

Advancing Patient Safety: Integration of a Root Cause Analysis for Hospital Acquired Infections using a PDSA Model

Courtney Foody DNP, RN, PCCN, NEA-BC, CPHQ,
Elizabeth Zuccarelli BSN, RN, CIC & DawnMarie Rumovitz MSN, RN, CIC

Virtua Health



BACKGROUND

As a safety initiative Virtua Mt. Holly & Virtua Willingboro launched a new process related to hospital acquired infections. Hospital acquired infections (HAIs) are infections that patients acquire while receiving treatment in a healthcare facility and pose significant risks to patient safety. HAIs occur after 48 hours after hospital admission, 3 days after discharge, or 30 days following a surgical procedure (NHSN, 2025). Preventing HAIs involves several key practices which the debriefing process helps to identify.

Adherence to strategies to decrease HAIs is essential for maintaining quality care and minimizing risks to patients. Virtua Mt. Holly and Virtua Willingboro were benchmarking above national standards and above our internal goal. Our goal of zero harm was not being met. The number of HAIs caused the sites to evaluate the process and awareness to interventions to decrease HAIs. It was clear our processes needed to be adjusted to meet our goals.

OBJECTIVES

The objectives of this project is to ensure clarity and consistency are present within the culture of preventing HAIs. The project aims to reduce HAIs by improving management of patients at risk for HAIs. Reducing HAIs in return allows the campuses to maintain the safety of the patients. The call action was in March of 2024. The Assistant Vice President of Quality Management and Infection Control Managers launched a new debriefing format for all HAIs that was aimed to discover opportunities in practices. Since the launch in 2024 the interventions and modifications to HAIs management has become a proactive interdisciplinary effort to continue to strive for zero harm.

Since 2023 Virtua Mt. Holly and Virtua Willingboro's Standard Infection Ratio (SIR) continuously decreased to align with national benchmarks and strive towards achieving zero harm. This decrease is directly associated with the integration of the root cause analysis for HAIs.

The two sites are broken down by infection, SIR, and current goals for each individual infection in figure 1. The categories of HAIs positives help the team to identify the workflows to be reviewed as seen in figure 1. During the review it was confirmed that in order to meet and surpass the national benchmarks that a deep dive into each case was needed to decrease HAIs (Venier, 2015).

The debriefs include chart reviews, interviewing key care takers, review of best practices, and developing a plan of care that is patient specific.

Virtua North		Infections			SIR			2025 Goals	
		2023	2024	2025	2023	2024	2025 thru June ^A	#	SIR
Central Line Associated BSI									
Mt Holly	1	3	1	0.137	0.431	0.284	≤ 2		
Willingboro	4	0	0	2.917	0.000	nc	0		≤ 0.369
Urinary Catheter Associated UTI									
Mt Holly	6	6	2	0.545	0.568	0.361	≤ 5		≤ 0.500
Willingboro	0	1	1	0.000	0.796	nc	1		
Hospital Onset C difficile									
Mt Holly	9	6	4	0.269*	0.180*	0.233*	≤ 8		
Willingboro	3	2	2	0.382	0.304	0.430	≤ 1		≤ 0.259

nc = not calculated because predicted number of infections < 1.0
* statistically significant ^AC diff SIR updated quarterly

Figure 1

Learning Objectives

- Identified a gap in determining the NHSN definition in relation to Hospital Acquired Infections (HAI) resulting in overreporting of HAIs.
- Impact: poor metrics in comparison to other like facilities that was not reflective of care provided, potential delays or overtreatment for HAIs

METHOD

The Virtua Mt. Holly and Virtua Willingboro Assistant Vice President of Quality and Infection Control Managers have conducted a literature search on best practices. The team in 2024 launched a new process in investigating possible practice changes to reduce HAIs based the evidence. This PDSA project included several revisions since initiation of the process. In current state the local Infection Control Manger conducts a Go, No Go meeting with local and Corporate leaders for any possible HAIs (figure 2). During this meeting, the team determines if the definition for reportable is met, if a root cause analysis is needed, who needs to be included in the investigation, and what observations are needed. Learning the workflow of the area through observations to help better understand and support the department to reduce potential HAIs in the future is completed (Tannenbaum & Greilich, 2023).

