

and leadership, official metric definitions were created. Weekly defect rates were chosen as a measurement and translated into the number of ready-for-use surgical trays at the time of case setup for every 100 surgical cases. Data from November 2018 through January 20, 2019, demonstrated the mean ready-for-use surgical trays at the time of case setup: for every 100 surgical cases, 96 the surgical trays was ready for use. Further analysis of the data over time demonstrated that variability was out of control. Defects were stratified into 12 categories. Moreover, 6 defects were creating 80% of the issues in trays not being ready: 'hole in wrapper,' 'biohazardous debris,' 'nonbiohazardous debris,' 'missing instrument,' 'incorrect/mislabeled instrument trays,' and 'missing indicators.' Results for unsterile trays at 7:00 A.M. showed that, on average, the central sterilizing department had 100 or more trays at the start of each 7:00 A.M. shift. **Conclusions:** Without a formal method for data collection, defined metrics, and ongoing analysis, evaluation of performance is based on anecdotal conclusions resulting in missed opportunities for improvement and, subsequently, opportunities for improved patient safety. Regularly published visible dashboards provide a true picture of performance, allowing staff to identify unwanted variation and to put interventions in place so that future variation is better controlled and or prevented. Additionally, having solid metrics, even when no industry ones exist, aid in measuring the effectiveness of improvement efforts, such as the DMAIC project, as they move into subsequent phases.

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Poster Presentation

Measuring Implementation of Antibiotic Stewardship in Critical Access Hospitals Using the NHSN Annual Facility Survey

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Background: Critical access hospitals (CAHs) serving rural communities have numerous limitations regarding resources, infrastructure, and staffing to support antibiotic stewardship programs (ASPs) and related quality improvement activities. The Federal Office of Rural Health Policy (FORHP) established the Medicare Beneficiary Quality Improvement Project (MBQIP) to provide CAHs with specialized technical assistance in quality improvement data collection and reporting to drive improvements in the quality of care and to reduce barriers to establishing ASPs. In 2016, FORHP developed an antibiotic stewardship process measure in partnership with the CDC to assess progress on implementing ASPs and to optimize hospital quality improvement practices related to antibiotic use. This is the first measure to be successfully implemented and reported at a national level to improve the judicious use of antibiotics in hospitals. **Methods:** A process measure was developed to assess adherence to the 7 core elements of a successful hospital ASP (ie, leadership, accountability, drug expertise, action, tracking, reporting, and education), as defined by CDC guidelines. Implementation was accomplished through CAH participation in the NHSN Annual Facility Survey (AFS). Responses were analyzed to assess fidelity to each core element, to

identify trends, and to benchmark measure reporting among 1,350 CAHs across the United States. Responses were mapped to 7 core element categories, and the total number of positive responses were matched to each core element for a specific survey year to track progress. Overall, the measure assessed progress in meeting all 7 core elements, as well as program robustness in the number of actions implemented and the amount of data tracked and reported at each hospital. NHSN reports were generated to tailor technical assistance activities and to assist hospitals with measure uptake and reporting. **Results:** CAH participation in the NHSN significantly increased from 2014 to 2018 (83% response rate). From 2014 through 2018, reporting of the new antibiotic stewardship measure consistently increased. CAHs that met all core elements increased from 18% (2014) to 73% (2018). Performance-based benchmarks enabled hospital comparisons and the establishment of reporting goals. **Conclusions:** This study highlights viable approaches to measuring antibiotic stewardship at a national level to drive improvements in care at hospitals of any size. The implementation of the antibiotic stewardship measure across CAHs demonstrates the impact of federal programs like MBQIP for hospitals that are building capacity for quality improvement. For the first time, CAHs were able to measure and compare their implementation of ASPs to other hospitals at the state and national level.

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Risk Estimate of Duodenoscope-Associated Infections in The Netherlands

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Background: The likelihood of endoscopy-associated infections (EAls) is often referenced from a paper published in 1993 by Kimmery et al¹ in which a risk of 1 exogenous infection for every 1.8 million endoscopies (0.00006%) is proclaimed. Even though Ofstead et al² pointed out in 2013 that this was at least an underestimation by 6-fold because of erroneous assumptions and mathematical errors, the original calculation is still often referred to. In the past decade, multiple outbreaks of multidrug-resistant microorganisms (MDROs) related to contaminated duodenoscopes have been reported worldwide. This leads to the assumption that the former risk calculation is indeed incorrect. **Objective:** We calculated the duodenoscope-associated infection (DAI) risk for the Dutch ERCP practice. **Methods:** We searched and consolidated all Dutch patients reported in the literature to have suffered from a clinical infection linked to a contaminated duodenoscope between 2008 and 2018. From a national database, the number of ERCPs performed per year in The Netherlands were retrieved. Actual numbers were available from 2012 to 2018. Numbers from 2008 to 2011 were estimated and assumed to be equal to 2012. **Results:** In 2008–2018, 3 MDRO outbreaks in Dutch hospitals were reported in the literature, with 21 patients suffering from a clinical infection based on a microorganism proven to be transmitted by a duodenoscope. In that period, ~203,500 ERCP procedures

were performed. Hence, for every 9,690 procedures, 1 patient developed a clinically relevant infection (DAI risk, 0.010%).

