reported. The meta-analysis of Saint et al. is an early publication that incorporated clinical trials only to 1993, which were also incorporated into the later meta-analyses. The meta-analysis by Johnson et al. concluded that there is only "fair quality evidence" that antimicrobial catheters can prevent bacteriuria in hospitalized patients during short-term catheterization and that there is no evidence for prevention of symptomatic infection. Johnson et al. concluded that the poor quality of published studies and the lack of valid economic analysis mean that further studies are required to clearly define the role of these catheters. The articles by Newton et al. and Karchmer et al. to which Ciavarella and Ritter referred were considered in the systematic review of Johnson et al. As noted in the compendium, several more-recent publications not included in these meta-analyses raise further questions about the effectiveness of antimicrobial catheters.

Thus, the recommendation in the compendium to "not routinely use silver-coated or other antibacterial catheters" is appropriate, given the evidence. This topic, however, remains controversial, and this is acknowledged by the inclusion of "use of antimicrobial-coated catheters for selected patients at high risk for infection" as an unresolved issue in the compendium.

The ultimate solution for catheter-acquired urinary infection seems to require the development of catheter materials that are biofilm resistant. Device manufacturers certainly have an important role to play in achieving this goal. The introduction of potentially beneficial devices, however, must be accompanied by clinical trials that are methodologically rigorous, evaluate important clinical outcomes, and support the use of the devices.

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Importance of Postoperative Factors in the Study of the Epidemiology of Surgical Site Infection Due to Methicillin-Resistant Staphylococcus aureus

We read the recent article by Anderson et al. with interest and commend their effort to shed light on the timely topic of surgical site infection (SSI) due to methicillin-resistant Staphylococcus aureus (MRSA). However, we wish to comment on some of the limitations and conclusions of their study.

With regard to surgical site isolates, the definition of MRSA and the method for identifying MRSA were not stated. Since this was a multicenter study, it would have been desirable to have used a uniform definition and method for identifying MRSA across the entire network of participating hospitals. In addition, the frequency with which polymicrobial results were detected (ie, MRSA and other organisms growing concurrently from the same specimen) and how they were handled in the data analysis (if at all) were not presented.

It was interesting that the postulate by Anderson et al. that preoperative patient debility is a risk factor for MRSA colonization—and therefore infection—was not consistently supported by their own data. Specifically, they failed to find a significant association between MRSA SSI and admission from outside facilities that are likely to house debilitated patients (eg, a nursing home or a rehabilitation facility). Is the failure to confirm such an association due to a type 2 error,
or does debility impact SSI rate indirectly through factors not examined by the study (eg, stay at a long-term care facility or hospital within the previous year or postoperative factors)?

Even though the authors cited 2 references in support of their argument linking functional status with MRSA colonization, they failed to mention that the population of both of these studies was limited to nursing home patients whose risk of exposure to MRSA is expected to be higher than that of the general population. Whether debility is an independent predictor of MRSA colonization outside of nursing homes deserves further study.

Data with regard to postoperative variables were largely ignored. For example, no data were presented with regard to the number of days (both inpatient-days and days after discharge) between surgery and the diagnosis of SSI for patients with SSI due to MRSA, compared with that for patients with SSI not due to MRSA. Similarly, Anderson et al. did not discuss the setting (outpatient, in a hospital, or in a long-term care facility) where the diagnosis of SSI was made, how frequently wound drains were used, the duration of antibiotic therapy after surgery, or the postdischarge destination of patients (eg, long-term care facility vs others). Consideration of these and other postoperative factors is important before invoking only a preoperative mechanism of association between debility and MRSA SSI. Although intraoperative wound contamination is considered to be a common cause of SSI, inoculation of the surgical site either directly or through hematogenous routes during the postoperative period may also occur.

