

Figure 1. A comparison of hematologic malignancy unit Hand Hygiene Champion compliance observations before and after Infection Preventionist re-education.

surveillance noted an increase in hospital-acquired infections (HAI) Clostridioides difficile infections (CDI), catheter-associated urinary tract infections (CAUTI), and multidrug-resistant organisms (MDRO) on our hematologic malignancy units (HM), which initiated an Infection Control (IC) investigation into possible causes. Increased rounding by our Infection Preventionist (IP) observed that HH compliance was much lower than unit HHO reported rates. Inquiries into this data discrepancy revealed barriers to accurate reporting, including HHO having low confidence in identifying and reporting non-compliant behavior. To that end, we conducted mandatory re-training of all HM HHO with the primary goal of improving the quality of our HH compliance data and addressing barriers with non-compliance reporting. Our secondary goal was to identify areas of improvement in institutional HH rates. **Methods:** In August 2023, 252 HM staff and HHO received detailed, in-person retraining by the HM IP. Training included reviewing the discrepancy in HHO and IP observations, potential causes of discrepancy, most commonly missed HH opportunities, examples of correct and incorrect HH practices, and addressing staff questions. **Results:** Following mandatory re-training of HM HHO, HH compliance for our HM units from September 2023 – December 2023 ranged from 89% to 98%, with increased reporting of non-compliance (Figure 1). A detailed dashboard was created that focused on HM HH compliance, containing the HHO observations and non-compliant reports. **Conclusion:** A one-time in-person retraining of HM HHO by our IP has led to an improvement in data quality, which is imperative for future quality improvement initiatives. Improving our HH data quality allowed IC to identify and provide actionable feedback to HM leaders, create targeted interventions to improve HAI rates, and improve patient safety. Future goals include retaining of all HHO and a HH campaign to ensure patient safety across our institution.

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Subject Category: Hand Hygiene

Assessing the quality of Hand Hygiene data produced by Alberta Health Services using a time-in-motion study

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Background: Alberta Health Services (AHS) measures hand hygiene compliance through direct observations performed by trained site-based reviewers (SBRs) and facilitated by the Infection Prevention and Control (IPC) program. Within AHS there are >100 acute care facilities, ranging in bed size from four beds to more than 1,000, with catchment populations ranging from one million. A time-in-motion study using trained AHS IPC staff was proposed to validate the completeness and accuracy of data being collected by the SBRs. **Methods:** The AHS IPC staff

performed direct observations at pre-selected facilities across all five zones and four different unit types (emergency, medical, surgical, and intensive care) for four 30-minute periods during weekdays between June and September 2023. An iPad app was used to capture results from all four moments of hand hygiene. The reviewer indicated the day and time of the review and captured as many representative hand hygiene moments and healthcare providers as possible. The distributions of the four moments of hand hygiene, healthcare provider group and overall compliance were compared at the unit type and facility level (tertiary, large urban, regional, pediatric, and small sites) between this time-in-motion study and SBR data collected June-September 2023. **Results:** The study collected 175 reviews and 4,683 observations from 14 facilities and 48 units. Between June and September 2023, SBRs collected 2,625 reviews and 61,506 observations from these same facility and unit types. Across all facility and unit types, the distribution of the four moments was similar between the study and SBRs. Similar proportions of healthcare providers were also observed. However, the overall hand hygiene compliance collected in the study was approximately 10% lower across all unit types as compared to that collected by the SBRs (study: 63%-84%; SBRs: 75%-92%). **Conclusions:** In public health surveillance, completeness and accuracy are two characteristics of high-quality data. A time-in-motion study identified that the hand hygiene observations collected by SBRs were complete, as the range of healthcare providers observed, and the distribution of their moments, mirrored that collected in the study. However, the SBRs reported higher compliance than the study participants and the true hand hygiene compliance is likely lower than what is currently being reported. Since this difference was seen consistently across all unit and facility types, trending data over time should still identify areas in need of improvement and may help to suggest causes of the over-reporting.

