

# UC Irvine

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### Title

171. The Impact of COVID-19 on Healthcare-Associated Infections

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and outreach; sending regional outbreak HCF lists to all HCF; and biweekly state-LHJ coordination calls. The Antibiotic Resistance (AR) Lab Network supported testing.

**Results.** From May 2020–May 2021, we conducted screening at 226 HCF, and identified 1192 cases at 93 HCF, mostly through screening (n=1109, 93%) and at LTACH (n=906, 76%); we identified 113 (10%) cases at ACH, including 35 (31%) in COVID-19-burdened units. Cases peaked in August 2020 (n=93) and February 2021 (n=191) and have since declined, with *C. auris* resurgence mirroring COVID-19 incidence.

We conducted 98 onsite IPC assessments, and identified multiple, improper IPC practices which had been implemented in response to COVID-19, including double-gloving and -gowning, extended use of gowns and gloves outside patient rooms, and cohorting according to COVID-19 status only.

Figure 1. *C. auris* and COVID-19 Cases in California through May 2021, and *C. auris* Cases by Local Health Jurisdiction (LHJ) May 2020–May 2021

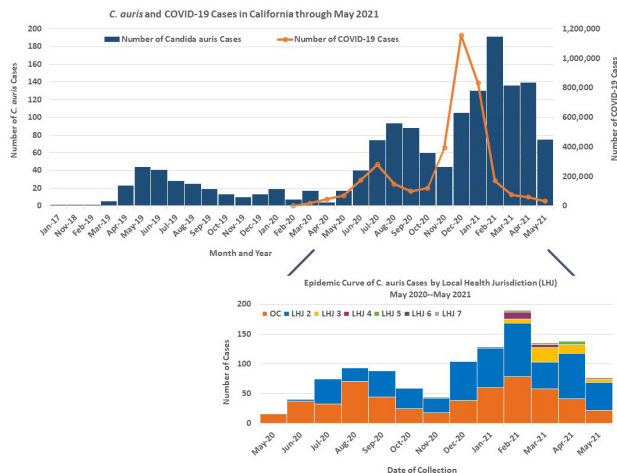


Table 1. By Facility Type: Colonization Testing May 2020–May 2021, and Total Case Counts before and after May 2020

Facility Type	Colonization Testing (Screening) May 2020–May 2021			Total Case Counts	
	Number of HCF Performing Screening	Number of Colonization Swabs Tested	% Colonization Swabs Tested Positive	Total Cases (%) May 2020–May 2021	Total Cases (%) January 2017–April 2020
ACH	39	1488	7.7%	113 (9.5%)	9 (3.4%)
LTACH	19	9025	10.2%	906 (76.0%)	161 (61.7%)
SNF	82	4888	3.4%	19 (1.6%)	7 (2.7%)
vSNF	70	1675	1.3%	152 (12.8%)	82 (31.4%)
Other	16	45	2.2%	2 (0.2%)	2 (0.8%)
<b>TOTAL</b>	<b>226</b>	<b>17,121</b>	<b>7.1%</b>	<b>1192</b>	<b>261</b>

ACH=acute care hospital; LTACH=long-term ACH; SNF=skilled nursing facility; vSNF=ventilator-equipped SNF; HCF=healthcare facility

Table 2. COVID-19-related Infection Control Practices Affecting *C. auris* Spread, and Associated Public Health Recommendations

Observations of Infection Control Practices Related to COVID-19	Public Health Recommendations
Cohorting patients on COVID-19 status only	Cohort considering all communicable disease (CD) status.
Improper personal protective equipment (PPE) use (e.g., double-gloving, -gowning)	Address healthcare personnel (HCP) concerns; perform competency-based training on proper PPE use.
Inadequate environmental cleaning and related auditing	Address HCP safety concerns (including adequate PPE); educate on proper contact time; ensure routine monitoring of daily and terminal cleaning/disinfection.
Implementation of crisis capacity strategies during perceived PPE shortages (i.e., reuse, extended use of gowns/gloves, including in hallways)	Do not reuse gowns/gloves; only implement crisis capacity strategies after requesting supplies through the emergency coordination center, and exhausting all contingency capacity strategies; if extending use of gowns/gloves, only do so when all CD status known and for patients with the same CD status housed in the same room.

**Conclusion.** The *C. auris* resurgence in CA was likely a result of COVID-19-related practices and conditions. An aggressive, coordinated, interjurisdictional *C. auris* containment response, including proactive prevention activities at HCF interconnected with outbreak HCF, can help mitigate spread of *C. auris* and potentially other novel AR pathogens.

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

### 170. Reduction in Bloodborne Pathogen Splash Exposures After Implementation of Universal Masking and Eye Protection for COVID-19

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**Session:** O-34. The Interplay Between COVID and other Infections

**Background.** While splashes to the eyes, nose and mouth can often be prevented through appropriate personal protective equipment (PPE) use, they continue to occur frequently when PPE is not used consistently. Due to the COVID-19 pandemic, we implemented universal masking and eye protection for all healthcare personnel (HCP) performing direct patient care and observed a subsequent decline in bloodborne pathogen (BBP) splash exposures.