Conclusions: The risk of developing a DAI is at least 30–180 times higher than the risks that were previously reported for all types of endoscopy-associated infections. Importantly, the current calculated risk of 0.010% constitutes a bare minimum risk of DAI because endoscope-related infections are underreported. Apart from DAI risk, a patient is also at risk of becoming colonized with a microorganism through contaminated endoscopes but without developing symptoms of clinical infection. These data call for concerted action of medical practitioners, industry, and government agencies to minimize and ultimately eliminate the risk of exogenous endoscope-associated infections and contamination. As a first step, the FDA recently recommended that healthcare facilities and manufacturers begin transitioning to duodenoscopes with disposable components.³

1. Kimmey MB, Burnett DA, Carr-Locke DL, et al. Transmission of infection by gastrointestinal endoscopy. *Gastrointest Endosc* 1993;36:885–888.

2. Ofstead CL, Dirlam Langlay AM, Mueller NJ, Tosh PK, Wetzler HP. Re-evaluating endoscopy-associated infection risk estimates and their implications *Am J Infect Control* 2013;41:734–736.

3. The FDA is recommending transition to duodenoscopes with innovative designs to enhance safety: FDA Safety Communication. US Food and Drug Administration website. www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication. Updated July 24, 2020. Accessed August 20, 2020.

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“The Six Moments:” A Novel Educational Tool to Promote Infection Prevention Practices in Patients Injecting Drugs

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Background: The opioid epidemic has led to a dramatic increase in the rate of invasive bacterial infections, including a 4-fold increase in sepsis and a 12-fold increase in endocarditis. The increase has been demonstrated in both veteran and nonveteran populations (Fig. 1). Thus, an urgent need exists to develop novel tools to educate patients and providers regarding (1) at-risk moments among intravenous drug users and (2) methods for preventing transmission of bacterial and viral infections associated with injection drug use. **Methods:** We conducted a survey among medical trainees and staff and collected information about knowledge and attitudes about harm-reduction services. To address gaps in knowledge, we developed an educational tool for promoting better infection prevention practices among patients who inject drugs by adapting the WHO Five Moments of Hand Hygiene. **Results:** In total, 43 medical trainees and staff responded to the survey. All respondents regarded infections as a serious risk among patients who inject drugs, although there was variation in perception about which types of pathogens were the most likely to be acquired through this pathway (ie, bacterial vs viral). Among survey respondents, 15 of 39 (38%) reported that they have counseled patients who inject drugs about infection prevention, whereas 24 (58%) reported that they had never provided counseling. The reason for the lack of counseling was primarily a lack of knowledge and a lack of resources (10 of 24, 42%). One-quarter (6 of 24, 25%) reported that they did perceive infection prevention counseling to be part of their role. To solve this knowledge and resource gap, we developed an educational tool designed to promote understanding of the risk of bacterial, viral, and fungal infections and how to prevent them (Fig. 2, A and B). The “Six Moments” model highlights important high-risk moments and activities, such as skin cleaning, use of clean needles, and avoiding oral contamination of needles, as well as the corresponding pathogens that can be transmitted at each stage. Infection prevention strategies are then applied to demonstrate how these infections can be averted. The tool focuses on simple infection prevention interventions that can be taught to patients and providers not trained in infection control to limit transmission of infections associated with IV drug use and addresses the

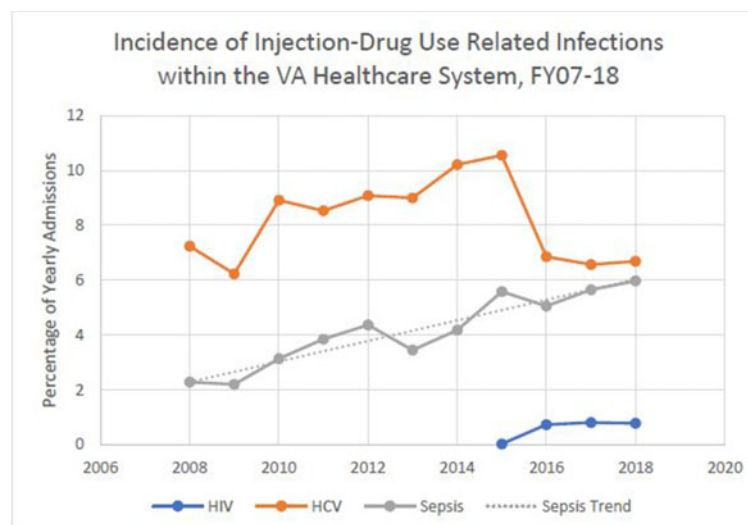


Fig. 1.