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Engagement and Bundle Compliance during COVID-19: A Virtual Strategy

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Abstract

Introduction: COVID-19 forced industries to change work processes; this was no different for those working to improve patient outcomes in healthcare. Due to competing priorities, many hospitals struggled with the upkeep of hospital-acquired condition (HAC) auditing and engagement. Children's National hospital developed a three-pronged approach for virtual engagement and sustainment of the processes necessary to achieve and maintain goal auditing and bundle compliance in three HACs: unplanned extubation, central line-associated bloodstream infections, and employee staff safety overexertion injuries. **Methods:** The overall goal was to create a flexible approach to maintaining engagement while relying on virtual communication. **Aim:** To maintain, without a decrease of more than 20%, the baseline bundle compliance per month for each HAC (unplanned extubation, central line-associated bloodstream infections, and employee staff safety) from March 2020 to March 2021. Our approach to increasing bundle compliance (primary outcome measure) and audits (process measure) included: regular leadership meetings using multiple virtual modalities, improving the audit process, and ensuring fidelity to bundle elements. **Results:** Qualitatively, we have found that microsystem leaders regularly engage with quality improvement staff and their teams using virtual touchpoints and ongoing communication. We exceeded the goal of maintaining our monthly bundle compliance, and we saw a significant positive change in the rate of audits after COVID-19. **Conclusions:** In a time of change during a pandemic, increased engagement in HAC work can adapt structure and processes. Our results are generalizable by increasing touchpoints using multiple virtual modalities. *(Pediatr Qual Saf 2022;7:e540; doi: 10.1097/pq9.0000000000000540; Published online March 30, 2022.)*

INTRODUCTION

COVID-19 forced industries worldwide to change their routines and everyday processes; this was no different for hospital employees and those working to improve patient outcomes in healthcare. With these changes in processes, many hospitals have struggled with quality improvement work during COVID-19 due to competing safety and operational priorities.[1] Hospital-acquired condition (HAC) auditing and engagement are two elements of quality improvement and patient safety work that are at risk for being left behind in the focus of pandemic medicine. Most nonclinical hospital workers abruptly changed to remote work, challenging long-established HAC structures and procedures. In Donabedian's healthcare quality model, when there is a change in the structure of care, there should be subsequent improvements in the clinical processes with improvements in their outcomes.[2] In this case, the risk of harm from HACs does not stop during a pandemic; in fact, the risk may be increased due to changes in hospitals' typical care practices. Our institution was not alone in the many disruptions to our regular care structure during COVID-19.[3] We struggled with personal protective equipment, change in the environment of care, and reallocation of resources. Our hospital's focus on quality improvement and patient safety could has easily been changed as well. Therefore, despite the changes occurring during COVID-19, we needed to adapt quickly to maintain robust structure and processes.

It is well-known that a reduction in HACs is associated with an increase in bundle compliance.[4] There was a significant amount of work done before COVID-19 to facilitate hospitals to improve their bundle compliance. When the Institute for Healthcare Improvement first proposed

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bundle care, it was suggested that hospitals attain 95% compliance to care bundles for all eligible patients.[5] Quality improvement and patient safety work typically rely on in-person meetings, auditing, and education. The most important and most commonly used aspects of bundle compliance are the following: educational materials, outreach visits, nursing or medical leadership opinions, feedback, reminders, family participation, multidisciplinary rounds, and special implementation teams.[6] It is notable that most of these processes include in-person engagement. However, it has not been previously reviewed how to attain this same degree of fidelity using a virtual setting, such as the one many hospital workers have become accustomed to over the last year. Therefore, the conversion to reliance on virtual modalities created significant and unique challenges to hospitals in 2020.[7] The Children's National quality improvement education team was meeting similar challenges in converting previously in-person teaching to virtual education without compromising the learner's abilities to implement quality improvement strategies in actual practice.[8]

This quality improvement report details our pediatric tertiary care hospital's rapid pivot to a virtual environment where the teams were forced to rethink standard work and ensure quality improvement continued. In addition, we tasked ourselves with keeping healthcare workers engaged with the competing priorities of continuing healthcare during COVID-19. To describe our transition, we will describe our success using three HAC examples: unplanned extubations (UEs), central line-associated bloodstream infections (CLABSIs), and employee staff safety (ESS) overexertion injuries.

