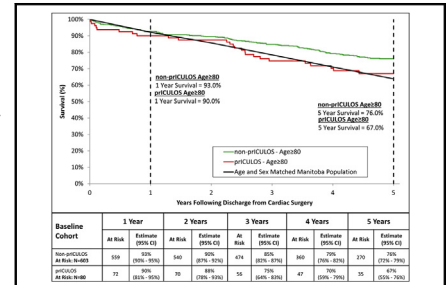
ABSTRACT

Objective: Octogenarians offered complex cardiac surgery frequently experience a prolonged intensive care unit length of stay; however, minimal data exist on the outcomes of these patients. We sought to determine the rates and predictors of 1-year noninstitutionalized survival (“functional survival”) and rehospitalization for octogenarian patients with prolonged intensive care unit length of stay after cardiac surgery and who were discharged from hospital.

Methods: The outcomes of discharged patients aged 80 years or more who underwent cardiac surgery with prolonged intensive care unit length of stay (≥ 5 consecutive days) from January 1, 2000, to December 31, 2011, were examined retrospectively from linked clinical and administrative provincial databases. Regression analysis was used to determine predictors of 1-year functional survival and rehospitalization after discharge from the hospital.

Results: A total of 80 of 683 (11.7%) discharged octogenarian patients had prolonged intensive care unit length of stay. Functional survival at 1 year was 92% and 81% for those with nonprolonged and prolonged intensive care unit lengths of stay, respectively ($P < .01$). Lack of outpatient physician visits within 30 days of discharge (hazard ratio, 5.18; $P < .01$) was a significant predictor of poor 1-year functional survival. The 1-year rehospitalization rates were 38% and 48% for those with nonprolonged and prolonged intensive care unit lengths of stay, respectively, with 41% of all rehospitalizations occurring within 30 days of initial discharge. A rural residence (hazard ratio, 1.82; $P < .01$) and nosocomial pneumonia during patients’ operative admissions (hazard ratio, 2.74; $P < .01$) were associated with rehospitalization within 30 days of discharge.

Conclusions: Octogenarians with prolonged intensive care unit length of stay have acceptable functional survival at 1 year but have high rates of early rehospitalization. Access to health services may influence functional survival and early rehospitalizations. These data suggest that close follow-up of these vulnerable patients after hospital discharge is warranted. (*J Thorac Cardiovasc Surg* 2017;154:1668-78)



Octogenarians with prolonged ICU LOS have lower functional survival and high rehospitalization rates.

Central Message

Octogenarians with prolonged ICU LOS have lower functional survival and higher rates of rehospitalization versus those without prolonged ICU LOS. Access to health services may influence outcomes.

Perspective

With the increasing number of vulnerable older adult patients being referred for cardiac surgery, there is a need to ensure there is effective in-hospital care (eg, preventing nosocomial pneumonia) and adequate community support (eg, adequate access to outpatient physician services within 30 days) to improve postdischarge outcomes.

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Increasing Canadian life span during the past 5 decades has resulted in a higher number of people living past 80 years of age.^{1,2} A growing burden of heart disease in an aging

population has resulted in cardiac surgery being offered to older and increasingly frail patients with multiple comorbidities.^{3,4} After cardiac surgery, although the

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Abbreviations and Acronyms

ICU = intensive care unit
 LOS = length of stay



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majority of patients require recovery in a postoperative intensive care unit (ICU) environment for less than 48 hours, many patients experience a more complicated course, resulting in a prolonged ICU length of stay (LOS).²⁻⁸ Patients who have a prolonged ICU LOS after cardiac surgery experience higher rates of rehospitalization with associated worse functional capacity,⁵ worse health-related quality of life,^{6,7} increased healthcare costs, and lower rates of noninstitutionalized survival (ie, being alive and in their own home).⁸

