deviation. A corresponding document was created, signed, and filed by the parties involved. The document will be scrutinized as new evidence becomes available.

In conclusion, it may be possible to deviate from a disinfection protocol that is perceived as too strict, provided that the deviation is well justified and does not jeopardize patient safety. Should other institutions decide to take a similar approach, local legislation and other particularities need to be taken into consideration.

ACKNOWLEDGMENTS

We would like to thank Walter Steiger (Infection Control, Bern University Hospital) and Felix Zürcher (Intensive Care Medicine, Bern University Hospital) for technical support with HU35 sample handling.

Financial support: No financial support was provided relevant to this article.

Potential conflicts of interest: All authors report no conflicts of interest relevant to this article.

Rami Sommerstein, MD;[1]
Tobias M. Merz, MD;[2]
Stephan M. Jakob, MD, PhD;[2]
Jukka Takala, MD, PhD;[2]
Jonas Marschall, MD, MSc[1]

Affiliations: 1. Department of Infectious Diseases, Bern University Hospital, University of Bern, Switzerland; 2. Department of Intensive Care Medicine, Bern University Hospital, University of Bern, Switzerland.

Address correspondence to Rami Sommerstein, MD, Department of Infectious Diseases, Bern University Hospital, University of Bern, Freiburgstrasse, 3010 Bern, Switzerland (rami.sommerstein@insel.ch).

Infect Control Hosp Epidemiol 2018;39:366–367

 0899-823X/2018/3903-0023. DOI: 10.1017/ice.2017.283

REFERENCES

1. Garvey MI, Phillips N, Bradley CW, Holden E. Decontamination of an extracorporeal membrane oxygenator contaminated with *Mycobacterium chimaera*. *Infect Control Hosp Epidemiol* 2017;38:1244–1246.
2. Heater Unit HU35. Revised instructions for use—cleaning, descaling, disinfection. 1.0.XX.01. Maquet Cardiopulmonary GmbH.
3. Sax H, Bloemberg G, Hasse B, et al. Prolonged outbreak of *Mycobacterium chimaera* infection after open-chest heart surgery. *Clin Infect Dis* 2015;61:67–75.
4. Sommerstein R, Ruegg C, Kohler P, Bloemberg G, Kuster SP, Sax H. Transmission of *Mycobacterium chimaera* from heater-cooler units during cardiac surgery despite an ultraclean air ventilation system. *Emerg Infect Dis* 2016;22:1008–1013.
5. Trudzinski FC, Schlotthauer U, Kamp A, et al. Clinical implications of *Mycobacterium chimaera* detection in thermoregulatory devices used for extracorporeal membrane oxygenation (ECMO), Germany, 2015 to 2016. *Euro Surveill* 2016;21.
6. Mejak BL, Stammers A, Rauch E, Vang S, Viessman T. A retrospective study on perfusion incidents and safety devices. *Perfusion* 2000;15:51–61.
7. Medical devices ordinance. The Swiss Federal Council website. https://www.admin.ch/opc/en/classified-compilation/19995459/index.html. Published 2001. Accessed, November 9, 2017.

Staphylococcus aureus Bloodstream Infection Due to Contaminated Hematopoietic Stem-Cell Graft

To the Editor—The Foundation for the Accreditation of Cellular Therapy and the American Association of Blood Banks publish guidelines to ensure the quality and safety of hematopoietic stem-cell (HSC) products.[1,2] These HSC products are generally cultured after procurement by the collection facility and following processing at the transplant center. Reported contamination rates of HSC grafts range from 1% to 45%.[3–5] The clinical significance of infusion of contaminated HSC products is unclear. When fresh products are used, contamination is often not identified prior to HSC infusion. Bacterial contamination is not an absolute contraindication to HSC infusion, as options are limited following a myeloablative preparative regimen. In a review of 12 studies, 91% of contaminated grafts contained bacterial species of low pathogenicity (eg, *Staphylococcus epidermidis* and *Propionibacterium acnes*). Of 26 patients who received grafts contaminated with highly pathogenic bacteria (eg, *S. aureus*), none developed symptoms or had a positive culture matching an organism found in the HSC graft.[3] In prior reports of infections putatively caused by graft contamination, confirmation that the graft was the source of infection was based solely on the finding of identical species.[6,7] Contrary to these prior reports, we present a case of catheter-related bloodstream infection with methicillin-susceptible *S. aureus* due to a contaminated HSC graft in which pulsed-field gel electrophoresis (PFGE) confirmed that the graft and patient isolates were identical.

