barriers and facilitators to the implementation of electronic decision support (EDS) in antimicrobial stewardship. Objective: To examine prescriber and antimicrobial steward perceptions of EDS using an ISTA approach in the preimplementation phase of an antimicrobial stewardship intervention. Methods: We conducted semistructured interviews with prescribers and stewards from 4 hospitals in 2 health systems in the context of a multi-component intervention to improve the use of fluoroquinolones and extended-spectrum cephalosporins. Sites planned to implement various EDS elements including order sets, antimicrobial steward time-outs, and audit with feedback stewardship notes in the medical record. Interviews elicited respondent perceptions about the planned intervention. Two analysts systematically coded transcriptions using an ISTA framework in NVivo12 software. Results: Interviews with 64 respondents were conducted: 38 physicians, 7 nurses, 6 advanced practice providers, and 13 pharmacists. We identified 4 key sociotechnical interaction types likely to influence stewardship EDS implementation. First, EDS changes the communication patterns and practices of antimicrobial stewards in a way that improves efficiency but decreases vital social interaction with prescribers to facilitate behavior change. Second, there is a gap between what stewards envision for EDS and that which is possible to build in a timely manner by hospital information technology specialists. As a result, there is often a months- to years-long delay from proposal to implementation, which negatively affects intervention acceptance. Third, prescribers expressed great enthusiasm for stewardship EDS that would simplify their workload, allow them to complete important work tasks, and save time. They strongly objected to stewardship EDS that was disruptive without a compelling purpose or did not integrate smoothly with pre-existing technology infrastructure. Fourth, physician prescribers attributed social and emotional meaning to stewardship EDS, suggesting that these tools can undermine professional authority, autonomy, and confidence. Conclusions: Implementing stewardship EDS in a way that improves the use of antimicrobials while minimizing unintended negative consequences requires attention to the interplay between new EDS and an organization’s existing workflow, culture, social interactions and technologies. Implementing EDS in stewardship will require attention to these domains to realize the full potential of these tools and to avoid negative unintended consequences.

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Background: This study explores the perspectives of healthcare workers on the healthcare-associated infection (HAI) and infection control measures in a tertiary-care unit, through a self-administered questionnaire, semi-structured interviews, and reflexive sessions based on video-recorded sterile procedures performed in respondents’ work contexts. Video reflexive ethnography (VRE) is a method that provides feedback to medical practitioners through reflection analysis, whereby practitioners identify problems and find solutions. Methods: Quantitative questionnaire data were used to assess the knowledge of HAI among 50 healthcare workers and their attitude toward practice of infection control measures. Semistructured interviews based on an interview guide were used to collect qualitative data from 25 doctors and nurses. The interviews were audio recorded and transcribed verbatim immediately. Also, routine sterile procedures in the wards and intensive care unit were video recorded, and the footage was discussed by the infection control team and the personnel involved in the videos. This discussion was video recorded and transcribed. Both interview data and reflexive discussion of video-graph were analyzed using a thematic analysis. The quantitative data were analyzed using the Kruskal–Wallis test.

Results: The quantitative data revealed no difference in the knowledge, attitude, and practice scores used to evaluate the infection control practices among the healthcare workers. We identified 4 themes from the qualitative data: (1) knowledge of HAI and infection control, (2) infection control measures in practice, (3) the shortfall in infection control measures and HAI, and (4) required implementation. Although the qualitative data indicated that the participants had excellent compliance with hand hygiene and personal protective equipment (PPE) use, the VRE and reflexive sessions indicated otherwise. Some astounding lapses were revealed, like failure to engage in boundary maintenance between sterile and nonsterile areas, failure to observe proper hand hygiene measures, and use of traditional hijab face covers (used in an unsterile environment as well) instead of surgical masks. These findings demonstrate the advantage of combining VRE with qualitative and quantitative methodology to deduce the lapses in the practice of infection control among healthcare workers.

Conclusions: Introduction of training programs focused on HAI and infection control measures in the educational system will help better inform medical and nursing students. Live video demonstrations of appropriate infection control practices during sterile procedures would be highly beneficial to educate the healthcare workers on correct infection control practices. Lapses in the use of PPE can be a possible reason for the outbreak of MERS-CoV, an endemic disease, in this part of Saudi Arabia.

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Analysis of National Healthcare Safety Network *Clostridioides difficile* Infection Standardized Infection Ratio by Test Type

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Background: The NHSN has used positive laboratory tests for surveillance of *Clostridioides difficile* infection (CDI) LabID events since 2009. Typically, CDIs are detected using enzyme immunoassays (EIAs), nucleic acid amplification tests (NAATs), or various test combinations. The NHSN uses a risk-adjusted, standardized
infection ratio (SIR) to assess healthcare facility-onset (HO) CDI. Despite including test type in the risk adjustment, some hospital personnel and other stakeholders are concerned that NAAT use is associated with higher SIRs than are EIAs. To investigate this issue, we analyzed NHSN data from acute-care hospitals for July 1, 2017 through June 30, 2018. **Methods:** Calendar quarters for which CDI test type was reported as NAAT (includes NAAT, glutamate dehydrogenase (GDH)+NAAT and GDH+EIA followed by NAAT if discrepant) or EIA (includes EIA and GDH+EIA) were selected. HO CDI SIRs were calculated for facility-wide inpatient locations. We conducted the following analyses: (1) Among hospitals that did not switch their test type, we compared

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**Figure 1.** Histograms of hospital HO incidence rates and SIRs by CDI test types for hospitals that did not switch CDI test types, 2017Q3-2018Q2

**Figure 2.** Scatter plots of pooled semiannual SIRs for NAAT and EIA for hospitals with CDI test type switch pattern EIA-to-NAAT and NAAT-to-EIA, 2017Q3-2018Q2
the distribution of HO incident rates and SIRs by those reporting NAAT vs EIA. (2) Among hospitals that switched their test type, we selected quarters with a stable switch pattern of 2 consecutive quarters of each of EIA and NAAT (categorized as pattern EIA-to-NAAT or NAAT-to-EIA). Pooled semiannual SIRs for EIA and NAAT were calculated, and a paired t test was used to evaluate the difference of SIRs by switch pattern. Results: Most hospitals did not switch test types (3,242, 89%), and 2,872 (89%) reported sufficient data to calculate SIRs, with 2,444 (85%) using NAAT. The crude pooled HO CDI incidence rates for hospitals using EIA clustered at the lower end of the histogram versus rates for NAAT (Fig. 1). The SIR distributions of both NAAT and EIA overlapped substantially and covered a similar range of SIR values (Fig. 1). Among hospitals with a switch pattern, hospitals were equally likely to have an increase or decrease in their SIR (Fig. 2). The mean SIR difference for the 42 hospitals switching from EIA to NAAT was 0.048 (95% CI, −0.189 to 0.284; P = .688). The mean SIR difference for the 26 hospitals switching from NAAT to EIA was 0.162 (95% CI, −0.048 to 0.371; P = .124). Conclusions: The pattern of SIR distributions of both NAAT and EIA substantiate the soundness of NHSN risk adjustment for CDI test types. Switching test type did not produce a consistent directional pattern in SIR that was statistically significant.

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Antibiotic Susceptibility of Common Organisms Isolated from Urine Cultures of Nursing Home Residents


Background: With the emergence of antibiotic resistant threats and the need for appropriate antibiotic use, laboratory microbiology information is important to guide clinical decision making in nursing homes, where access to such data can be limited.