Children's National Hospital uses the solutions for patient safety definition for each HAC. A UE is "any dislodgment of an endotracheal tube from the trachea that is not intentional." A CLABSI is a "laboratory-confirmed bloodstream infection where an eligible bloodstream infection organism is identified, and an eligible central line is present on the day of the event or the day before." An ESS overexertion injury is one where an employee or staff is hurt in the workplace, causing "the worker to take time off from their job or be transferred to another job or doing lighter (restricted) duties."[9] These HACs were chosen as they were deemed the most critical for patient safety to concentrate on compliance and engagement during the change in processes due to COVID-19. To address this immediate need to pivot our care model to virtual-based, Children's National Hospital developed a three-pronged approach for virtual engagement and sustainment of the processes necessary to achieve and maintain goal UE, CLABSI, and ESS outcomes. The lessons learned during this initiative will extend beyond COVID-19 and permanently change the virtual rounding concept in the future.

Global and Specific Aims

The overall goal of this article is to preserve engagement by creating a flexible approach to maintaining patient and staff safety during the change to reliance on virtual communication modalities. Specifically, our aim for this initiative is to maintain, without a decrease of more than 20%, the baseline bundle compliance (0.813) per month for each HAC (UE, CLABSI, and ESS) from March 2020 to March 2021.

METHODS

Each team (UE, CLABSI, and ESS) comprises multidisciplinary members (nursing, educators, and physicians) and is facilitated by a performance improvement consultant. The performance improvement consultant is part of a centralized team who oversees various process improvement projects in the hospital. The consultant is responsible for creating work plans, metric development, and execution of improvement initiatives. After implementing improvement projects, the consultant is responsible for monitoring progress and timely completion of any deliverables. Although audits occur individually based on the HAC and the unit, the model is the same everywhere in the hospital: consultants work with the leadership and unit directors to ensure audits are occurring regularly and provide support and accountability to ease the process of auditing. Before COVID-19, our processes for auditing HAC work relied on in-patient meetings and rounding. For example, the performance improvement team members attended in-person endotracheal tube rounds to remind the team regarding the importance of continuing to audit for unintended extubations. These endotracheal tube rounds occur via a multidisciplinary process, wherein a physician leader prepares for rounds by identifying the intubated patients and looking at patient-specific information (location of endotracheal tube on chest radiograph, sedation medications, etc.), and then rounds with the bedside nurse, a nursing educator, respiratory therapist, professional practice specialist, and performance improvement consultant on each intubated patient to review specifically identified process measures. In addition, the ESS team met in-person twice a month with auditors to discuss bundle compliance. Previously, the CLABSI professional practice specialists performed audits or delegated to team members to go to units in the hospital and physically assess the rooms, equipment, dressings, or test the bedside nurses on their bundle knowledge. At the end of the month, if there were a particularly low number of audits, the performance improvement consultant supplemented with audits (physically onsite and conducting the audits in-person). Although it depends on each HAC and each unit's specific processes, the Children's National audits typically occur anywhere between biweekly to every other week.

Once many of our nonclinical staff were working remotely, it became clear that it was necessary for there to be a significant shift in how Children's National focused on quality improvement and patient/employee safety work on a hospital-wide scale. Auditors were occasionally pulled to clinical work. The performance

improvement consultants were no longer in the hospital to assist with audits. In addition, the audit numbers and bundle compliance dropped during the summer of 2020 after the COVID-19 pandemic affected processes. Our three-pronged approach to increasing bundle compliance and audits included: increasing the number of virtual leadership meetings, improving the audit process, and ensuring fidelity to bundle elements. To accomplish this, we shared data promptly with unit directors and auditors, pushed data regarding audit numbers and feedback from leadership to unit directors, and increased availability via virtual modalities, as outlined below. As with all quality improvement work, much of the success lies in re-establishing buy-in and strengthening existing relationships.

Increasing the Number of Virtual Leadership Meetings

Now that the CLABSI team could no longer supplement audits at the end of the month, the team built in more frequent check-ins throughout the month to increase engagement. Instead of in-person meetings, the availability for virtual check-ins increased the number of team members who could participate. Similarly, the ESS team now meets virtually once a month. Virtual meetings with UE leaders now occur quarterly as large group meetings, in addition to twice-a-month touchpoints (videoconference meetings with cameras on, text messaging, and emails) with each ICU leader using multiple virtual modalities. These modes were chosen to increase engagement between the leaders and performance improvement teams and enhance access for leaders to be updated on current audit status and deliverables. During the change to virtual communication, it is essential to cater an individualized approach to each unit leader to keep the personal connection.

