SAFETY

Annotated Bibliography


The phenomenon of role transition for new nurses has been a topic of research and concern for practicing nurses, educators, and administrators for many years. This transition has an impact on the job retention of new nurses. Stress, lack of confidence, and unmet expectations have been found to influence patient safety and outcomes. Simulator programs have enhanced the experiences of students and nurses in the clinical setting. Within this safe environment of simulation, nurses find the opportunity to develop critical thinking, decision making, and clinical confidence. A simulator program was developed in Vassar Brothers Medical Center to assist in the transition of new graduate registered nurses to acute care practice. This article describes the process of developing a program and suggestions for instructors who are interested in developing a simulation program. (Source: PubMed)


Nurse managers are seeking ways to improve patient safety in their organizations. At the same time, they struggle to address nurse recruitment and retention concerns by focusing on the quality of nurses' work environment. This exploratory study tested a theoretical model, linking the quality of the nursing practice environments to a culture of patient safety. Specific strategies to increase nurses' access to empowerment structures and thereby increase the culture of patient safety are suggested. (Source: PubMed)

Aspden, P., Corrigan, J. M., Wolcott, J., Erickson, S. M., & IOM Committee
Americans should be able to count on receiving health care that is safe. To achieve this, a new health care delivery system is needed—a system that both prevents errors from occurring and learns from them when they do occur. The development of such a system requires a commitment by all stakeholders to a culture of safety and to the development of improved information systems for the delivery of health care. This national health information infrastructure is needed to provide immediate access to complete patient information and decision-support tools for clinicians and their patients. In addition, this infrastructure must capture patient safety information as a by-product of care and use this information to design even safer delivery systems. Health data standards are both a critical and time-sensitive building block of the national health information infrastructure. Building on the Institute of Medicine reports *To Err Is Human* and *Crossing the Quality Chasm*, *Patient Safety* puts forward a road map for the development and adoption of key health care data standards to support both information exchange and the reporting and analysis of patient safety data. (Source: Publisher)


In 1996 the Institute of Medicine launched the Quality Chasm Series, a series of reports focused on assessing and improving the nation’s quality of health care. *Preventing Medication Errors* is the newest volume in the series. Responding to the key messages in earlier volumes of the series *To Err Is Human* (2000), *Crossing the Quality Chasm* (2001), and *Patient Safety* (2004) this book sets forth an agenda for improving the safety of medication use. It begins by providing an overview of the system for drug development, regulation, distribution, and use. *Preventing Medication Errors* also examines the peer-reviewed literature on the incidence and the cost of medication
errors and the effectiveness of error prevention strategies. Presenting data that will foster the reduction of medication errors, the book provides action agendas detailing the measures needed to improve the safety of medication use in both the short- and long-term. Patients, primary health care providers, health care organizations, purchasers of group health care, legislators, and those affiliated with providing medications and medication-related products and services will benefit from this guide to reducing medication errors. (Source: Publisher)


The Quality and Safety Education for Nurses (QSEN) project, funded by the Robert Wood Johnson Foundation, has identified 6 core competencies that all pre-licensure nursing students need to master in order to provide high quality, safe nursing care. The core competencies are: patient-centered care; teamwork and collaboration; evidence-based practice; informatics; quality improvement; and safety. Implementation of these competencies throughout nursing education will require shedding the nursing and faculty belief systems and mental models of the past to adopt new ones. (Source: QSEN Team)


This article describes the scope of the problem of inaccuracy of medication lists and reviews innovations that improve the transfer of medication information within the hospital. (Source: QSEN Team)


Current discussion on the need to dramatically change nursing education and practice is based on clear concerns about the changing nature of healthcare. The increasingly complex healthcare system of
our nation provides sophisticated interventions yet concerns about quality persist. A new model of education and practice is proposed and this model is being implemented through a groundbreaking partnership to prepare a master's educated, entry-level, generalist nursing clinician to lead and guide care at the point of care. The competencies associated with this new clinician are discussed and future implications for evaluation and monitoring are shared. (Source: PubMed)


A new graduate registered nurse residency program integrating human patient simulation was developed at an academic medical center. The program focused on orientation through skill-based learning, critical thinking, human factors engineering, and patient safety using simulated experiences for a wide variety of high-risk, low-frequency, as well as high-frequency, commonly occurring clinical events and situations. Structured evaluations demonstrated that simulation serves as a highly effective strategy for developing competency, confidence, and readiness for entry-into-practice. It strengthened assessment and clinical skills, and enhanced nurse residents' ability to apply critical thinking to simulated patient scenarios. The time and cost of orientation decreased while recent graduate nurse satisfaction with orientation was high. (Source: PubMed)


Problems arise when clinicians or educators encounter situations that are error-prone, complex, or distracting. Trigger films (TF) are 2-4 minute vignettes simulating real-life situations that finish abruptly, stimulating participants to analyze situations in a safe environment. We report on a natural evolution of the TF, the patient safety vignette (PSV), a multimedia tool that advantages the human characteristic of
vicariousness by inviting stakeholders into an unfolding patient misadventure. PSVs are produced in our high fidelity simulation lab and are based on actual patient events. We have previously demonstrated the validity and reliability of the approach in the healthcare setting, a multidimensional, dynamic and stressful environment where complex, critical, and risky decision making and interventions occur. PSVs offer a systematic approach to facilitating patient safety activity by engaging clinicians in a range of complex scenarios in what we term the "living laboratory." Initial outcome measures examining efficacy and clinician acceptance are reported. (Source: Publisher)

