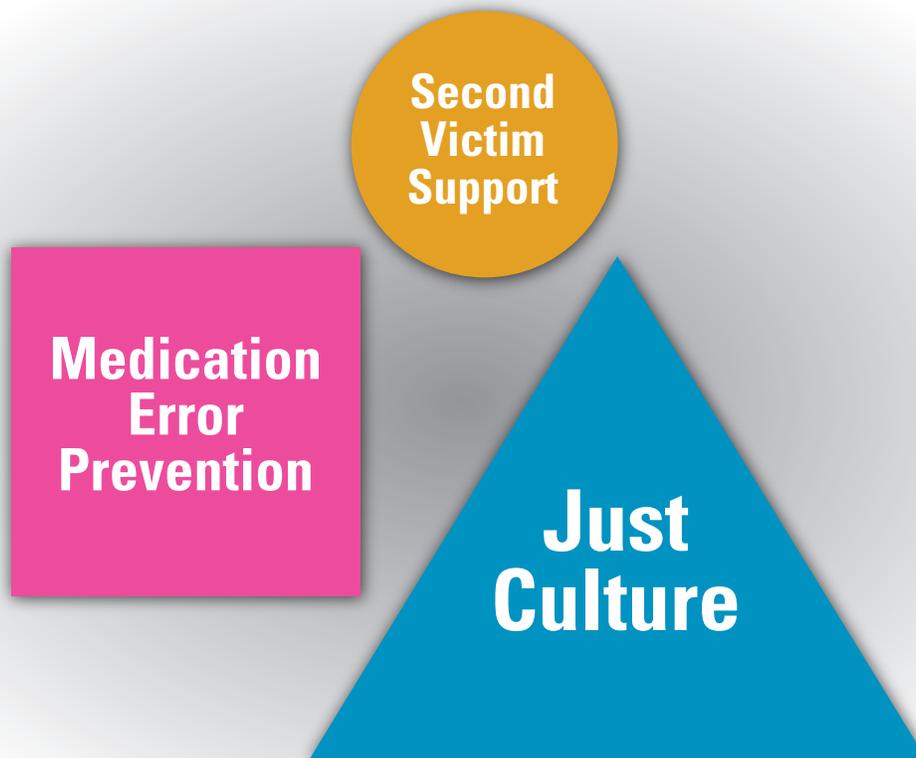


Just Culture, Medication Error Prevention, and Second Victim Support:

A Better Prescription for Preparing Nursing Students for Practice



A White Paper Project

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A Call to Action

Preparing prelicensure professional nursing students to successfully administer medications to patients upon graduation is a primary goal of academic baccalaureate nursing programs. But what happens when a student nurse makes a medication error? Despite a solid curriculum and sophisticated faculty guidance around the basic knowledge, skills, and attitudes associated with medication administration, baccalaureate nursing programs often operate within a culture that is disciplinary and punitive in nature when a medication error happens. Disciplinary actions have historically included counseling, reprimand, remediation, failing clinical, dismissal from the program, or additional work assignments.^{1,2} Nor does the baccalaureate nursing program curriculum support effective student acquisition of the knowledge, skills, and attitudes required to understand human fallibility and medication errors within a Just Culture, and how to respond fairly and compassionately to health professionals who make an error—the second victims of the error. Reasons for these curriculum vulnerabilities are deeply rooted in an overly punitive culture that has dominated healthcare in the past and an unrealistic expectation of “zero errors” and perfect compliance with policies and procedures despite unexpected challenges. Further, student competencies related to understanding the causes and reduction of medication errors, Just Culture, and second victim support are not required or measured in accreditation criteria or licensing exams. The lack of faculty education and support in teaching and cultivating these competencies enhance these curricular vulnerabilities.

Because the culture of healthcare is changing dramatically, nursing students in baccalaureate programs will not be adequately prepared for practice unless these deficiencies are addressed. While an errorless imperative may be a laudable target, it can never be a realistic expectation given all that is known about human fallibility, even in an industry where a single mistake could be catastrophic. Nursing students of the future need to fully understand human fallibility and the human tendency to lose perception of the risks associated with behavioral choices that may be made when facing unexpected challenges. They need to understand why medication errors happen and how to reduce the risk of their occurrence. And students need to appreciate the tenets of a Just Culture and compassionate second victim support while personally experiencing their immense benefits within the culture of their own undergraduate training. Schools of nursing need to design and implement curricular change that addresses these problems.

Three Missing Nursing Competencies

Just Culture

Historically, the healthcare environment has dealt with those who make errors with punishment. A nurse who made an error was often blamed, shamed, deemed negligent or incompetent, punished, written up, or even fired. Nurses could lose their nursing licenses and sometimes were even criminally prosecuted as a result of an error. Schools of nursing mirrored the ways in which error-making was dealt with in healthcare organizations. In nursing schools, students who made an error have been similarly punished and sometimes even dismissed from the nursing program.

Eventually, it became apparent that this punitive, blaming culture did not work. Not only did it fail to promote patient safety, it also failed to reduce the number of errors that were occurring in the healthcare environment. Preventable medical errors went from being the fifth leading cause of death in 2000,³ with an estimated 47,000 to 98,000 Americans dying from a preventable medical error, to becoming the third leading cause in 2016,⁴ with estimates of over 400,000 Americans dying from a preventable medical error. Despite the many efforts, initiatives, and organizations involved in trying to reduce errors and make the healthcare environment safer, reduction of errors and enhanced patient safety have not occurred.⁵ Complicating this reality even further is the problem of underreporting of errors. When errors go unreported, awareness that system flaws may be causing errors is absent. Flaws that could be remedied are not addressed and errors continue to be made. The major cause of underreporting is thought to be the punitive, blame and shame, way of addressing the error-making and the fear it instills in the error-maker. It became clearer that the conventional solutions of blame and punishment were not solving the problem.

As healthcare organizations realized the ineffectiveness of such an approach, they moved toward establishing a Just Culture with the ultimate goal of improving patient safety. A Just Culture is designed to improve transparency, to encourage employees to report errors and to identify problems within the systems so that weaknesses and flaws can be addressed. Unfortunately, schools of nursing have been slower to integrate a Just Culture into their programs and curricula.



Three Missing Nursing Competencies (continued)

Although there are different definitions of a Just Culture, there are commonalities in the different definitions. Perhaps one of the more inclusive definitions comes from the Agency for Healthcare Research and Quality (AHRQ), who has defined it as:

“A Just Culture focuses on identifying and addressing systems issues that lead individuals to engage in unsafe behaviors, while maintaining individual accountability by establishing zero tolerance for reckless behavior. It distinguishes between human error (e.g., slips), at-risk behavior (e.g., taking shortcuts), and reckless behavior (e.g., ignoring required safety steps), in contrast to an overarching “no-blame” approach still favored by some. In a Just Culture, the response to an error or near miss is predicated on the type of behavior associated with the error, and not the severity of the event.”⁶

A Just Culture empowers employees to become involved with monitoring and improving the workplace.⁷ It is one that is constantly improving, analyzing each situation on its merits, and always with the end goal of patient safety. Thus, it is a vital component of a culture of safety.⁶

It must be emphasized that a Just Culture is not a blame-free culture. Instead, it is one that seeks to balance responsibility and accountability. A Just Culture recognizes that people sometimes make mistakes, system issues often contribute to errors, and a balance between individual accountability and system effectiveness is sought. Organizational response varies based upon which of these categories the error falls, such as:

- ① Human error, which involves an inadvertent action, slip, lapse, or mistake. The organizational response should be on taking corrective action and coaching, training, teaching, and sometimes consoling the error-maker. Punishment is not appropriate.
- ② At-risk behavior (which entails conscious drifting away from safe behavior). This type of behavior involves a conscious choice, choosing to violate a rule, policy, or procedure. The risk was either not recognized or the action was determined to be justified. Regardless of the reason, risk for error has been increased and the system made more vulnerable to error. This individual should be coached to understand why the action taken increased the risk of error.
- ③ Reckless behavior (consciousness of conduct and risk). This behavior requires remedial, disciplinary action. It can include punitive action such as termination. It is possible that even civil or criminal charges will be made against the individual.⁷