**Methods.** Our healthcare system, employing >12,000 healthcare personnel (HCP), implemented universal masking in April 2020 and eye protection in June 2020. We required HCP to mask at all times, and use a face shield, safety glasses or goggles when providing direct patient care. Occupational Safety tracked all BBP exposures

due to splashes to the eyes, nose, mouth and/or face, and compared exposures during 2020 to those in 2019. We estimated costs, including patient and HCP testing, related to splash exposures, as well as the additional cost of PPE incurred.

**Results.** In 2019, HCP reported 90 splashes, of which 57 (63%) were to the eyes. In 2020, splashes decreased by 54% to 47 (36 [77%] to eyes). In both years, nurses were the most commonly affected HCP type (62% and 72%, respectively, of all exposures). Physicians (including residents) had the greatest decrease in 2020 (10 vs. 1 splash exposures [90%]), while nurses had a 39% decrease (56 vs. 34 exposures). Nearly all of the most common scenarios leading to splash exposures declined in 2020 (Table). We estimated the cost of each BBP exposure as \$2,940; this equates to a savings of \$123,228. During 2020, we purchased 65,650 face shields, safety glasses and goggles (compared to 5303 similar items in 2019), for an additional cost of \$238,440.

Specific activities identified as leading to bloodborne pathogen splash exposures, 2019 vs. 2020.

Activity	2019 Splash Reports N = 90	2020 Splash Reports N = 47	Difference (%)
Direct patient care, including positioning	13	10	-23%
Discontinuing IVs	10	4	-60%
Handling uncooperative patient	9	12	33%
During disposal of needles/supplies	7	2	-71%
Inserting IV/site care/dressing change	7	1	-86%
Flushing, irrigating tubes/lines/drains	5	3	-40%
Emptying urine/drain collection device	4	3	-25%
Performing fingerstick glucose	3	0	-100%
Inserting/discontinuing nasogastric tube	3	1	-67%
Procedures	24	10	-58%
Assisting with surgery/invasive procedure	9	3	-67%
Blood draws/injections	5	2	-60%
Wound care	5	0	-100%
Inserting/removing urinary device	3	1	-67%
Other procedures*	2	4	100%
All other	5	1	-80%

\*Included performing CPR, suctioning, vaginal exams.

**Conclusion.** We observed a significant decline in splash-related BBP exposures after implementing universal masking and eye protection for the COVID-19 pandemic. While cost savings were not observed, we were unable to incorporate the avoided pain and emotional trauma for the patient, exposed HCP, and coworkers. This unintended but positive consequence of the COVID-19 pandemic exemplifies the need for broader use of PPE, particularly masks and eyewear, for all patient care scenarios where splashes may occur.

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

### 171. The Impact of COVID-19 on Healthcare-Associated Infections

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For the CDC Prevention Epicenters Program

**Session:** O-34. The Interplay Between COVID and other Infections

**Background.** The profound changes wrought by COVID-19 on routine hospital operations may have influenced performance on hospital measures, including healthcare-associated infections (HAIs).

**Objective.** Evaluate the association between COVID-19 surges and HAI or cluster rates

**Methods.** Design: Prospective cohort study

**Setting.** 148 HCA Healthcare-affiliated hospitals, 3/1/2020–9/30/2020, and a subset of hospitals with microbiology and cluster data through 12/31/2020

**Patients.** All inpatients

**Measurements.** We evaluated the association between COVID-19 surges and HAIs, hospital-onset pathogens, and cluster rates using negative binomial mixed models. To account for local variation in COVID-19 pandemic surge timing, we included the number of discharges with a laboratory-confirmed COVID-19 diagnosis per staffed bed per month at each hospital.

**Results.** Central line-associated blood stream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), and methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia increased as COVID-19 burden increased (P ≤ 0.001

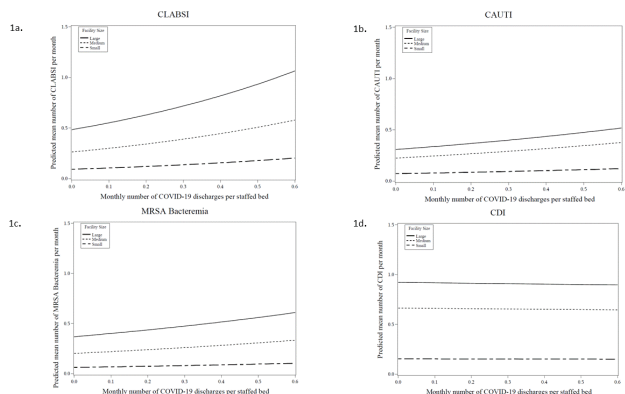
for all), with 60% (95% CI, 23 to 108%) more CLABSI, 43% (95% CI, 8 to 90%) more CAUTI, and 44% (95% CI, 10 to 88%) more cases of MRSA bacteremia than expected over 7 months based on predicted HAIs had there not been COVID-19 cases. *Clostridioides difficile* infection (CDI) was not significantly associated with COVID-19 burden. Microbiology data from 81 of the hospitals corroborated the findings. Notably, rates of hospital-onset bloodstream infections and multidrug resistant organisms, including MRSA, vancomycin-resistant enterococcus and Gram-negative organisms were each significantly associated with COVID-19 surges ( $P < 0.05$  for all). Finally, clusters of hospital-onset pathogens increased as the COVID-19 burden increased ( $P = 0.02$ ).