Brown, D. L. (2006). Can you do the math? Mathematic competencies of baccalaureate degree nursing students. *Nurse educator, 31*(3), 98-100. Studies show that nursing students, even with the use of calculators, are unable to complete a medication examination with at least 85% accuracy within a predetermined time limit. Although dosage calculation errors are cited as one of the most frequently occurring types of error in medication administration, these areas are seen as one of the most preventable. Based on a survey of 9 BSN (1988) and 10 BSN (2003) accredited schools of nursing, the author offers several recommendations for addressing the problem of mathematically under-prepared students. (Source: QSEN Team)

Brown, Y., Neudorf, K., Poitras, C., & Rodger, K. (2007). Unsafe student clinical performance calls for a systematic approach. *The Canadian nurse, 103*(3), 29-32. Patient safety is the responsibility of both the system and the individual practitioner. Unsafe incidents are a very real possibility when nursing students are preparing for their profession. The curriculum committee of the Nursing Education Program of Saskatchewan (NEPS) identified the need for a unified and consistent process related to students who demonstrate unsafe clinical performance. Many clinical teachers experience difficulty in identifying and making decisions related to students' unsafe performance. The authors describe the development of a systematic approach that was adopted by NEPS in June 2005 and
is being used across all program years and sites. The approach provides students with a fair and just process and reflects the responsibility of the educational program to prepare graduates who will provide safe, competent care. (Source: PubMed)


National surveys of registered nurses, physicians, and hospital executives document considerable concern about the U.S. nurse shortage. Substantial proportions of respondents perceived negative impacts on care processes, hospital capacity, nursing practice, and the Institute of Medicine's six aims for improving health care systems. There were also many areas of divergent opinion within and among these groups, including the impact of the shortage on safety and early detection of patient complications. These divergences in perceptions could be important barriers to resolving the current nurse shortage and improving the quality and safety of patient care. (Source: PubMed)


In this paper, we review the literature on nursing workload in intensive care units (ICUs) and its impact on patient safety and quality of working life of nurses. We then propose a conceptual framework of ICU nursing workload that defines causes, consequences and outcomes of workload. We identified four levels of nursing workload (ICU/unit level, job level, patient level, and situation level), and discuss measures associated with each of the four levels. A micro-level approach to ICU nursing workload at the situation level is proposed and recommended in order to reduce workload and mitigate its negative impact. Performance obstacles are conceptualized as causes of ICU nursing workload at the situation level. (Source: PubMed)

Patient safety has become a major concern for both society and policymakers. Since nurses are intimately involved in the delivery of medications and are ultimately responsible during the medication administration phase, it is important for nursing to understand factors contributing to medication administration errors. The purpose of this chapter is to identify the incidence of these errors and the associated factors in an attempt to better understand the problem and lessen future error occurrence. Literature review revealed both active failures and latent conditions established in Reason’s theory remain prevalent in current literature where active failures often display themselves in the form of incorrect drug calculations, lack of individual knowledge, and failure to follow established protocol. Latent conditions are evidenced as time pressures, fatigue, understaffing, inexperience, design deficiencies, and inadequate equipment and may lie dormant within a system until combined with active failures to create opportunity for error. Although medication error research has shifted in emphasis toward identification of system problems inherent in error occurrence, no one force emerges as a clear antecedent, reinforcing the need for further research and replication of existing studies with emphasis placed on more dependable reporting measures through which nurses are not threatened by reprisal. (Source: PubMed)


Nurses and others have expressed a great deal of interest in the potential for incorporating notions about organizational culture and climate in research and practice aiming to improve health care safety. In this review, definitions and measures of these terms are explored, the state of the research literature connecting culture and climate with safety is reviewed, and directions for future research and leadership practice are outlined. (Source: PubMed)

Conerly, C. (2007). Strategies to increase reporting of near misses and
adverse events. *Journal of nursing care quality, 22*(2), 102-106. The article provides insights and highlights best practices from the field that can be used globally and has significance in the new accreditation process. In this context, the author focuses on the cultural barriers to reporting adverse events and the need to create a change in culture. With this, many healthcare organizations realized that a change in culture has been needed to improve patient safety. (Source: CINAHL)

Constantino, R. E. (2007). A transdisciplinary team acting on evidence through analyses of moot malpractice cases. *Dimensions of critical care nursing: DCCN, 26*(4), 150-155. A transdisciplinary team is crucial for healthcare systems to act based on evidence in responding to the global demand of the business of caring and patient safety. The purpose of this paper is to outline a transdisciplinary team led by nurses that examines linkages between moot malpractice cases filed against a healthcare system and to the quality of the healthcare system's ecology, caregiver, and patient safety outcomes. (Source: PubMed)

Cornish, J., & Jones, A. (2007). Evaluation of moving and handling training for pre-registration nurses and its application to practice. *Nurse education in practice, 7*(3), 128-134. This paper describes preliminary questionnaire survey work in a research programme exploring M&H training for student nurses (n=106) and its application to practice. The aim of the study was to provide evidence of the students' experiences of M&H in the clinical setting to inform future educational development. The students were able to distinguish between acceptable and unacceptable practice they observed. Good practice comprised planning and coordination within the nursing team and careful reassurance of the patient. Regarding poor practice, the students identified that equipment was unavailable or not used and that staff demonstrated poor posture in this work or used condemned techniques thought to be detrimental to the staff and the patients. Fewer students had observed: risk assessments, equipment safety checks and use of a hoist for lifting fallen patients, than had seen other accepted M&H procedures. Contrary to the Manual
Handling Operations Regulations (HSE. 1992; 1998. Manual Handling Operations Regulations. HMSO, London.) and hospital 'no-lifting' policies, 71% of the respondents had been asked to participate in a manoeuvre that they thought was wrong and a similar number had been asked to physically lift patients without using recommended equipment. Perceived injuries to both staff and patients were also described. (Source: PubMed)