In addition to these standard questions additional ad hoc members are identified and invited to a second meeting. The second meeting involves all key stakeholders and other experts in the system. During the meeting, a process map of what should have happened and opportunities that were identified are discussed. An action plan is developed at the end. The action plans vary based on the situation. For example, making sure practice and policy meet or developing a specific long-term care plan for an individual patient that is added to the EMR. There have been successful changes in the workflows of departments that have reduced HAIs from 2024 into 2025 related to the open discussion during the Go, No Go and Debriefing meeting (Figure 2). The continued revisions helped to allow the debriefs to be meaningful by impacting patient care.

The first revision was **September of 2024 which included the debriefing tool that included deviations and opportunities from the deviation**. In **November 2024**, the team started to discuss a new revision that was launched in **January 2025** that included a formal Go, No-Go to determine reportability and key stakeholders in the care and management of the patient during the encounter. In **June of 2025**, the team began to review near misses and review what successful interventions were implemented to prevent the HAI. As of **July of 2025**, the team has started to identify high risk patients for HAIs and develop plans to prevent HAIs from occurring by developing a detailed plan of care based on known barriers and behaviors. To date there has been key strategies to reduce HAIs that have developed by the interdisciplinary team including 3 long-term care plans for high-risk patients.

Call to Action

In addition to the debriefing process, the team has implemented a **Call to Action** during orientation. The team meets with new orientees who are working at the bedside as well as meeting with new leaders. The emphasis of importance is started on hire and continued throughout one's employment.

As a result, information was shared in CCG, OMG, and staff meetings to increase awareness of the debriefings of HAIs. The team rounds to influence employees on HAIs with a focus on the steps of prevention. The team rounds on all units with a monthly topic that rotates including the following topics: CLABSI, CAUTI, C-Diff, SSI, SSI Colons. The rounds include education, hands on demonstration, and interactive games to help reinforce key steps to reduce HAIs.

RESULTS

HAI Debriefing was launched in 2024; Virtua Mt. Holly had a total of 4 debriefings and Virtua Willingboro had a total of 3 debriefings. Of the total of 7, 4 resulted in an RCA. On May 22, 2025, the Nurse Directors, Assistance Nurse Managers, and Advanced Nurse Clinicians were all sent a 6-question poll to determine the impact of the new HAI debriefing process. The poll was sent out to 33 people and 17 responses came back; the response rate was 51% percent.

The leaders were asked questions anonymously to allow unbiased feedback on the debriefing process. 53% of responses have directly completed the new format while 29% of the responses have been included in the debriefs without completing the new documents. The end users using the forms are solely working with the new tools that were developed, and no previous forms was 59%. 71% of the responses answered that the new debriefing format is providing more actionable items to prevent future HAIs on the campus. 79% of the responses stated that the new format is providing further details that require investigation that have not previously been identified or capture in the previous format. 71% of the responses stated that the new HAI format is allowing for stronger actions to prevent future HAIs by altering the workflow when a HAI is confirmed.

The key principles of being preoccupied with implementing sustained change is by all staff members being aware of events and learnings on how to prevent a similar HAI in the future. Using staff meetings, huddles, e-mails, and at the elbow training is a key focus to reducing HAIs. Using the acronym STAR, stop, think, act, and review the situation helps to prevent HAIs for at risk patients. In addition, using SBAR to have closed loop communication has proven to prevent over reporting (World Health Organization, 2010).

The team continues to drive to zero HAIs by using the Go, No Go and the formal debriefing tools and processes. The formal debriefing tools include the SOP for the debriefing, the SBAR, and the process map which provides insight into how to better meet the patient where their needs are to prevent HAIs (Figure 2 & 3).