Improving the Audit Process

The CLABSI prevention team first began by approaching individual auditors to inquire which barriers were impeding the auditing process. Notably, unit auditors had significant difficulties balancing their priorities in addition to CLABSI auditing, especially under the practice changes placed by COVID-19. Some unit auditors were pulled into staffing, especially during high census times, which competes with their ability to continue audits instead of direct clinical care. The quality improvement team took over disseminating CLABSI reports to combat these difficulties of competing priorities. The reminder regarding auditing and the current HAC event numbers is an important step in improving compliance. Finally, the UE team streamlined the auditing process by combining the UE audits with endotracheal tube rounds.

Ensuring Fidelity to Bundle Elements

The last approach included reviewing bundle definitions with auditors and sharing data packets with nursing unit directors. By ensuring the appropriate definitions were followed in the audit process, the auditors could more efficiently direct their limited resources toward the bundle elements defined by solutions for patient safety.[10] Additionally, when unit directors saw their scores and engagement compared to others' units, this significantly improved buy-in. Although not a change from prior methods, the initial significant decrease in engagement indicated to unit auditors the urgency behind the changes of virtual rounding. This urgency enabled unit leaders to provide additional resources and strategies for unit auditors. Importantly for staff safety, although Children's National has seen a decrease in its admission volume similar to many pediatrics hospitals across the country, the patient acuity has increased. The patient population has changed with an older demographic being seen for COVID-19-related complications.

Statistical Analysis

We used statistical process control p-chart to track the monthly compliance percent and u-chart for the audits per 1000 patient-days, with the special causes identified using Nelson's rules.[11] For the comparison analysis, to test the statistical significance of the difference between pre and post-COVID-19 periods, we analyzed the compliance percent data based on binomial distribution and the audits data based on Poisson distribution. We based the trend comparison analysis for compliance percent and audits on the linear regression framework with monthly aggregations as the data points.

Outcome and Process Measures

As stated previously, this project aims to maintain the level of engagement in safety work that our hospital noted before COVID-19. Therefore, the primary outcome measure for this initiative is bundle compliance. In addition, we use the number of audits reported per month as a proxy for engagement in HAC prevention work; thus, the number of audits per 1000 patient-days is our process measure.

Setting

Children's National Hospital is a stand-alone academic children's hospital located in Washington, D.C., with over 8000 employees. It comprises 323 acute-care beds and is a level I pediatric trauma center serving Virginia, Maryland, and the District of Columbia.

Institutional Review Board Approval

This project is a quality improvement initiative and was determined by the Children's National Institutional Review Board not to constitute human subjects research. No formal ethics review was performed for this work. Therefore, there are no conflicts of interest to disclose for the authors.

RESULTS

Outcome Measures

Our baseline data collection occurred from April 2018 until February 2020, which we considered the

pre-COVID-19 data. The monthly overall bundle compliance (primary outcome measure) occurring during this time for each HAC combined is as follows: ESS (72%), UE (82%), and CLABSI (82%) (Fig. 1). We defined our intervention period from March 2020 until September 2021. The ESS p-chart shows a shift in the centerline to 93% compliant (Fig. 1). Additionally, the team maintained a 100% compliance rate for several months after February 2020 and did not decrease, therefore not negatively affected by the changes brought about by COVID-19 (Fig. 1). UE bundle compliance also shows an increase in the centerline after an initial dip in engagement since August 2020 (Fig. 1). The CLABSI compliance p-chart does not indicate statistical significance but, importantly, does not show a significant decrease in compliance after COVID-19 (Fig. 1).

Process Measures

The process measure is the number of audits completed per 1000 patient-days, which our organization uses as a proxy for indicating engagement. There was no statistically significant negative trend after COVID-19 for the number of ESS audits per month (Fig. 2). The UE audit u-chart shows a statistically significant shift and increase in the centerline after COVID-19 (Fig. 2). The CLABSI audits show a drop in the Summer of 2020 (July–August), but overall, there was a recovery in audits and a change in the centerline after COVID-19 (Fig. 2).

