that Hispanic persons had higher risk and that transplant patients had lower risk of testing positive suggests differences in the extent to which each subgroup may have been able to shelter from COVID-19 in the community during this earlier phase of the pandemic. Keeping immunocompromised patients safe from COVID-19 while they undergo longitudinal care involves layered precautions in the hospital and in the community that must evolve in response to evidence and epidemiological trends.

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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: Diagnostic/Microbiology

Temporal trends in urine-culture rates in the US acute-care hospitals, 2017–2020

Sophia Kazakova; Natalie McCarthy; James Baggs; Kelly Hatfield; Babatunde Wolford, Babatunde Olubajo; John Jernigan and Sujan Reddy

Background: Previously, we reported decreasing postadmission urine-culture rates in hospitalized patients between 2012 and 2017, indicating a possible decrease in hospital-onset urinary tract infections or changes in diagnostic practices in acute-care hospitals (ACHs). In this study, we re-evaluated the trends using more recent data from 2017–2020 to assess whether new trends in hospital urine-culturing practices had emerged. **Method:** We conducted a longitudinal analysis of monthly urine-culture rates using microbiology data from 355 ACHs participating in the Premier Healthcare Database in 2017–2020. All cultures from the urinary tract collected on or before day 3 were defined as admission urine cultures and those collected on day 4 or later were defined as postadmission urine cultures. We included discharges from months where a hospital reported at least 1 urine culture with microbiology and antimicrobial susceptibility test results. Annual estimates of rates of admission culture and postadmission urine-culture rates were assessed using general estimating equation models with a negative binomial distribution accounting for hospital-level clustering and adjusting for hospital bed size, teaching status, urban–rural designation, discharge month, and census division. Estimated rate for each year (2018, 2019, and 2020) was compared to previous year's estimated rate using rate ratios (RRs) and 95% confidence intervals (CIs) generated through the multivariable GEE models. **Results:** From 2017 to 2020, we included 8.7 million discharges and 1,943,540 urine cultures, of which 299,013 (15.4%) were postadmission urine cultures. In 2017–2020, unadjusted admission culture rates were 20.0, 19.6, 17.9, and 18.2 per 100 discharges respectively; similarly, unadjusted postadmission urine-culture rates were 8.6, 7.8, 7.0, and 7.5 per 1,000 patient days. In the multivariable analysis, adjusting for hospital characteristics, no significant changes in admission urine-culture rates were detected during 2017–2019; however, in 2020, admission urine-culture rates increased 6% compared to 2019 (RR, 1.06; 95% CI, 1.02–1.09) (Fig. 1). Postadmission urine-culture rates decreased 4% in 2018 compared to 2017 (RR, 0.96; 95% CI, 0.91–0.99) and 8% in 2019 compared to 2018 (RR, 0.92; 95% CI, 0.87–0.96). In 2020, postadmission urine-culture rates increased 10% compared to 2019 (RR, 1.10; 95% CI, 1.06–1.14) (Fig. 2). Factors significantly associated with postadmission urine-culture rates included discharge month and hospital bed size. For admission urine cultures, discharge month was the only significant factor. **Conclusions:** Between 2017–2019, postadmission urine-culture rates continued a decreasing trend, while admission culture rates remained unchanged. However, in 2020 both admission and postadmission urine culture rates increased significantly in comparison to 2019.

Figure 1. Estimated Rate Ratios with 95% Confidence Intervals for Admission Urine Culture Rates