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A Just Culture within a nursing program will share many of the same attributes.⁸ Faculty members should believe that they can learn and improve by openly identifying and examining their own weaknesses and that they are as willing to expose areas of weakness as they are to display areas of excellence. Faculty need to feel supported and safe when expressing concerns as well as feeling safe and emotionally comfortable in their work. In a Just Culture, faculty are at ease monitoring their colleagues and giving them performance feedback. They feel accountable for creating and maintaining a psychologically safe environment in which information on errors and close calls is shared. Attitudes and structures required for a Just Culture include the following:

- Mistakes are part of learning and professional practice
- Vigilance alone is not enough
- Threats of punishment do not prevent errors—only the reporting of errors
- Students should be held accountable for their actions—but not blamed for system faults beyond their control
- Students should feel as accountable for creating and contributing to a safe learning environment as they do for delivering excellent nursing care
- Students who act with recklessness (for example, repeatedly arriving unprepared for clinical skills class or falsely documenting a procedure as completed) should be appropriately and fairly disciplined; this may include dismissal from the program^{8,p. 43-44}

There are multiple reasons a Just Culture is important. A Just Culture model seeks to improve patient safety and reduce errors by providing a safe environment to report errors, close calls, and system shortcomings. Because of this, schools of nursing are encouraged to incorporate Just Culture concepts into the curriculum and throughout the academic experience.⁹



Three Missing Nursing Competencies (continued)

Just Culture is also a fair culture. The Just Culture system provides an evidence-based approach to investigating and addressing errors.^{8,10} Faculty are able to objectively investigate every case without assigning blame, identify types of mistakes, and differentiate between levels of severity by using the Just Culture algorithm.⁸

Human error is, and always will be, a reality. In a Just Culture framework, the focus is on addressing systems issues that contribute to errors and harm. While students should be held accountable for actively disregarding protocols and procedures, the reporting of errors, lapses, close calls, and adverse events is encouraged. Students should be supported when the system breaks down and errors occur. Students should feel empowered and unafraid to voice concerns about threats to patient safety. In such an environment, students should feel that it is safe to report their own errors and close calls and to report system problems they encounter during clinical experiences. As they learn to trust the safety of admitting errors or weaknesses, they will also feel safe in seeking appropriate help and practicing accountability.

It is also important because nursing students begin forming their professional values during nursing school. A Just Culture has also been found to promote a sense of accountability for the improvement of the system.⁹ This is an important concept for early professionalization. This early indoctrination to professional values, including reporting, should lead to increased reporting when in practice.

Establishing a Just Culture in a nursing program will not be an easy transition. In many nursing education programs, this will represent a significant philosophical shift. While some nursing programs may have integrated some of the principles of a Just Culture into their curricula, (e.g., a policy of documenting safety and professionalism concerns on student performance),¹¹ a broader implementation is recommended. A Just Culture should be threaded throughout the curriculum and program, embedded into every aspect of the program.

Medication Error Prevention

Medication errors are a persistent and significant cause of patient harm during the delivery of healthcare.^{12,13} Medication error has been defined as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer.¹⁴ A medication error can occur at any step in the medication use process: prescribing, order processing, dispensing, administration, and/or effects monitoring. Up to 38% of all medication errors in hospitalized patients occur during the medication administration step, the step that most involves nurses.^{15,16}

An adverse drug event (ADE) is defined as harm experienced by a patient as result of exposure to a medication.¹⁷ These events may or may not involve error. Half of all ADEs are preventable,¹⁸ making them one of the most common causes of preventable morbidity and mortality in both hospitalized and ambulatory patients.¹⁷ Each year, ADEs account for 1.3 million emergency department visits and 350,000 hospitalizations,¹⁹ and nearly 5% of hospitalized patients suffer a preventable ADE.²⁰

Medication errors and preventable ADEs are often caused by interactions between latent and active failures that create a window for an event to occur.²¹ Latent failures are vulnerabilities that arise within organizational and managerial spheres, lying dormant in the system and setting the stage for error. Latent failures are often caused by system design flaws. Active failures are the unsafe acts of individuals closest to the patient, which serves as a catalyst for an event. Active failures are often the result of human error or at-risk behaviors (behavioral drift) such as procedural shortcuts or failing to use available technology. The probability of human error increases as negative system and individual performance shaping factors are introduced, such as task complexity, technology design flaws, medication label ambiguity, rushing, lack of experience, and distractions or interruptions. The likelihood of at-risk behaviors increases as practitioners are challenged by unexpected system failures that they must work around to provide patient care.²²⁻²⁶ Common system-based (latent) and human-based (active) causes of medication errors are further described in **Appendix 1**.

The actual number of medication errors made by nursing students is not known; in a recent literature review, Asensi-Vicente, Jimenez-Ruiz, and Vizcaya-Moreno acknowledged that few studies exist analyzing errors and close calls of students.²⁷ However, studies have demonstrated that medication errors by student nurses and new graduates are prevalent but underreported.²⁸⁻³⁰ While most of these errors do not result in patient



Three Missing Nursing Competencies (continued)

harm,²⁹ it has been reported that insulin is the highest single-frequency medication involved in student nurse errors.^{29,31-33} Insulin is a high-alert medication that bears a heightened risk of causing harm to patients when used in error.³⁴ Most of student nurse-related insulin errors involved dose omissions, selecting the wrong type of insulin, measuring and administering the wrong dose, and administering insulin to the wrong patient,³¹ all of which can cause significant patient harm.

While inexperience has been described as a primary factor contributing to student medication errors,³² some student-related errors are similar in origin to those that seasoned healthcare professionals make, such as misinterpreting an abbreviation, misidentifying a drug due to a look-alike label, misprogramming an infusion pump, omissions, miscommunication errors, or simply making a mistake when distracted.²⁸⁻³⁰ However, some student nurse errors stem from system and practice issues that are unique to environments where students and clinical site practitioners care for patients together.³¹ The duality of patient assignments is a prime example. Patients who are assigned to student nurses are also assigned to staff nurses. While dual assignments are necessary, communication breakdowns regarding who will administer medications to patients, what medications have been administered, and which medications should be held, have resulted in dose omissions and the administration of extra doses. Other unique conditions with specific examples that promote student nurse-related medication errors can be found in **Appendix 2**.

Preceptor-associated challenges, such as limited availability for questions and difficulty with balancing the workload between clinical tasks and multi-student oversight, has also been linked to student-related errors, as have clinical site deficiencies, including gaps in student and faculty orientation with little clarity around roles and responsibilities.³³ Studies have also demonstrated the positive aspects of having students in real-world clinical settings. Students bring a unique perspective to the table, questioning processes that could allow error and identifying medication errors before they reach patients through participation in the verification process and communication with patients.^{31,33}

Nurses spend 40% of their time administering medications,⁵ with additional time spent on other medication-related tasks such as medication reconciliation and patient monitoring. It has become an increasingly complex nursing activity³⁵ requiring multifaceted competencies during which errors are likely and ADEs are possible. The administration process entails a complex mixture of varied and often competing demands that structure the entire workday given its inseparability from other nurses' work.³⁶ Because nurses are often the final gatekeeper during the medication use process, they also play an important role in detecting and correcting prescribing and dispensing errors.³⁷ As such, nurses need to be prepared for this vital role upon entry into practice.

