**Presentation Type:**
Poster Presentation - Oral Presentation
**Subject Category:** COVID-19
**Impact of COVID-19 on healthcare-associated infections in Canadian acute-care hospitals: Interrupted time series (2018–2021)**
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**Background:** Data regarding the effects of the SARS-COV-2 (COVID-19) pandemic on healthcare-associated infections (HAIs) in Canadian acute-care hospitals are limited. We examined the impact of the COVID-19 pandemic on HAIs and antimicrobial resistant organisms in hospitals participating in the Canadian Nosocomial Infection Surveillance Program. **Methods:** We analyzed 13,406 HAIs including adult mixed intensive care unit (ICU) central-line–associated bloodstream infections (CLABSIs), and healthcare-associated (HA) *Clostridioides difficile* infection (CDI), methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections (BSI), vancomycin-resistant *Enterococcus* (VRE) BSI, and carbapenemase-producing Enterobacterales (CPE) infections collected using standardized case definitions and questionnaires from 29–64 hospitals participating in the Canadian Nosocomial Infection Surveillance Program (CNISP) from January 2018 to December 2021. We used a generalized linear mixed model with quasi-Poisson distribution to assess step and slope changes in monthly HAI rates between the pre–COVID-19 pandemic period (January 1, 2018–February 29, 2020; 26 time points) and the COVID-19 pandemic period (March 1, 2020–December 31, 2021; 22 time points). Results were reported as incidence rate ratios (IRRs) with 95% confidence intervals (CIs) and adjusted for seasonality, hospital clustering, and hospital characteristics of interest. **Results:** In the CNISP network, 7,352 (55%) HAIs were reported in the prepandemic period and 6,054 (45%) in the pandemic period. Median age was significantly younger during the pandemic period compared to the prepandemic period among patients with HA-CDI, HA-MRSA BSI, and adult mixed ICU CLABSIs, and more than half of cases among all reported HAIs were male (range, 52%–65%). The 30-day all-cause in-hospital mortality rate did not significantly change between the prepandemic and pandemic periods for all reported HAIs and was highest among HA-VRE BSIs (34%). Modeling results indicated that the COVID-19 pandemic was associated with an immediate increase in HA-CDI and adult mixed ICU CLABSI rates whereas HA-MRSA BSI, HA-CPE and HA-VRE BSI rates immediately decreased. However, pandemic status did not have a statistically significant lasting impact on monthly rate trends for all reported HAIs after adjusting for seasonality, clustering, and hospital covariates (Fig. 1 and 2). Adjusted IRRs for all HAIs ranged from 1.00 to 1.01 (95% CI, 0.94–0.99 to 1.01–1.05).