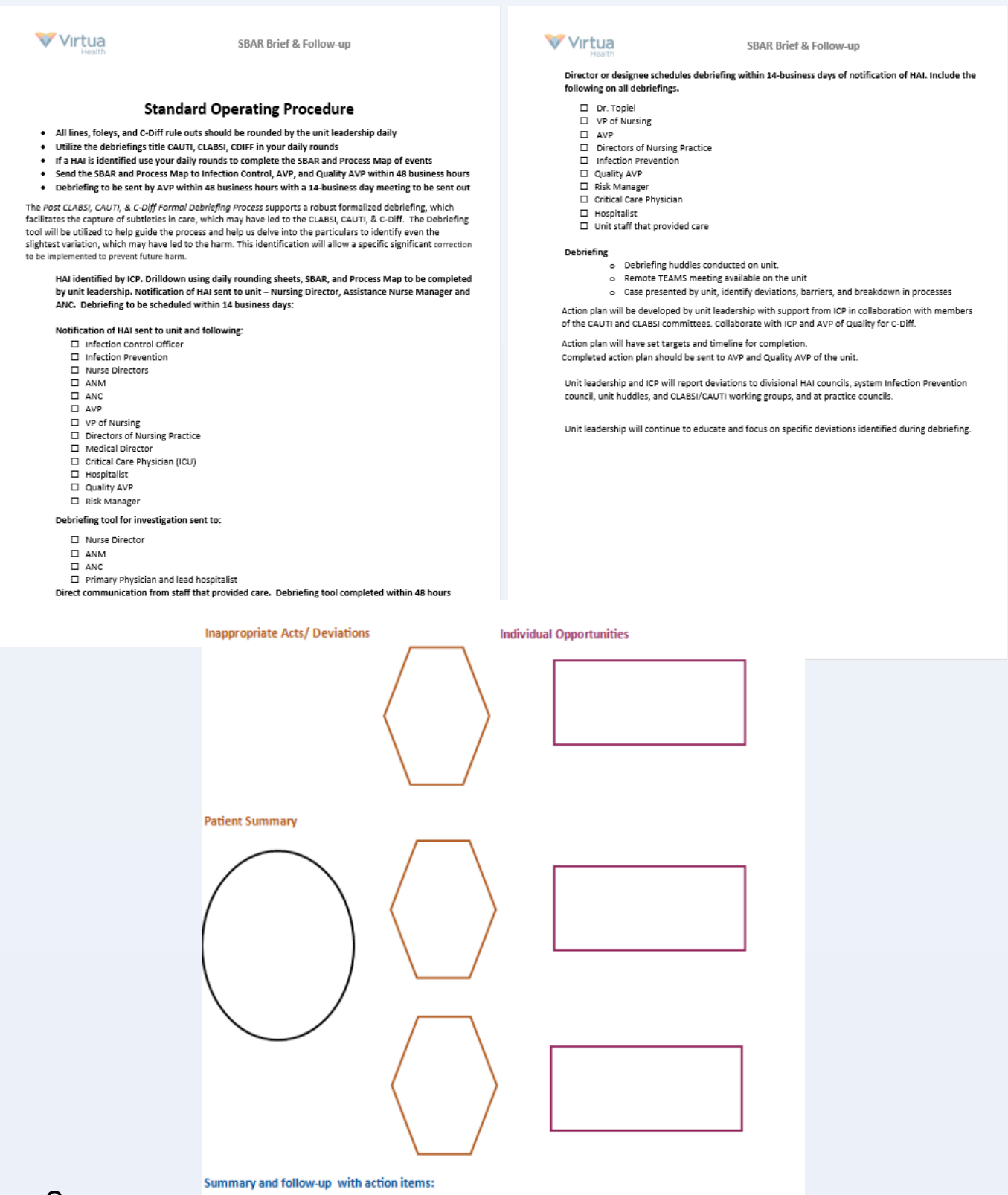


Figure 3

Conclusion

When properly implemented early identification of high-risk patients can prevent HAIs from occurring. Fostering a culture of safety where frontline workers will know they can stop the line when they notice a potential hazard increases the safety of our patients. The most important aspect of reducing HAIs is having employees who feel safe and empowered to speak up to a health care team member when a process is not followed (World Health Organization, 2010).

Since launching the latest revisions, the team has 7 Go, No-Go's. Of the seven Go, No-Go's 3 were determined not to meet criteria of a HAI. However, these 3 patients were considered high-risk and had long-term care plans entered into the system to reduce the risk of an HAI if admitted again with the same risk such as a foley or central line in place. Being able to identify patients at risk and develop a long-term care plan for the staff to implement when admitted allows the staff to promote a proactive care model that fosters safety of our patients with each encounter.