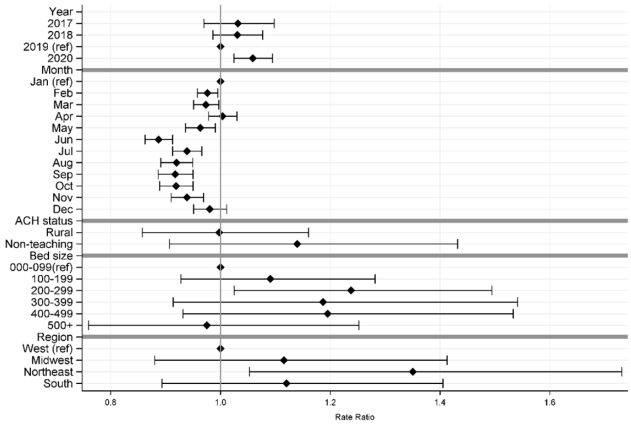
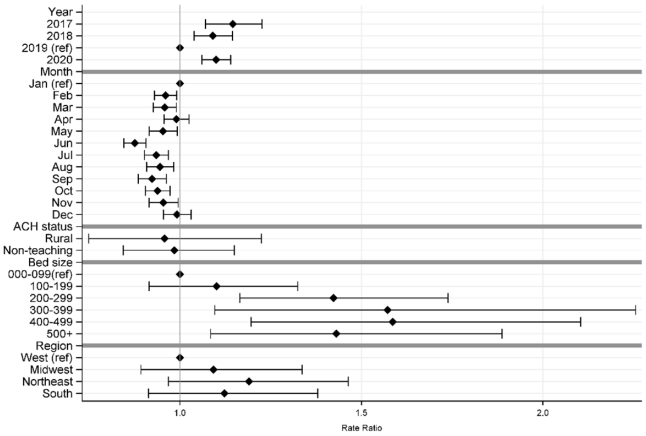


Figure 2. Estimated Rate Ratios with 95% Confidence Intervals for Post-admission Urine Culture Rates



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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: Environmental Cleaning

Is your ice machine really clean? Uncovering the presence of opportunistic pathogens in hospital ice machines

Margot Cazals; Emilie Bedard; Michèle Prévost and Patrice Savard

Background: Ice is used in healthcare facilities for medical purposes and consumption by the medical staff and the patients, but some studies have revealed significant microbial contamination of ice machines leading to nosocomial outbreaks or pseudooutbreaks and infections by opportunistic pathogens, including the fungi *Candida*, the bacteria *Pseudomonas aeruginosa*, and nontuberculous mycobacteria (NTM). Although ice machines are complex devices that are prone to contamination, very little is known about their potential as vectors of infections for populations at risk in hospitals. Only few studies document efficient maintenance regimes, specifically cleaning procedures and microbial indicators that would ensure their safe use. **Method:** In this prospective study, combined samples of water and ice, and drain biofilm samples were collected from 36 ice and cold-water distribution machines of a recently built hospital, for a total of 72 samples. Physicochemical parameters (total and free chlorine, temperature, etc) were measured in water, and several opportunistic pathogens (ie, *Candida* spp, *P. aeruginosa*, NTM) and biological indicators (ie, heterotrophic plate counts (HPCs), total and viable bacteria and enterococci) were monitored in water and ice and biofilm. Culture methods were used for HPCs, *Candida* spp, *P. aeruginosa*, and enterococci, and total and viable bacterial populations were estimated using flow cytometry. NTM were monitored by quantitative polymerase chain reaction (qPCR).

Results: We observed clear differences between the machines in terms of biological contamination, with frequent detection of NTM and presumed *Candida*. Thus, NTM were detected in the 36 samples of ice and water with concentrations from 0.5 to 2×104 gene copies/mL. Among the several species of fungi detected in the ice machines, some were identified as *C. parapsilosis* and *C. guilliermondii*, which are organisms of concern in healthcare facilities. Factors affecting the level of contamination in ice machines include the location of the machines and water quality (ie, temperature and chlorine residual concentration). Depending on the location in the building and the model of ice machine sampled, the biological indicators measurements indicated more or less significant contamination. No link was established between environmental strains recovered from the machines and clinical infections. **Conclusions:** Monitoring results showed that ice machines, while subject to few regulations and controls, can be reservoirs of unsuspected opportunistic pathogens that could lead to nosocomial infections of vulnerable patients. Cleaning procedures should be based on the disinfection of resistant opportunistic pathogens, such as *Candida* and NTM, and the use of general indicators, such as HPCs, should be questioned.