A 15-year-old male presented for hematopoietic cell transplant (HCT) for hypodiploid B-cell acute lymphoblastic leukemia (B-ALL). His history included osteosarcoma of the proximal right tibia, for which he had completed treatment with chemotherapy and limb-sparing resection two years prior to this admission. At the time B-ALL was diagnosed, local recurrence of osteosarcoma was also discovered in the distal right femur. He began therapy for both cancers per the Children's Cancer Group protocol 1941 with modifications as appropriate. He underwent a right transfemoral amputation and achieved remission of osteosarcoma.

After achieving complete remission of B-ALL, he underwent a 10/10 HLA–allele matched unrelated donor HCT. Preparative regimen per Children's Oncology Group protocol AALL1331 included fractionated total body irradiation, thiotepa, and cyclophosphamide. Graft-versus-host disease prophylaxis included tacrolimus and methotrexate. Antimicrobial prophylaxis included posaconazole, valacyclovir, pentamidine, and levofloxacin. Marrow was collected at an outside collection center approximately 24 hours prior to infusion, and the product remained at room temperature. On day 0, the patient received the fresh donor marrow via the red lumen of his tunneled double-lumen central venous catheter (DLCVC). Infusion was complicated by hypertension and bradycardia, managed with furosemide and hydralazine.

TABLE 1. Timing of Fevers and Blood Culture Results by CVC Lumen

Day Relative to Stem Cell Infusion	Maximum Temperature (°C)	Culture of DLCVC, Red Lumen	Culture of DLCVC, White Lumen	Culture of Single-Lumen CVC
Day 0	36.9	None	None	None
Day +1	37.8	None	None	None
Day +2 (early AM)	38.3	MSSA	Negative	Negative
Day +2 (late PM)		MSSA	Negative	Negative
Day +3	37.7	None	None	None
Day +4 (early AM)	38.1	MSSA	Negative	Negative
Day +5 (early AM)	37.1	MSSA	Negative	Negative
Day +6 (early AM)	37.0	Negative	Negative	Negative
Day +6 (late PM)		Negative	Negative	Negative
Day +7	37.1	None	None	None
Day +8 (early AM)	37.0	Negative	Negative	Negative

NOTE. DLCVC, double-lumen central venous catheter; CVC, central venous catheter; MSSA, methicillin-sensitive *Staphylococcus aureus*.

Approximately 24 hours after completion of HCT, the patient developed a fever of 38.3°C associated with tachycardia but no other signs of sepsis. Blood cultures from all lumens of the DLCVC and the single-lumen CVC were obtained, and antibiotics were broadened to vancomycin plus cefepime. On day +2 after fever onset, the team was notified that the culture of the HSC product performed just prior to infusion had grown a single colony each of *Micrococcus* and *Staphylococcus aureus*. Blood cultures from the red lumen of his DLCVC were positive for *Staphylococcus aureus* within 24 hours of culture. Fever and culture results are summarized in Table 1. On day +5, methicillin susceptibility was confirmed, and antibiotics were changed to intravenous cefazolin plus vancomycin locks, all administered via the red lumen of the DLCVC. Following institution of this regimen, he remained afebrile with negative blood cultures. Removal of the contaminated DLCVC was deferred until after engraftment, on day +32; antibiotics were discontinued after line removal. As of this writing, he is day +117 and is doing well with no evidence of further infectious complications. Because the HSC product was infused through the same lumen that subsequently became contaminated and the susceptibility patterns of the methicillin-sensitive *Staphylococcus aureus* isolates from patient and HSC product were identical, PFGE was performed on both isolates.[8] This analysis confirmed that the isolates were identical strains (Supplemental Figure).

