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Commentary: Durable left ventricular assist device infections: A call to arms

Walker M. Blanding, MD, and Arman Kilic, MD

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Innovation in the realm of durable left ventricular assist devices (LVAD) has changed the landscape of advanced heart failure and provided hope for patients with otherwise dismal prognosis with regard to survival and quality of life. Nevertheless, adverse events such as renal failure, right heart failure, device malfunction, and infection account for a significant morbidity and mortality burden for LVAD populations.^{1,2} Likosky and colleagues³ present their work on durable LVAD health care-associated infection and its influence on Medicare costs as well as other adverse events.

The authors make creative work of the Society of Thoracic Surgeons Intermacs database as well as 90-day Medicare claims to evaluate the cost of health care-associated infection in this patient subset. Of those undergoing LVAD implantation, 27.8% developed a health care-associated infection. The payment groups were divided into terciles with the upper tercile accounting for 9% higher payments compared with the lower tercile with an absolute difference of \$13,600. The majority of this difference was accounted for during the postimplant period and the trend held steady for both device-related and nondevice-related infections. The upper tercile of health care-associated infections was also associated with longer lengths of intensive care unit stay after implant, more renal dysfunction requiring dialysis, higher pulmonary artery pressures, higher incidence of need for right ventricular

CENTRAL MESSAGE

Postimplant ventricular assist device infection rates vary significantly across institutions, carry significant cost, and are associated with other predictors of postoperative morbidity and mortality.

mechanical assist, more reoperation for bleeding, and increased respiratory failure rates.

Although it seems natural to recognize that those patients who develop an unexpected infection while hospitalized will utilize more resources and ultimately cost the system more, this work shows the exponential effect this can have in complex LVAD patients who require a high level of care at baseline. Perhaps more importantly, the work shows the association with major other morbidities and mortality in the LVAD population. Although it is unclear from these data which variables may act as confounders, it is clear that patients who get infections are significantly sicker and place a higher burden on the system.

Clinicians know too well the challenge of rescuing LVAD patients from multisystem organ failure and sepsis. Although even the lowest tercile of hospitals still carry a significant infection burden contributing to this, the study does point out a high and perhaps unacceptable variability of 37% among Intermacs hospitals in terms of overall and risk-adjusted infection rates, which is significantly higher than other benchmarked cardiac operations.^{4,5} These data should perhaps be a call for the heart failure community for standardization for infection control practices in hopes of providing higher quality of care and better use of resources. Moreover, adopting best practices from centers with lower infection rates and lower failure to rescue from major infection rates may improve outcomes on a broader

From the Division of Cardiothoracic Surgery, Medical University of South Carolina, Charleston, SC.

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Address for reprints: Arman Kilic, MD, Division of Cardiothoracic Surgery, Medical University of South Carolina, 30 Courtenay Dr, MSC 295, Suite BM 279, Charleston, SC 29425 (E-mail: kilica@muscc.edu).

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scale. This should be a multidisciplinary effort with input from various stakeholders, including experts in infectious disease. Further research aimed at providing more granularity regarding infection types and severity as well as specific practices to limit the burden of infection would be prudent.

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