DISCUSSION

Overall, this initiative's global aim is to prevent harm from HACs with maintained bundle compliance and engagement through audits even after a change in processes necessitated by COVID-19. Qualitatively, we found that microsystem leaders regularly engage with quality improvement staff and their teams (unit managers, medical directors, nursing, and physician champions) using all touchpoints and ongoing communication. An essential aspect of this change to reliance on multiple virtual modalities is that the teams stayed connected throughout the month, not just during singular monthly meetings. Streamlining the process of audits via increased communication between the improvement consultants and the medical teams and reducing unnecessary steps are crucial to this improved connection.

Quality improvement and patient safety work are as important as ever in the time of COVID-19. In discussion with the teams at the start of COVID-19, there was a consensus that we would not let the changes in our system decrease engagement in HAC safety initiatives. In our continued attempt to become a high-reliability organization, Children's National Hospital must remain focused on patient and employee safety as of the utmost importance. Bundle compliance is regularly reviewed with the Chief Quality Officer and nursing leadership and during monthly meetings with senior leadership. This buy-in from top-level managers is essential for the sustainability of processes that improve audits and bundle compliance. This work in improving patient and employee safety is particularly essential during COVID-19 to refocus our efforts on maintaining safe procedures that avoid HACs when so much of the hospital's previous safety structure is changing.

Many changes occurred during the world's transition to virtual work during COVID-19. We have successfully transitioned to a virtual bundle compliance rounding process like many of those changes. This practice of virtual rounding is generalizable for other hospitals that are having difficulty maintaining their bundle compliance. Increasing touchpoints and the accessibility of those performing audits have been successful at our hospital and would likely be successful at other similar-sized adult and children's hospitals. Importantly, our hospital did not require increased resources from the Performance Improvement Consultants to maintain this compliance, only a change in the processes to contact the unit leaders virtually. Once hospitals

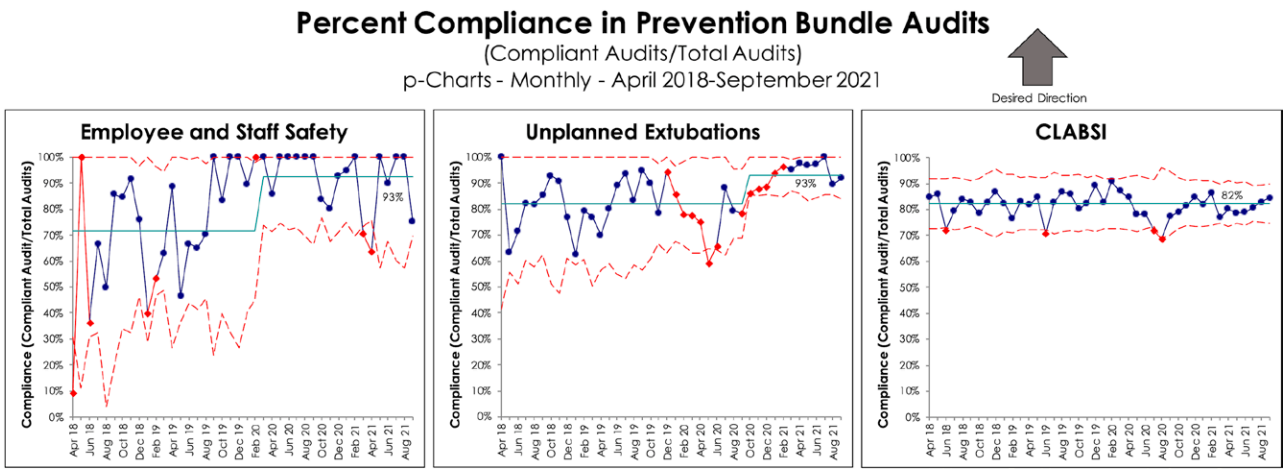

Fig. 1. Bundle compliance for each HAC and overall, p-chart.

