

CENTRAL LINE INFECTIONS: Targeting Zero on an Oncology Unit

By Dawn Garcia, BSN/MS, CMQ-O/E



Shari Vanpuyvelde, RN, OCN, educates a chemotherapy patient about infection prevention in Sacred Heart Hospital's oncology unit.

Courtesy of Sacred Heart Hospital

A

physician commented that he was concerned about central line care for his patients. While this is a common concern in many organizations, it was not acceptable in one that aspired to achieve performance at best practice levels. Our hospital—Sacred Heart Hospital in Eau Claire, Wisconsin—has an excellent reputation for quality and caring, competent clinicians. As a new quality leader in the organization, I had the opportunity to evaluate this physician's concern objectively and to work on meeting our patients' needs and expectations.

It didn't take long to identify that the physician's perception highlighted a true opportunity. I reviewed data throughout the hospital related to the incidence of central line infections and compared it to national trends. A particular area of interest emerged on the oncology unit. Despite a stable and experienced nursing team and dedicated physicians, the unit had experienced several central line infections within a 6-month period. While these patients were high risk, and our rates were not uncommon compared to national rates, at Sacred Heart we believed that we could and should reduce the factors that may

have contributed to these patients experiencing central line infections. If all of the current best-practice evidence were applied to routine aspects of care for these patients, infections would decline. The foundation of the project was based upon key organizational safety practices noted by the Institute for Healthcare Improvement coupled with the central line bundle interventions emerging as best clinical practice for the care of patients in critical care units. The immuno-compromised nature of patients in critical care is similar to that of patients undergoing chemotherapy and radiation. If best-practice interventions geared to the critical care population were applied effectively to the high-risk oncology population, we believed that we could achieve similar results. We began to target zero on our oncology unit.

When facing a challenge to patient safety and quality, there is no time to waste. We reviewed historical data, which indicated a stable pattern over prior months. The team, however, didn't recognize the impact of the issue to their patients' course of care and the potential of sepsis morbidity and mortality. The care team was called to action, including the physician who made the original observation. Team meetings with all colleagues on the oncology unit identified several immediate opportunities for action. In department meetings, nursing colleagues were given background information on the impact of healthcare infections, especially central line infections, to risks among their specific patients. Best-practice strategies were shared using applied learning techniques to real patient situations. The team immediately took responsibility, believed that they could do better, and set out to plan their actions.

Behind the Scenes

Infection control is always top of mind with healthcare executives to ensure patient safety and the best possible patient experience. In addition, the Center for Medicare and Medicaid Services (CMS) added an incentive as of October 2008 by not providing payment for additional expenses associated with certain hospital-acquired conditions (HACs), including central line infections. Our quality leadership team realized that standards and processes needed to be heightened to meet a higher performance bar, especially within departments where there was a high risk of infection.

An effective strategy for achieving these outcomes would require standardized work processes designed to deliver consistent results. Use of a performance improvement methodology would provide a framework to ensure that the key processes interconnect to avoid gaps that could create error or waste. Human error in this case would create the potential for a central line infection. One tactic to prevent error is to create "standard work" processes for critical parts of a work process, such that every step is a must do, every time. Creating standard work processes is a necessity when variability in processes cannot be tolerated and is the key to process consistency, which ultimately creates consistent results.

Sacred Heart Hospital has an established model for performance improvement and a performance improvement coordinator, who is a black belt in Six Sigma. The performance

improvement model is based upon the DMAIC model (Six Sigma) with an additional last step intended to support spread and deployment. The phases of the model include: Define (Plan), Measure, Analyze, Improve (Do), Control (Check, Act) and Learn (Communicate). The model is introduced to all new colleagues and leaders during orientation. As improvement projects and opportunities are identified, first-hand experience with the model is applied to the situations with coaching support. Specific tools for leaders and teams to use in performance improvement are maintained on an internal site, and are updated as processes and tools are improved. Outcome data from performance improvement projects are reported on a shared internal data repository, viewable by all leaders within the organization. This tool provides transparency of results and project efficiency to avoid duplication. All leaders within our organization are accountable for metrics showing performance of their areas of responsibility, as they affect overall organizational performance. Such results are a factor in annual performance compensation. Other tools have been developed as needed to support work teams and shared reporting of results, including an A-3 report that serves as a mini-posterboard of the project focus, change elements, and current status to project goal.

