Table – Characteristics of patients on Unit A who did and did not have a diagnosis of Hepatic Failure, January 2019 -September 2021

	N patients	Patient days	Length of stay (days)	Central line days	Central Line Utilization Ratio	Infection Classification			p-value[1]
						N Secondary BSI	N Primary HABSI, Not CLABSI	CLABSI	0.04
Hepatic Failure	1000	11547	11.5	2934	0.25	6	23	16	
No Hepatic Failure	3285	19363	5.9	4709	0.24	10	8	9	

1) Chi-squared test to compare the distribution of infection classification in patients with and without hepatic failure

Table 2—Distribution of pathogens involved in hospital-acquired bloodstream infection in patients who did and did not have hepatic failure

Organsim	Hepatic failure	No hepatic failure
Enterococcus	16	14
Enterobacteriales	16	7
Yeast	10	4
Staphylococcus aureus	4	4
Common Commensal	7	1
Other	3	4

ward, we have demonstrated that these units house a population uniquely susceptible to HABSI and CLABSI.

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Central-line associated bloodstream infection (CLABSI) in patients hospitalized with COVID-19

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Background: Significant increases in healthcare-associated infections (HAIs) including central-line associated blood stream infections (CLABSIs) have been reported during the COVID-19 pandemic. Acute-care hospitals have faced staffing and personal protective equipment shortages, increased critical care capacity, and diversion of resources from traditional HAI surveillance and prevention efforts. In this study, we characterized CLABSIs among patients with COVID-19 and compared demographics, comorbidities, and outcomes between patients diagnosed with CLABSI with and without COVID-19. **Methods:** This is an observational retrospective cohort study of all patients diagnosed with CLABSI as defined by NHSN at William P. Clements Jr. University Hospital from April 1, 2020, through September 30, 2021. A retrospective chart review was conducted to identify demographics, comorbidities, and outcomes of hospitalized patients diagnosed with CLABSI. Patients hospitalized with and without COVID-19 were compared using the independent-sample t test for means and the χ^2 test for proportions. **Results:** Overall, 82 patients diagnosed with CLABSI between April 1, 2020, to September 30, 2021, among whom 31 (38%) were hospitalized with COVID-19 and 51 (62%) were not hospitalized with COVID-19. Patients hospitalized with COVID-19 were significantly more likely to be obese (58% for COVID-19 positive vs 26% for COVID-19 negative; $P = .01$) and to require extracorporeal membrane oxygenation (19% vs 4%; $P = .04$). However, COVID-19 patients were significantly less likely to have hematologic malignancy (7% vs 28%; $P = .03$), undergone bone marrow transplantation (0% vs 18%; $P = .01$), or have neutropenia (3% vs 22%; $P = .03$). There were no significant differences in line type or organism identified. Gram-positive pathogens were identified in 16 patients (52%) hospitalized with COVID-19. Gram-negative pathogens were identified in 3 patients (10%); fungal organisms were identified in 10 patients (32%), and 2 cases (7%) were polymicrobial. Patients with COVID-19 were significantly more likely to require an ICU stay (84% vs 43%). p **Conclusions:** High device

Table 1. Characteristics of patients with CLABSI hospitalized with and without COVID-19

	Total N=82	COVID-19 Positive N=31 (38%)	COVID-19 Negative N=51 (62%)	P-value
Male	47 (57%)	19 (61%)	28 (55%)	0.65
Age (mean ± SD)	58.1± 15.2	55.9± 15.3	50.4 ±15.2	0.31
Comorbidities				
Obesity	31 (38%)	18 (58%)	13 (26%)	0.01
DM	20 (24%)	11 (36%)	9 (18%)	0.11
Solid tumor	11 (13%)	2 (7%)	9 (18%)	0.19
Heme malignancy	16 (20%)	2 (7%)	14 (28%)	0.02
Solid organ transplant	7 (9%)	3 (10%)	4 (8%)	1.00
BMT	9 (11%)	0 (0%)	9 (18%)	0.012
Neutropenia	12 (15%)	1 (3%)	11 (22%)	0.026
Immunocompromised	32 (39%)	7 (23%)	25 (49%)	0.02
Recent Surgery	7 (9%)	1 (3%)	6 (12%)	0.25
ECMO	8 (10%)	6 (19%)	2 (4%)	0.04
Location				<0.001
Ward	34 (41%)	5 (16%)	29 (57%)	
Intensive Care Unit	48 (59%)	26 (84%)	22 (43%)	
Days admitted (mean ± SD)	20.9 ± 20.4	27.1 ± 25.1	17.1 ± 16.1	0.03
Line days (mean ± SD)	15.6 ± 12.4	19.5 ± 17.0	13.2 ± 7.8	0.03
Line type				0.07
PICC	23 (28%)	5 (16%)	18 (35%)	
CVC	19 (23%)	10 (32%)	9 (18%)	
HD	14 (17%)	3 (10%)	11 (22%)	
Port	4 (5%)	1 (3%)	3 (6%)	
More than 1	22 (27%)	12 (39%)	10 (20%)	
Organism				0.38
Gram positive	37(45%)	16 (52%)	21 (41%)	
Gram negative	16 (20%)	3 (10%)	13 (26%)	
Fungal	24 (29%)	10 (32%)	14 (28%)	
Polymicrobial	5 (6%)	2 (7%)	3 (6%)	

