Table 2. Admission Testing for SARS-Cov-2 Infection in Hospitalized Patients at a Large Health System, by Patient Vaccination Status

		All Transmission Periods (n=19 weeks)*	Moderate Transmission Period (n=4 weeks)	Substantial Transmission Period (n=3 weeks)	High Transmission Period (n= 12 weeks)
Fully Vaccinated	Total # Tests Collected	2,387	958	587	842
	# Positives (%)	17 (0.7%)	5 (0.5%)	4 (0.7%)	8 (1.0%)
	NNT	140	192	147	105
	Total Test Costs	$119,350	$47,900	$29,350	$42,100
	Cost to Detect 1 Positive Patient	$7,000	$9,600	$7,350	$5,250
Not Fully Vaccinated	Total # Tests Collected	16,628	3,220	2,663	10,745
	# Positives (%)	315 (1.9%)	45 (1.4%)	39 (1.5%)	231 (2.1%)
	NNT	53	72	68	47
	Total Test Costs	$831,400	$161,000	$133,150	$537,250
	Cost to Detect 1 Positive Patient	$2,650	$3,600	$3,400	$2,350

*Data from study period following vaccine availability and subsequent time to develop immunity (February 1, 2021 through June 14, 2021); Fully vaccinated = receipt of 2 doses of mRNA COVID-19 vaccine or 1 dose of adenoviral vector vaccine; NNT: number needed to test to identify 1 positive patient

value based on the NNT, even during lower periods of transmission and in different patient populations. Limiting admission testing to non–fully vaccinated patients during periods of lower transmission may be a strategy to address cost and resource concerns around this practice. Further investigations into the impact of booster vaccination and newer SARS-CoV-2 variants on admission testing programs are also necessary. Although the impact of such testing on healthcare-associated COVID-19 among patients and healthcare workers could not be clearly determined, these data provide important information as facilities weigh the costs and benefits of such testing.

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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: COVID-19
Procalcitonin as marker for bacterial coinfection among adult COVID-19 patients in a tertiary-care hospital in the Philippines
Angelie Lorraine Pesebre; Cybele Lara Abad; Jan Jorge Francisco and Justin Allister Ong

Background: Antimicrobials are often given to patients with COVID-19 despite the absence of a bacterial coinfection. Procalcitonin (PCT), when elevated, often indicates the presence of a bacterial infection and is used to guide empiric antibiotic therapy. We sought to determine the utility of PCT and the optimal cutoff value of PCT among patients with COVID-19. **Methods:** We retrospectively reviewed all COVID-19 confirmed ca-ses hospitalized in our institution from March to December 2020. Of 729 cases, we included 403 (55.3%) who had baseline PCT and blood or respiratory tract specimens (eg, sputum, endotracheal aspirate) within 48 hours of admission. Participants were classified according to PCT levels and COVID-19 severity. A receiver operating characteristic (ROC) curve analysis was performed. The area under the curve (AUC) obtained was used to compute the possible optimal cutoff value using the Youden index. A χ^2 test was used to define association between groups according to the characteristics of variables. **Results:** Of a total cohort of 403, 245 (57%) were male, with an overall median age of 60 years (range, 22–94). Overall, 28 presented with mild COVID-19, 194 presented with moderate COVID-19, and 181 presented with severe or critical COVID-19. Moreover, 363 (90%) were given antibiotics. Of 28 with mild COVID-19, 22 (79%) received empiric antibiotics. The rate of bacterial coinfection was high at 28% (113 of 403). *Klebsiella pneumoniae* was the most commonly identified microorganism: 52 (19.5%) of 266 patients. Based on the ROC curve, the optimal cutoff for PCT was 4.72 ng/mL, with 97% specificity and only 6% sensitivity. Only 17 participants had

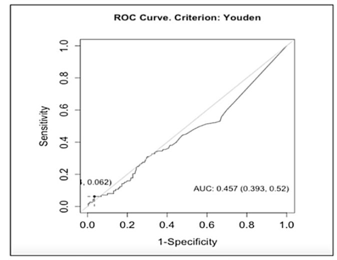

Figure 1. Receiver - Operator Characteristic(ROC) curve of procalcitonin and bacterial co-infection.
**ROC Curve that has an AUC of 0.5 suggests no discrimination. It means that the classifier is unable to distinguish between positive and negative disease (predicting the disease randomly).*
** An AUC between 0 and 0.5 means that the corresponding model has poor separability, and may actually perform worse than a random chance.*
** An AUC between 0.5 and 1 means there is a higher chance that the classifier is able to distinguish positive and negative disease.*
** An AUC=1 able to perfectly distinguish between all the positive and negative disease correctly*
** An AUC=0 means that the classifier predicts all positives as negative, and all negatives as positive.*

PCT > 4.72 ng/mL. Of these, 1 was mild, 5 were moderate COVID-19, 8 had severe COVID-19, and 3 had critical COVID-19; all received antibiotic therapy. **Conclusions:** In our cohort, the rate of bacterial coinfection was high. A PCT of >4.72 ng/mL increased the likelihood of a coinfection. However, PCT had poor sensitivity and may not detect the presence of bacterial coinfection, especially when used alone. Serial PCT monitoring, its use in conjunction with other markers, or as a prognostic tool, need to be explored further.

