

**Methods.** Retrospective review was done for all CLABSI in adults meeting National Healthcare Safety Network (NHSN) criteria in 2020 at an 889-bed teaching hospital. CLABSIs in encounters with PCR-confirmed COVID-19 (COVID CLABSI) were compared with CLABSIs in encounters without a COVID diagnosis (non-COVID CLABSI). As a secondary analysis, we also reviewed all CLABSI occurrence in 2019. Characteristics were compared using Mid-P Exact (Poisson) and Chi Squared (categorical) Tests. Subjective data collected by infection preventionists during real-time case reviews with clinical staff of each CLABSI was also reviewed.

**Results.** In 2020, the rate of COVID CLABSI (CLABSI/1000 catheter days) was 6.6 times greater than the rate of non-COVID CLABSI (5.47 vs. 0.83,  $p < 0.001$ ). In the COVID CLABSI group we observed higher rates of occurrence in the ICU setting (94% vs 28%,  $p < 0.001$ ), in house mortality (53% vs 26%  $P=0.0187$ ), presence of arterial lines (91% vs 20%,  $p < 0.001$ ) and increased number of catheter lumens (4 vs 3,  $p < 0.001$ ). No significant difference was observed in the distribution of pathogens. No significant differences were observed between 2019 CLABSI and 2020 non-COVID CLABSI. Real-time case reviews identified changes in nurse staffing, increased nurse: patient ratios, delays in routine central line dressing changes, and inconsistent use of alcohol-impregnated port protectors as possible contributing factors.

Table 1. 2020 COVID CLABSI vs 2020 non-COVID CLABSI

Table 1: CLABSI - CY2020 COVID vs CY2020 non-COVID

	CY2020-COVID n=32	CY2020-non-COVID n=46	p-value
CLABSI Rate / 1000 central line days	5.47	0.83	<0.001
Charlson Comorbidity Score (median)	3.5	5	0.998
In-house mortality	53%	26%	0.0187
ICU CLABSI	94%	28%	<0.001
Arterial line present on infection date	91%	20%	<0.001
# Lumens on CLABSI infection date (median)	4	3	<0.001

A comparison of selected patient and catheter characteristics in COVID CLABSI vs non-COVID CLABSI in 2020

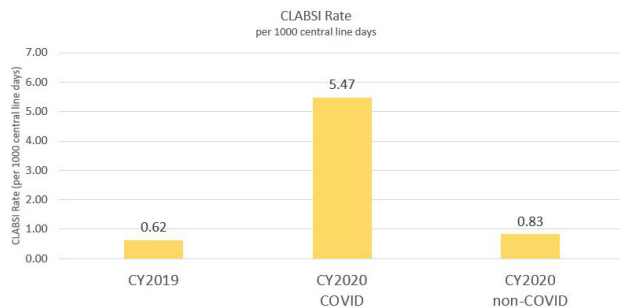
Table 2. 2019 CLABSI vs 2020 non-COVID CLABSI

Table 2: CLABSI - CY2019 vs CY2020 non-COVID

	CY2019 n=39	CY2020-non-COVID n=46	p-value
CLABSI Rate / 1000 central line days	0.62	0.83	0.1967
Charlson Comorbidity Score (median)	7	5	0.130
In-house mortality	38%	26%	0.2496
ICU CLABSI	44%	28%	0.1743
Arterial line present on infection date	23%	20%	0.7921
# Lumens on CLABSI infection date (median)	2	3	0.631

A comparison of selected patient and catheter characteristics in CLABSI in 2019 vs non-COVID CLABSI in 2020

Figure 2. CLABSI rate in 2019 vs COVID CLABSI and non-COVID CLABSI in 2020



A comparison of CLABSI rates (displayed in infections/1000 catheter days) in all adult inpatients at our institution for calendar years 2019 and 2020, with the infections in 2020 divided into those that occurred during an encounter with a PCR -confirmed diagnosis of COVID-19 and those without.

**Conclusion.** We observed a dramatically higher rate of CLABSI in patients with COVID-19 in 2020, while the rate of CLABSI in patients without COVID-19 remained unchanged from the year prior. Higher rates of ICU admission, critical illness, increased numbers of lumens, increased presence of arterial lines, nurse staffing changes, and gaps in routine line prevention processes associated with emergency measures in the COVID-19 cohort ICU may have contributed to this finding. Further work is needed to better understand how to minimize process-related disruptions in central line care during a hospital response to a pandemic.