Quality and Safety Education for Nurses (QSEN) addresses the challenge of preparing nurses with the competencies necessary to continuously improve the quality and safety of the health care systems in which they work. The QSEN faculty members adapted the Institute of Medicine competencies for nursing (patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics), proposing definitions that could describe essential features of what it means to be a competent and respected nurse. Using the competency definitions, the authors propose statements of the knowledge, skills, and attitudes (KSAs) for each competency that should be developed during pre-licensure nursing education. Quality and Safety Education for Nurses (QSEN) faculty and advisory board members invite the profession to comment on the competencies and their definitions and on whether the KSAs for pre-licensure education are appropriate goals for students preparing for basic practice as a registered nurse. (Source: PubMed)


Teaching the highest quality and safest practice has long been a goal of faculty members in pre-licensure nursing education programs. This article will describe innovative approaches to integrating quality and safety content into existing clinical practica. The core competencies identified by the Quality and Safety Education for Nurses project-
patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics—serve as the framework for the teaching/learning exercises. The strategies described require a shift in attention rather than changes in course content and can be included in any clinical rotation in an acute care setting. (Source: PubMed)


A medication safety education program was developed and implemented to reduce the harm caused to patients by medication errors, specifically errors related to the intravenous infusion of high-alert medications. Participants were required to complete two 30-minute computer modules focusing on medication safety. Changes in the climate of safety, nurses' knowledge and behavior, and the number of infusion pump alerts and reported medication errors were evaluated both before and after completion of the education program. A statistically significant change in knowledge regarding medication errors occurred, but there was no change in the climate of safety scores, the use of behaviors advocated in the medication safety education program to improve medication infusion safety, the number of infusion pump alerts, or the number of reported errors. It was concluded that there was a need for strong administrative support and follow-up to foster changes in behavior, which can lead to a reduction in harm caused by medication errors. (Source: PubMed)


The Nursing Division of the Saskatchewan Institute of Applied Science and Technology (SIAST) first included systems and patient safety as a priority in its institutional business and strategic plan in 2003. Three interrelated leading-edge, two-year projects (2004-2006) were launched: Best Practice, Mentorship and Patient Safety, with the intent
that each project would enhance the others. This case study focuses on the work of the Patient Safety Project Team. The team developed a project framework and strategic plan, conducted a literature review and identified key concepts related to systems and patient safety. Strategies to integrate these concepts into the school's 15 nursing education programs are being implemented. (Source: PubMed)


The education of future generations of nurses is in need of philosophic and programmatic transformation in keeping with the rapidly changing health care delivery system. The Nurse Residency Model is one baccalaureate nursing program's response to calls for reform. Rooted in a spirit of collegiality and lifelong learning, the three facets of its philosophy include enhanced socialization, improved transition to practice, and increased student accountability. Students gain increased competency and demonstrate increased accountability with each progressive semester in the program, which culminates in clinical immersion in the senior year. Unique programmatic features of this model include field experiences, the simulation lab, and a work requirement. Additional benefits include resource efficiency and patient safety. Implementation remains an ongoing process. Outcome indicators are expected to yield valuable data on which to develop an evidence base in support of the model. (Source: PubMed)


This chapter describes: (a) new evidence of factors in clinical care situations that influence nurses' decision making in clinical situations, particularly novices; (b) principles and strategies for teaching content related to nurse watchfulness or vigilance in the context of patient care; and (c) implications for assessing nursing students' motivation and competence in the context of caring, with the ultimate goal of the
nursing student supporting optimal patient safety and patient health outcomes. (Source: Publisher)


**OBJECTIVE:** The study purpose was to identify human performance factors that characterized novice nurse near-miss/adverse-event situations in acute-care settings. **BACKGROUND:** Increased focus on recruitment and retention of newly graduated registered nurses (RNs) in light of patient safety improvement goals will challenge healthcare educators and administrators. What we are beginning to learn about human performance issues during real work situations from patient safety research provides information related to human performance in complex environments that may guide education and system supports for novice RNs. **METHODS:** Data collected during 8 retrospective interviews of novice RNs about details surrounding their individual near-miss or adverse event were analyzed for common themes. **RESULTS:** Nine themes were identified. Seven themes were present in at least 7 of the 8 cases and included environmental and social issues, as well as novice lack of expertise. **CONCLUSIONS:** Findings suggest that support for novice nurses in acute care environments requires attention to the following: consistent availability of expertise in light of workload unpredictability, the social climate regarding expectations of novice performers, realistic expectations of novice decision-making ability during complex situations even up to a year after graduation, and strategies to recognize and intervene when novices are at risk for error. (Source: PubMed)