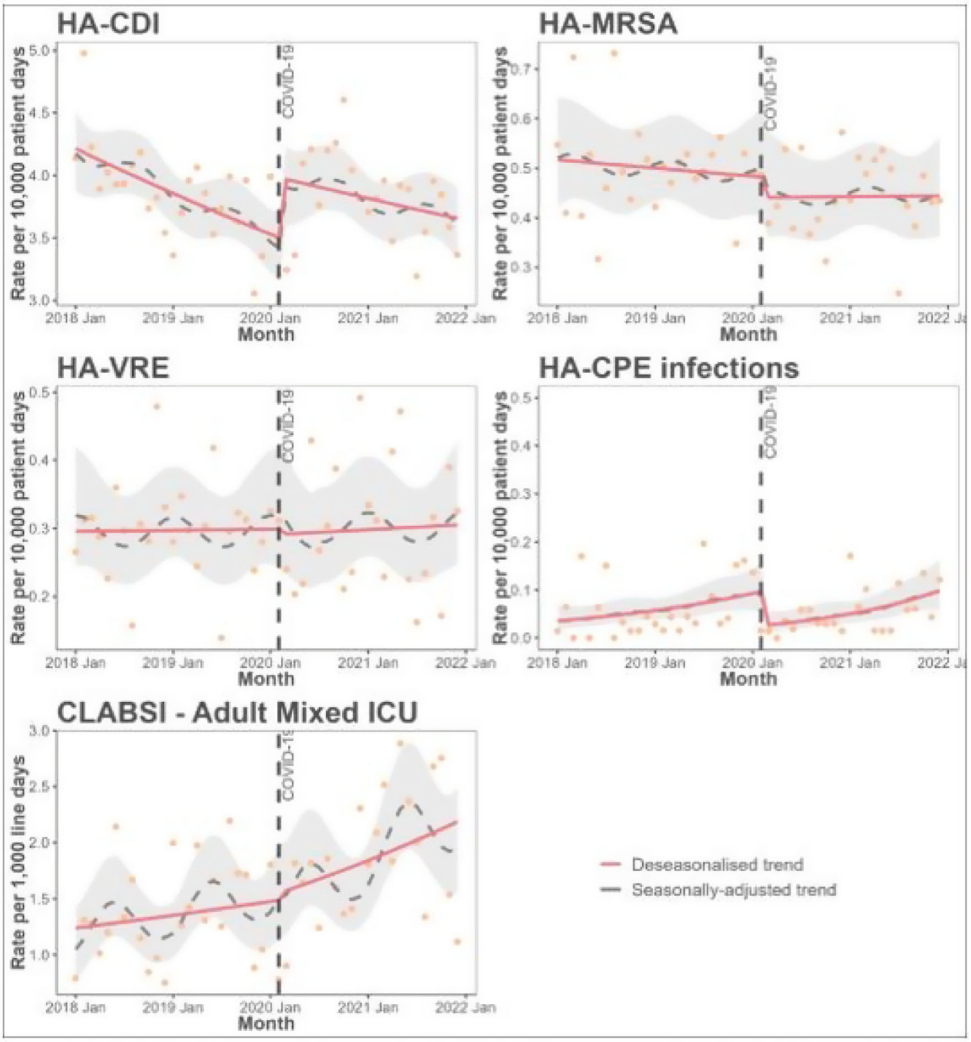


**Figure 1.** Interrupted time series model of healthcare-associated infection rates before and during the COVID-19 pandemic, Canadian Nosocomial Infection Surveillance Program, 2018–2021.



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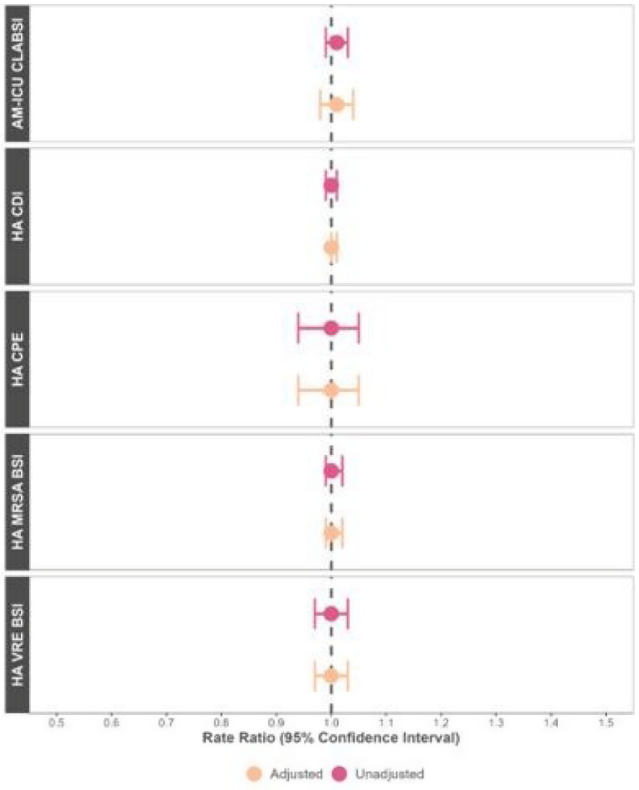
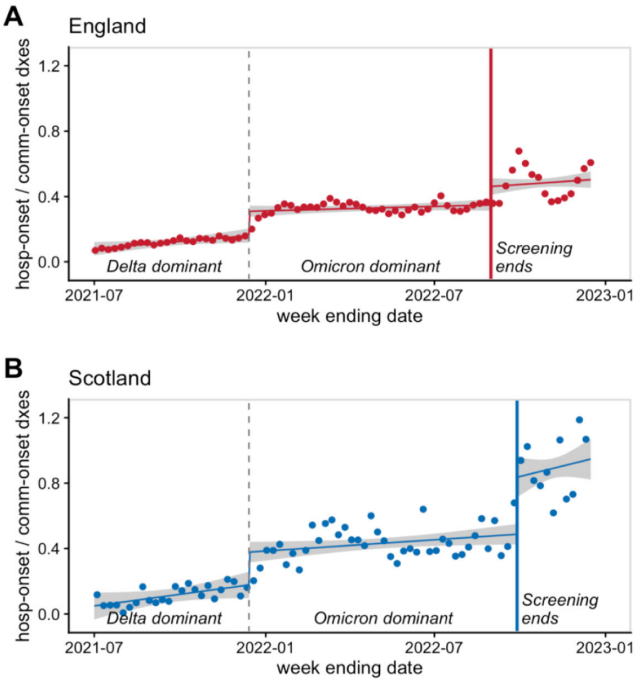



**Figure 2.** Forest plot of incidence rate ratios with 95% confidence intervals of healthcare-associated infection before and during the COVID-19 pandemic, Canadian Nosocomial Infection Surveillance Program, 2018–2021.