The sole study cited by the authors to support their view that MRSA colonization in surgical patients increases SSI risk due to the same organism involved primarily patients with non-surgical site infections (eg, pneumonia, urinary tract infection, bacteremia, and vascular access-related infection). Of interest, 2 other relevant studies have failed to find an association between preoperative MRSA colonization and SSI due to the same organism. Thus, preoperative colonization with MRSA may play a lesser role in causing SSI than in causing infections that do not involve the surgical site.

Even though the study by Anderson et al. was not a randomized controlled study, it would have been useful for the authors to present data on the potential impact of vancomycin prophylaxis on the risk of MRSA SSI, as some of their patients almost certainly received vancomycin prophylaxis. Was this issue studied but never reported, or was it not studied at all?

Anderson et al. suggest screening of patients “with decreased functional status” for MRSA colonization as well as decolonization of carriers or a change in their perioperative antibiotic regimen to include an agent with activity against MRSA. We believe such recommendations are premature for the following reasons: (1) it has not been clearly demonstrated that preoperative MRSA carriage is a predictor of MRSA SSI, (2) lack of demonstration of several preoperative factors (eg, American Society of Anesthesiologists risk category, diabetes, dialysis, or older age) that may be associated with functional impairment as independent predictors of MRSA SSI when studied simultaneously with selected postoperative factors, (3) the benefit of preoperative vancomycin prophylaxis with respect to MRSA SSI has not been clearly demonstrated, and (4) the benefit of mupirocin nasal decolonization therapy in preventing S. aureus SSI has not been clearly demonstrated, despite several randomized controlled studies (in fact, the benefit of mupirocin nasal decolonization therapy in preventing S. aureus SSI has not been demonstrated even in nonrandomized studies, in the case of general surgery procedures).

In conclusion, the weight of the evidence to date suggests that when investigating the epidemiology of MRSA SSI, the potential impact of postoperative variables should not be ignored. Indeed, if corroborated as independent predictors of MRSA SSI, postoperative factors such as how frequently wound drains are used or the duration of antibiotic prophylaxis may be more amenable to intervention than preoperative variables such as Medicaid insurance coverage or debility.

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Pseudoinfection Due to Mislabling

To the Editor—Pseudoinfections and pseudooutbreaks are mainly caused by transfer of organisms between patient specimens (cross-contamination) and by contamination of patient specimens with environmental organisms. Other causes are clinical misdiagnosis and surveillance artifacts. The following example shows that further causes must be considered.

Salmonella enterica serovar Hadar was isolated on the same day from a stool specimen of patient A and from an intestinal biopsy specimen of patient B. The patients were hospitalized in the same hospital but in different wards. An investigation was prompted, revealing that the patients had gone to the endoscopy suite concurrently on the day of specimen collection. An ileocoloscopy had been performed on patient A, including collection of mucosal biopsy specimens, whereas patient B had undergone gastroscopy without biopsy. No specimens at all had been collected from patient B that day to be sent to the microbiology laboratory. A stool specimen had been collected for microbiological examination from patient A, before patient A went to the endoscopy suite that day. Patient B did not show clinical signs of salmonellosis, and a pseudoinfection was suspected. However, the pseudoinfection obviously could not have been caused by specimen contamination or cross-contamination. Observations of the work flow within the endoscopy suite led us to conclude that specimen mislabeling was the most likely cause of the pseudoinfection. The charts of the 2 patients had been deposited on the same desk. When the biopsy specimen was taken to the desk to be marked with a patient label, a label of patient B was erroneously used for the biopsy specimen of patient A.

As in other cases published, this case of a pseudoinfection was noticed because of the unusual pathogen involved. Coincidentally, no biopsy specimen had been obtained from patient B on the day of specimen collection. If this had not been the case, the pseudoinfection would not have been noticed at all, or cross-contamination would have been regarded as the most likely cause of pseudoinfection, leading to a costly analysis of endoscope processing as well as of each step in specimen collection and processing. Taking into account frequent errors in daily routine work, we hypothesize that pseudoinfection due to mislabeling of specimens is not an infrequent event.

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