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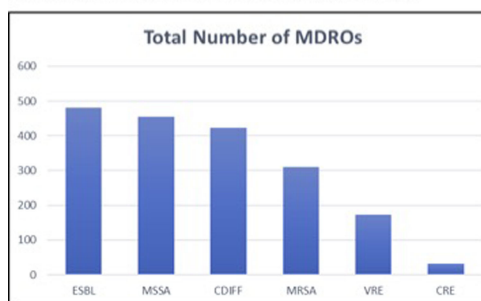
Subject Category: Hand Hygiene

Relationship between Hand Hygiene and MDRO Acquisition after Implementation of an Electronic Hand Hygiene Monitoring System

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Background: Hand hygiene (HH) is fundamental to preventing the transmission of pathogens between patients. Unfortunately, adherence to HH is suboptimal and monitoring adherence is challenging. Electronic HH monitoring systems (EHHMS) are emerging potential solutions to increase the number of HH observations and eliminate the potential for observation

Figure 1. Total number of MDROs, January 2021 – September 2022



Abbreviations: ESBL, extended-spectrum beta-lactamase producing Enterobacterales; MSSA, methicillin-susceptible Staphylococcus aureus; CDIFF, Clostridioides difficile; MRSA, methicillin-resistant Staphylococcus aureus; VRE, vancomycin-resistant enterococci; CRE, carbapenem-resistant Enterobacterales

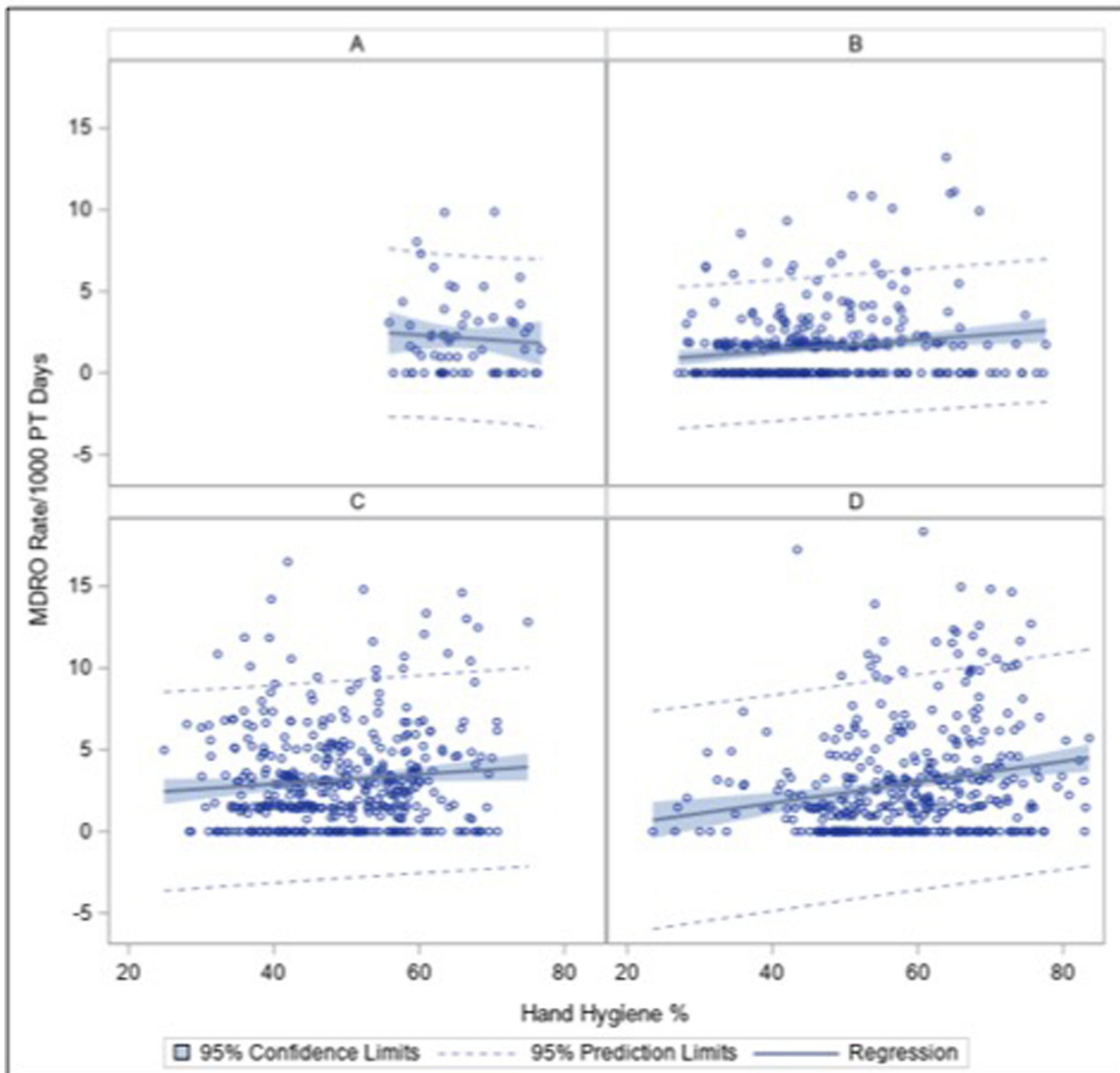
Figure 2. Association between hand hygiene adherence and HO-MDRO rate/1000 patient-days*

