Highly Reliable Health Care in the Context of Oncology Nursing: Part II

Norma Sheridan-Leos, RN, MSN, AOCN®, CPHQ®, CPPS®

The principles of reliability science are used in various high-risk and high-tech industries to improve quality and safety. In part one of this two-part series, three of the five principles (the principles of anticipation) were discussed as they pertain to delivering oncology care in challenging and variable circumstances. This article will address the final two principles (the principles of containment) and examine how a healthcare organization responds when an error in treatment has occurred.

Resilience

Because humans are not perfect, errors will occur. This means that leaders have to mitigate those errors, allowing the organization to maintain its function in spite of the unexpected. In addition to the ability to bounce back after an adverse event, resilience also refers to the ability to maintain safe operations under constant stress (Niedner et al., 2015). An example of this occurs when organizations recognize that situations will arise when no policy is in place. As organizations become more reliable, they have the ability to predict potential error and, in turn, make staff more aware of the potential for error and harm to patients. Another example of resilience is when oncology staff members are trained in ways that make them better able to adapt to unexpected situations that may occur. This type of training should be done in teams. In addition, staff should be allowed to learn from adverse events after they occur, through participation in root cause analyses, unit-based discussions, or other venues.

Deference to Expertise

The term expertise is the experience, learning, and knowledge found not only in an individual person, but also in a team of people working together (Weick & Sutcliffe, 2007). Expertise in mitigating an adverse event may not be matched with the hierarchical position of the person who has been charged to mitigate the event. Sometimes, the person with a higher position of authority may not be the best person to react to an adverse event. For example, instead of defaulting to management to make all decisions, the oncology nurse at the bedside may be the best person to make some decisions based on what the decision entails. Decisions about how to handle an event are given to those who have the most expertise regarding the event, regardless of their title or rank. A case study provided in this article describes a response scenario to an action taken in an oncologic emergency situation by an experienced staff nurse who made an independent decision which was contrary to the orders of the nurse manager. Because the experienced oncology nurse had more knowledge about the oncologic emergency of spinal cord compression than the preceptee, the experienced nurse altered the educational plans set by management. In an organization that values the expertise of every team member, staff members are not only encouraged to identify problems like this, but also are expected to identify and solve problems when they arise (Luria, Muething, Schoettker, & Kotagal, 2006). Leadership’s role should be for the infrequent and more complex problems.

Mindfulness

Use of the five principles of reliability science are collectively called mindfulness (Weick & Sutcliffe, 2007). When staff at an oncology organization use these principles, they are in a position to swiftly anticipate, respond, detect, and correct unexpected events (Niedner et al., 2013). Figure 1 illustrates examples of the five principles and applies them to oncology nursing. Becoming mindful...
is not easy. The organization must focus less on successful outcomes and more on actual or near-miss events. A rigid chain of command will not serve an organization in becoming mindful. Policy cannot be devised to meet every situation, but, through mindfulness, exceptionally safe and consistently high-quality care can occur (Hines, Luna, Lofthus, Marquardt, & Stelmokas, 2008).

Implications for Oncology Nursing

Commercial aviation, nuclear power, and other sectors that are known for high reliability differ from oncology care in many ways. Concepts and approaches they have used cannot be directly duplicated in oncology care. Instead, they need to be adapted and applied to meet the unique challenges in oncology. The administration of chemotherapy has special concerns given the particular risk of these agents. Chemotherapy administration is among the most hazardous and challenging activities in oncology nursing. Complex, multidrug chemotherapy protocols are commonly administered to patients with cancer. Oncology teams often work in different geographic areas, hand off patients, and follow complex treatment regimens. At every step of the chemotherapy process, the potential for error exists.

Parenteral and oral chemotherapy drugs used in the treatment of cancer are complex and have been identified as high-alert medications because of the potential for patient harm (Institute for Safe Medication Practices, 2012). Medications are designated as high-alert if they have a high risk of causing significant patient harm when an error or adverse event occurs. Chemotherapy drugs fall into this category because chemotherapy-related errors can cause patients harm and even be lethal because of the narrow therapeutic indices and the complexities of chemotherapy regimens (Villa-Torres, Albert-Mari, Almenar-Cubells, & Jimenez-Torres, 2009).

Many reasons exist regarding why the ordering, dispensing, and administration of chemotherapy is prone to errors, and why even small errors can cause serious harm to patients. Chemotherapy, as a classification of medications, is unique in that dosing is individualized and nonstandardized. Doses are computed on the basis of body size or other factors, such as renal function, and require patient-specific calculations. A dose adjustment is sometimes required, which adds a second calculation to determine the appropriate dose (Sheridan-Leos, Schulmeister, & Hartranft, 2006).