This article provides a perspective on the community-based curriculum model that has guided undergraduate education for the past decade, discusses some of the problems that have emerged with the community-based approach, and proposes an alternative approach for
consideration and discussion. The community-based model is discussed in relation to three major areas of concern: faculty and preceptor implementation of the curriculum, entry into practice and hiring pattern disjunctions, and trends and unexpected consequences of changes in the health care system. The Environments of Care Model, proposed as an alternative curriculum approach, conveys a broad perspective on health and illness, based on a multiple determinants of health paradigm and a systems framework. (Source: PubMed)


Teaching IOM focuses on the core competencies derived from the IOM reports on quality and health care and how to use these reports in the classroom. The companion CD-ROM provides additional material for incorporating content into curricula and teaching-learning experiences. It includes PowerPoint presentations with notes on the book's five major topics; healthcare safety, healthcare quality, public health safety and quality, healthcare diversity, and linkage between research and evidence-based practice. The content is appropriate for graduate or undergraduate students. (Source: QSEN Team)


A major concern for patient safety in hospitals is accurate medication administration. To improve the medication administration process, nurses and pharmacists must report system problems. Although staff supported the concept of medication error reporting, they did not report errors. Inherent fear of retribution, punitive actions, and professional humiliation prevented self-reporting of medication errors. Our hospital's quality improvement department developed, implemented, and evaluated a program called LifeSavers. Its purpose was to build a nonpunitive culture and to increase medication error reporting by staff. In one year, the LifeSavers program increased
medication error disclosures from 14 to 72 reports per month. The successful development of a nonblame culture of medication error reporting led to identified sources of problems and improvement of the medication administration system. (Source: PubMed)


**BACKGROUND:** Disparate health care provider attitudes about autonomy, teamwork, and administrative operations have added to the complexity of health care delivery and are a central factor in medicine's unacceptably high rate of errors. Other industries have improved their reliability by applying innovative concepts to interpersonal relationships and administrative hierarchical structures (Chandler 1962). In the last 10 years the science of patient safety has become more sophisticated, with practical concepts identified and tested to improve the safety and reliability of care. **OBJECTIVE:** Three initiatives stand out as worthy regarding interpersonal relationships and the application of provider concerns to shape operational change: The development and implementation of Fair and Just Culture principles, the broad use of Teamwork Training and Communication, and tools like WalkRounds that promote the alignment of leadership and frontline provider perspectives through effective use of adverse event data and provider comments. **METHODS:** Fair and Just Culture, Teamwork Training, and WalkRounds are described, and implementation examples provided. The argument is made that they must be systematically and consistently implemented in an integrated fashion. **CONCLUSIONS:** There are excellent examples of institutions applying Just Culture principles, Teamwork Training, and Leadership WalkRounds— but to date, they have not been comprehensively instituted in health care organizations in a cohesive and interdependent manner. To achieve reliability, organizations need to begin thinking about the relationship between these efforts and linking them conceptually. (Source: PubMed)

**AIM:** To determine if the presence of mathematical and computer anxiety in nursing students affects learning of dosage calculations.

**METHOD:** The quasi-experimental study compared learning outcomes at differing levels of mathematical and computer anxiety when integrative and computer based learning approaches were used.

Participants involved a cohort of second year nursing students (n=97).

**RESULTS:** Mathematical anxiety exists in 20% (n=19) of the student nurse population, and 14% (n=13) experienced mathematical testing anxiety. Those students more anxious about mathematics and the testing of mathematics benefited from integrative learning to develop conditional knowledge (F(4,66)=2.52 at p<.05). Computer anxiety was present in 12% (n=11) of participants, with those reporting medium and high levels of computer anxiety performing less well than those with low levels (F(1,81)=3.98 at p<.05). **CONCLUSION:** Instructional strategies need to account for the presence of mathematical and computer anxiety when planning an educational program to develop competency in dosage calculations. *(Source: PubMed)*


The case study and analyses presented here illustrate the crucial role of human factors engineering (HFE) in patient safety. HFE is a framework for efficient and constructive thinking which includes methods and tools to help healthcare teams perform patient safety analyses, such as root cause analyses. The literature on HFE over several decades contains theories and applied studies to help to solve difficult patient safety problems and design issues. A case study is presented which illustrates the vulnerabilities of human factors design in a transport monitor. The subsequent analysis highlights how to move beyond the more obvious contributing factors like training to design problems and the establishment of informal norms. General advice is offered to address these issues and design issues specific to this case
are discussed. (Source: PubMed)

Greenfield, S. (2007). Medication error reduction and the use of PDA technology. *The Journal of nursing education, 46*(3), 127-131. The purpose of this study was to determine whether nursing medication errors could be reduced and nursing care provided more efficiently using personal digital assistant (PDA) technology. The sample for this study consisted of junior and senior undergraduate baccalaureate nursing students. By self-selection of owning a PDA or not, students were placed in the PDA (experimental) group or the textbook (control) group, provided with a case study to read, and asked to answer six questions (i.e., three medication administration calculations and three clinical decisions based on medication administration). The analysis of collected data, calculated using a t test, revealed that the PDA group answered the six questions with greater accuracy and speed than did the textbook group. (Source: PubMed)

Greenfield, S., Whelan, B., & Cohn, E. (2006). Use of dimensional analysis to reduce medication errors. *The Journal of nursing education, 45*(2), 91-94. The purpose of this pilot study was to determine whether using dimensional analysis as the method of mathematical computation could reduce nursing medication calculation errors. The sample for this study consisted of second-year baccalaureate nursing students in a required clinical skills course. Students in the control group were taught medication calculations using the traditional math method during one semester, whereas students in the experimental group were taught the same material using dimensional analysis during the next semester. Analysis of the collected data from a medication dosage calculation examination revealed the dimensional analysis group scored with greater accuracy than the traditional math group. (Source: PubMed)