A recent examination of the outcomes of approximately 9500 cardiac surgery cases performed in Manitoba over a 10-year period has demonstrated that the number of patients

who experienced a prolonged ICU LOS after cardiac surgery (defined as requiring an ICU admission for ≥ 5 days) has increased from 7% between 2000 and 2009 to greater than 11% between 2010 and 2013 (a relative increase of 57%).⁸ Furthermore, a significant increase in the numbers of patients aged 80 years or older has been observed at the University of Manitoba (Figure 1). At present, people aged 80 years or more represent the Canadian demographic with the fastest growth rate, more than tripling in number over the last 3 decades.² Therefore, the number of older adult patients undergoing heart surgery and experiencing prolonged ICU LOS will only continue to increase.

Although recent investigations have sought to understand outcomes in octogenarian patients undergoing cardiac surgery,⁹⁻¹² the long-term functional impact for those patients who require prolonged ICU LOS after cardiac surgery remains unclear. This leads to challenges in decision making on the indication and timing of surgery, in conversations with the patient and their caregivers in times of unanticipated outcomes, and in ensuring adequate discharge planning for these vulnerable patients. Therefore, we sought to examine the long-term impact of prolonged ICU LOS on the octogenarian patient to determine predictors for adverse outcomes, such as poor functional survival (ie, dead or institutionalized)⁸ and rehospitalization. We hypothesized that octogenarians with a prolonged ICU LOS have a lower rate of functional survival and higher rates of rehospitalization 1 year after their cardiac surgery procedure.

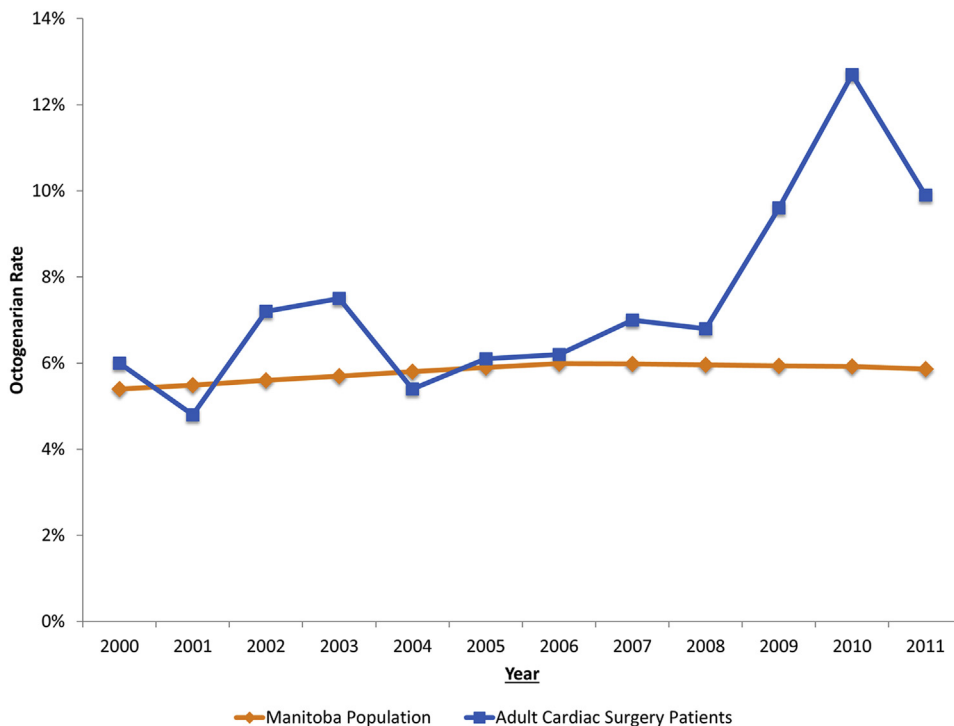


FIGURE 1. Proportion of the Manitoban general and cardiac surgical population aged 80 years or more. The rate of provincial rate of octogenarians (orange line) has been stable, whereas the number of patients undergoing cardiac surgery (blue line) has approximately doubled over a 10-year period.

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