**Disclosures.** Jonathan Grein, MD, Gilead (Other Financial or Material Support, Speakers fees)

## 772. Effect of Selective Digestive Decontamination Using Oral Colistin on HAI Rates and All-Cause Mortality Among Cardiovascular Surgery Patients - A Single Centre Experience from India

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**Session:** P-37. HAI: Device-Associated (CLABSI, CAUTI, VAP)

**Background.** Hospital acquired infections affect the morbidity and mortality of ICU patients considerably. Selective digestive decontamination (SDD) is defined as the prophylactic application of topical, non-absorbable antimicrobials in the oropharynx and stomach, with the goal of eradicating potentially pathogenic microorganisms but preserving the protective anaerobic microbiota. SDD has been applied in trials among critically ill patients and found to be effective in reducing HAI.

**Methods.** This cohort study was conducted in our cardiothoracic vascular surgery ICU of a tertiary care hospital, where patients were given oral colistin syrup (100mg 6<sup>th</sup> hourly for 5 days) in the immediate post op during the intervention period. We compared the clinical and microbiological outcomes of patients before (5 months, pre-intervention arm) and after (5 months, intervention arm) the implementation of SDD (Oral colistin syrup).

**Results.** A total of 78 patients were included in the interventional arm with a mean age of 58.7 years whereas the pre-interventional group consisted of 94 study participants with a median age of 57.5 years. 11 out of 94 had positive respiratory sample culture (11.7%) in the preintervention group which mandated antibiotic therapy for HAP compared to one culture positive in the interventional period (OR 0.0980, 95% CI: 0.0124 to 0.777 and  $P=0.0279$ ). One patient had blood stream infection in the pre-intervention period compared to none in the intervention phase. All-cause mortality in the pre-interventional group was 7.44% (7 in 94) vs 1.28% (1 in 78) in the interventional group (OR 0.1614, 95% CI: 0.0194 to 1.3416,  $P= 0.0914$ ). Adverse events (nausea, vomiting & loose stools) were observed in a total of 24 study patients, but necessitated withdrawal of regimen only in nine patients.

**Conclusion.** An SDD regimen of Colistin alone in Cardiac Surgery patients resulted in statistically significant reduction in incidence of Hospital Acquired Pneumonia, along with a reduction in all-cause mortality (though not statistically significant).

**Disclosures.** All Authors: No reported disclosures

## 773. Hypochlorous Acid Generating Electrochemical Catheter Prototype for Prevention of Intraluminal Infections

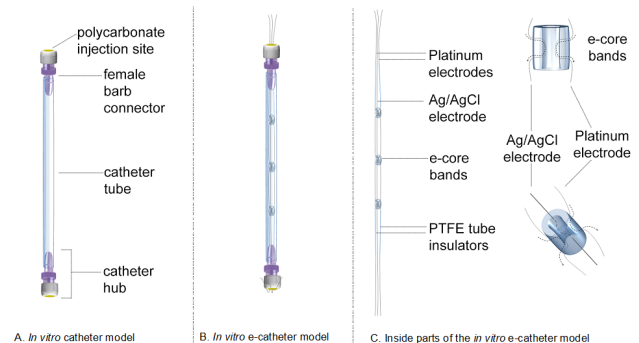
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**Session:** P-37. HAI: Device-Associated (CLABSI, CAUTI, VAP)

**Background.** Central-line associated bloodstream infection (CLABSI) contributes to mortality and cost. While aseptic dressings and antibiotic-impregnated catheters can prevent extraluminal infections, intraluminal infections remain a source of CLABSIs with limited prevention options.

**Methods.** In this proof-of-concept study, an electrochemical intravascular catheter (e-catheter) prototype capable of electrochemically generating hypochlorous acid intraluminally on the surface of platinum electrodes polarized at a constant potential of 1.5 VAg/AgCl was developed. After 24h of pre-polarization at 1.5 VAg/AgCl, their activity was tested by inoculating four clinical isolates derived from catheter-related infections, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Enterococcus faecium* and *Escherichia coli*.

Figure 1. In vitro catheter and e-catheter models.



**Results.** E-catheters generated a mean HOCl concentration of  $15.86 \pm 4.03 \mu\text{M}$  and had a mean pH of  $6.14 \pm 0.79$ . e-catheters prevented infections with all four species, with an average reduction of  $8.41 \pm 0.61 \log_{10} \text{CFU/mL}$  at 48h compared to controls.

