Making an Infusion Error: The Second Victims of Infusion Therapy-Related Medication Errors

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ABSTRACT
Infusion therapy-related adverse events can result in distress and professional suffering for the nurse involved with the event, with long-lasting consequences. This article discusses the second victim syndrome and its impacts on nurses. Original research on 168 recent nursing graduates and their experiences with second victim syndrome after making an infusion-related error is also presented. The article concludes with strategies to help nurses cope with the aftermath of making an infusion therapy-related medication error.

Key words: intravenous medication errors, patient safety, professional practice, second victims

BACKGROUND
Reason advocates a distinction between individual- and systems-level approaches to explain why and how errors occur. Individualist solutions address human factors such as forgetfulness, faulty mental processing, carelessness, lack of concern, or negligence. Individual-level or “person-blame” approaches view the individual as primarily responsible; thus, the focus becomes correcting the problematic individual who failed. Systems-level approaches view the error as a result of external factors that are situational and oriented toward tasks and procedures. Instead of blaming individuals for failure, systems-level approaches view errors as expected or “normal” in complex systems. A systems-level approach, therefore, recognizes that an errorless imperative is not a practical goal. Errors are seen as a failure of safety systems designed to protect against them.

Reason elaborated a Swiss cheese model, whereby multiple contributory factors can line up, making an error possible. Investigatory analyses of root causes can help explain why and how errors occur. Such analyses have been used by high-risk industries, such as aviation and nuclear power,
to reduce errors and achieve successful safety outcomes. The Joint Commission similarly encourages hospitals to report and learn from patient safety adverse events. By adapting systems of checks and balances used by the aviation industry to surgery, a decrease in medication errors and infections has been achieved. Consequently, instead of asking who is at fault, we should ask why our defenses failed to protect against the error. In the case of medication errors, it is important to understand which factors in systems of medication administration make errors more likely to happen. In a review of the literature, Brady et al identified a number of contributing factors to nurses’ medication errors at both individual and systems levels. Administering medications is the end point of a long process with opportunities for errors at any juncture. Thus, medication errors may occur in selection, obtaining, delivery, storing, prescribing, ordering and transcribing of medication orders, and dispensing, in addition to during administration. In their review of the literature, Brady and colleagues found that common contributing factors at the systems level were issues with medication reconciliation, drug distribution systems, inaccurate or illegible prescriptions, excessive workloads, distractions, staff shortages, and fatigue. Nurses’ level of pharmacological competency and mathematical skills were identified as individual factors.

Medication administration mistakes contribute to increased cost, lengthened hospital stays, and in some cases, severe patient harm or death. Of medication errors, intravenous (IV) or infusion errors are among the most serious, carrying a greater risk for patient harm and higher rates of death than other medication errors. In a study carried out in the United Kingdom of voluntarily reported incidents that led to patient deaths, 62% involved IV administrations. An observational study by Westbrook and colleagues of nurses going about their routines of administering IV medications found that nearly 70% had at least 1 clinical error. Of these, approximately one-fourth were classified as serious. Reasons for infusion errors included interruptions, knowledge deficits, inexpenence, and failure to follow safety routines. Wolf conducted a retrospective study of 975 voluntarily reported IV-associated medication errors. Key patterns that were associated with errors included equipment difficulties, device-related errors, and problems with medication labeling. In a cross-sectional study of 237 hospital nurses in Tehran, Iran, nearly 61% of the medication errors had been made in the administration of IV drugs. The authors of that study cited lack of pharmacetical knowledge as the most important cause of the errors.

Second Victim Concept
Although concerted attention has been focused on making safety improvements in health care systems, less attention has been paid to understanding how nurses cope after they have been involved in adverse events. The American Nurses Association’s 2016 “Culture of Safety” campaign has emphasized the importance of keeping both patients and nurses safe, while calling for solutions that look beyond individual-focused blame.

In cases of serious medication errors, the patient and his or her family are the obvious, and first, victims of the error. However, the health care providers who were involved may themselves experience significant trauma as a result of the event. Albert Wu, MD, described this as the “second victim” phenomenon in reference to the ridicule, blame, and resultant distress experienced by a young doctor after failing to correctly interpret the signs of cardiac tamponade. All health care professionals, not just physicians, may experience a lack of sympathy from their colleagues after an error, and are often criticized and censured for the mistake. Health care providers who have been traumatized by adverse patient events often feel personally responsible for the patient outcome, believe they have failed the patient, and commonly second-guess their clinical skills and competence. Given the size of the health care workforce and the estimates of errors in the health care environment, the possibilities for large numbers of second victims are indeed vast. It has been estimated that one-half of all health care providers have experienced the impacts as a second victim at some point in their professional careers. Such impacts include symptoms similar to posttraumatic stress: shock, guilt, depression, sleeplessness, and other physical and/or emotional symptoms.