Nursing curricula has long included pharmacologic and task-related competencies associated with medication administration, such as dose calculations and injection techniques. And while nursing programs are mandated to teach students to minimize harm to patients,³⁸ there is evidence to suggest that many undergraduate nursing curricula do not adequately educate students about the factors that contribute to medication errors and the possible strategies to prevent them.^{5,12,13,39} In fact, most nurse executives do not believe new graduate nurses are proficient in safe medication administration.⁵

Traditional medication safety education in nursing curricula focuses on the five rights of medication administration.^{5,40} While the five rights are considered the gold standard for preventing medication errors, there are several things wrong with teaching nursing students medication error prevention this way.^{5,41} First, the five rights are strictly goal-oriented—a desired destination without a map for getting there. They offer little procedural guidance on how to meet the goals. Next, the five rights fail to recognize the complexity of the nursing role or acknowledge that human factors and system weaknesses contribute to medication errors. Further, the focus on the five rights is limited to individual performance and does little to reflect that safe medication practices are a culmination of the interdisciplinary efforts of many individuals and reliable systems.⁴¹ Pepper offered an analogy of the five rights as the equivalent of giving airplane pilots the following instructions to avoid crashes: have the right plane, the right passenger, the right airport of origination, the right destination, and the right time.⁴²

Lukewich also notes that the level of nursing students' confidence in what they may have learned about patient safety in general declines as they are increasingly exposed to real-world clinical environments.⁴³ Students found it difficult to translate what they learned in the classroom about patient safety into the clinical setting.



Three Missing Nursing Competencies (continued)

Given the increasing incidence of harmful adverse drug events and medication errors, greater emphasis must be placed on the integration of medication error prevention competencies into professional nursing education.⁴⁴ Specifically, medication error prevention in the nursing curriculum requires broad, comprehensive development as a specific theme with an interdisciplinary approach to:

- ① Teach nursing students about the causes of medication errors and how to reduce their occurrence by exposing them to real-world clinical situations that reflect the complexity of medication administration and errors⁴⁵
- ② Help nursing students recognize that medication errors may happen during their training and throughout their nursing career, despite their competence and vigilance^{31,33}

Because teaching medication error prevention can be hampered by punitive deficiencies that persist in the culture of clinical training environments,⁴⁶ it must be taught in tandem with Just Culture and compassionate response to the second victims of errors.

Second Victim Support

In the very best of times, healthcare practitioners and students are repeatedly exposed to emotional turmoil caused by patient tragedies such as loss of life, even when it is clinically anticipated.⁴⁷ These patient tragedies have been described as the complex sorrow intrinsic to the work in healthcare.⁴⁸ When patient tragedies are caused by medical error, it can shake involved practitioners and students to their very core.

Wu coined the phrase, second victim, to describe the suffering experienced by physicians involved in harmful medical errors, later indicating the term might be appropriate for other healthcare professionals involved in harmful medical events.⁴⁹ Scott and colleagues described the second victim phenomenon more broadly as, “healthcare providers who are involved in an unanticipated adverse patient event, in a medical error and/or a patient related injury, and become victimized in the sense that the provider is traumatized by the event.”^{50, p. 326} The second victim phenomenon can affect all healthcare disciplines, including students. Approximately half of all healthcare providers have been impacted by a harmful medical error or adverse event at least once during their career.⁵¹

The effects of the second victim phenomenon can be deep and long-lasting, particularly when medical error is involved. Immediately after an error is recognized, the individual typically experiences stress-related psychological and physical reactions related to sadness, fear, anger, and shame.^{47-49,52,53} They are immediately panicked, horrified, and apprehensive, which is manifested by disbelief, shock, an increased blood pressure and heart rate, muscle tension, rapid breathing, extreme sadness, appetite disturbances, and difficulty concentrating.^{48,49,52,53} They are often puzzled when procedures they expected to keep patients safe fail and an error occurs.⁴⁸

While awaiting investigation of the error, second victims are often plagued with fears of losing their job (or expulsion from professional training) and the financial consequences of unemployment and levied fines; being labeled as incompetent or careless by colleagues, their family, and the patient’s family; loss of coworkers’ respect; involvement in a civil or criminal lawsuit; and loss of their professional license. Further fueled by isolation from colleagues and their organization, second victims often experience a fear of returning to the clinical setting, loss of confidence, self-doubt, remorse, depression, guilt, worry, embarrassment, anguish, humiliation, a wish to make amends, frustration, and hypervigilance.^{47,48,53,54}

The months that follow are characteristic of post-traumatic stress disorder (PTSD),^{47,54} which is expressed as an inability to successfully process the feelings of fear, sadness, guilt, and shame.⁵⁴ The traumatic event leads to insomnia, other sleep disturbances, flashbacks, thoughts of suicide,⁵⁵ and a damaged self-perception and inner security.^{48,53,54} Every day feels like an eternity. Fatal errors and those that cause harm are known to haunt second victims throughout their lives^{48,56} and may result in competent practitioners losing their licenses or leaving the profession.⁵⁷⁻⁵⁹

The provision of emotional support from peers and supervisors for second victims is critical to the individual’s psychosocial and physical recovery after an unexpected patient event.⁶⁰⁻⁶² Yet researchers have found that most second victims do not receive any form of support to help them cope



Three Missing Nursing Competencies (continued)

with their stress or counter their fear of being negatively viewed or isolated in the wake of an error.⁶³ Instead, we remain silent and abandon the second victims—our wounded healers—in their time of greatest need.⁵³

While research into the second victim phenomenon has been ongoing, little has been done to address the need to educate future healthcare professionals across all disciplines. We urgently need trained individuals within professional nursing schools to:

- ① Identify healthcare providers and students at risk of suffering from the second victim phenomenon⁶⁴
- ② Develop an evidence-based, holistic second victim support program, with clear objectives and core competencies, to console healthcare providers and students⁵¹ and enhance their constructive coping strategies⁶⁵
- ③ Build a sound, thoughtful, tactical plan to proactively reach out to second victims to address their unique needs and begin the healing process^{64,66}

Teaching students to prevent errors will always be one of the ultimate goals of nursing education; however, students also need to know that errors will undoubtedly happen given human fallibility. They need to understand and expect the second victim phenomenon in response to harmful or potentially harmful errors. They need to know how to access available and supportive resources when an adverse event happens;⁶⁷ and, they need to know how to appropriately respond to second victims.⁵⁵

Schools of nursing have a moral imperative to change the culture of abandonment, isolation, and punishment of second victims to a culture that provides accessible and effective support for suffering clinicians.⁶⁸ To reinforce this goal, schools of nursing also need to establish and deploy a second victim rapid response team in the immediate wake of a harmful or potentially harmful error to mirror the behaviors that are expected of professional nurses. Similar to medical rapid response teams used to manage acute patient deterioration, a dedicated team with knowledge and experience in supporting students and faculty during the acute stages of emotional trauma can significantly aid the recovery of second victims.^{47,59} It is of the highest priority to anticipate that stressful adverse events, including errors, will likely occur during training. Nursing faculty must be proactive in their response to students and faculty at risk of becoming second victims.^{69,70} This important work can only be accomplished by decreasing the punitive responses to medical errors⁷¹ through a Just Culture, and a clear understanding of the causes and prevention of medication errors.

Integrating the Competencies into the Nursing Curriculum

The competencies related to Just Culture, medication error prevention, and the second victim phenomenon overlap in significant ways and should be integrated seamlessly into the professional nursing curriculum, beginning with the first semester.^{72,73} While specific classes or courses may be developed to teach students the basic concepts associated with these critical competencies, they should not be taught in isolation. Although making medication errors, experiencing adverse events, witnessing or experiencing the second victim phenomena, and catching clear glimpses of the underlying culture of patient care are unpredictable, these topics should be included as part of the student's clinical goals and captured spontaneously in teachable moments throughout the students' educational experience. When the knowledge, skills, and attitudes associated with Just Culture, medication error prevention, and the second victim phenomenon are integrated into the clinical experience, students can explore these concepts repeatedly through the day in different ways and through many different lenses. This would not only allow a broader application of knowledge, skills, and attitudes but should also enable a greater conceptual understanding of real-life situations.