BACKGROUND: The Joint Commission on Accreditation of Healthcare Organizations National Patient Safety Goal 1, which requires the use of at least two patient identifiers, is the foundation for other patient safety goals. St. Francis Hospital involved staff and patients in the "Helping Hippocrates" Project, which used a "game" with staff and patients to ensure the accuracy of information on patients' identification (ID) bands. THE PROJECT: Members of all hospital departments assigned to a specific day were to compare the ID band with the patient census report and identify patients who had no ID band on their wrist and patients who had a band with inaccuracies. They were to also ask patients if the staff had checked the ID band before treatments or procedures. Also, the nurse manager was to select a patient to add to his or her own ID band a special band bearing the name Hippocrates. The department conducting the survey had to find Hippocrates. FINDINGS: Internal data showed that patient identification errors declined from 8.2% to a sustained zero. Patient satisfaction data showed that since the inception of Helping Hippocrates, patients' perceptions of staff’s compliance with ID verification showed steady improvement. CONCLUSION: Helping Hippocrates demonstrates the value of using an innovative problem-solving strategy that engages the entire organization. (Source: PubMed)


Patient safety is receiving unprecedented attention among clinicians, researchers, and managers in health care systems. In particular, the focus is on the magnitude of systems-based errors and the urgency to identify and prevent these errors. In this new era of patient safety, attending to errors, adverse events, and near misses warrants consideration of both active (individual) and latent (system) errors. However, it is the exclusive focus on individual errors, and not system errors, that is of concern regarding nursing education and patient safety. Educators are encouraged to engage in a culture shift whereby student error is considered from an education systems perspective.
Educators and schools are challenged to look within and systematically review how program structures and processes may be contributing to student error and undermining patient safety. Under the rubric of patient safety, the authors also encourage educators to address discontinuities between the educational and practice sectors. (Source: PubMed)


On June 17-18, 2002, over 150 leaders and experts from health professions education, regulation, policy, advocacy, quality, and industry attended the Health Professions Education Summit to discuss and help the committee develop strategies for restructuring clinical education to be consistent with the principles of the 21st-century health system. The report says that doctors, nurses, pharmacists and other health professionals are not being adequately prepared to provide the highest quality and safest medical care possible, and there is insufficient assessment of their ongoing proficiency. Educators and accreditation, licensing and certification organizations should ensure that students and working professionals develop and maintain proficiency in five core areas: delivering patient-centered care, working as part of interdisciplinary teams, practicing evidence-based medicine, focusing on quality improvement and using information technology. (Source: Publisher)


In response to the call to better prepare today's nurses for professional practice, the American Association of Colleges of Nursing (AACN) convened a task force on essential patient safety competencies and charged this group with identifying the essential baccalaureate core competencies that should be achieved by professional nurses to
ensure high-quality and safe patient care. This article presents the competencies that are the result of the work of the task force. (Source: QSEN Team)

Harding, L., & Petrick, T. (2008). Nursing student medication errors: A retrospective review. *Journal of nursing education, 47*(1), 43-47. This article presents the findings of a retrospective review of medication errors made and reported by nursing students in a 4-year baccalaureate program. Data were examined in relation to the semester of the program, kind of error according to the rights of medication administration, and contributing factors. Three categories of contributing factors were identified: rights violations, system factors, and knowledge and understanding. It became apparent that system factors, or the context in which medication administration takes place, are not fully considered when students are taught about medication administration. Teaching strategies need to account for the dynamic complexity of this process and incorporate experiential knowledge. This review raised several important questions about how this information guides our practice as educators in the clinical and classroom settings and how we can work collaboratively with practice partners to influence change and increase patient safety. (Source: PubMed)


PURPOSE: The purpose of this study was to gain insight into how nurses recover medical errors in the emergency department (ED) setting. METHODS: The research method was of exploratory descriptive design with qualitative analysis. Subjects who signed the informed consent participated in one of four focus groups centering on nurse's role in recovering errors. Questions were asked during the focus groups to elicit information regarding nurse's role in the three phases of error recovery, namely, identifying, interrupting, and correcting the error. RESULTS: Five themes emerged to describe methods used by nurses to identify errors in the ED setting. These themes included: surveillance, anticipation, double checking, awareness of the "big picture," and experiential "knowing." Five themes emerged as methods used to interrupt errors: patient advocacy, offer of assistance, clarification, verbal interruption, and creation of delay. The themes for correcting an error were assembling the team and involving leadership. CONCLUSION: The results of this study provide preliminary evidence of the strategies used by ED nurses in the recovery of medical error. Further research is needed to generalize these findings to other ED settings. Knowledge of effective recovery strategies can ultimately be used to develop interventions for reducing medical error and improving patient safety. (Source: PubMed)


High-fidelity simulation using lifelike mannequins has been used to teach medical and aviation students, but little is known about using this method to educate nurses. The process and methods authors used to develop, implement, and evaluate high-fidelity simulation experiences in an acute/critical care elective for senior nursing students are described. Authors share their insight, experiences, and lessons
learned, along with practical information and a framework, in developing simulations and debriefing. (Source: PubMed)