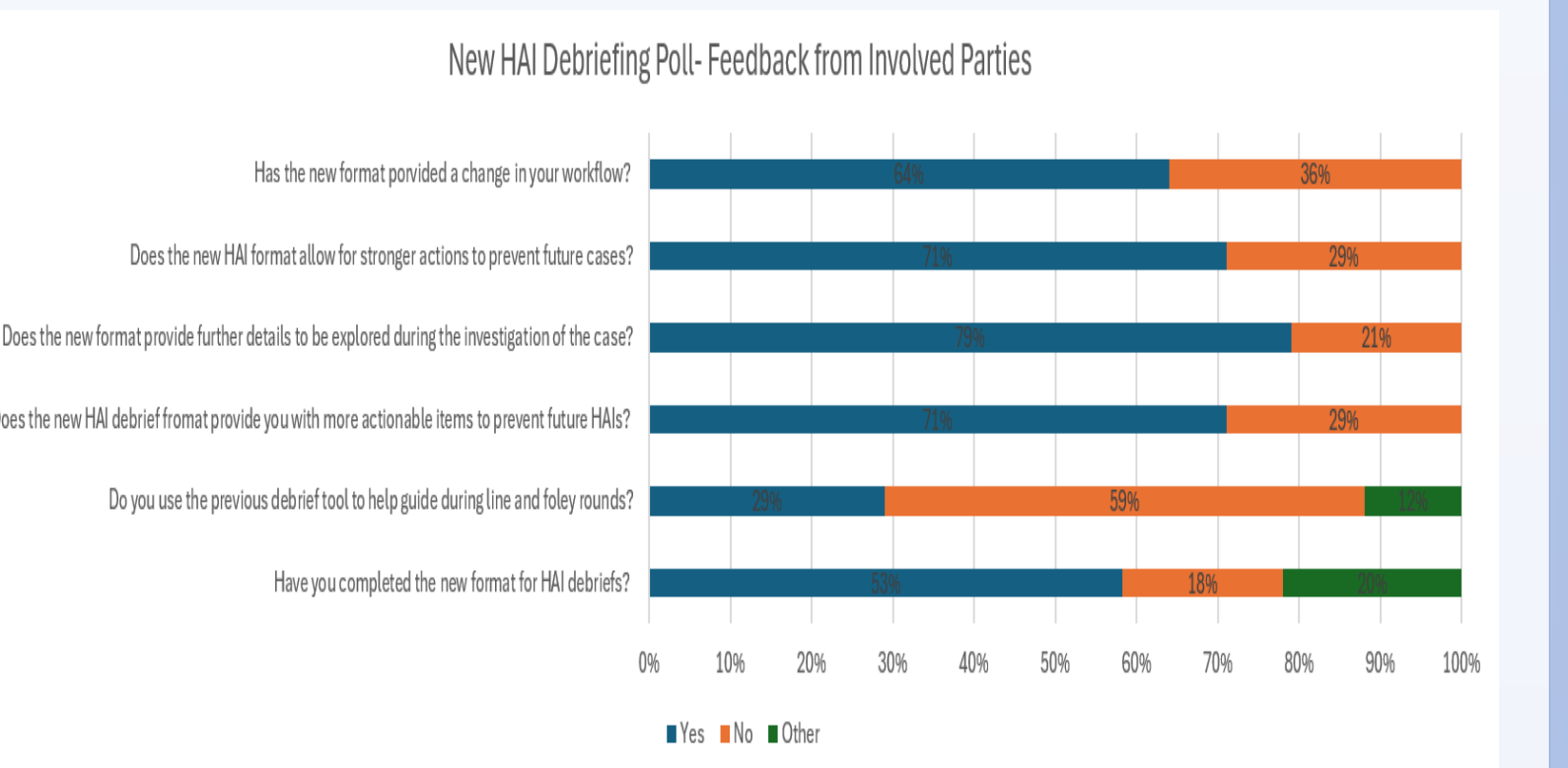


Figure 4

Overall, Virtua Mt. Holly and Virtua Willingboro have made a large stride to having zero harm to our patients with each encounter. The results from the poll have proven that the new format is changing workflows of the team. The Root Cause Analysis is providing meaningful actions to reduce HAIs. The debriefing has incorporated interviewing key stakeholders to better identify interventions (Percarpio & Watts, 2013). These interventions that have been implemented into practice post debriefing has proven to be sustainable. The results of the survey are in figure 4.

REFERENCES

- Percarpio, K. B., & Watts, B. V. (2013). A cross-sectional study on the relationship between utilization of root cause analysis and patient safety at 139 department of veterans affairs medical centers. *Joint Commission Journal on Quality & Patient Safety*, 39(1), 32–37. [https://doi.org/10.1016/s1553-7250\(13\)39006-0](https://doi.org/10.1016/s1553-7250(13)39006-0)
- Tannenbaum, S. I., & Greilich, P. E. (2023). The debrief imperative: building teaming competencies and team effectiveness. *BMJ Quality & Safety*, 32(3), 125–128. <https://doi.org/10.1136/bmjqs-2022-015259>
- Venier, A.-G. (2015). Root cause analysis to support infection control in healthcare premises. *Journal of Hospital Infection*, 89(4), 331–334. <https://doi.org/10.1016/j.jhin.2014.12.003>
- World Health Organization, (2010) Patient safety workshop learning from error. [Patient safety workshop: learning from error](https://www.who.int/publications/i/item/patient-safety-workshop-learning-from-error).