The shared nature of Just Culture, medication error prevention, and the second victim phenomenon across clinical disciplines suggests that interprofessional educational and experiential learning opportunities should be provided to improve the students' competencies in these areas and a clear understanding of their role as part of a clinical team.⁷⁴



Integrating the Competencies into the Nursing Curriculum *(continued)*

The Quality and Safety Education for Nurses (QSEN) project,⁷⁵ funded by the Robert Wood Johnson Foundation, provides a framework for identifying critical nursing competencies required for professional nurses (and by extension, nursing students). The QSEN project is focused on enhancing nursing curricula and fostering faculty development to support student achievement of quality and safety competencies.⁷⁶ Using the QSEN framework, the competency plans in **Appendix 3** list the knowledge, skills, and attitudes (KSAs) needed by students for each of the three critical competencies.

Student Competency Evaluation

Various instruments have been developed to assess the overall safety competencies of health professionals⁷⁷ according to Miller's four competency levels: knows, knows how, shows how, and does,⁷⁸ although their reliability and validity are modest at best. Most of these instruments have been developed largely to examine the impact of specific patient safety curricular initiatives.⁷⁹ As such, these existing instruments do not cover the whole spectrum of patient safety competencies, and they tend to measure very broad competencies (e.g., teamwork, communication, managing risks) or are best suited for specific working situations. While much can be learned from these existing patient safety competency evaluation instruments,⁷⁷ they may not provide the level of detail needed to truly assess each student's knowledge, skills, and attitudes associated with Just Culture, medication error prevention, and second victim support.

Specific competency evaluation instruments for Just Culture, medication error prevention, and second victim support, should be developed and tested to assess each student's competencies in the clinical environment. For each of these new competencies, the student should be able to demonstrate the ability to replicate a skill, apply the knowledge in a familiar situation, adapt the knowledge to new situations, associate new knowledge with previously learned principles, and demonstrate the desired attitudes through actions, attitudes, and decision making. Proposed student competency plans for these competencies are included in **Appendix 3**.

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As the demands for competencies associated with Just Culture, medication error prevention, and second victim support are increasingly expected at the time of entry into practice, it will also be important to capture new graduate nurses' perspectives of their own competence on these topics through surveys before graduation.

Faculty Involvement

Faculty are critical to achieving the goals outlined in this White Paper. Faculty must create the real-world teaching pedagogies and the learning environment to enhance the acquisition of knowledge, skills, and attitudes of these new competencies. Faculty have long been adept at creating meaningful ways, strategies, and activities to teach new skills. However, we are proposing a new way of viewing and actualizing the overlapping concepts of safe medication administration, second victims, and Just Culture.

Faculty development initiatives should center around assisting nursing faculty to develop an understanding of these new competencies, concepts, and culture. This education should begin with new faculty orientation and include regularly scheduled updates. Continuing topical education could be provided as continuing education or pre-employment training at the organizational level. Supporting faculty continuing education at nursing and/or interdisciplinary conferences and second victim workshops could aid in achieving this goal. Simulation experiences for faculty can be developed to allow faculty to practice dealing with students making errors.

The competencies being recommended represent a significant shift in current practice and the current culture of many schools of nursing. An important early step must be to conduct an honest appraisal and analysis of the existing culture and behaviors in their institutions. Faculty must be involved with this from the beginning. The success of any significant curricular or philosophical revisions, especially one that involves a culture change, is contingent upon faculty involvement and commitment. Few schools of nursing have truly embraced a Just Culture. Nursing faculty must be willing



Faculty Involvement (continued)

to embrace and work within a Just Culture and make whatever changes are needed. They must be willing to expose areas of weakness and feel comfortable and safe while doing so. Ultimately, it is the faculty who should describe and define a Just Culture within their own institutions.⁸

Support from leadership is also critical. Not only should leadership incorporate behavioral expectations of faculty into faculty evaluations, these expectations should be clearly communicated to faculty and modeled by leadership.⁸ Faculty leadership must initiate and support efforts to create and sustain a Just Culture (through orientation of new faculty, accolades for faculty who embody Just Culture, and willingness to discuss needs for improvement). Faculty meetings should have regular agenda items that support Just Culture; collated data regarding student and instructor errors and close calls should be reported, examined, and posted for students and faculty. Opportunities for improvement should be celebrated.⁸

A commitment to initiating and maintaining a Just Culture and faculty development requires resources. Identification of resources, internal and external, available to support faculty must take place and faculty should be made aware of these resources. An example of an external resource is the Quality and Safety Education for Nurses (QSEN) Institute free faculty Learning Modules, which includes a module on Just Culture. Faculty must be given the time, resources, education, and opportunities to learn and acquire the knowledge, skills, and attitudes necessary to teach these new competencies.

Conclusion

While it may be laudable to establish a goal of zero errors or zero patient harm, the reality is that human beings are inescapably fallible and will never be able to achieve perfect outcomes. It is more intellectually honest to make students aware of the ways and reasons that medication errors occur and how to reduce the risk of their occurrence. Given the formidable link between the causes and prevention of medication errors, Just Culture, and second victim support, it is critically important to teach these three missing nursing competencies in unison and to provide an environment of learning that models and supports these competencies. Only together will they help form a solid foundation for preparing professional nursing students to successfully administer medications and respond to a medication error when it happens.

This White Paper serves as a call to action to nursing programs to change the way they are preparing nursing students for practice. Contained within are several recommendations toward achieving this goal. It is recommended that faculty define, describe, and create a Just Culture in their own programs. All faculty, full-time, part-time, adjunct, and clinical, should be taught the principles of a Just Culture and how it relates to their own teaching and role modeling. All faculty should be committed to implementing the Just Culture philosophy.

It is also recommended that safety- and quality-focused components are woven into the nursing curricula, beginning with the first semester. Not only could examples of safety and quality metrics be discussed in every clinical lecture but a specific class could be developed that expounds on safety and quality metrics and processes. Nursing students should be taught about human fallibility and how to work within systems to minimize error.

It is further recommended that a second victim response team be established within the nursing program. As part of the culture of safety, it is important to anticipate that stressful events are likely to occur during training; nursing faculty should be proactive in planning discussion regarding common emotions faced by healthcare providers. Indeed, the patient safety culture of an organization—including schools of nursing—is an important component in the overall safety culture of that program. A formalized support initiative to address suffering of second victims should be considered in schools of nursing.

Finally, a set of new critical competencies of Just Culture, second victim support, and medication error prevention is recommended. Using the QSEN format with knowledge, skills, and attitudes, these competencies are presented in **Appendix 3** for integration of safety and quality into curricula. **Appendix 4** provides links to additional resources.