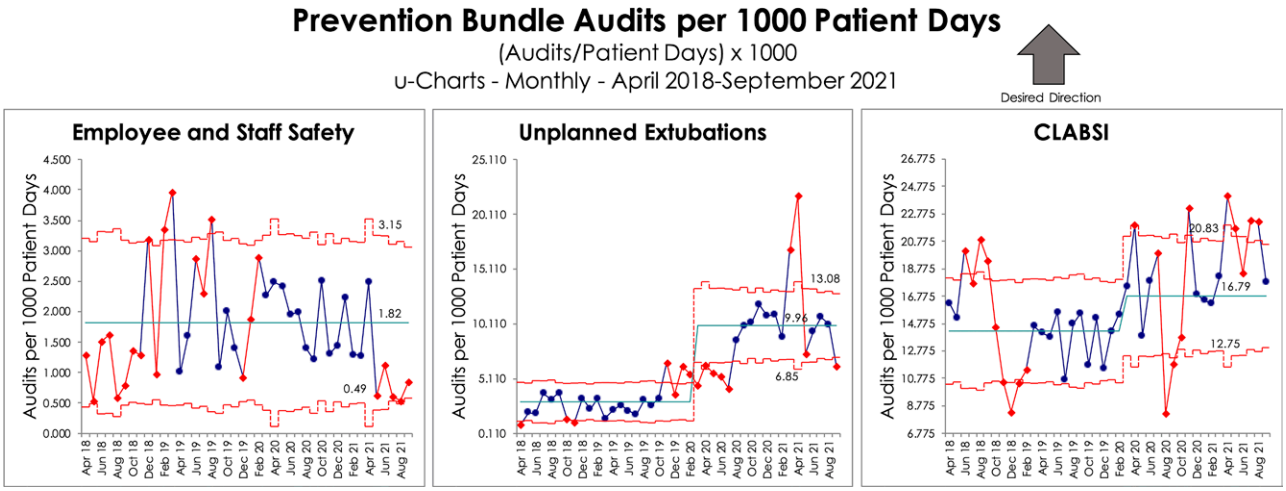

Fig. 2. Audits for each HAC and overall, u-chart.

have established their successes in virtual engagement, the process would also be generalizable to off-sites or ambulatory sites associated with a central hospital. This change could improve data collection and compliance throughout an entire institution instead of individual processes at each location.

It is noteworthy that we chose to use bundle compliance and audit numbers as our proxy for engagement in HAC prevention work. Although typical quality improvement projects report outcomes such as decreased CLABSIs, UEs, or other patient safety outcomes, that was not the goal of this initiative. We know from previous published patient safety work that increased engagement will lead to a follow-up decrease in HACs.[12] Thus, our goal at the start of COVID-19 was to maintain the engagement we have previously noted, with the knowledge that this would likely continue to reduce HACs.

Lessons Learned

We learned that patient safety work must adapt during this intense change to our typical processes. Our teams are responsive to working in an entirely virtual world and are succeeding in their modifications, as evidenced by improved auditing numbers seen before COVID-19. The results show that virtual engagement works. Although many other healthcare processes are converting to a virtual structure, the future of healthcare will be a combination of virtual and in-person. The lessons we have learned from this quality improvement project will allow us to perfect and build upon the virtual processes in place.

Virtual processes have benefits; there is less potential for disrupting in-person workflow and may also decrease physical touchpoints, thereby reducing the likelihood of indirect contact transmission, a known method of nosocomial infections.[13] Additionally, decreasing the number of people (auditors, quality improvement specialists, etc.) in a unit will automatically decrease noise pollution, thereby providing better, more healing care. By creating a space for virtual processes in quality improvement and patient safety, we open the opportunity for around-the-clock participation. With third-shift virtual rounding, many more healthcare team members would be made available to participate in improvement processes.

Limitations

Some hospitals may have difficulty transitioning fully to virtual HAC reduction work. It does require electronic accessibility for those who perform bundle compliance audits. Another significant limitation is that our hospital was committed to the resources necessary to support HAC work. During COVID-19, the process improvement consultants were not reassigned into operational roles. Nursing educators were required to increase their patient care responsibilities, but they were notably still able to perform their quality improvement audits. Many other hospitals may not have the resources to support their centralized quality improvement staff to continue their core work. In this sense, our success may be limited in the generalizability of results to other hospitals.

CONCLUSION

In a time of significant change during COVID-19, increased engagement in HAC work can adapt structure and processes. The results demonstrate success in virtual rounding without a decrease in audits; bundle compliance after COVID-19 is reproducible and generalizable to other hospitals by increasing touchpoints using multiple virtual modalities -those processes are likely to be the future in bundle compliance and engagement. We urge other hospitals to adopt similar virtual work to continue to improve their commitment to patient safety while we are still early in the paradigm shift that COVID-19 has begun.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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