Henriksen, K., & Dayton, E. (2006). Issues in the design of training for quality and safety. *Quality & safety in health care, 15 Suppl 1*, i17-24. The US healthcare delivery system is in a state of change. Medical science and technology are advancing at an unprecedented rate, while cost containment and productivity pressures on clinicians make the clinical environment less than ideal for training. Training is one of the vehicles for addressing new knowledge requirements and for enhancing human and system based performance. Yet the theoretical underpinnings and design aspects of training have been largely unrecognized and unexamined in health care. This paper first explores changes in the practice of medicine and the healthcare delivery environment. It then describes how healthcare training and education can benefit from findings in the behavioral and cognitive sciences. It describes the systems approach to training and explores the extent to which a systems approach can be applied to the clinical environment. Finally, the paper examines innovative training and education techniques that are already gaining acceptance in health care. (Source: PubMed)

Henriksen, K., & Dayton, E. (2006). Organizational silence and hidden threats to patient safety. *Health services research, 41*(4 Pt 2), 1539-1554. Organizational silence refers to a collective-level phenomenon of saying or doing very little in response to significant problems that face an organization. The paper focuses on some of the less obvious factors contributing to organizational silence that can serve as threats to patient safety. Converging areas of research from the cognitive, social, and organizational sciences and the study of sociotechnical systems help to identify some of the underlying factors that serve to shape and sustain organizational silence. These factors have been organized under three levels of analysis: (1) individual factors, including the availability heuristic, self-serving bias, and the status quo trap; (2) social factors, including conformity, diffusion of responsibility, and
microclimates of distrust; and (3) organizational factors, including unchallenged beliefs, the good provider fallacy, and neglect of the interdependencies. Finally, a new role for health care leaders and managers is envisioned. It is one that places high value on understanding system complexity and does not take comfort in organizational silence. (Source: PubMed)

The potential role of organizational factors in enhanced patient safety and medical error prevention is highlighted in the systems approach advocated for by the Institute of Medicine and others. However, little is known about the extent to which these factors have been shown empirically to be associated with these favorable outcomes. The present study conducted an intensive review of the clinical and health services literatures in order to explore this issue. The results of this review support the general conclusion that there is little evidence for asserting the importance of any individual, group, or structural variable in error prevention or enhanced patient safety at the present time. Two major issues bearing on the development of future research in this area involve strengthening the theoretical foundations of organizational research on patient safety and overcoming definitional and observability problems associated with error-focused dependent variables. (Source: PubMed)

This paper presents evidence from a root cause analysis (RCA) team meeting that was recently conducted in a Sydney Metropolitan Teaching Hospital to investigate an iatrogenic morphine overdose. Analysis of the meeting transcript reveals on three levels that clinical members of the team struggle with framing the uncertain and
contradictory details of situated clinical activity and translating these first into 'root causes', and then into recommendations for practice change. This analysis puts two challenges into special relief. First, RCA team members find themselves in the unusual position of having to derive organizational-managerial generalizations from the specifics of in situ activity. Second, they are constrained by the expectation inscribed into RCA that their recommendations result in 'systems improvements' assumed to flow forth from an extension of formal rules and spread of procedures. We argue that this perspective misrecognizes the importance of RCA as a means to engender solutions that leave the procedural detail of clinical processes unspecified, and produce cross-hospital discussions about the organizational dimensions of care. (Source: PubMed)


Before investing in a human patient simulator, we designed a preliminary study that examined student responses to a laboratory exercise that used lower-fidelity simulation. Our purpose was to compare beginning-level, baccalaureate nursing students' self-reported assessment in the domains of confidence, ability, stress, and critical thinking before and after they participated in the simulation. Results showed statistically significant improvement in all domains for skills in urinary catheterization, intravenous and nasogastric medication administration, and sterile dressing change. (Source: PubMed)


Improvement in systems that ensure safety in the provision of care is a high priority to hospital administrators, clinicians, and patients. Research to determine the approaches and methods that will result in the most significant patient safety improvements is underway but more is needed. This article describes the process for improving patient safety adopted at one hospital. Results of these efforts demonstrate
significant improvement in staff understanding of patient safety measures. Staff survey results are supported by improvement in clinical indicators. Recommendations for future action and implications for other hospitals are discussed. (Source: PubMed)

The aim of this study was to investigate if nursing students improved their work technique when assisting a simulated patient from bed to wheelchair after proficiency training, and to investigate whether there was a correlation between the nursing students' work technique and the simulated patients' perceptions of the transfer. **METHOD:** 71 students participated in the study, 35 in the intervention group and 36 in the comparison group. The students assisted a simulated patient to move from a bed to a wheelchair. In the intervention group the students made one transfer before and one after training, and in the comparison group they made two transfers before training. Six variables were evaluated: work technique score; nursing students' ratings of comfort, work technique and exertion, and the simulated patients' perceptions of comfort and safety during the transfer. The result showed that nursing students improved their work technique, and that there was a correlation between the work technique and the simulated patients' subjective ratings of the transfer. In conclusion, nursing students improved their work technique after training in patient transfer methods, and the work technique affected the simulated patients' perceptions of the transfer. (Source: PubMed)