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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: Implementation Science

The Strike Team as an implementation strategy for surgical infection prevention

Buddhi Hatharaliyadda; Michelle Schmitz; Fauzia Osman; Kenneth Van Dyke; Nasia Safdar; Aurora Pop-Vicas; Charles Heise and Anne Mork

Background: Surgical site infections (SSIs) incur up to $10 billion annually due to their excessive morbidity. SSI prevention bundles have had variable success in colorectal surgery. For example, at the University of Wisconsin Hospital, a 505-bed regional referral center, SSI rates have remained high despite the introduction of a 14-element SSI prevention bundle in 2016. To aid in the implementation of this complex bundle, the hospital started Strike Teams in 2019. We have described the impact of Strike Teams on colorectal SSI rates in our tertiary-care hospital. **Methods:** A Strike Team with key stakeholders from colorectal surgery (ie, surgeon, OR director, nurses, surgical technicians), anesthesia, pharmacy, infection prevention, and infectious disease was formed, supported by the hospital's executive leadership. The Strike Team met monthly throughout 2019 to review each SSI case, discussed barriers to adherence for the SSI prevention bundle elements with implementation difficulties (Table 1), and proposed actionable feedback to increase adherence. The latter was disseminated to frontline clinicians by the teams' surgical leaders during everyday clinical practice. The Strike Team was paused in 2020 due to resource reallocation in response to the COVID-19 pandemic. Monthly and quarterly SSI surveillance was conducted according to CDC guidance. **Results:** Colorectal SSI rates before, after, and during Strike Team activity are shown in Fig. 1. Adherence rates to the bundle elements targeted by the Strike Team are shown in Fig. 2. **Conclusions:** Adherence to the preferred antibiotic prophylaxis increased, although adherence to other bundle elements of focus did not change significantly. SSI rates decreased below our expectation while the Strike Team was active in our hospital, although SSI reduction was not sustained. Further research should study the effectiveness of Strike Teams as a long-term implementation strategy for SSI prevention in colorectal surgery.

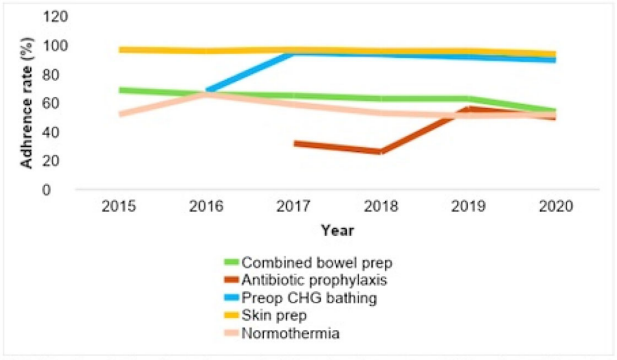
Table 1. SSI Prevention Bundle at University of Wisconsin Hospital

Bundle Element	Strike Team Target for Adherence
PRE-OP	
Smoking cessation	No
Glucose control for diabetics	No
Chlorhexidine bathing	**Yes**
Mechanical bowel prep and oral antibiotics	**Yes**
INTRA-OP	
Appropriate hair removal	No
Standardized skin prep with ChloraPrep	**Yes**
Preferred antibiotic prophylaxis*	**Yes**
Normothermia	**Yes**
Normoglycemia	No
Wound protectors	No
Glove change prior to skin closure	No
Separate instrument tray for closure	No
Antimicrobial sutures	No
POST-OP	
Standardized dressing change at 48 h	No

*Cefazolin + Metronidazole, or Levofloxacin + Metronidazole in penicillin-allergic patients; within 60 minutes of incision; weight-based dosing and redosing for cefazolin.

Figure 1. Quarterly colorectal SSI rates over time (values shown in green correspond to quarters when Strike Team was active).

Figure 2. Adherence rates* to selected SSI prevention bundle elements over time



*Calculated as % of patients who received bundle elements out of all patients with colorectal surgery that year.

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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: MDR GNR

Predicting the regional impact of interventions to prevent and contain multidrug-resistant organisms

Samuel Cincotta; Elizabeth Soda; Rachel Slayton; David Ham; Maroya Walters and Prabasaj Paul

Background: Multidrug-resistant organisms (MDROs), such as carbapenem-resistant Enterobacterales (CRE), can spread rapidly in a region.