utilization as well as prolonged hospitalization and line days among patients with COVID-19 along are contributing risk factors for CLABSI among patients hospitalized with COVID-19. This finding highlights the need for ongoing HAI surveillance and prevention efforts in patients hospitalized with COVID-19 given their characteristics and increased risk for CLABSI. Reinforcing infection prevention efforts by accentuating the importance of optimal line care and regular feedback are crucial, especially among patients hospitalized with COVID-19.

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Human factors analysis of the disinfection of central-line needleless connectors

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Background: Patients requiring vascular catheters are at risk for bloodstream infections (BSIs), particularly those with central venous access devices (CVADs). Central-line–associated bloodstream infections (CLABSIs) may occur as a result of the introduction of pathogenic microbes during CVAD access procedures, including through the needleless connector. The use of an antiseptic scrub is recommended to disinfect the needleless connector before device access, and this procedure has been shown to reduce the risk for CLABSI. We identified perceived barriers and facilitators and assessed compliance with instructions for use of chlorhexidine or alcohol antisepsis products (CHG or IPA; 5-second scrub time plus 5-second dry time) and alcohol antisepsis products (IPA; facility protocol 15-second scrub time plus let dry) for needleless connector disinfection. **Methods:** We performed a multiple-methods study involving focus groups composed of a convenience sample of nurses and clinical observations of CVAD needleless-connector access procedures in 3 medical ICUs and 1 surgical ICU at 2 academic medical centers. We used open-ended questions to guide the focus-group discussions. We directly observed nursing staff performing needleless-connector disinfection following a time–motion paradigm using an electronic tool to document the observed needleless-connector access events and to measure needleless-connector

Table 1. Summary of observed scrub and drying times by antisepsis product and facility.

	Mean scrub time-s (SD)	Mean dry time-s (SD)
Antisepsis product		
CHG/IPA (n=11)	4.1 (3.2)	1.1 (1.4)
IPA (n=37)	4.3 (3.5)	1.3 (2.0)
Facility		
A (n=19)	4.6 (4.0)	1.4 (1.9)
B (n=29)	3.8 (3.4)	0.9 (0.7)

antiseptic scrub times and dry times. **Results:** In total, 8 focus groups involving 28 nurses revealed access to the antiseptic product and lesser workload as best-practice facilitators of needleless-connector disinfection. Identified barriers were often the opposite of the facilitators, particularly the time required per needleless connector access using IPA and knowledge deficits regarding the need for disinfection between multiple needleless-connector accesses. From 36 observations, including a total of 48 access events, we determined that the mean scrub times were below the recommended times, especially for IPA (Table 1). Drying time after use of either antisepsis product was negligible. **Conclusions:** A lack of access to the disinfection product, emergency situations, and increased workload were perceived barriers to needleless-connector disinfection. Observed scrub times and drying times were shorter than recommended, much more so for IPA. These deficits in the performance of needleless-connector disinfection may increase the risk of CLABSI. Ongoing education and periodic competency evaluation of needleless-connector disinfection are needed to imbed and sustain best practices.