Appendix 1 — Causes of Medication Errors

Causes	Description	Examples of Errors, Safety Problems, and Unsafe Behavioral Choices
System-Based (Latent Failures) Causes		
Management of Information		
Missing information about the patient	Essential patient information (e.g., age, gender, diagnosis, pregnancy, allergies, lab values, identify) is not obtained, readily available in useful form, and/or considered when prescribing, dispensing, and administering medications, and when monitoring medication effects	<ul style="list-style-type: none"> <input type="checkbox"/> Untimely access to lab studies <input type="checkbox"/> Patient allergies unknown <input type="checkbox"/> Patient weight unknown for proper dosing <input type="checkbox"/> Patient misidentified <input type="checkbox"/> Failure to notice significant respiratory depression in patients receiving opioids
Missing information about the drug	Essential drug information is not readily available in useful form and/or considered when prescribing, dispensing, and administering medications, and when monitoring the effects of medications	<ul style="list-style-type: none"> <input type="checkbox"/> Medication reconciliation problem <input type="checkbox"/> Administration of the wrong dose or use of the wrong route <input type="checkbox"/> Nurse unaware of special precautions or special monitoring needed with medication <input type="checkbox"/> Warnings or alarms overlooked or ignored <input type="checkbox"/> Failure to consult up-to-date drug references
Miscommunication	Methods of communicating drug orders and other drug information are not streamlined, standardized, and/or automated to minimize the risk for error	<ul style="list-style-type: none"> <input type="checkbox"/> Failure to pursue safety concerns <input type="checkbox"/> Error-prone presentation of medication orders on medication administration records <input type="checkbox"/> Incomplete medication orders <input type="checkbox"/> Misunderstood abbreviations <input type="checkbox"/> Misheard verbal orders <input type="checkbox"/> Delays and errors due to miscommunication between nursing and pharmacy
Drug name, packaging, or labeling problems	<p>Readable labels that clearly identify drugs are not on all drug containers, and/or drugs do not remain labeled up to the point of drug administration</p> <p>Strategies are not undertaken to minimize the risk of errors with products that have similar and/or confusing labels/packages or drug names</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Product misidentification due to look-alike drug labels and packages, look- or sound-alike drug names, and/or confusing or ambiguous labels <input type="checkbox"/> No access to labels for nurse-prepared syringes, leading to unlabeled syringes <input type="checkbox"/> Medications do not remain labeled up to the point of drug administration, leading to misidentification <input type="checkbox"/> Doses dispensed in bulk supplies without patient-specific labels <input type="checkbox"/> Mislabeled medications
Deficiencies in patient education or involvement in care	Patients are not included as active partners in their care through education about their medications and/or ways to avoid errors	<ul style="list-style-type: none"> <input type="checkbox"/> Missed opportunity to capture an error because the patient is reluctant to ask questions <input type="checkbox"/> Errors during self-administration because patients do not understand the directions due to language barriers, medical jargon, and/or low health literacy, reading, or verbal skills <input type="checkbox"/> Errors during self-administration because patients lack information about the causes of medication errors and/or how to prevent them



Appendix 1 — Causes of Medication Errors (continued)

Management of the Environment		
Causes	Description	Examples of Errors, Safety Problems, Unsafe Behavioral Choices
Drug storage, distribution, and standardization problems	<p>Intravenous (IV) solutions, drug concentrations, and/or administration times are not standardized whenever possible</p> <p>Medications are not provided in a safe and secure manner and/or available for administration within a time frame that meets essential patient needs</p> <p>Access to medications is unrestricted</p> <p>Hazardous chemicals are not safely sequestered and away from drug preparation areas</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Multiple concentrations of IV solutions leading to use of the wrong concentration <input type="checkbox"/> Nurses mixing IV solutions incorrectly <input type="checkbox"/> Selection of the wrong drug or dose caused by unsafe storage of medications <input type="checkbox"/> Hazardous chemicals and fixatives stored with medications, leading to mix-ups <input type="checkbox"/> Delay in medication administration due to problems with pharmacy dispensing or nursing transmission of orders to pharmacy <input type="checkbox"/> Omissions due to nonstandard administration times <input type="checkbox"/> Dosing error that reaches a patient due to access to more vials of medication than needed
Drug delivery device problems	<p>The potential for human error is not mitigated through careful procurement, maintenance, use, and/or standardization of devices used to prepare and deliver medications (e.g., infusion pumps, implantable pumps, oral and parenteral syringes)</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Pump design flaws leading to programming errors <input type="checkbox"/> Accidental IV administration of an oral solution prepared in a parenteral syringe <input type="checkbox"/> Line mix-ups (e.g., connecting an IV solution to an epidural line) <input type="checkbox"/> Insufficient supply of infusion pumps
Unsafe environmental conditions or workflow problems	<p>Medications are not prescribed, transcribed, prepared, dispensed, and administered within an efficient and safe workflow and/or in a physical environment that offers adequate space and lighting, and allows practitioners to remain focused on medication use</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Drug mix-ups due to lack of space, cluttered workspaces, and/or overfilled and disorganized storage of medications <input type="checkbox"/> Misheard telephone orders due to noise and distractions <input type="checkbox"/> Errors in preparation or drug mix-ups due to poorly lighted workspaces and/or drug storage cabinets <input type="checkbox"/> Interruptions during medication administration and/or preparation causing mental slips and other errors



Appendix 1 — Causes of Medication Errors (continued)

<p>Cultural conditions and risk management practices unsupportive of medication safety</p>	<p>A safety-supportive Just Culture and model of shared accountability for safe system design and making safe behavioral choices is not in place and/or is not supported by leaders</p> <p>Practitioners are not stimulated to detect and report adverse events, errors (including close calls), hazards, and observed at-risk behaviors</p> <p>Interdisciplinary teams do not regularly analyze errors that have occurred within the organization and in other organizations to mitigate future risks</p> <p>Redundancies (e.g., independent double checks, automated verification process) are not used for vulnerable parts of the medication system</p> <p>Proven infection control practices are not followed when storing, preparing, and/or administering medications</p>	<ul style="list-style-type: none"> ❑ Lack of leadership and budgetary support for medication safety ❑ Underreporting of errors for learning due to disincentives (shame, blame, fear of disciplinary action, documentation of errors in personnel files) ❑ Culture of secrecy and blame prevents disclosure of errors to patients/families ❑ External reports of errors and adverse events not used to drive safety improvements ❑ Ineffective error prevention strategies focused on individual performance improvement, rather than system improvements ❑ Lack of automated or manual double checks for critical steps in the medication use process ❑ Failed manual double checks, often because they are not performed independently ❑ Misplacement/misuse of double checks in place of system enhancements that would prevent error ❑ Medications (e.g., insulin) in pen delivery devices are not patient specific, allowing inappropriate use for more than one patient after changing the needle
<p>Staffing pattern deficiencies</p>	<p>The complement of qualified, well-rested practitioners does not match the clinical workload, compromising patient safety</p>	<ul style="list-style-type: none"> ❑ Inadequate staffing patterns leading to task overload, rushed procedures, and errors ❑ Lack of staffing contingency plans to cover illness and vacations ❑ Fatiguing staffing patterns leading to impaired staff judgment and flawed performance ❑ Inadequate breaks contributing to mental overload and errors
<p>Lack of staff competency verification and education</p>	<p>Practitioners receive insufficient orientation to medication use and do not undergo baseline and annual competency evaluation of knowledge and skills related to safe medication practices</p> <p>Practitioners involved in medication use are not provided with ongoing education about medication error prevention and the safe use of drugs that have the greatest potential to cause harm if misused</p>	<ul style="list-style-type: none"> ❑ Unfamiliarity with medication delivery devices, leading to misuse ❑ Inappropriate doses or errors in patient assessment and monitoring due to lack of education about specific patient populations (e.g., pediatrics) ❑ Errors related to task overload for those with the added responsibility of training new staff ❑ Errors by new or reassigned nurses who are required to perform unfamiliar tasks or administer unfamiliar medications without proper orientation, education, and/or supervision ❑ Errors with new medications for which education was not first provided



Appendix 1 — Causes of Medication Errors (continued)

Human-Based (Active Failures) Causes		
Human error	An inadvertent failure in how human beings perceive, think, and/or behave (not a behavioral choice); an inadvertent action that deviates from intention, expectation, or desirability	<p>Execution Errors (occur during the performance of skill-based behaviors that are well practiced and require little attention)⁹¹</p> <ul style="list-style-type: none"> ❑ Slips (attention errors) such as selecting the wrong medication due to a look-alike name or label, or selecting the wrong medication from a drop-down menu because it was close to the desired medication listing ❑ Lapses (memory errors) such as forgetting to complete a double check prior to administration or forgetting to administer a medication after being interrupted ❑ Random errors such as miscalculating a dose <p>Planning Errors (errors in perception, judgment, inference, or interpretation that occur during rule- or knowledge-based performance)⁹¹</p> <ul style="list-style-type: none"> ❑ Rule-based errors (misapplication of rule) such as misprogramming a new infusion pump using steps that are similar, but not identical, to a more familiar pump; misinterpretation of patient monitoring results; faulty recall of the sequence and procedure for mixing a medication; administering an IV medication too quickly ❑ Knowledge-based errors (problem-solving errors) such as not knowing that a dose is excessive, or that a medication is contraindicated
At-risk behavioral choices (also called drifting behaviors)	A behavioral choice that increases risk where risk is not recognized or is mistakenly believed to be insignificant or justified; the choice is usually made to solve an unexpected challenge or system failure, and the behavior becomes habitual when there is a successful outcome	<ul style="list-style-type: none"> ❑ Technology workarounds/failure to engage the technology (e.g., barcode scanning) ❑ Skipping a double check ❑ Using a parenteral syringe to draw up an oral solution ❑ Carrying medications in pockets ❑ Not labeling syringes ❑ Borrowing medications ❑ Disregarding patient concerns ❑ Using an estimated, not measured, patient weight ❑ Tacit or explicit intimidation ❑ Preparing more than one patient's medications at a time ❑ Administering a PRN medication by memory rather than consulting the medication administration record



