		VACCINE STATUS		
Patient	Unvaccinated	Partially vaccinated	Primary series	Up-to-date
COVID +	9	6	18	6
COVID -			5	3

and aggressive vaccination are all crucial to minimizing the impact of future outbreaks.

Disclosures: None

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Patient Safety
Modeling methicillin-resistant *Staphylococcus aureus* (MRSA) acquisitions in the intensive care unit with different staffing levels and finite direct-care tasks
Stephanie Johnson; Matthew Mietchen and Eric Lofgren

Background: Modeling is a cost-effective way to evaluate interventions pertaining to hospital infection acquisitions, such as staffing levels. Increasing the number of nurses in an intensive care unit affects rates of HAI transmission. The way compartmental models are often formulated assumes that there is a never-ending series of tasks for workers to perform. Our previous models used a baseline of 1:3 nurse:patient ratio, and we kept the number of tasks the same across staffing ratios. We wanted to understand how having a finite number of tasks, using this baseline number, across staffing levels affected HAI acquisitions. **Methods:** We used a stochastic mathematical model of methicillin-resistant *Staphylococcus aureus* (MRSA) to study the impact of changes in staffing and a finite pool of tasks on hospital-associated acquisitions. For a 15-bed intensive care unit (ICU), we have 1 intensivist, and we set the nurse:patient ratios at 1:1, 1:1.5, 1:2.5, 1:3, 1:5, and 1:7.5, to represent the extreme ends of staffing levels and more moderate values in line with critical care society guidelines. Each model was run 1,000 times. The outcome of each scenario is the median number of hospital-associated MRSA acquisitions in 1 year from those 1,000 runs. **Results:** Treating the 1:3 nurse:patient ratio as the baseline, with 45 MRSA acquisitions per year, increasing the number of nurses from 5 to 6 (moving to a 1:2.5 nurse:patient ratio) had a relative risk (RR) of 0.77, suggesting that a small change in nurse staffing levels might have an outsized impact on rates. More dramatic changes had correspondingly larger swings in MRSA acquisition rates, with 1:1 nurse:patient ratio scenarios having an RR of 0.17, and at the other extreme, a 1:7.5 nurse:patient ratio having an RR of 4.66. Comparing the infinite to finite models, the ratios with more nurses had lower acquisition rates, with decreases ranging from 20% to 50%. Ratios with fewer nurses in the ICU showed 100%–400% increases in the number of acquisitions. All results were statistically significant. **Conclusions:** As nurse:patient ratios go up, the burden of direct-care tasks fall on fewer people, which has a direct impact on HAI rates. Our model demonstrates this hypothesis. Therefore, appropriate staffing should be considered in infection control guidelines, and the cost of staffing should be weighed against its impact on infection prevention as well as other areas of patient care. In this study, we considered only the impact from changes in contact patterns emerging from different staffing levels. Further insights may exist when considering other outcomes that also accompany increased staffing.

Disclosures: None

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Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Patient Safety
Electrifying the case review process for better speed, reach, and impact
Jennifer Gutowski; Melissa Bronstein; Adam Tatro; Stephany Frey and Emil Lesho

Background: Prevention of healthcare-associated infections (HAIs) requires timely feedback to and input from all staff involved in patient care to best identify practice gaps and improvement targets. However, multidisciplinary review of HAI events can be challenging to promptly complete given staffing shortages and the excess administrative burden of emailed and printed forms and disjointed analyses, reporting, and visualization tools. Plagued by a lack of feedback from attending and ordering physicians, difficulty transcribing and analyzing nonstandardized data, and challenges in summarizing and distributing actionable findings, we sought to reduce turnaround time (TAT), improve data collection, and broaden communication of HAI contributing factors and proposed solutions. **Methods:** A secure web application for electronic data capture and reporting, Research Electronic Data Capture (REDCap), was used; the software application is free to nonprofit organizations. The review process is now initiated by an infection preventionist entering HAI information into an initial survey, which automatically cascades information into 4 subsequent surveys, distributed through automated email links, providing an opportunity for individual responses from the nursing unit, the attending provider, an infectious disease physician, and the ordering provider for the positive test that detected the HAI. Survey questions focus on evaluation of adherence to CDC and SHEA HAI prevention strategies. Reminders are automatically generated and continue to be sent to involved staff until their portion is completed. Survey responses are automatically summarized upon completion of all reviews and are shared with several stakeholders, including hospital leadership, the care team, infection prevention staff, and quality-control partners (Fig.). Discrete qualitative and quantitative data are exported in a standard application-programming interface (API) format for immediate analysis and interpretation. **Results:** After the review process was launched using new electronic technology, the average TAT and completion rate improved from 23 days and 40% to 7 days and 95%, respectively. Input from ordering and attending physicians, once extremely rare, became frequent. Nuanced insight into causative and preventive factors, previously unachievable, occurred during review of all 38 HAIs reported in December 2022. Reviewers believed that 48% of HAIs reviewed could have been prevented. **Conclusions:** Applying electronic technology to HAI case review improved completion and timeliness of reviews by both providers and nurses. By sharing data and insights with all stakeholders in real time, the new procedure permitted multidirectional communication between the care teams and increased awareness of patient harm as well as ownership of patient safety. Our process is freely and readily generalizable to any nonprofit healthcare facility.

Disclosures: None

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