This event met the definition of a central-line–associated bloodstream infection (CLABSI) and therefore was reported to the Centers for Disease Control and Prevention (CDC) National Healthcare Safety Network. Surveillance definitions of healthcare-acquired conditions are necessarily applied uniformly. In this case, however, the investigation found convincing evidence that the infection was unavoidable. Even if graft contamination is known, it is usually impossible to withhold HSC infusion after administering the preparatory regimen. While multiple reports have found that low-grade bacterial contamination of HSC products is rarely consequential, our patient's experience demonstrated that clinically significant infections may occur. In most reported cases, the identified contaminants are organisms of low pathogenicity such as coagulase-negative staphylococci. However, pathogenic bacteria such as *E. coli* and *S. aureus* are capable of rapid expansion within HSC products stored at room temperature.[9] Certain organisms, such as *Candida* spp and *S. aureus*, are particularly capable of forming biofilms on foreign material. Contamination with highly virulent organisms, while rare, may expose HCT recipients to much greater risk than contamination with less pathogenic organisms. In cases of contamination with less virulent organisms, close observation without obtaining cultures or changing antibiotic coverage may be warranted. However, in cases of contamination by virulent organisms, particularly those that tend to adhere to foreign material, a more aggressive approach may be considered. In such a case, we suggest obtaining blood cultures and considering preemptive antibiotics as guided by the identity and susceptibility of the contaminating organism. The CDC definitions of CLABSI should exempt events that are definitively unrelated to the central line.

ACKNOWLEDGMENTS

We wish to acknowledge Christa Clark, BSN, RN, CCRN, and Maria F. Gergen, MT (ASCP), of Hospital Epidemiology, University of North Carolina Hospitals, for aiding the investigation of the case. The authors report no financial support for this study. All authors report no conflicts of interest.

Zachary I. Willis, MD, MPH;[1]
Jennifer E. Brondon, MD, MS;[1]
Emily E. Sickbert-Bennett, PhD, MS;[2]
Kimberly A. Kasow, DO;[1]
David J. Weber, MD, MPH[2]

Affiliations: 1. Department of Pediatrics, University of North Carolina, Chapel Hill, North Carolina; 2. Hospital Epidemiology, University of North Carolina Hospitals, and Department of Medicine, University of North Carolina, Chapel Hill, North Carolina.

Address correspondence to Zachary I. Willis, MD, MPH, 8340 MBRB, CB#7509, 111 Mason Farm Road, Chapel Hill, NC 27599-7509 (zwillis@med.unc.edu).

ADDITIONAL PRESENTATION. A version of this report has been submitted as an abstract to the 2018 BMT Tandem Meetings, the combined

annual meetings of the Center for International Blood and Marrow Transplant Research and the American Society for Blood and Marrow Transplantation, to be held February 21–25, 2018, in Salt Lake City, Utah.
Infect Control Hosp Epidemiol 2018;39:367–369
 0899-823X/2018/3903-0024. DOI: 10.1017/ice.2017.285

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit https://doi.org/10.1017/ice.2017.285