Appendix 1 — Causes of Medication Errors (continued)

Reckless behavioral choices	A behavioral choice to consciously disregard a substantial and unjustifiable risk NOTE: Reckless behavior requires the conscious disregard of a substantial and unjustifiable <u>risk</u> ; conscious disregard of a policy or procedure alone does not constitute reckless behavior if the person mistakenly believes the <u>risk</u> is insignificant or justified (at-risk behavior)	<ul style="list-style-type: none">❑ Drug diversion, which leads to patient drug administration errors❑ Refusal to wear glasses due to vanity despite repeated medication errors due to the inability to fully read labels, along with repeated coaching failures aimed at helping the individual recognize the risk associated with that behavioral choice
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Source: Cohen MR. Causes of medication errors. In: Cohen MR, ed. *Medication Errors*, 2nd ed. Washington, DC: American Pharmacists Association; 2007:55-66.⁹²



Appendix 2 — Student Nurse-Related Medication Errors

Error-Prone Conditions	Examples of Errors
<p>Nonstandard Times Medications scheduled for administration during nonstandard or less commonly used times, including early in the morning, are prone to student dose omissions</p>	<ul style="list-style-type: none"> ❑ A student omitted an antibiotic ordered as a one-time dose at 1100 ❑ A patient did not receive his morning dose of insulin because the student assigned to the patient had not arrived on the unit in time to administer the drug
<p>Documentation Issues With both staff nurses and students administering medications to the same patients, dose omissions or extra doses have been administered because students or staff nurses have not properly documented drug administration or reviewed prior documentation of drug administration</p>	<ul style="list-style-type: none"> ❑ A student documented that he gave the patient his morning medications at 0830; these medications were still in the patient's drawer at 1700 ❑ A student administered heparin to a patient and left the unit for a conference before documenting it; a staff nurse gave the patient another dose ❑ A student gave a dose of Lopressor (metoprolol) to a postoperative patient who had already received the medication in the post-anesthesia care unit (PACU), which was documented on the PACU record
<p>MARs Unavailable or Not Referenced Students may not consistently use the patient's medication administration record (MAR) to guide the preparation of medications, and may not bring the patient's MAR to the bedside for reference when administering medications</p>	<ul style="list-style-type: none"> ❑ A staff nurse had given a patient a dose of methadone at 0730; although this was documented, the student also gave the patient a dose at 0830; the student was using a worksheet she had created, not the MAR ❑ A student gave the wrong patient a dose of digoxin and warfarin; the student did not reference the MAR to assist with patient verification
<p>Partial Drug Administration Students may not be administering all of the prescribed medications to assigned patients, particularly IV medications that they may not be permitted to administer</p>	<ul style="list-style-type: none"> ❑ A patient did not receive an IV antibiotic for 3 days; staff nurses were unaware that the students assigned to this patient were not allowed to give IV medications ❑ A student nurse did not administer a respiratory medication to her patient; she thought a respiratory therapist would administer it
<p>Held or Discontinued Medications Students have not known or understood the organization's processes for holding and discontinuing medications and have administered drugs that have been placed on hold or discontinued</p>	<ul style="list-style-type: none"> ❑ A student gave a dose of enoxaparin that was noted to be held on the MAR ❑ A student did not know the meaning of a yellowed-out section on the MAR and gave the patient an IV dose of potassium chloride that had been discontinued
<p>Monitoring Issues Students may not be aware that vital signs and/or lab values should be checked before administering certain medications</p>	<ul style="list-style-type: none"> ❑ A student gave a patient with an INR of 2.33 a dose of enoxaparin, which was noted to be discontinued on the MAR when the INR reached 2 (patient was also on warfarin) ❑ A student administered a dose of Epogen (epoetin alfa) to a patient with a hemoglobin of 15.5; the dose was listed on the MAR to be held if the patient's hemoglobin exceeded 12
<p>Non-Specific Doses Dispensed Students have administered excessive doses when they expected the drug to be provided in a patient-specific dose, but pharmacy had dispensed a larger dose or quantity</p>	<ul style="list-style-type: none"> ❑ A student gave the patient a 4 mg tablet of dexamethasone as dispensed, but 2 mg (½ tablet) had been prescribed ❑ A student administered the full amount of Dilantin suspension dispensed in a bottle intended to be used for several doses



Appendix 2 — Student Nurse-Related Medication Errors (continued)

<p>Oral Liquids in Parenteral Syringes Preparation of oral or enteral solutions in parenteral syringes has led to students accidentally administering these products by the IV route</p>	<ul style="list-style-type: none">❑ A student gave the patient an oral liquid dose of vancomycin by the IV route❑ A student prepared an oral liquid opioid in a parenteral syringe; while the instructor's back was to the patient, the student began to administer the drug via an IV saline lock❑ A student gave a patient an oral liquid dose of furosemide IV, which was intended for gastric tube administration
<p>Preparing Drugs for Multiple Patients Student nurses have given medications to the wrong patient, particularly when they prepared more than one patient's medications at a time and brought medications for two or more patients into a room</p>	<ul style="list-style-type: none">❑ A student gave the patient in bed A his medications along with a dose of warfarin 5 mg intended for the patient in bed B❑ An instructor put medications intended for the patient in bed B on a table while observing a student administer medications to the patient in bed A; the student picked up the wrong medications and gave them to the patient

Source: Institute for Safe Medication Practices (ISMP). Error-prone conditions that lead to student nurse-related errors. *ISMP Medication Safety Alert! Nurse AdviseERR*. 2008;6(4):1,3.³¹



Appendix 3 — Student Competency Plans

Just Culture Competency Plan

Goal	<input type="checkbox"/> Use knowledge of Just Culture to empower employees, students, and faculty to become involved with monitoring and improving the workplace ⁷		
Learning Outcomes	<input type="checkbox"/> Prepare for dealing with errors and close calls in a fair and just manner <input type="checkbox"/> Recognize the need for a systems level approach		
Teaching Strategies (Interprofessional When Possible)	<input type="checkbox"/> Experiential learning and clinical experiences that reinforce Just Culture principles <input type="checkbox"/> Faculty modeling of Just Culture Principles <input type="checkbox"/> Faculty need to involve clinical partners <input type="checkbox"/> Didactic content, including faculty presentations; assigned reading; online, self-paced modules; and problem-based learning approaches <input type="checkbox"/> Simulation training to practice		
Core Competencies and Associated Knowledge, Skills, and Attitudes			
Topic	Knowledge	Skills	Attitudes
Importance of Safety Concerns, Close Calls, and Error Reporting	Describe importance of reporting safety concerns, close calls, and errors in clinical environment	Identify the six questions that should be asked and answered after an error or close call situation: 1. What happened? 2. What normally happens? 3. What do procedures require? 4. Why did it happen? 5. How was the risk being managed? 6. Who should be told? ⁸	Recognize the importance of understanding safety concerns, close calls, and errors in the clinical environment Appreciate the importance of advocacy skills (problem solving, communication, collaboration) in promoting quality and safety in patient care
Significance	Discuss the major causes of error underreporting including barriers	Recognize punitive methods of addressing errors have been ineffective in improving patient safety	Acknowledge that a Just Culture is not a blame-free culture Acknowledge that Just Culture seeks a balance between individual accountability and system effectiveness ⁷
Key Types of Errors	Demonstrate an understanding of the types of human behavior in a Just Culture model	Differentiate between three human behaviors: ⁷ 1. Human error , which involves an inadvertent action, slip, lapse, or mistake 2. At-risk behavior , which entails a conscious drifting away from safe behavior without recognizing the risk or believing the risk is justified 3. Reckless behavior , which entails a conscious disregard of a substantial and unjustifiable risk	Acknowledge all human behaviors are not the same and that organizational responses vary depending on type of category ⁷ Recognize the value in understanding the causes of errors, risk, and human behavior within the Just Culture framework