Nurses are among those frequently affected by the trauma of making an error. Given that infusion therapy-related errors can be among the most serious, the opportunities for trauma and second victim impacts are many, particularly when a newly licensed registered nurse makes an infusion error. Edrees and colleagues described the case of a new graduate who, having previous experience only with prefilled insulin pens, was unfamiliar with drawing up insulin from vials. The nurse mistakenly used a regular syringe to give an IV insulin bolus and also confused units with milliliters. As a result, instead of the 10 units ordered, the patient received all the insulin in the 10-mL vial, resulting in a dose of 1000 units of insulin. Although the error was quickly detected and no permanent harm to the patient resulted, this type of error is likely never to be forgotten by the young nurse.

Although many may attribute mistakes to carelessness, even conscientious nurses can make serious medication errors and, thus, become second victims. Two recent cases of infusion therapy errors help illustrate this point. According to a report in the Wall Street Journal, Julie Thao, a registered nurse, mistook an epidural painkiller for penicillin and subsequently connected it to an IV administration set, thereby infusing the epidural medication directly into the patient’s bloodstream. Her young patient, a 15-year-old girl about to give birth, died as a result of the error. Fatigue was a major factor as Thao had worked 2 consecutive 8-hour shifts the day before and then slept in the hospital before coming on duty again the next morning. A newly introduced barcode-scanning technology had proved
unreliable on IV bags, so Thao manually entered the information. As a result of the patient’s death, Thao lost her job and was charged with criminal negligence. Soon after, she was hospitalized for depression. Thao has since gone public about the incident, using it as a platform to discuss safety in medication administration.

Kimberley Hiatt, a registered nurse, also made a critical infusion error. Hiatt miscalculated and administered 10 times the correct amount of calcium chloride (1.4 g versus the correct dose of 140 mg) to a critically ill infant with heart problems. From the outset, Hiatt was honest about her error and filed the requisite incident reports. However, when the infant died 5 days later, Hiatt was fired from her job despite an impeccable record prior to the event. Unable to find employment elsewhere, Hiatt ultimately committed suicide.

Cases like these grab our attention and remind us that such errors must be prevented for both the sake of the patient and that of the provider. They remind us that rather than being abandoned, second victims should have certain rights that need to be upheld. According to Charles Denham, MD, second victim rights include the right to be treated in a just manner after the mistake has been made and the right to be treated with respect, understanding, and compassion. Denham also advocates for supportive care and transparency surrounding the event and subsequent consequences. Finally, second victims should be given the opportunity to contribute to making changes that might help others avoid mistakes. Unfortunately, many nurses are shut out of these processes and denied their second victim rights.

In 2010, the authors published the results of their survey research on nurses who had made medication errors. The goal of the research was to obtain nurses’ perspectives on how and why medication errors occur and to explore their feelings about medication errors. Of the 202 registered nurses who responded, 78% had made 1 or more medication error sometime during their careers. Although the respondents ranged from new graduates to nurses with more than 40 years of experience, common threads ran through their accounts of making an error. These included emotional responses such as shame and self-blame, loss of self-esteem, and doubts about professional competence. Some considered leaving nursing altogether. As expected, there were many concerns about patient harm. One nurse wrote of feeling “awful, I thought I had killed my patient.” Others felt sick, sad, frightened, and depressed. It was clear that making an error was often a devastating event with the power to elicit negative emotions even years after it occurred. The authors also discovered that any error, however minor, could result in long-term trauma for the nurse, regardless of harm to patient.

Although infusion therapy was not the focus of the authors’ earlier work, they noted that many of the most graphic medication errors involved infusion errors that nurses remembered years later. Examples included the story of a nurse who had given too much IV morphine to a pediatric patient and described feeling “awful, terrible, horrendous.” One of the most serious errors was recounted by a nurse who gave an overdose of the chemotherapy drug, vincasar PFS, to a favorite pediatric patient. The nurse was “devastated” and did not work for several days. Other errors included an increased rate of a lidocaine infusion at 230 mL/h, which was 10 times the prescribed rate. The nurse was understandably upset by the error and described being “hypoglycemic,” having no breaks and no relief from those in charge before making the error. Other errors that elicited strong emotions included administering the wrong IV solutions, omitted doses, and medications erroneously given intravenously rather than by mouth or injection.