Figure 3. Measurement of pH and HOCl at 48 hours in polarized e-catheters.

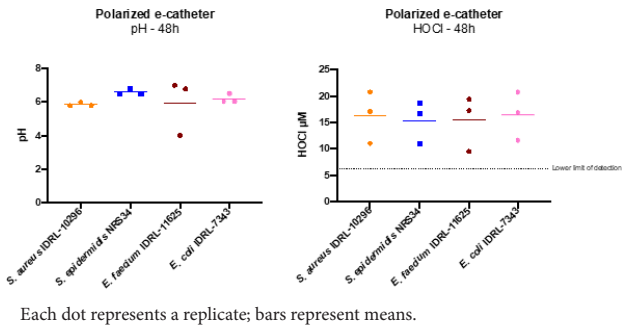
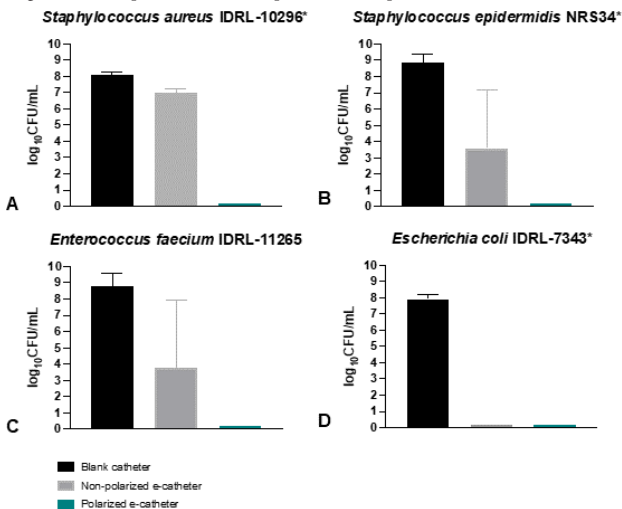


Figure 4. Prevention of infection after 48 hours of polarization (24 hours of infections) using e-catheters (polarized and non-polarized) compared to blank catheters.



\* indicates statistically significant reduction of cell counts in polarized e-catheter compared to blank catheter (p <0.05).

**Conclusion.** Polarized e-catheters which generate low amounts of HOCl continuously should be further developed to prevent intraluminal infection.

**Disclosures.** Haluk Beyenal, Ph.D. patent (Other Financial or Material Support, HB holds a patent: Beyenal H CD, Fransson BA, Sultana ST. . 2018. Electrochemical reduction or prevention of infections. U.S. patent 20180207301A1, international patent WO/2017/011635.) Robin Patel, MD, 1928 Diagnostics (Consultant)BioFire Diagnostics (Grant/Research Support)ContraFect Corporation (Grant/Research Support)Curetis (Consultant)Hylomorph AG (Grant/Research Support)IDSA (Other Financial or Material Support, Editor's Stipend)Infectious Diseases Board Review Course (Other Financial or Material Support, Honoraria)Mammoth Biosciences (Consultant)NBME (Other Financial or Material Support, Honoraria)Netflix (Consultant)Next Gen Diagnostics (Consultant)PathoQuest (Consultant)PhAST (Consultant)Qvella (Consultant)Samsung (Other Financial or Material Support, Patent Royalties)Selux Diagnostics (Consultant)Shionigi & Co., Ltd. (Grant/Research Support)Specific Technologies (Consultant)TenNor Therapeutics Limited (Grant/Research Support)Torus Biosystems (Consultant)Up-to-Date (Other Financial or Material Support, Honoraria) Robin Patel, MD, BioFire (Individual(s) Involved: Self; Grant/Research Support; Contrafect (Individual(s) Involved: Self; Grant/Research Support; IDSA (Individual(s) Involved: Self; Editor's stipend; NBME, Up-to-Date and the Infectious Diseases Board Review Course (Individual(s) Involved: Self; Honoraria; Netflix (Individual(s) Involved: Self; Consultant; TenNor Therapeutics Limited (Individual(s) Involved: Self; Grant/Research Support; to Curetis, Specific Technologies, Next Gen Diagnostics, PathoQuest, Selux Diagnostics, 1928 Diagnostics, PhAST, Torus Biosystems, Mammoth Biosciences and Qvella (Individual(s) Involved: Self; Consultant