**Figure. Ratio of new hospital-onset SARS-CoV-2 infections vs new community-onset SARS-CoV-2 admissions in England and Scotland.**




Mean weekly ratios of new hospital-onset SARS-CoV-2 infections versus new community-onset SARS-CoV-2 admissions in (A) England and (B) Scotland. Hospital-onset infections were defined as a diagnosis >7d from admission, and community-onset infections diagnosed ≤7d from admission. The vertical solid line demarcates when universal admission testing in hospitals was no longer required by each country's national healthcare system. The vertical dashed line denotes when Omicron became the dominant variant (>50% of sequenced samples). All regression lines are interrupted time-series models, and the shaded area represents a 95% confidence interval.

**Conclusions:** Although the COVID-19 pandemic placed a significant burden on the Canadian healthcare system, the immediate impact on monthly rates of HAIs in Canadian acute-care hospitals was not sustained over time. Understanding the epidemiological effects of the COVID-19 pandemic in the context of changing patient populations, and clinical and infection control practices, are essential to inform the continued management and prevention of HAIs in Canadian acute-care settings.

**Disclosures:** None

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**Association between stopping universal SARS-CoV-2 admission testing and hospital-onset SARS-CoV-2 in England and Scotland**

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**Background:** Many hospitals test all patients for SARS-CoV-2 upon admission to prevent silent transmission to other patients and healthcare workers. The utility of universal admission testing has been questioned, however, due to resource constraints, care delays, and sparse data on its impact on nosocomial infections. England and Scotland stopped requiring universal admission testing on August 31, 2022, and September 28, 2022, respectively. We assessed associations between these changes and hospital-onset SARS-CoV-2 infection rates. **Methods:** We used public data from National Health Service England and Public Health Scotland on hospital-onset SARS-CoV-2 infections, defined as cases diagnosed >7 days after admission, between July 1, 2021, and December 16, 2022. Because hospital-onset infections are driven by SARS-CoV-2 community incidence rates, we calculated the weekly ratio between hospital-onset versus community-onset SARS-CoV-2 admissions (diagnosed ≤7 days from admission) and assessed for temporal changes associated with stopping universal admission testing using interrupted time-series analysis. The study was divided into 3 periods: sARS-CoV-2 delta-variant dominance with admission testing, SARS-CoV-2 omicron-variant dominance with admission testing (starting December 14, 2021), and SARS-CoV-2 omicron-variant dominance without admission testing. **Results:** During the study period, there were 518,379 COVID-19 admissions in England, including 398,264 community-onset and 120,115 hospital-onset cases, and 46,517 COVID-19 admissions in Scotland, including 34,183 community-onset and 12,334 hospital-onset cases. The mean weekly ratio of new hospital-onset SARS-CoV-2 infections versus community-onset admissions in England rose from 0.12 during the SARS-CoV-2 delta-variant surge to 0.33 during the SARS-CoV-2 omicron-variant surge to 0.48 after universal admission testing ended (Fig.). There was a significant immediate level change both after the SARS-CoV-2 delta-to-omicron variant transition (92% relative increase; 95% CI, 58%–127%) and after admission testing ended (32% relative increase; 95% CI, 14%–50%). Likewise, the mean weekly ratios rose from 0.11 to 0.43 to 0.89 during their analogous periods in Scotland, with significant level changes both after SARS-CoV-2 delta-to-omicron variant transition (113% relative increase; 95% CI, 54%–172%) and after admission testing ended (72% relative increase; 95% CI, 43%–100%). No significant trend changes were observed. **Conclusions:** Stopping asymptomatic screening of hospitalized patients in 2 national health systems was associated with significant increases in hospital-onset SARS-CoV-2 infections. Nosocomial SARS-CoV-2 remains a common and potentially morbid complication, with reported mortality rates for nosocomial infections by SARS-CoV-2 omicron variant ranging from 5% to 13%. Preventing infections in vulnerable populations remains an