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Perceptions and emotions of infection control team member during the COVID-19 pandemic in Germany

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Background: We conducted an anonymous survey in compliance with German data protections regulations among participants of the annual infectious disease and control meeting in Freiburg, Germany, in October 2021. **Methods:** In total, 391 surveys were returned: 188 from nurse infection control practitioners (ICPs) and 66 from specially infection control trained physicians (STPs). We report the results of these 2 subgroups regarding their perceptions and emotions during the pandemic. Descriptive statistics and χ^2 test with $P < .05$ were used when applicable. **Results:** Shortages of medical masks or FFP2 masks during the first pandemic wave in 2020 were reported by 48.5% STPs and 57.4% ICPs. STPs and ICPs relied equally on information provided by the Robert Koch Institute, the WHO, the ECDC and the CDC. Occupational health information was sought significantly more often by ICPs; only 17% of ICPs never used this source versus 51.5% of STPs ($P < .001$). Most ICPs (58%) and STPs (51%) described their relationship to local authorities as good as well as communication with institutional leaders (69.7%). Fewer ICPs (36.1%) felt frequently appreciated during the pandemic compared to 45.5% of STPs and more ICPs (25%) reported frustration than STPs (18.2%). However, the differences were not statistically significant. Rarely, ICPs (2.1%) or STPs (1.5%) felt unsafe at work and only 1.6% of ICPs and no STPs reported loss of motivation. In addition, 13.8% of ICPs and 12.1% of STPs often felt overwhelmed, but only 3.2% of ICPs and no STPs felt hopeless. Their self-reported competency was rated as high by 75% of ICPs and 69.7% of STPs. The 5 most frequent free-text comments regarding "lessons learned" pertained to better crisis communication, better supply chain management, precise regulations, "less talking more doing," and mandatory vaccination. The most frequent free-text general comments pertained to maintain basic hygiene measures in private and public life because of the pandemic. **Conclusions:** Our survey results indicate a high level of resilience among members of infections control teams in German medical institutions despite obvious shortcomings in supplies during the first wave of the pandemic. There were no significant differences between physician and nurse members of infection control teams regarding their perceptions and emotions, indicating a homogenous situation within the teams. The high level of self-perceived competency has likely helped deal with the pandemic and prevented the feeling of loss of control implied in the question items "feeling overwhelmed" and "hopeless."

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Epidemiologic risk factors and occupation analysis of COVID-19 cases, hospitalizations, and deaths—southern California, 2020

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Background: COVID-19 occupational exposures have been examined using death certificates and employment data from the Bureau of Labor Statistics and the O*Net database in the United States. However, no studies have examined cases, hospitalizations, and deaths by occupation using hospital records.[1] We analyzed COVID-19 cases using hospitalization data from a large, rural community hospital to fill this gap in the evidence base. **Methods:** A retrospective cross-sectional study design was used to examine patients with COVID-19 from March 1 through July 31, 2020. We examined demographic characteristics, such as age, sex, race or ethnicity, and length of stay (LOS), among those who tested positive for SARS-CoV-2. Epidemiological risk factors were also analyzed, including smoking status, body mass index (BMI), alcohol use, and occupation. Occupational data were processed using the National Institute for Occupational Safety and Health Industry and Occupation Computerized Coding System. Homemakers, disabled persons or retirees, students or minors, and listed occupations with insufficient information were excluded from the analysis. Occupations were categorized into 23 major occupation groups based on the 2018 Standard Occupational Classification System. To examine whether certain occupations are at a higher risk due to COVID-19, we stratified the analysis by overall cases, hospitalizations, and deaths. Microsoft Power BI Desktop and IBM SPSS version 28.0.0.0 software were used to analyze the data. This study was reviewed and approved by the local institutional review board. **Results:** In total, 2,132 COVID-19 diagnoses with 1,049 total hospitalizations were identified during the study period. Most cases were in the group aged 50–64 years, white race, and/or Hispanic ethnicity (Table 1). Most cases never or rarely drank alcohol, were nonsmokers, and had a BMI ≥30 (Table 2). The average LOS among those hospitalized for COVID-19 was 6.46 days. The occupational analysis revealed a higher frequency of cases among those in management (n = 95, 14%) and healthcare (n = 83, 12%), with those in management (n = 40, 14%) and sales (n = 29, 10%) having the highest frequency of being hospitalized. However, the highest frequency of deaths occurred among those in building and grounds cleaning and maintenance occupations (13%) (Table 3). **Conclusions:** This study describes the burden of COVID-19 in a rural area with a large aging population and highlights