> collect in this area, which would be relatively resistant to cleansing or disinfection. The internal mechanism of the valve contains moving parts which introduces irregularities in the fluid flow and may promote areas of stagnation and create potential reservoirs for microbial growth. Also, the plastic housing is opaque, which prohibits visual inspection of the connector valve. Therefore, it is possible that blood or infusion products could collect within the valve and, because of its opaque nature, go unnoticed by heal thcare workers.[5(p1412)]

In addition, the evidence used to support the recommendation is limited and lacked the proper control for variables that possibly influenced the results. The following limitations apply to all 4 studies:

1. The data were based on observation and were collected without randomization or proper control for variables.
2. The data were "retrospective, observational, and uncontrolled"[5(p1412)] and were collected during different periods of time, with likely differences in staff, patient populations, and level of care.
3. Each of the 4 studies reports on observational data from only a single healthcare facility.[2-5]
4. No data were presented that were related to the homogeneity of the patient population, assuming that the patient populations were the same, because they could have been, and very well may have been, dramatically different.
5. No specific data were presented that were related to the homogeneity of the specific catheter types used, the length of catheterization, or the insertion and maintenance techniques used.
6. The MVs studied were not utilized according to the manufacturer's instructions for use.

Finally, the recommendation fails to cite 2 studies[6,7] that demonstrate positive outcomes associated with the use of a positive-pressure connector. In the first study, by Garcia et al.,[6] the use of a positive-pressure connector was compared with the use of a split-septum device (ie, the split-septum device associated with lower CRBSI rates in Field et al.,[3] Salgado et al.,[4] and Rupp et al.[5]) for its impact on BSI rates in a 427-bed tertiary care hospital. Garcia et al.[6] found that, at 95% confidence intervals, the *P* values did not indicate a statistically significant difference in the BSI rates between the split-septum device group and the Luer activated device group of patients with peripheral and central lines. However, the Luer activated device group was associated with a lower occurrence of sharps injuries related to intravenous port access. The second study, by Costello et al.,[7] reported on a systematic intervention to reduce CLABSI rates in a pediatric cardiac intensive care unit from 7.8 to 2.3 cases of CLABSI per 1,000 catheter-days. Costello et al.[7] reported:

> For access to the CVLs [central venous lines], we converted our needleless connector system from a Luer lock-activated valve system...to a device that has a flat access surface and contains a positive-displacement valve....The positive-displacement valve has a fully cleanable surface and eliminates retrograde flow into the catheter when an infusion device is disconnected from an infusion port.[7(p918)]

A compendium is a summary or abstract containing the essential information in brief form. This portion of this compendium left out essential information by omitting negative-pressure MVs and the specific, well-documented deficits of MVs known to increase the risk of BSI. Because of the failure to include this relevant information and because of the lack of scientific rigor in the studies cited, we are asking that this recommendation be removed from the compendium. A critical assessment of all of the available literature on the efficacy of needleless access devices are needed; until then, recommendations related to the use of these devices should be limited to suggesting a thorough assessment of risks, benefits, and education regarding proper use of all devices in this category.

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Reply to Edgar

The journal recently printed our supplement article: "Strategies to Prevent Central Line–Associated Bloodstream Infec-

tions in Acute Care Hospitals,"[1] and we appreciate the attention of Kerry J. Edgar to this article.[2] It appears that the greatest concern expressed in the letter reflects the fact that we restricted our comments in section 4, subsection III, point 3 to positive-pressure needleless connectors with mechanical valves rather than addressing needleless connectors with mechanical valves in general. The letter reviews 4 studies that note an increased incidence of catheter-related infection with use of mechanical valves. These are the studies we referenced in the compendium.[1] As noted in the letter, of these 4 recently published studies in the peer-reviewed literature about the association of mechanical valves with an increased incidence of catheter-related infections, 3 involved positive-pressure devices. Thus, on the basis of the literature review performed while drafting the compendium, the recommendation as written is accurate in that it represents a summary of the evidence available at that time. The letter refers to the abstract by Garcia and Jendresky[3] that did not find a difference in the rate of central line–associated bloodstream infection with the use of positive-pressure connectors, compared with the use of split-septum connectors. However, we did not include another abstract by Karchmer et al.[4] that showed a significantly higher rate of central line–associated bloodstream infections with the use of mechanical valve connectors, some of which were positive-pressure connectors, because the methodology of the compendium included citations of peer-reviewed publications only.

The letter notes that "The mechanical valves studied were not utilized according to the manufacturer's instructions for use," suggesting that a breach in aseptic technique when handling the device, rather than the device itself, is associated with an increased risk of infection. This is a crucial point in the use of any medical device, and we addressed this issue by including the importance of education in section 4, subsection III, point 3: "Do not routinely use positive-pressure needleless connectors with mechanical valves before a thorough assessment of risks, benefits, and education regarding proper use." Nevertheless, it is hoped that manufacturing of such devices in the future will involve fail-safe engineering advances aimed at further mitigation of the risk of infection in the complex hospital environment in which they are used. Both SHEA and the IDSA remain committed to keeping the compendium in alignment with current published evidence, and, together, the societies are undertaking a formal review and updating process.

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Strategies to Prevent Catheter-Associated Urinary Tract Infection

To the Editor—We commend the Society of Healthcare Epidemiologists of America (SHEA) and the Infectious Disease Society of America (IDSA) for developing the recently published Compendium of Strategies to Prevent Healthcare-Associated Infections,[1] which offers practical approaches for developing comprehensive infection prevention programs. Unfortunately, the methodology used for literature search or data extraction is not mentioned. It appears that some relevant articles were not reviewed, and that data from some reviewed articles were misinterpreted, particularly for the article by Lo et al.[2] on strategies to prevent catheter-associated urinary tract infection.

Lo et al.[2] offer 3 references[3-5] for their statement that "Reviews and meta-analyses of silver-coated urinary catheters... *consistently conclude* [italics added] that evidence does not support a recommendation for the uniform use of such devices."[2(pS43)] In the first reference, however, Brosnahan et al.[3] conclude that silver alloy catheters "significantly" reduce the rates of both symptomatic and asymptomatic catheter-associated urinary tract infection,[3(p1)] and that "results suggest that the use of silver alloy indwelling catheters for catheterizing hospitalized adults reduces the risk of catheter-acquired urinary tract infection."[3(p2)] Johnson et al.[4] conclude that "according to fair-quality evidence, antimicrobial urinary cath-