REFERENCES

1. American Association of Blood Banks. *Standards for Cellular Therapy Services*. 8th ed. Bethesda, MD; 2017.
2. Foundation for the Accreditation of Cellular Therapy. *Standards for Hematopoietic Progenitor Cell Collection, Processing, and Transplantation*. 6th ed. Omaha, NE: FACT Accreditation; 2015.
3. Kamble R, Pant S, Selby GB, et al. Microbial contamination of hematopoietic progenitor cell grafts-incidence, clinical outcome, and cost-effectiveness: an analysis of 735 grafts. *Transfusion (Paris)* 2005;45:874–878.
4. Donmez A, Aydemir S, Arik B, et al. Risk factors for microbial contamination of peripheral blood stem cell products. *Transfusion (Paris)* 2012;52:777–781.
5. Patah PA, Parmar S, McMannis J, et al. Microbial contamination of hematopoietic progenitor cell products: clinical outcome. *Bone Marrow Transplant* 2007;40:365–368.
6. Webb IJ, Coral FS, Andersen JW, et al. Sources and sequelae of bacterial contamination of hematopoietic stem cell components: implications for the safety of hematotherapy and graft engineering. *Transfusion (Paris)* 1996;36:782–788.
7. Lazarus HM, Magalhaes-Silverman M, Fox RM, Creger RJ, Jacobs M. Contamination during in vitro processing of bone marrow for transplantation: clinical significance. *Bone Marrow Transplant* 1991;7:241–246.
8. Enright MC, Day NPJ, Davies CE, Peacock SJ, Spratt BG. Multilocus sequence typing for characterization of methicillin-resistant and methicillin-susceptible clones of *Staphylococcus aureus*. *J Clin Microbiol* 2000;38:1008–1015.
9. Hahn S, Sireis W, Hourfar K, et al. Effects of storage temperature on hematopoietic stability and microbial safety of BM aspirates. *Bone Marrow Transplant* 2014;49:338–348.

Perirectal Screening for Carbapenem-Resistant Enterobacteriaceae Obtained From 100 Consecutive Healthy Pregnant Women in Labor at a Brooklyn Hospital: Results and Risk Factors

To the Editor—Carbapenem-resistant Enterobacteriaceae (CRE) have emerged as a worldwide problem; they have been associated with antibiotic use, long-term and acute-care hospitalization; and they have spread to endemic areas.[1] The spread of CRE in communities is a public health threat because CRE infections have limited treatment options and increased mortality.[2]

In our hospital in 2016, a premature baby developed sepsis on day of life 29 and died within 24 hours. A blood culture grew CRE *Klebsiella pneumoniae*. Subsequent investigations into the source of the organism in the neonatal intensive care unit (NICU) did not find any CRE isolates from multiple environmental surface cultures, including isolettes, monitors, weighing scales, sinks, etc. We therefore decided to investigate the prevalence of CRE rectal carriage in our maternity population. Our hypothesis was that the baby was colonized at birth from exposure to maternal colonization with the organism.

We screened 100 consecutive pregnant women delivering babies at The Brooklyn Hospital Center (TBHC) to investigate whether CRE had become a significant clinical issue in this population.

METHODS

Pregnant women admitted in labor were approached and requested to have a perirectal sample taken for surveillance purposes. A convenience sample of 100 sequential perirectal specimens was taken. The study plan was submitted to the TBHC Institutional Review Board as a quality assurance/quality improvement study and was given waived status. The study was anonymous and required only verbal consent. We also administered an epidemiology questionnaire consisting of 15 questions related to travel history, hospitalizations, surgery, and antibiotics during pregnancy. Perirectal swabs were refrigerated and processed within 24 hours of collection. We used the Centers for Disease Control and Prevention (CDC) laboratory protocol for detection of CRE from rectal swabs.[3] Samples that screened positive for CRE were identified using the Vitek system (bioMèrieux, Marcy-l'Étoile, France). Carbapenem minimum inhibitory concentrations (MICs) for these isolates were determined using the Etest method (bioMèrieux). Carbapenem-resistant isolates were screened by polymearase chain reaction (PCR) for bla_{KPC}, bla_{NDM} and bla_{OXA48} as previously described.[4]

RESULTS

We identified 2 specimens that grew CRE organisms (both *Klebsiella pneumoniae*), for a prevalence of CRE colonization in 2% of the population with a confidence interval of 0.2%–7.0% using the Clopper-Pearson method. The MICs of ertapenem and imipenem were >32 μg/mL for both isolates. In addition, PCR testing revealed the presence of bla_{KPC} in both isolates; other carbapenemase genes were not detected. The 2 women colonized with CRE had no history of travel or antibiotics during pregnancy, but 1 of them had been hospitalized in the previous 6 months (Table 1).