HH Adherence Quartiles**	Rate Ratio (95% CI)	p-value
Quartile 2 vs 1	0.97 (0.82, 1.15)	0.70
Quartile 3 vs 1	0.96 (0.79, 1.17)	0.69
Quartile 4 vs 1	1.05 (0.86, 1.28)	0.62

*Adjusted for number of tests ordered per month per unit
 **Quartile 1 – low adherence, Quartile 4 – high adherence
 Abbreviation: HO-MDRO, healthcare facility-onset multidrug-resistant organisms and *Clostridioides difficile*

bias. This aim of this study is to assess the impact of improved HH adherence after the introduction of an EHHMS on the rates of healthcare facility-onset multidrug-resistant organisms and *Clostridioides difficile* (HO-MDRO). **Methods:** We performed a retrospective, quasi-experimental study to evaluate the impact of HH on HO-MDROs across 4 acute care facilities (59 hospital units, 14 of which were ICUs) from January 2021 - September 2022 after implementing an EHHMS in a large academic healthcare system. Clinical cultures from all sources were included; routine surveillance cultures were not collected during this period. HO determination was made using National Healthcare Safety Network (NHSN) definitions. The association between monthly unit-level HH adherence (%) and

Figure 3. Association between hand hygiene adherence and HO-MDRO rate by facility using unadjusted regression lines*



*Each letter represents a single hospital; Each dot represents a single unit per month
 Abbreviation: HO-MDRO, healthcare facility-onset multidrug-resistant organisms and *Clostridioides difficile*

HO-MDRO rate per 1000 patient-days was assessed using mixed-effects Poisson regression using rate ratios (RR), which accounts for unobserved heterogeneity between units while controlling for number of tests ordered per month per hospital unit. HH adherence was stratified in quartiles (Q1: 24-43%, Q2: 43-51%, Q3: 52-61%, Q4: 61-84%). **Results:** During the study period, there were 23 million HH opportunities and 1875 MDROs in 772,930 patient-days. HH adherence increased from 41% January 2021 to 57% September 2022. ESBL, MSSA, and CDIFF accounted for most MDROs (Figure 1). The mean monthly HH adherence rate was 52% per unit, with a median of 1.66 (IQR: 0-3.5) MDROs/1000 patient-days. Mixed-effects Poisson regression suggested no significant overall relationship between HH adherence and MDRO rate (Figure 2). A close to null association was observed when comparing quartile two to quartile one (RR: 0.97, 95% CI: 0.82, 1.15), quartile three to quartile one (RR: 0.96, 95% CI: 0.79, 1.17), and quartile four to quartile one (RR: 1.05, 95% CI: 0.86, 1.28). Results were similar across hospitals (Figure 3). **Conclusions:** Although implementing an EHHMS led to an improvement in HH adherence, we were not able to demonstrate a resultant decrease in HO-MDROs. Potential explanations include the relatively rare outcomes of interest, unrecognized confounders, and the complex interaction between HH and HO-MDROs, since poor HH adherence on a unit may lead to increased attention from infection prevention and therefore increased focus on other MDRO prevention measures.