Nurses have a pivotal role to play in clinical risk management (CRM) and promoting patient safety in health care domains. Accordingly, nurses need to be prepared educationally to manage clinical risk effectively when delivering patient care. Just what form the CRM and
safety education of nurses should take, however, remains an open question. A recent search of the literature has revealed a surprising lack of evidence substantiating models of effective CRM and safety education for nurses. In this paper, a critical discussion is advanced on the question of CRM and safety education for nurses and the need for nurse education in this area to be reviewed and systematically researched as a strategic priority, nationally and internationally. It is a key contention of this paper that without 'good' safety education research it will not be possible to ensure that the educational programs that are being offered to nurses in this area are evidence-based and designed in a manner that will enable nurses to develop the capabilities they need to respond effectively to the multifaceted and complex demands that are inherent in their ethical and professional responsibilities to promote and protect patient safety and quality care in health care domains. (Source: PubMed)


In order to enhance their capabilities in clinical risk management (CRM) and to be integrated into safe and effective patient safety organisational processes and systems, neophyte graduate nurses need to be provided with pertinent information on CRM at the beginning of their employment. What and how such information should be given to new graduate nurses, however, remains open to question and curiously something that has not been the subject either of critique or systematic investigation in the nursing literature. This article reports the findings of the third and final cycle of a 12 month action research (AR) project that has sought to redress this oversight by developing, implementing and evaluating a CRM education program for neophyte graduate nurses. Conducted in the cultural context of regional Victoria, Australia, the design, implementation and evaluation of the package revealed that it was a useful resource, served the intended purpose of ensuring that neophyte graduate nurses were provided with pertinent
information on CRM upon the commencement and during their graduate nurse year, and enabled graduate nurses to be facilitated to translate that information into their everyday practice. (Source: PubMed)

Joint Commission on the Accreditation of Healthcare Organizations. (2007). *Front line of defense: The role of nurses in preventing sentinel events* (2nd ed.). Oakbrook Terrace, IL: Joint Commission on the Accreditation of Healthcare Organizations. Written especially for nurses in all disciplines and health care settings, this book focuses on the hands-on role nurses play in the delivery of care and their unique opportunity and responsibility to identify potential sentinel events. Topics include preventing medication and transfusion errors, as well as preventing suicide, falls, and treatment delays. New chapters address wrong-site surgery perinatal injuries or death, and injuries or death due to criminal events. Learn how to: better recognize the root causes of specific sentinel events; identify strategies to prevent sentinel events from occurring; and overcome obstacles in the areas of staffing, training, culture of safety, and communication among the health care team. (Source: Publisher)


The purpose of this study was to investigate about the communication problems in the team nursing systems, if the requests for medication between nurses happen. For this study, we developed a simulation involving a nurse giving a medication prepared by another nurse. Baseline data was collected from 100 third-year nursing students and 163 nurses of two municipal hospitals further subdivided into three groups by their service years. The responders attributing to the errors in the simulation were compared. As a result, the more service years the fewer nurses there were who attributed medication errors to no explanation and no confirmation between nurses. The nurses whose service years were less than five years had a low level of awareness regarding no explanation of a nurse leader requesting the medications
as well as the students. These findings suggested that there is the possibility that some medication errors occur due to preoccupation that nurses feel it is less necessary to explain and confirm everything related to medication administrations as their length of service increase. Nurses have a communication problem that is influenced by the relationship in the workplace in the team nursing system. Therefore, the requests for medication should no be permitted. (Source: PubMed)

Kennedy, D. (2004). Analysis of sharp-end, frontline human error: Beyond throwing out "bad apples". *Journal of nursing care quality, 19*(2), 116-122. Sharp-end, frontline human error occurs close to the delivery of patient care. The purpose of this article is to examine the mechanism of human error and cognition, and to explore the antecedents, attributes, and consequences of frontline human error. Fallible decision-making and actions leading to patient injury are explicated in a case study. The discussion includes strategies for preventing patient injury by refining system flaws. (Source: PubMed)

Kneafsey, R., & Haigh, C. (2007). Learning safe patient handling skills: Student nurse experiences of university and practice based education. *Nurse education today, 27*(8), 832-839. INTRODUCTION: Poor patient handling practices increase nurse injuries and reduce patients' safety and comfort. BACKGROUND: UK Universities have a duty to prepare student nurses for patient handling activities occurring during clinical placements. This study examines students' experiences of moving and handling education in academic and clinical settings. METHODS: A 34 item questionnaire was distributed to student nurses at one School of Nursing (n=432, response rate of 75%). RESULTS: Many students undertook unsafe patient handling practices and provided reasons for this. There was a medium statistically significant correlation between the variables 'provision of supervision' and 'awareness of patient handling needs' (r(s)=.390, p=.000). 40% of students stated that their M&H competency was assessed through direct observation. Twenty six
percent of the total sample (n=110), said they had begun to develop musculo-skeletal pain since becoming a student nurse. Forty-eight stated that this was caused by an incident whilst on placement.

DISCUSSION: Inadequate patient handling practices threaten student nurse safety in clinical settings. Although some students may be overly confident, they should be supervised when undertaking M&H activities.

CONCLUSIONS: Though important, University based M&H education will only be beneficial if students learn in clinical settings that take safe patient handling seriously. (Source: PubMed)


Modern medicine is complex. Reports and surveys demonstrate that patient safety is a major problem. Health educators focus on professional knowledge and less on how to improve patient care and safety. The ability to act as part of a team, fostering communication, co-operation and leadership is seldom found in health education. This paper reports the findings from pilot testing a simulated training program in interprofessional student teams. Four teams each comprising one medical, nursing, and intensive nursing student (n = 12), were exposed to two simulation scenarios twice. Focus groups were used to evaluate the program. The findings suggest that the students were satisfied with the program, but some of the videos and simulation exercises could be more realistic and more in accordance with each other. Generally they wanted more interprofessional team training, and had learned a lot about their own team performance, personal reactions and lack of certain competencies. Involving students in interprofessional team training seem to be more likely to enhance their learning process. The students' struggles with roles, competence and team skills underline the need for more focus on combining professional knowledge learning with team training.