**Limitations.** Variations in surveillance and reporting may affect HAI data.

Table 1. Effect of an increase in number of COVID-19 discharges on HAIs and hospital-onset pathogens

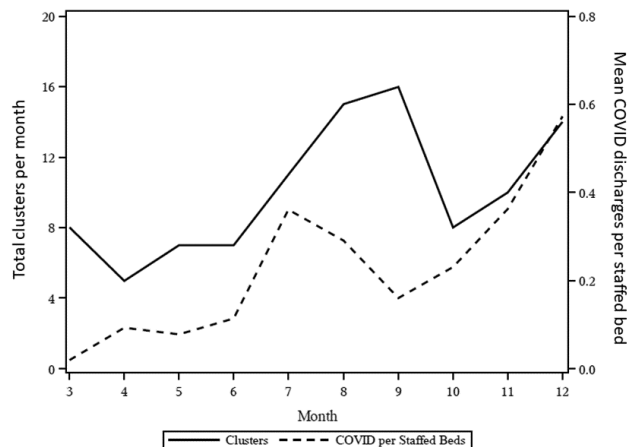
OUTCOME	EFFECT	RELATIVE RATE (95% CI)	P VALUE
CLABSI	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.14 (1.09, 1.19)	<0.001
	beds 200-299	Ref	-
	beds ≥300	2.14 (1.42, 3.23)	<0.001
CAUTI	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.09 (1.04, 1.15)	0.001
	beds 200-299	Ref	-
	beds ≥300	2.13 (1.39, 3.28)	0.001
CDI	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	0.97 (0.93, 1.02)	0.247
	beds 200-299	Ref	-
	beds ≥300	3.37 (2.29, 4.96)	<0.001
MRSA BSI	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.09 (1.04, 1.14)	0.001
	beds 200-299	Ref	-
	beds ≥300	2.05 (1.28, 3.28)	0.003
BSI	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.05 (1.03, 1.07)	<0.001
	beds 200-299	Ref	-
	beds ≥300	3.19 (2.37, 4.30)	<0.001
MDRO	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.05 (1.04, 1.07)	<0.001
	beds 200-299	Ref	-
	beds ≥300	5.44 (4.21, 7.03)	<0.001
MRSA	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.06 (1.04, 1.08)	<0.001
	beds 200-299	Ref	-
	beds ≥300	2.79 (2.02, 3.87)	<0.001
VRE	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.04 (1.01, 1.08)	0.016
	beds 200-299	Ref	-
	beds ≥300	2.88 (1.75, 4.75)	<0.001
GNR	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.06 (1.04, 1.08)	<0.001
	beds 200-299	Ref	-
	beds ≥300	3.16 (2.35, 4.26)	<0.001
Clusters	Per 0.1 increase in the monthly number of COVID-19 discharges per staffed bed beds <200	1.09 (1.01, 1.18)	0.02
	beds 200-299	Ref	-
	beds ≥300	1.55 (0.74, 3.27)	0.25

Figure 1. Predicted mean HAI rates as COVID-19 discharges increase



Predicted mean HAI rate by increasing monthly COVID-19 discharges. Panel a. CLABSI, Panel b. CAUTI Panel c. MRSA Bacteremia, Panel d. CDI. Data are stratified by small, medium and large hospitals.

Figure 2. Monthly comparison of COVID discharges to clusters



COVID-19 discharges and the number of clusters of hospital-onset pathogens are correlated throughout the pandemic.

**Conclusion.** COVID-19 surges adversely impact HAI rates and clusters of infections within hospitals, emphasizing the need for balancing COVID-related demands with routine hospital infection prevention.

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**172. Impact of COVID-19 Pandemic on Healthcare-associated Infections (HAIs) in a Large Network of Hospitals**

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**Session:** O-34. The Interplay Between COVID and other Infections

**Background.** The COVID-19 pandemic had a considerable impact on US healthcare systems, training hospital resources, staff, and operations. Our objective was to evaluate the impact of COVID-19 pandemic on incidence and trends of healthcare-associated infections (HAIs) in a network of hospitals.