### METHODS

#### Design

In 2015, the authors designed an online survey focusing on recent nursing graduates and their feelings about making a medication administration error. To assess the incidence and impacts of making a medication error, the survey employed both multiple-choice and open-ended items. The survey asked respondents if they had made a medication error, and if so, a series of free-form text questions that included a description of the error, contributing factors, and emotions surrounding the error followed. Multiple-choice items were analyzed with simple descriptive statistics. Open-ended error accounts were examined for type of medication, type of error, route of administration, situational context, and whether there were indications of patient harm. Key themes were also identified in the error accounts.

University institutional review board approval (#15-203) was granted before administering the study. Surveys were sent to the email addresses of all members of the 2009-2013 cohorts of BSN graduates of a large 4-year nursing program in the southeastern United States, totaling 969 in number. If an email was returned as undeliverable, the authors then sent a paper copy of the survey to the physical address on file. Ultimately, 842 surveys were successfully delivered to email accounts and physical addresses. Of these, 168 responses were received, resulting in a response rate of approximately 20%.

### RESULTS

Over one-half of the respondents (56%, n = 88) reported making at least 1 medication error since becoming a registered nurse. An additional 5% (n = 8) were unsure whether they had ever made an error. Based on analyses of the self-reported descriptions of error events, data indicated that more than one-third (37%) of the medication administration errors were related to infusion therapy. The most frequent IV medication errors involved antibiotics, anticoagulants, and antianxiety agents (Table 1).
<table>
<thead>
<tr>
<th>Medication</th>
<th>5 Rights</th>
<th>Contributing Factors</th>
<th>Emotional Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>Wrong dose</td>
<td>Two units using different computer documentation systems on same patient</td>
<td>Irritated, Frustrated</td>
</tr>
<tr>
<td></td>
<td>Wrong time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylcysteine (Mucomyst)</td>
<td>Wrong route (given IV)</td>
<td>Supervising a clinical student “days after coming off of new graduate orientation”</td>
<td>Terrible, frustrated Nervous</td>
</tr>
<tr>
<td>IV antibiotic</td>
<td>Wrong route (IV push</td>
<td>Incorrect dispensing from pharmacy; incorrect label and instructions; inexperience;</td>
<td>Awful, scared, “so grateful the patient was okay”</td>
</tr>
<tr>
<td></td>
<td>instead of infusion)</td>
<td>trusting the pharmacy, not checking</td>
<td>Mad and disappointed in self</td>
</tr>
<tr>
<td>IV antibiotic</td>
<td>Wrong time</td>
<td>“Patient load of 7” all needing medications; MAR on paper; so much going on at once</td>
<td>“Scary” Guilty and upset that hadn’t been more careful</td>
</tr>
<tr>
<td>IV antibiotic</td>
<td>Wrong dose</td>
<td>Rushing to give preoperative medication for surgery; not double-check</td>
<td>None noted</td>
</tr>
<tr>
<td>Antidiuretic hormone (vasopressin)</td>
<td>Wrong time</td>
<td>Failure to double-check; commotion of emergency situation</td>
<td>Disappointed Relieved that error was caught immediately</td>
</tr>
<tr>
<td>Chemotherapy drug (IV) (2 separate</td>
<td>Wrong dose</td>
<td>Stopped chemotherapy infusion to draw blood from central venous catheter, orientation</td>
<td>“Hate” that I made the error</td>
</tr>
<tr>
<td>errors; other was morphine, but</td>
<td>Wrong time</td>
<td>ended; heavy assignment; not checking</td>
<td>Overwhelmed</td>
</tr>
<tr>
<td>unable to determine route)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furosemide</td>
<td>Wrong dose</td>
<td>“Pressure of the situation”</td>
<td>“I felt awful and was glad they were okay”</td>
</tr>
<tr>
<td>Heparin</td>
<td>Wrong dose (too low)</td>
<td>Unfamiliar with protocol to start heparin infusion</td>
<td>“Very” scared; fear</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Luckily” had the intuition to double-check</td>
</tr>
<tr>
<td>Heparin</td>
<td>Wrong dose (too low)</td>
<td>Being very busy and stressed as a new nurse; not getting physician signature beforehand</td>
<td>Errors are “overwhelming” Scared to death</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gravity of possibility for patient harm sunk in</td>
</tr>
<tr>
<td>Heparin infusion</td>
<td>Wrong dose (too high)</td>
<td>Read the order wrong and made transcription error</td>
<td>Disappointed</td>
</tr>
<tr>
<td>Hydromorphone pantoprazole (Protonix)</td>
<td>Wrong dose(s)</td>
<td>Not returning unused medications to medication-dispensing machine “Keeping it in my pockets”</td>
<td>“So” scared Afraid to report</td>
</tr>
<tr>
<td>(2 separate errors—both IV)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin</td>
<td>Wrong drug (wrong type of insulin)</td>
<td>Input error by pharmacist; error in verification by admitting nurse; failure to check the chart again</td>
<td>Awful; felt bad to implicate coworker Great that it was caught</td>
</tr>
<tr>
<td>Labetalol</td>
<td>Wrong dose (5 times the dose)</td>
<td>Fatigue, understaffing; not entering drug order according to protocol</td>
<td>“I was trained better than to make a mistake like that”</td>
</tr>
<tr>
<td>Lactated Ringer’s solution/dextrose 5% in lactated Ringer’s solution</td>
<td>Wrong drug</td>
<td>First week of travel contract; handwritten orders; no medication scanning system; new hospital, unit, schedule; travel fatigue</td>
<td>Felt bad Glad no lasting damage Angry about the way was treated</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>Wrong dose (too high)</td>
<td>Was used to giving 1 mg/mL medication concentration</td>
<td>Guilt Glad to talk to other nurse, helped confidence</td>
</tr>
<tr>
<td>Metoprolol</td>
<td>Wrong route (injected through arterial catheter)</td>
<td>Dark room; was in orientation</td>
<td>Terrible; quickly let preceptor know</td>
</tr>
<tr>
<td>Norepinephrine bitartrate (Levophed)</td>
<td>Wrong dose (too low; regular dose versus maximum)</td>
<td>Critically ill patient coding “Too many hands trying to help save him”</td>
<td>Very difficult to deal with “I realized that I should have checked the bag”</td>
</tr>
</tbody>
</table>