Appendix 3 — Student Competency Plan (continued)

Topic	Knowledge	Skills	Attitudes
Accountability	Demonstrate aspects of Just Culture as part of the practice of nursing	Identify key aspects of a Just Culture framework including: 1. Mistakes are part of learning and professional practice 2. Vigilance alone does not prevent errors 3. Threats of punishment do not prevent errors—only the <i>reporting</i> of errors that results in learning 4. Individual accountability for the quality of one’s behavioral choices is part of the Just Culture (human error is not a behavioral choice), but nurses should not be blamed for human fallibility or system faults beyond their control	Students should feel accountable for creating and contributing to a safe learning environment Students should acknowledge their own role in patient safety
System Barriers	Explore systems thinking	Identify systems barriers to reporting and how that contributes to errors Identify the system-based causes of error associated with management of information, the environment, and human resources	Value the Just Culture framework’s focus on system-level changes



Appendix 3 — Student Competency Plan (continued)

Medication Error Prevention Competency Plan

Goal	<ul style="list-style-type: none"> ☐ Improve awareness of medication safety and error prevention in clinical practice 		
Learning Outcomes	<ul style="list-style-type: none"> ☐ Understand human fallibility ☐ Recognize the system-based and human-based causes of medication errors ☐ Identify and report medication hazards and errors ☐ Analyze medication risks and errors to learn from their occurrence ☐ Recognize ways to prevent medication errors and mitigate medication risks ☐ Determine whether risk-reduction and error-prevention strategies are successful 		
Teaching Strategies (Interprofessional when Possible)	<ul style="list-style-type: none"> ☐ Didactic content, including faculty presentations and clinical site guest lecturers; online, self-paced modules; and problem-based learning approaches⁸¹ ☐ Assigned reading, including the free monthly newsletter, <i>ISMP Nurse AdviseERR</i> (www.ismp.org/newsletters/nursing) ☐ Storytelling and case studies of medication errors^{82,83} ☐ Simulation training to identify medication safety risks and errors, report hazards and errors, investigate events, disclose events to patients/families, plan safety improvements^{5,63,67,84-87} ☐ Experiential learning and clinical experiences that reinforce medication safety, including attendance at medication-safety related committees or project teams at host sites ☐ Debriefings after simulations and/or a medication error to promote learning⁸⁸ ☐ Student projects that promote critical thinking skills around medication safety, including root cause analysis, failure mode and effects analysis, use of quality improvement tools (e.g., causal diagrams, flowcharts, metrics, storyboards)^{2,89,90} 		
Core Competencies and Associated Knowledge, Skills, and Attitudes			
Topic	Knowledge	Skills	Attitudes
Scope and Significance	<p>Examine the frequency of medication errors</p> <p>Discuss the risk of patient harm from medication errors, particularly with high-alert medications and vulnerable patient populations</p>	<p>Identify medications that are high-alert during drug administration</p> <p>Identify patients that are more vulnerable to harm from medication errors</p>	<p>Acknowledge that risk-reduction strategies are critical, particularly when administering high-alert medications to vulnerable patients</p> <p>Value the importance of medication safety in clinical practice</p>
Types and Causes	<p>Articulate the most frequent types of errors that occur during each step of medication use and with specific high-alert medications, patient populations, and technologies</p> <p>Examine the latent (system-based) and active (human-based) failures that lead to medication errors</p> <p>Describe perceptual and cognitive biases that contribute to medication errors and blaming behaviors</p>	<p>Compare latent and active failures</p> <p>Differentiate between human error, at-risk behavior (behavioral drift), and reckless behavior</p> <p>Point out examples of system design flaws, perceptual and cognitive biases, and other performance shaping factors that increase the risk of making a medication error</p>	<p>Appreciate the cognitive and physical limits of human performance*</p> <p>Appreciate how system failures often set individuals up to make errors or unsafe behavioral choices</p>

* Competencies identified by QSEN under the categories of safety and quality



Appendix 3 — Student Competency Plan (continued)

Topic	Knowledge	Skills	Attitudes
Error and Risk Identification	<p>Identify common risk points in the medication use process</p> <p>Contrast various error and risk identification processes</p> <p>Demonstrate how to respond to and report errors and risk</p>	<p>Communicate observations or concerns related to hazards and errors to patients, families, and the healthcare team*</p> <p>Use error-reporting systems for close calls and error reporting*</p>	<p>Modify behavioral choices to become less tolerant of risk</p> <p>Willing to address possible sequelae from error and ask for help</p>
Learning from Errors	<p>Describe processes used in understanding the causes of error (and risk) and allocation of responsibility and accountability (such as root cause analysis, failure mode and effects analysis, and causal diagramming)*</p> <p>Outline the questions that should be asked about risk and errors to maximize learning</p> <p>Identify reliable resources for learning from external errors</p> <p>Understand the relationship between learning systems and justice</p>	<p>Participate in analyzing errors (and risk) and designing system improvements; engage in (collaborative) analysis rather than blaming others when errors or close calls occur*</p> <p>Identify the system-based and human-based causes of errors and risk</p> <p>Demonstrate ability to find literature related to medication errors or medication safety and discuss how to integrate the lessons learned into clinical practice</p>	<p>Value the lessons inherent in medication errors and appreciate that similar errors could happen to you</p> <p>Open to learning about error prevention and making behavioral/system changes to reduce risks</p> <p>Value self-disclosure related to safety; willing to report errors or close calls for improvement</p> <p>Celebrate learning from mistakes and using knowledge to improve nursing practice</p>
Error-Reduction Strategies	<p>Defend the goal of highly reliable outcomes rather than zero errors or harm¹⁰</p> <p>Examine human factors and other basic safety design principles as well as commonly used unsafe practices (such as work-arounds and dangerous abbreviations)*</p> <p>Illustrate the role of interdisciplinary teamwork in medication safety</p> <p>Review medication safety standards and guidelines</p> <p>Propose how to implement sustainable change to mitigate the risk of medication errors and how to measure whether the change is successful (quality metrics)</p>	<p>Demonstrate effective use of technology and standardized practices that support safety and quality*</p> <p>Identify risk-reduction strategies for high-alert medications</p> <p>Rank error-reduction strategies according to potential for success</p> <p>Function as an integral member of an interdisciplinary team (e.g., medication reconciliation, medication rounding, safety huddles)</p> <p>Devise solutions and develop action plans to prevent errors and facilitate error reporting</p>	<p>Acknowledge that the errorless imperative is an unreasonable standard</p> <p>Value own role in preventing errors, maintaining safety, and working as a functional member of a team</p> <p>Support interdisciplinary teamwork</p>

* Competencies identified by QSEN under the categories of safety and quality



Appendix 3 — Student Competency Plan (continued)