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Presentation Type:
Poster Presentation - Top Poster Award
Subject Category: COVID-19
Prioritizing SARS-CoV-2 testing in a highly immunosuppressed patient population
Jenna Shackelford; Michele Woolbert; Ninet Sinaii; Brooke Decker; Tara Palmore and Robin T Odom

Background: The NIH Clinical Center implemented multiple testing protocols to facilitate early detection and isolation of SARS-CoV-2 infected patients and rooming-in family members (RIFMs). Beginning in February 2020, all symptomatic patients were tested; in March 2020, all patients were tested prior to aerosol-generating procedures (AGPs); and in May 2020, all patients and RIFMs were tested on admission. We sought to determine the value of SARS-CoV-2 testing practices in our hospital. **Methods:** Respiratory specimens collected March 2020 through June 2021 tested for SARS-CoV-2 by RT-PCR were reviewed, and corresponding patient clinical and demographic variables were collected. Repeated tests from SARS-CoV-2–positive persons were excluded from the data. Results associated with multiple testing indications were assigned the highest priority reason based on a predetermined hierarchy. Data were analyzed using the χ^2 test and logistic regression. **Results:** Of 12,706 results from 5,704 patients, primary testing reasons were pre-AGP (n = 5,387, 43.0%), admission (n = 2,733; 21.8%), and symptomatic testing (n = 2,701; 21.6%). Overall, 159 tests (1.25%) were positive for SARS-CoV-2. Asymptomatic patients tested on admission were 1.8 times more likely to be positive than outpatients tested for any reason (P = .003) and 4.2 times more likely than asymptomatic inpatients tested prior to AGP (P = .003). Within asymptomatic pre-AGP testing, there was no difference between inpatients (0.46%) and outpatients (0.65%). Hispanic patients were 1.9 times more likely to be positive. (p **Conclusions:** At a hospital with a geographically broad referral base, admissions COVID-19 testing was far more fruitful than pre-AGP testing of inpatients. Pre-AGP used the most testing resources yet had the lowest yield. Admissions testing remains beneficial regardless of community transmission rates, while testing prior to AGP could be pared back when community rates of COVID-19 are low and redeployed when community rates rise. **Conclusions:** Our findings 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 reevaluated 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

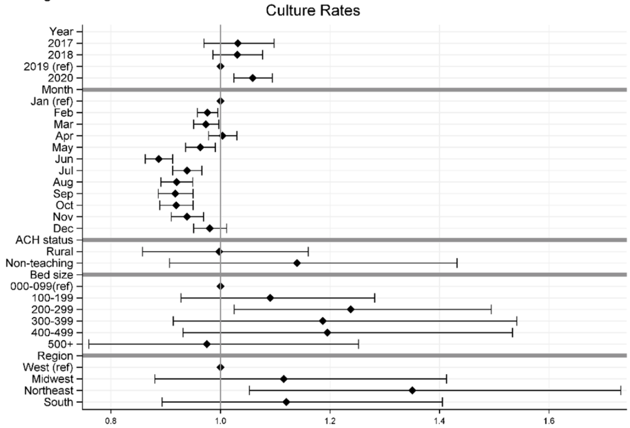
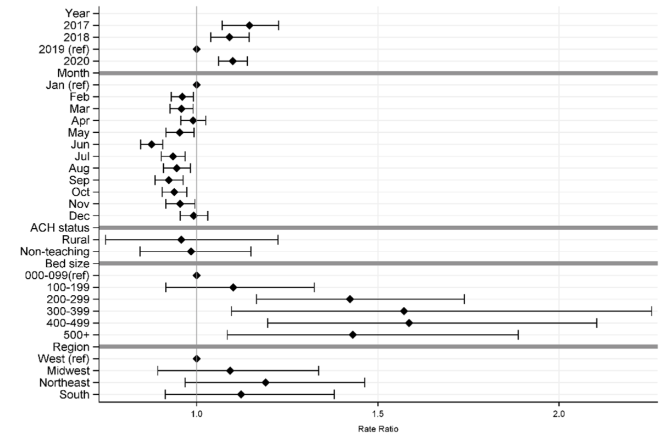


Figure 2. Estimated Rate Ratios with 95% Confidence Intervals for Post-admission Urine Culture Rates



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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).