(continues)
### TABLE 1
Intravenous Medication Errors, Contributing Factors, and Emotional Responses (Continued)

<table>
<thead>
<tr>
<th>Medication</th>
<th>5 Rights</th>
<th>Contributing Factors</th>
<th>Emotional Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not listed</td>
<td>Wrong route (IV push instead of infusion)</td>
<td>Machine dispensed wrong medication</td>
<td>“Very” alarmed</td>
</tr>
<tr>
<td>Not listed (2 separate errors—1 IV)</td>
<td>Wrong route</td>
<td>Trying to go too fast; not enough staff</td>
<td>Frustrated</td>
</tr>
<tr>
<td>Not listed (2 separate errors—1 IV)</td>
<td>Wrong patient (Two patients prescribed the same drug; switched bags)</td>
<td>In a hurry; too many things to do</td>
<td>“Guilty”</td>
</tr>
<tr>
<td>Normal saline/normal saline with potassium</td>
<td>Wrong drug</td>
<td>Rushing; “Being a new nurse with lots of pressure to be perfect”; medication-dispensing machine stocked incorrectly</td>
<td>Horrible, embarrassed, scared</td>
</tr>
<tr>
<td>Pantoprazole (Protonix) “IV med” not specified (2 IV errors)</td>
<td>Wrong dose</td>
<td>Medication-dispensing machine was on “override pull”; did not scan medications Pump programming error</td>
<td>Fear of approaching physician</td>
</tr>
<tr>
<td>“Psych drug”</td>
<td>Wrong route</td>
<td>Understaffed, lack of report Floated to new unit</td>
<td>None noted</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>Wrong patient (same medication and dose)</td>
<td>Pharmacy placed wrong medication in medication-dispensing machine</td>
<td>Incompetent “Unable to provide the simplicities of care”</td>
</tr>
</tbody>
</table>

Abbreviations: IV, intravenous; MAR, medication administration record.

Analyses indicated that approximately one-half of the medication errors were incorrect dose errors, followed by incorrect route and incorrect drug. Analyses of the accounts revealed that individuals frequently blamed themselves for failing to double-check medications. Contributing factors included general inexperience with the process of IV medication administration, particularly in terms of infusion technologies, medication dispensing, and medication protocols (Table 1). Several respondents acknowledged making errors during or immediately after completing the orientation process. Nurses also cited the following as contributing factors: fatigue, time pressures, hurrying/rushing, and being involved in high-stress emergency situations. Several described that the medication-dispensing machine had been incorrectly stocked or overridden. Others noted that overriding the medication administration system had resulted in dosage errors or duplication of efforts. No cases described long-term harm to the patients involved.