As projects move through the performance improvement process and the future state is controlled to target, best practices in the project are spread to other areas of potential benefit. The spread process always begins with the rationale for the area or project selection, and the potential benefit to the population served. In this way, the team is engaged and the cultural acceptance can begin. Once established, data is shared with the teams on a monthly basis to ensure engagement and to inform departments of progress to targets. Team recognition of project milestones is built into the PI process, and achievement of overall project goals occurs at organizational celebration events.

Identification of central line infections as an important area of focus came from a review of the priority criteria and a review of the current performance. We use a matrix to review overall organizational performance annually, to explore by key metrics, areas that are statistically in control or areas that need process improvement.

Within Sacred Heart Hospital's organization, we established three key priorities:

- 1) Critical to service, as the "best possible patient experience."
- 2) Critical to sustainability, as our business imperative to be the provider of choice in value and services.
- 3) Critical to quality, as meeting our safety and regulatory requirements.

After evaluating our processes and performance in view of these priorities, we determined that the oncology unit was an opportunity that would support multiple "critical to" items by focusing on the patient experience and infection prevention.

The Interventions

Using the performance improvement model, the oncology team evaluated recent performance and fallouts from the target. From

there, the team evaluated all possible contributing factors and ranked them in importance for interventions. After reviewing the Institute for Healthcare Improvement (IHI)'s central line bundle, we ensured that these best practices were incorporated into our own process. As we approached the opportunity, we also evaluated the observations from our colleagues, patients, and providers. Our colleagues were focused on delivering the very best care to the patients, and we knew that any possible barrier or impact to that goal should be evaluated and overcome if possible. We began with the process of line insertions and applied the IHI central line bundle components to this process, involving specific site location away from infection sources, chlorhexidine preparation, and full-barrier draping. Line site selection is the physician's decision, however, the patient's home situation and therapy needs are significant considerations for site placement. Regardless of where the line is placed, a consistent insertion process includes a full barrier drape and other aseptic precautions with initial line securement.

We then critiqued the process of the current orientation and skill development of colleagues to assume a key role in effective central line care. The nursing educator reviewed with each nurse the appropriate steps of the standard work process for central line care and conducted return demonstrations until she was confident that the process was consistent to those standards. In addition, we reviewed how we communicated among the team to ensure that the same best-practice expectations were known and supported by all. Central line care is included as part of the bedside report discussion that occurs at each incoming and off-going nursing hand-off process.

Physicians were engaged in the process to know what the team was focused on and to identify additional variables from their perspective. Physicians were also engaged in terms of type of catheter or device, the setting for placement and ongoing care, and assessment of the line as part of the overall course of care. All members who came in contact with our oncology patients were taught the goals and tactics to achieve infection prevention with special focus to at-risk elements, especially hand hygiene and isolation precautions. Strategic placement of hand sanitizers and signage informed all who entered the unit of the need to protect patients who were at risk and the specific actions needed from them. Patients were taught and coached to ask and remind family members and healthcare team members to consistently use hand hygiene before and after contact with touch surfaces or the patient.

The Results

A systematic process to designing effective care processes and a unit culture focused on eliminating central line infections was effective. Our oncology unit experienced a 16-month interval without any central line infections and continues to experience only a rare event. Still, the process discipline requires ongoing monitoring and weekly review of any cases that may evidence central line infections hospital-wide. The upstream and downstream impacts are considered for patients that experience care pre-admission and post-admission, and care aspects are coordinated in conjunction with primary care and other practice set-

tings. As a high-risk area, infections in the oncology population are common. However, even in these situations, a concentrated focus and application of systematic performance improvement can achieve stellar results.