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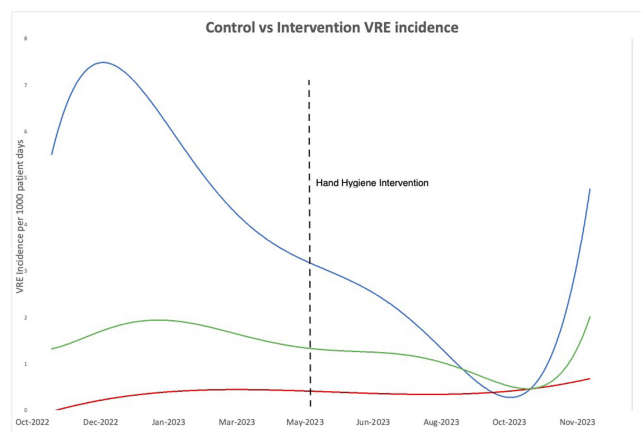
Poster Presentation - Poster Presentation

Subject Category: Hand Hygiene

Empowering Patient Hand Hygiene and Reducing Infection in the Oncology Population

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Background: Significant focus has been placed on healthcare worker hand hygiene, but little attention has been assigned to the role of patient hand hygiene (HH) in reducing hospital acquired infections. Therefore, in this quality improvement study, we examined the impact of providing patients with hand hygiene products around mealtime on increasing patient HH adherence and on reducing acquisition of nosocomial antibiotic resistant organisms. **Methods:** Patients on two inpatient leukemia units at a tertiary oncologic center were provided with a single use pre-packaged alcohol wipe on their meal trays prior to every meal (three times daily). Additionally, an information card explaining to patients how and when to use the alcohol wipe was provided on the meal trays three times a week. Both the wipe and instructions were designed with input from patient representatives at the hospital. Two oncologic control units were selected where no specific intervention for patient hand hygiene was conducted. Patient hand hygiene adherence on the control and intervention units were measured through once monthly patient interviews conducted after meals where patients were asked to recall whether they washed their hands prior to eating (using any product). Vancomycin Resistant Enterococcus (VRE) incidence was compared on the intervention and control units during the 7 months prior and 7 months following initiating the intervention. **Results:** During the seven-month intervention period, more than 15 000 wipes were dispensed to patients on the intervention units. Through interview, 91% of 87 patients on the intervention units reported cleaning their hands before eating a meal using any cleaning product compared to 72% of 68 patients on the control units ($X^2 = 9.32, p = 0.002$). Furthermore, on the intervention units, 30 (38%) patients endorsed using the provided hand hygiene product. During intervention period, the combined incidence rate of VRE the intervention units was 1.85 case/1000 patient-days compared to 5.35 cases/1000 patient-days during the 7 months prior to intervention



($t = 3.24, p=0.007$)(Figure 1). **Conclusions:** This patient-centered quality improvement intervention increased patient hand hygiene and potentially reduced VRE incidence in a vulnerable oncologic population. This practical intervention that incorporated the patient perspective provided accessible hand hygiene products with simple instruction and reminders required minimal participation of unit staff. Further application of the intervention in non-oncologic populations is needed to further establish the relationship between patient hand hygiene and the acquisition of nosocomial infections.

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Managerial Influence on Infection Prevention and Control (IPC) Implementation in Israeli Hospitals: A Doctoral Research Study

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Background: This research, part of a doctoral study, aims to examine the impact of managerial factors on the implementation of Infection Prevention and Control (IPC) measures in Israeli hospitals. The study focuses on identifying key facilitators and barriers from the perspectives of physician and nurse managers, with an emphasis on understanding the integration of managerial strategies and theoretical frameworks in IPC implementation. **Objective:** The objective is to explore specific managerial factors, both facilitators and barriers, influencing the effective implementation of IPC measures. The research investigates these influences through the lens of physicians and nurses managing IPC units in public hospital settings. **Methodology:** A mixed-method approach was adopted, involving in-depth interviews with ten IPC-Unit managers (five physicians and five nurses) and a comprehensive questionnaire distributed among IPC-Unit heads. The study's demographic and professional profiles of participants are detailed in Table 1. The data collection process encompassed an Activity Assessment Questionnaire (2-AAQ) and an Organizational Change Implementation Questionnaire (3-OrgChangeImplQ), with the distribution of responses categorized by implementation stages and sociological theories (Tables 2-4). **Result:** Managerial autonomy emerged as a significant catalyst for IPC implementation, with supportive leadership and resource allocation being critical. Differences in approaches between physician and nurse managers were observed, reflecting diverse strategies in planning, execution, monitoring, and maintenance of IPC measures. The findings also revealed a natural alignment with sociological theories, particularly Normalization Process Theory (NPT) and Diffusion of Innovations (DOI), despite a lack of formal training in these areas. **Conclusions:** The study underscores the multifaceted nature of IPC implementation, highlighting the importance of managerial autonomy,