Typical responses to the question of how the nurse felt after making a medication error were overwhelmingly negative. These contained strong emotional responses, including expressions of fear, anger, frustration, disappointment, and remorse. On the other end of the emotional spectrum, many reported feeling relieved and happy that their patients were not harmed as a result of the infusion error. For example, after administering the wrong dose of IV hydromorphone, a nurse wrote, “I was so scared...I thought my patient was not going to tolerate the dose...I was reluctant to report the incident because I was afraid I was going to lose my job...My clinical nurse leader (CNL) was very supportive and reassured [me] that was the best thing to do.” Although the nurse was afraid to report the error, the CNL recommended that reporting the error was the best course of action.

Other examples of registered nurses’ emotional responses after an infusion error included the following:

- “I felt awful, and scared, and was just so grateful that the patient was okay. I was mad and disappointed in myself.” (Intermittent IV infusion antibiotic given as IV push)
- “I hate that I made a [medication] error. It could have potentially caused a lot of damage to the patient.” (Incorrect rate of sedative infusion)
- “I was very scared we would hurt the patient. Fear [was] my major takeaway.” (Incorrect dose of a heparin infusion)

Despite strong negative personal feelings about making an infusion error, those making the errors were rarely treated badly by others in the aftermath. In fact, the nurses in this study often described being supported by coworkers, charge nurses, and preceptors after the event. Several explained how they had received assistance in monitoring the patient and notifying the physician. Others noted that making an infusion error had resulted in a positive lesson learned. The exception was a newly arrived traveling nurse who made a minor error (administered dextrose 5% in lactated Ringer’s instead of lactated Ringer’s) but was not treated well by the employing hospital after the mistake.
Although 1 nurse described feeling “horrible, embarrassed, and scared” after administering incorrect IV fluids, “after meeting with the nurse educator, [she] felt much better.” Another new graduate described how her charge nurse interpreted the error as a learning experience:

All I can say is thank God I underdosed the patient and had to deliver a little more of the bolus to meet the requirement for the correct level. I told the charge nurse and she told me not to report it. I had only been a nurse for a month or so and she said it’s how you learn….I have never made an error with a heparin drip since then. It scared me to death and the gravity of hurting a patient with medication errors really sunk in.

—Registered nurse, incorrect rate of heparin infusion

However, despite the support received, the visceral effects of making an error were often severe. For example, 1 nurse “went to the bathroom and vomited” after making an infusion error of hanging a bag of Precedex (dexmedetomidine hydrochloride) on a dopamine infusion. As a result of the error, the patient’s blood pressure started to drop and he complained that he was feeling ill. The nurse remembered “crying all the way home.” In this case, the preceptor quickly helped correct the problem and found someone else to watch the patient so that the nurse and preceptor could take a walk. Although the patient did not experience sustained harm, for the nurse the long-term effects of making an error lingered. After the event had passed, the nurse was “really nervous at work for years afterward” and noted that “even typing the event had passed, the nurse was “really nervous at work for years afterward” and noted that “even typing this is making me anxious again,” as evidence of the sustained impact.

Not knowing whether one’s error caused the patient harm can also leave the nurse with persistent self-doubt, as reported by the following nurse:

Oxygen dropped to the mid-60s to 70s and a rapid response was called…feel guilt over the error and for not directly turning myself in to my manager. I know it wouldn’t have changed the outcome for the patient, but I would have been able to let the chips fall where they may…the possibility of contributing to her transfer [to intensive care unit] plagues me, but I may not know if it was the medication or the inevitable decline associated with her condition.

—Registered nurse, incorrect dose of IV antianxiety medication

When asked to reflect on the errors, nurses often commented that errors can be made by anyone, and, therefore, nurses should not be dealt with punitively. For example:

• “Making [medication] errors is overwhelming, but we all have to realize that we are human beings and we do err.”
• “Everyone makes them [mistakes]; I feel like nurses are criticized when they make them. Instead of supporting each other, we criticize them.”
• “My manager never said anything about it. It is reported more as learning opportunities to help prevent future mistakes, instead of a punishment.”

