Reply to the Editor:

We appreciate the interest shown by Dr Allen in our work concerning leg harvest surgical site infection rates after coronary artery bypass graft surgery and the opportunity to respond to his comments. We agree that many wound complications occur after discharge and, as stated in our article, share his concern that some may be missed if outpatient follow-up is incomplete. We should note, however, that the Society of Thoracic Surgeons (STS) database calls for 30-day follow-up, not just in-hospital follow-up. Indeed, as stated in the Methods section, at Washington University our data coordinators contact all treating physicians and cardiothoracic surgeons by phone at 30 days after the operation for follow-up information. Because the National Nosocomial Infection Surveillance System/Centers for Disease Control (NNIS/CDC) definition of surgical site infection requires that signs and symptoms of infection begin within 30 days of surgery,¹ by definition late-onset infections were not included in our study.

Dr Allen also reminds us of significant contributions from other authors. We did indeed cite other publications by these same authors, and we appreciate the addition of the reference by Allen and colleagues² to the debate. The publications cited in Allen's letter, however, describe risk factors associated with wound complications in general^{2,3} or impaired wound healing⁴ after saphenous vein harvest in patients undergoing coronary artery bypass grafting. In the publication of Allen and colleagues³ wound complications included hematoma, dehiscence, cellulitis, necrosis, or abscess requiring dressing changes, antibiotics, or débridement. In the publication of Utley and associates,⁴ impaired wound healing included inflammation, separation, cellulitis, lymphangitis, drainage, necrosis, or abscess requiring dressings, antibiotics, or débridement. In light of the variety of different complications included in these two studies, it is not surprising that their

published rates of wound complications would be much higher than the 4.5% surgical site infection rate we reported. Our publication pertains specifically to risk factors for leg surgical site infections, not all "wound complications." We applied strict criteria, which we consider a strength of the study, and used prospective data available in our institutional STS database and our hospital infection control database to determine the rate of surgical site infection in this patient population. As stated in the Methods section, all medical records were reviewed for patients with apparent surgical site infection, and the diagnosis of infection was confirmed with standardized criteria established by the NNIS/CDC¹ to define deep and superficial leg harvest surgical site infection. We reported a 4.5% rate of confirmed leg infections according to the NNIS/CDC definitions for infection.

We appreciate Dr Allen's enthusiasm for endoscopic vein harvest. We did not cite the prospective study of endoscopic versus traditional saphenous vein harvest by Allen and colleagues² because they analyzed total wound complication rates rather than surgical site infection rates. In fact if we use the numbers reported in this publication to look specifically at infection, the difference between the two groups did not achieve statistical significance. Although there were fewer patients with infection after endoscopic harvest of the saphenous vein (1/51 with cellulitis after endoscopic harvest vs 6/58 with cellulitis, cellulitis/abscess, or cellulitis/dehiscence after traditional harvest, $P = .118$ by Fisher exact test), this study was underpowered to analyze differences in surgical site infection rates. Even with a 10% surgical site infection rate in the traditional harvest group and a 5-fold decrease in infection rates, the power to detect a significant difference in infection rates with the number of patients enrolled was only 40%.

It is important to compare apples with apples. We used very strict definitions of surgical site infection and specific fol-

low-up times to establish the rate of leg harvest site surgical site infection at our institution. As stated in the conclusions of our study, however, we recognize that the 4.5% surgical site infection rate identified was almost certainly an underestimate of the "true" surgical site infection rate. Every effort was made by our STS data coordinator to obtain complete 30-day follow-up for all patients, but in an imperfect world we recognize that follow-up was not 100% accurate. Databases such as that run by the STS do not track events, data coordinators do. They must be provided with specific and usable definitions with which to do their work, and recognition of a job well done. We have confidence in our data and in our analysis.

Margaret A. Olsen, PhD, MPH

Thoralf M. Sundt, MD

Jennifer S. Lawton, MD

Ralph J. Damiano, Jr, MD

Diane Hopkins-Broyles, BSN, CIC

Patricia Lock-Buckley, RHIT

Victoria J. Fraser, MD

Division of Infectious Diseases

Washington University School of Medicine

St Louis, MO 63110

References

1. Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. *Infect Control Hosp Epidemiol.* 1999;20:247-78.
2. Allen KB, Griffith GL, Heimansohn DA, Robison RJ, Matheny RG, Schier JJ, et al. Endoscopic versus traditional saphenous vein harvesting: a prospective, randomized trial. *Ann Thorac Surg.* 1998;66:26-32.
3. Allen KB, Heimansohn DA, Robison RJ, Schier JJ, Griffith GL, Fitzgerald EB, et al. Risk factors for leg wound complications following endoscopic versus traditional saphenous vein harvesting. *Heart Surg Forum.* 2000;3:325-30.
4. Utley JR, Thomason ME, Wallace DJ, Mutch DW, Staton L, Brown V, et al. Preoperative correlates of impaired wound healing after saphenous vein excision. *J Thorac Cardiovasc Surg.* 1989;98:147-9.

doi:10.1016/j.jtcvs.2003.12.039