Lessons Learned

While the overall process of minimizing central line infections within the department was a success, there were two key opportunities that needed to be addressed within the department. The first issue was a knowledge deficit among the colleagues and interdisciplinary team. While healthcare professionals understand and know all factors contributing to healthcare infections, until the situation relates to someone that they've touched, who has experienced an infection, they may not feel like they really have a part in the process. When the message relates to the part that each person plays in a specific case outcome and the critical factor of one break in the system, healthcare professionals get on board. The benefit of sharing stories is huge; clinicians generally do not put together the pieces from multiple patient experiences to see the nature of the original problem.

The second issue that needed to be addressed was engaging patients and their family members. Often, patients and family members do not know all of the aspects that they can control to support low infection rates. When patients were educated, and the prompts to protecting the patients became part of what our visitors do, compliance with hand hygiene and other simple measures became routine and effective. The power of engaging the patient cannot be underestimated, and the family's role will only magnify this effectiveness in the overall process of care. This is one of the key components to ensuring patient safety.

We also realized through the use of the performance-improvement model that there are a few processes we would do differently. First, we ask stakeholders to make suggestions, but we did not have a formal process for incorporating this feedback into our prioritization matrix. This would have enabled our clinical experts to prioritize this patient outcome initiative above other important projects that may not have had such a clear clinical outcome correlation. Second, we needed to develop a flow chart and process map to validate key processes that may impact the outcome. That work was done once we had already scoped our project. When the results of this analysis were shared with the colleagues, they were amazed at all of the steps in the process! From this work, we were able to identify the standard work processes to ensure consistent results.

Sacred Heart Hospital continues to look into the future to ensure consistency and a positive patient experience not only within the oncology unit, but across the organization and within our sister hospital, St. Joseph's Hospital in Chippewa Falls, Wisconsin (20 minutes north). Both facilities are part of the Hospital Sisters Health System, based in Springfield, Illinois. The last step of our performance-improvement model is Learn and Communicate, so the learnings from the experience at Sacred Heart Hospital are being incorporated into the experience on the critical care unit there and throughout the organization at St. Joseph's Hospital.

Keys to Success

Ensuring patient safety and following processes have been fairly easy tasks within our oncology unit. After being involved in the performance-improvement process, nurses have become meticulous about cleansing access sites for patient lines and centrally placed ports. They have become partners with patients and their families to ensure that everyone on the team knows the plan and is supporting the same. The nurses provide a bedside report, which allows the offgoing nurses to look at the access site, discuss any issues with the patient, and then address any of the issues with the oncoming nurses. This process ensures that all gaps are taken care of and nothing falls through the cracks. In short, the key to the performance success on this unit has been the development of a cultural expectation that no patient should acquire a central line infection and that we are committed to doing everything possible to engage the entire team in support of that goal. The patients are active members in this effort, and there is a level of confidence and joy in the outcomes achieved. Our mission is to provide the very best patient experience. Keeping our patients safe and free from potential infection is one way that we can support our mission of service to them and to our community.

Next Steps

Sacred Heart Hospital is actively involved in a catheter-associated urinary tract infection initiative to further improve our cur-

rent performance and is actively engaged in other infection-prevention initiatives developed in view of national practice trends and best practices.

At the project level, standardization of some of the processes learned in this project has certainly strengthened our confidence in the potential results achieved when caring clinicians come together to create a better patient experience. We now use case examples and stories of patients to teach colleagues of the impacts, and the best practices that are evolving, for rapid adoption and improvement.

We turned what used to just be the "right thing to do" into a commitment to our patients. The process takes time, but when you engage the entire team and keep them accountable for their actions within the department, success can be achieved. **PSQH**

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