Another nurse noted that making an error should give the nurse the opportunity to “stop and reground yourself” instead of being in “robot mode.” Others called for better instruction in infusion therapy, particularly during emergency situations, commenting that patient codes “happen in every unit of the hospital.” One respondent suggested that adding a panel of nurses who had made medication errors would be a good learning opportunity for questions and answers by nursing students.

Discussion

Whether minor or serious, all infusion therapy-related errors have the potential to lead to emotional distress for the nurse involved. The recent graduates in this study described negative emotions after making infusion medication administration errors despite the lack of long-term patient harm. Most of the nurses were treated well by their coworkers, managers, and others after the error event. However, because they might have internalized blame, it seems likely that some of the nurses in the study ultimately will experience long-term second victim impacts, regardless of the mitigating factors.

It is helpful to understand second victim impacts as part of an evolving process rather than a singular event. According to Scott and colleagues, second victim recovery consists of 6 distinctive stages. They include chaos and accident response, intrusive reflections, restoring personal integrity, enduring the inquisition, obtaining emotional first aid, and moving on—dropping out, surviving, or thriving. With this in mind, interventions may be targeted toward the different stages of the recovery process and initiated at both the individual and organizational levels.

Second victim rapid response teams exemplify the potential for swift positive action at the first stage of the second victim trajectory. Response teams are made up of nurses and other caregivers who immediately go to the person who has made an error and offer support. Team members can offer a supportive presence during the period of confusion and rapid succession of events immediately after an adverse event. For example, the Resilience in Stressful Events program at Johns Hopkins Hospital is a peer support program of volunteers including nurses, physicians, and pastoral care staff who can be called on to aid colleagues in need (Table 2). Cofounder Cheryl Connors stressed that these are not therapists but, rather, peers who provide service through empathic listening and linking second victims to professional resources when needed.

Other aspects of the recovery process will likely require more time and sustained attention. Thus, organizations that offer counseling and long-term support can help make a difference for the provider who lives with a mistake. Emory Healthcare in Atlanta offers a program of counseling and referrals for additional psychological support similar to an employee assistance program.
Others have recognized the unique support needs of advanced practice nurses who have been involved in errors. As specialized providers, certified registered nurse anesthetists (CRNAs) have an exceptionally high level of responsibility to the patient. With that responsibility comes a high level of risk of becoming a second victim. As noted by Maria van Pelt, who did her dissertation on the stress of catastrophic adverse events, CRNAs are usually among the last providers to reassure anxious patients before surgery and may experience strong feelings of guilt and helplessness if something goes wrong. Programs and guidelines specifically with CRNAs in mind are now being implemented.

However, barriers exist even when organizations do provide support. After making an error, providers are often reluctant to admit they are hurting and do not avail themselves of existing services. In part, this is due to the fear and stigma associated with mental health care. It seems clear that efforts to increase support, transparency, and understanding of the complex nature of adverse events are needed.

Any caregiver can provide support by following a few basic rules of therapeutic communication. According to Connors, these can be represented as a list of “do’s and don’ts.” After an error occurs, it is important to find a quiet place that would be conducive to listening away from the incident scene. When discussing the error, peers should ask open-ended questions and then carefully listen to what’s being said. Connors noted that although most nurses tend to want to fix things and to minimize the error, it is preferable to let the person express his or her feelings. This allows the person who has made the error the right to experience negative emotions and grief. Connors stressed that peers should not try to determine who is at fault or determine the cause of the error. It is also important to direct the person to appropriate resources.

**Limitations**

This research was limited by the cross-sectional nature of the data collection. Nurses were surveyed at only 1 point in time. Thus, this study could be enhanced if the researchers had the ability to follow the nurses over a longer period to find out how they fared after making an error. Future survey research instruments could also specifically ask nurses to choose from a list of individual- and systems-level contributing factors.

### CONCLUSIONS

Opportunities for errors are everywhere in the complex system of health care. However, errors are often not simply the result of human error or individual mistakes. Therefore, it is critical to address and resolve systems issues to prevent errors and adverse events from occurring. Interventions that deal with distractions, technologies, high nurse-patient ratios, and other systemic issues have been advocated by nursing leaders, educators, and staff. Likewise, at the individual level, each nurse is responsible for maintaining competence and to take appropriate and reasonable actions.

In the current study, an overall account of the error was asked for instead, and key elements and emotions that were expressed within the narratives were subsequently analyzed. After making an error, nurses in this study expressed fear for the patient and fear for themselves. When errors do happen, nurses have a responsibility to be there for one another. Opportunities for future research and applications include additional work on how to best support second victims.

### REFERENCES