Second Victim Support Competency Plan

Goal	<ul style="list-style-type: none"> ■ Use knowledge of second victim phenomenon to minimize the trauma risk to healthcare providers who are involved in unanticipated adverse patient events 		
Learning Outcomes	<ul style="list-style-type: none"> ■ Prepare for adverse events such as the unanticipated death of a patient or a harmful medical error^{47,50,53} ■ Recognize the second victim phenomenon and how to provide or seek restorative support⁸⁰ 		
Teaching Strategies (Interprofessional when Possible)	<ul style="list-style-type: none"> ■ Didactic content, including faculty presentations; assigned reading; online, self-paced modules; and problem-based learning approaches⁸¹ ■ Storytelling and case studies of first and second victims^{82,83} ■ Simulation training to practice dealing with the second victim phenomenon as both a victim and supporter⁶⁷ ■ Experiential learning and clinical experiences that reinforce a supportive response to the second victim phenomenon ■ Debriefings after an adverse event to promote open information sharing and event processing⁸⁴ 		
Core Competencies and Associated Knowledge, Skills, and Attitudes			
Topic	Knowledge	Skills	Attitudes
Awareness	<p>Integrate understanding of the second victim phenomenon, its origins and history, and its applicability to all healthcare providers (including students and faculty)</p> <p>Demonstrate awareness of the relationships between unanticipated adverse patient care events and the risk for becoming a second victim</p>	<p>Recognize the risks of becoming a second victim for self and other providers</p> <p>Identify the second victim phenomenon in self and other providers</p>	<p>Recognize that well-intentioned and conscientious nurses and providers can become second victims</p> <p>Acknowledge that the errorless imperative is an unreasonable standard</p> <p>Acknowledge tension between first and second victims' rights and organizational responsibility for providing safe care</p>
Significance	<p>Discuss traumatic impacts and long-term effects on second victims</p>	<p>Recognize traumatic impacts and long-term effects of becoming a second victim for self or others</p>	<p>Acknowledge emotional costs associated with an adverse patient event</p> <p>Acknowledge that second victim suffering may be severe and may warrant professional and/or medical intervention</p>
Independent Coping Strategies	<p>Demonstrate awareness of independent coping strategies to help prevent or lessen the psychological impact a second victim could experience⁵¹</p>	<p>Demonstrate effective strategies to reduce the impact of becoming a second victim for self or others</p>	<p>Acknowledge maladaptive coping mechanisms</p> <p>Recognize value in active, problem-focused coping strategies but understand the need for reaching out and accepting further support when needed</p>



Appendix 3 — Student Competency Plan (continued)

Topic	Knowledge	Skills	Attitudes
Restorative Second Victim Support	<p>Understand the rights of first and second victims</p> <p>Describe strategies for peer support of second victims</p> <p>Describe approaches to initiate organizational support systems for second victims</p> <p>Understand what to expect from second victim support teams and other interventions that provide formal support</p> <p>Examine how peer support of second victims can decrease the impact of adverse events</p> <p>Access available second victim phenomenon resources⁶⁷</p>	<p>Provide peer support and respond to second victims</p> <p>Initiate/assist in obtaining organizational level of second victim support for self or others</p> <p>Participate on second victim support teams</p> <p>Assist in meeting the needs of second victims, promoting their healing, and restoring their professional relationships</p> <p>Seek further education about second victim phenomenon</p>	<p>Respect the second victims' rights to be treated fairly</p> <p>Value the justice of consoling human fallibility and the compassion of peer support of second victims</p> <p>Appreciate the role of teamwork in supporting second victims</p> <p>Value trained professionals' role in reaching out to proactively addressing second victims' needs</p> <p>Recognize that the impact of an adverse event is made worse in an environment of fear, blame, shame, and abandonment</p> <p>Appreciate the necessity for continuing education and skill development to best support second victims</p>



Appendix 4 — Additional Resources

Resource Matrix			
JUST CULTURE			
Source	Description	Links	Cost
Agency for Healthcare Research and Quality	CUSP (Comprehensive Unit-based Safety Program) Toolkit	https://www.ahrq.gov/hai/cusp/index.html	Free
Agency for Healthcare Research and Quality	TeamSTEPPS: Evidence-based program aimed at optimizing performance among teams of healthcare professionals	https://www.ahrq.gov/teamstepps/instructor/index.html	Free
Institute for Healthcare Improvement	White Paper with toolkit for support processes following a serious clinical adverse event	http://www.ihl.org/resources/Pages/IHIWhitePapers/RespectfulManagementSeriousClinicalAEsWhitePaper.aspx	Free
NHS Improvement (United Kingdom)	An organization that helps healthcare systems improve safety processes	https://www.england.nhs.uk/patient-safety/a-just-culture-guide/	Free
Quality and Safety Education for Nurses	Just Culture Assessment Tool: Nursing Education (JCAT-NE)	https://qsen.org/?s=just+culture+assessment+tool	Free
Outcome Engenuity	Just Culture Algorithm, Just Culture Assessment Tool, and Just Culture educational resources <i>What We Believe</i> position statements that challenge conventional thinking about our ability to prevent adverse outcomes	https://justculture.com/just-culture-assessment-tool-jcat-software/ https://justculture.com/shop/ https://www.outcome-eng.com/what-we-believe-about-high-reliability/	Monetary cost for algorithms and associated tools Free position statements
CRC Press	Sidney Dekker's book, <i>Just Culture: Restoring Trust and Accountability in Your Organization</i> ; the latest edition offers content related to restorative justice and explores why individuals break rules	https://sidneydekker.com/books/	Monetary cost
MEDICATION ERROR PREVENTION			
Source	Description	Links	Cost
Agency for Healthcare Research and Quality	Website of federal agency that funds research and supports evidence to improve healthcare quality and safety	https://www.ahrq.gov/patients-consumers/care-planning/errors/20tips/index.html	Free



Appendix 4 — Additional Resources (continued)

Institute for Safe Medication Practices	Website with comprehensive tools and resources related to safe practices and error reporting; provides guidelines, webinars, workshops, educational programs, self assessments, and many tools and resources	https://www.ismp.org/	Mostly free, some educational offerings and publications have a monetary charge
Medcom Trainex	Education provider for health-care professionals	https://www.medcomrn.com/index.php/articles/common-nursing-medication-errors-types-causes-prevention/	Free
US Food and Drug Administration (FDA)	Federal website with information about FDA's programs to monitor product safety, including recalls, safety alerts, problem reporting, and postmarket monitoring systems	https://www.fda.gov/safety/	Free
SECOND VICTIM PHENOMENON			
Source	Description	Links	Cost
American Association of Nurse Anesthetists	Website targeted to nurse anesthetists with links to emotional wellbeing resources, coping strategies, suicide prevention, and other interventions after adverse patient events	https://www.aana.com/practice/health-and-wellness-peer-assistance/about-health-wellness/emotional-and-mental-well-being	Free
AHRQ CANDOR Toolkit (Communication and Optimal Resolution)	Comprehensive program toolkit to help healthcare institutions and practitioners respond to adverse clinical/patient care events, which includes videos, case studies, informational modules, and more	https://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/candor/introduction.html	Free
CRC Press	Sidney Dekker's book, <i>Second Victim: Error, Guilt, Trauma, and Resilience</i> , which discusses guilt and survivorship for second victims across multiple fields using case studies and examples	https://www.crcpress.com/Second-Victim-Error-Guilt-Trauma-and-Resilience/Dekker/p/book/9781466583412	Monetary cost
Johns Hopkins Medicine	Website with information about "What any caregiver can do to support a second victim," including a list of "dos and don'ts"	https://armstronginstitute.blogs.hopkinsmedicine.org/2015/07/30/what-any-caregiver-can-do-to-support-a-second-victim/	Free



Appendix 4 — Additional Resources (continued)

Johns Hopkins Armstrong Institute for Patient Safety and Quality	Caring for the Caregiver: The RISE (Resilience in Stressful Events) Program, which offers workshops, training programs, and toolkits for organizations	https://www.hopkinsmedicine.org/armstrong_institute/training_services/workshops/Caring_for_the_Caregiver/index.html	Free with registration Some workshops have a monetary charge
University of Missouri (UM) Health Care “ForYOU” Team	Research and materials for designing a second victim support team, including a second victim recovery trajectory, a checklist for program building, a brochure for employees and family members, and a program assessment worksheet	https://www.muhealth.org/about-us/quality-care-patient-safety/office-of-clinical-effectiveness/foryou	Free



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