**774. Outbreak of Central-Line-Associated Bloodstream Infections (CLABSI) amid the COVID-19 Pandemic Associated with Changes in Central Line Dressing Care Accompanying Changes in Nursing Education, Nursing Documentation, and Dressing Supply Kits**

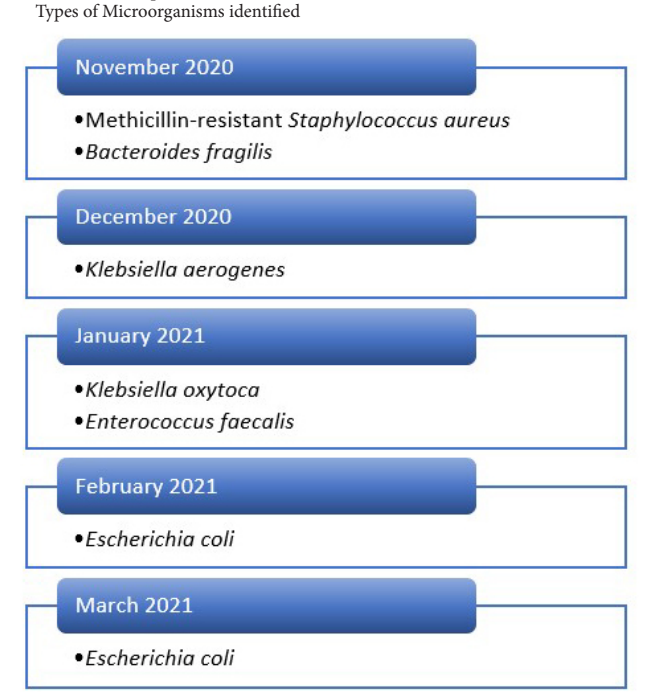
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**Session:** P-37. HAI: Device-Associated (CLABSI, CAUTI, VAP)

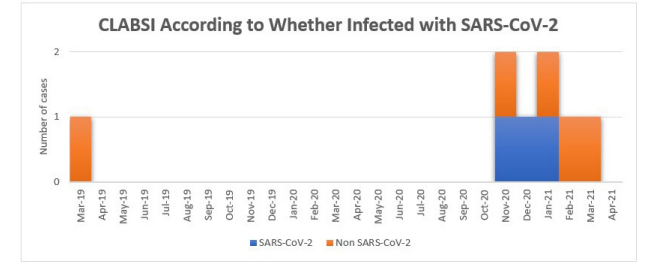
**Background.** National Healthcare Safety Network (NHSN) data have revealed an increase in CLABSI associated with the COVID-19 pandemic, but data on factors mediating the increase are limited. Our hospital had been free of CLABSI for 18 months, but we encountered an outbreak of 7 CLABSI over a 5-month period beginning in November 2020. This led to an investigation that revealed that some underlying issues were related to COVID-19.

**Methods.** Infection prevention staff at Omaha's Veterans Affairs Medical Center interviewed hospital staff and performed a retrospective chart review of patients with CLABSI (based on the NHSN definition) amid the COVID-19 pandemic.

**Results.** The first case of CLABSI in the outbreak was detected in November 2020. Prior to that, there was no case of CLABSI since April 2019, as shown in the graph. Each case of CLABSI was associated with a different microorganism. Further investigation revealed deviations from our usual practices in central line dressing care. Our response to COVID-19 had included alterations in periodic competency training (including dressing care) for nursing staff as well as the rapid introduction of streamlined inpatient nursing documentation. Previously, dressing kits included chlorhexidine-impregnated dressings; in November, a kit without these dressings was introduced. A weekly audit of dressing care was begun in March 2021. No CLABSI was identified in April 2021.



Different types of microorganisms isolated during the CLABSI outbreak each month.



The trend of CLABSI in VA Nebraska-Western Iowa Health Care System

**Conclusion.** We encountered a CLABSI outbreak associated with deviations from usual central line dressing care. Using the concept of the Swiss cheese model of error prevention, we recognized alterations in three barriers: competency training; thorough documentation; and complete supply kits. The first two of these factors were directly related to our COVID-19 response. Our findings illustrate the relevance of the Swiss cheese model for maintaining a safe healthcare environment.

**Disclosures.** Marvin J. Bittner, MD, Merck (Advisor or Review Panel member)Sanofi Pasteur (Speaker's Bureau)

**775. Risk Factors for Healthcare Associated Central Line-Associated Bloodstream Infection (CLABSI) to Identify Novel Infection Prevention Areas - A Case-Control Study**

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