Preoccupation With Failure
- Encourage and reward near-miss reporting.
- Conduct immediate post-code blue debriefings, with feedback to other staff.
- Conduct a root cause analysis (RCA) whenever a patient with neutropenia becomes septic and is transferred to a higher level of care. Share learning as applicable.
- Conduct a unit-based RCA when naloxone is given to reverse sedation caused by pain medications. Share learning as applicable.
- Engage in planned, unit-based performance benchmarking. Publish these results where staff can view them.
- Analyze near-miss incidents and errors for potential improvements in processes.

Reluctance to Simplify
- When adverse events do occur, look for the reason why and reject findings when only one cause for the incident is found. Look for process issues “upstream” from the bedside provider involved in the event.
- Use the Swiss cheese theory from Reason (1997) to analyze the error.

Sensitivity to Operations
- Review the organization’s supply of chemotherapeutic agents compared to the patient listing of treatment to be given to identify, in advance, any patients requiring treatment with agents that are in short supply.
- Conduct team huddles at the start of a shift.
- Be aware of and mitigate potential distractions in the work area.
- Maintain awareness of the patient’s overall condition rather than a focus on the cancer diagnosis.
- Use tools that facilitate information sharing amongst team members and between the team and the patient and his or her family.
- Monitor unitwide and hospitalwide conditions, such as bed availability, diversion status, and emergency department capacity. In clinical settings, review appointment lists.
- Implement rounding by supervisors and administrators in the clinical units.

Resilience
- Reward staff for working together in multidisciplinary teams.
- Provide education and rewards when staff accommodate changes in unit acuity or hospital resources.
- Provide initial and ongoing training for staff regarding management of oncologic emergencies (e.g., tumor lysis syndrome, spinal cord compression). When possible, use in situ simulation.

Deference to Expertise
- Cultivate a culture in which team members and organizational leaders defer to the person with the most knowledge relevant to the issue.
- Foster team members’ individual knowledge of their personal strengths and weaknesses, as well as knowledge of their coworkers’ strength and weaknesses.
- Develop, implement, and evaluate appropriate oncology clinical pathways, protocols, and care bundles.
- Institute interdisciplinary rounds, where any team member (e.g., nursing, respiratory therapy, pharmacy, families) has a voice, is respected, and can fully participate in these rounds.

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FIGURE 1. Five Principles of High Reliability Science Applied to the Oncology Care Environment
Note. Based on information from Goldenhar et al., 2013; Hines et al., 2008; Reason, 1997; Weick & Sutcliffe, 2007.
Complex, multidrug chemotherapy protocols often are used to treat cancer, and the greater the number of medications administered, the greater the potential for error. Some chemotherapy agents are given by more than one route (i.e., subcutaneous or IV), in varying doses (i.e., standard dose or high doses), and over varying periods of time (i.e., bolus or continuous infusions). In addition, some agents can be given safely by only one route. For example, some agents can be given intrathecal whereas other agents, if given this way, would be life threatening. Each of these variations in chemotherapy prescribing, dispensing, and administering is a potential for error. A proliferation of new anticancer agents have become available, requiring the continuous updating of nursing knowledge.

The advent of supportive agents has reduced cases of life-threatening neutropenia and vomiting, but nothing can counteract fatal toxicities from overdosing, such as cardiac, renal, and pulmonary toxicities that can arise from a chemotherapy apy error. Many patients with cancer are physically compromised at the time of diagnosis from obesity (Lyman & Sparreboom, 2013), past multimodality treatment with different toxicities profiles, comorbidities, or advanced age (Sogaard, Thomsen, Bossen, Sorensen, Norgaard, 2013). They may have received radiation therapy in the past or may require concurrent therapy with radiation therapy. In addition to oncology-specific complexity risk factors, chemotherapy errors can occur for other reasons, such as understaffing, poor communication, human error, fatigue, and environmental factors.

Conclusion

Using the principles of reliability science offers organizations a way of functioning that differs from the way many healthcare organizations are accustomed to functioning. In a highly reliable healthcare organization, safety is understood to be a shared responsibility and an individual duty of every team member (Riley, 2009). However, many healthcare organizations still use the traditional hierarchical reporting structure with many layers of management between the nurse caring for the patient and nursing leadership. Many times, the reporting of adverse events and failures is not viewed as an opportunity to improve, but rather that the events are where nurses or others failed and deserve punishment. In a healthcare environment such as this, failures are rarely reported and the organization becomes complacent and lulled into believing that processes are safe. Transformation to a highly reliable oncology organization must occur over a period of time and take into account various factors, including environmental issues; training and oversight of staff; and processes used for planning, implementing, and measuring new initiatives and specific work processes (Hines et al., 2008). These changes could be implemented on a single unit and then have an impact on other units, spreading across an organization. Keeping Patients Safe: Transforming the Work Environment of Nurses (Institute of Medicine, 2004) offers several recommendations regarding the involvement of staff nurses in creating reliable and safe patient care. Becoming a High Reliability Organization: Operational Advice for Hospital Leaders (Hines et al., 2008) offers leaders at the bedside or in the board room information on how to implement high-reliability principles in their organizations. Oncology care, because of its complexity, is the perfect specialty for the application of reliability science.

References