(Source: PubMed)

Lester, H., & Tritter, J. Q. (2001). Medical error: A discussion of the
medical construction of error and suggestions for reforms of medical education to decrease error. *Medical education, 35*(9), 855-861.

**INTRODUCTION:** There is a growing public perception that serious medical error is commonplace and largely tolerated by the medical profession. The Government and medical establishment's response to this perceived epidemic of error has included tighter controls over practising doctors and individual stick-and-carrot reforms of medical practice. **DISCUSSION:** This paper critically reviews the literature on medical error, professional socialization and medical student education, and suggests that common themes such as uncertainty, necessary fallibility, exclusivity of professional judgement and extensive use of medical networks find their genesis, in part, in aspects of medical education and socialization into medicine. The nature and comparative failure of recent reforms of medical practice and the tension between the individualistic nature of the reforms and the collegiate nature of the medical profession are discussed. **CONCLUSION:** A more theoretically informed and longitudinal approach to decreasing medical error might be to address the genesis of medical thinking about error through reforms to the aspects of medical education and professional socialization that help to create and perpetuate the existence of avoidable error, and reinforce medical collusion concerning error. Further changes in the curriculum to emphasize team working, communication skills, evidence-based practice and strategies for managing uncertainty are therefore potentially key components in helping tomorrow's doctors to discuss, cope with and commit fewer medical errors. (Source: PubMed)


The Institute of Medicine recommended establishing evidence-based teaching methods and curricula in health professions' education to meet the needs of the changing healthcare system. In an attempt to provide evidence-based information for nursing education, this study was designed to identify educational elements that best prepare nurses
for practice. The study employed a two-tiered survey process for collecting and combining data from programs of nursing education and the graduates of those programs. Administrators of 410 nursing programs responded to questions related to elements of education in their programs (response rate = 51%), whereas 7,497 RN (76.5%) and LPN (23.5%) graduates of respondent programs answered questions related to the adequacy of educational preparation for practice, difficulty with current client care assignments, and other professional and practice issues (response rate = 45.4%). The majority of the nurses reported that their education had adequately prepared them to perform many, but not all, essential areas of the nursing functions examined. Nearly 20% of the RNs and 18% of the LPNs reported having difficulty with client care assignments. Inadequate preparation of several nursing functions were identified as predictive of difficulty with patient care assignments. These areas include working effectively within the healthcare team, administering medications to groups of patients, analyzing multiple types of data when making client-related decisions, delegating tasks to others, and understanding the pathophysiology underlying a client's conditions. In addition, it was found that the graduates were more likely to feel adequately prepared when nursing programs taught them use of information technology and evidence-based practice; integrated pathophysiology and critical thinking throughout the curriculum; taught content related to the care of client populations as independent courses; and had a higher percentage of faculty teaching both didactic and clinical components of the curriculum. The findings of this study are significant in broadening our understanding of the relationships between educational elements and preparedness of new nurses for practice. (Source: PubMed)


The place of nurse prescribing and the preparation for this role is an educational challenge that has been heavily debated in New Zealand and overseas for the past 10 years. Nurse prescribing is relatively new
in New Zealand and is related to the expanding roles and opportunities for nurses in health care. Opposition to nurse prescribing in New Zealand has been marked and often this has been linked to concerns over patient safety with the implication that nurses could not be adequately prepared for safe prescribing. The educational framework used to teach pharmacology to nurses by one university in New Zealand is presented, along with early findings on the effectiveness of this approach. Further research is required to confirm that nurse prescribers in New Zealand are well prepared and able to utilise effective decision-making processes for safe prescribing. (Source: PubMed)

Maddox, P. J., Wakefield, M., & Bull, J. (2001). Patient safety and the need for professional and educational change. *Nursing outlook, 49*(1), 8-13. Questionable quality of health care delivered in the United States has become a front-line issue, taking a strong place alongside more traditional concerns such as increasing costs and access to care. Given that nurses comprise the largest component of the health care workforce, safety and error reduction in health care are central concerns for the profession. (Source: PubMed)

Malloch, K. (2007). The electronic health record: An essential tool for advancing patient safety. *Nursing outlook, 55*(3), 159-161. According to a recent American Hospital Association survey, 68% of US hospitals reported they had fully or partially implemented electronic health records in 2006. Three applications within the electronic record—computerized physician order entry (CPOE), electronic medication administration records (eMAR), and clinical documentation—are impacting patient safety by decreasing incorrect and unnecessary treatments and medications, as well as improving the timeliness of care. (Source: QSEN Team)


In a survey published in Nursing 2005, nurses in the U.S. and Canada
were asked to respond to questions pertaining to patient safety in health care facilities. The goal of the survey was to explore nurses' perceptions about patient safety, including their views on falls, medication safety, and preventable adverse events. It was also designed to reveal whether nurses believe their own facilities have programs that support a culture of patient safety in daily practice. (Source: QSEN Team)


As leaders for nursing education, nursing research, healthcare administration and patient safety, we asked one another: How do we use our collective resources to build health system capacity for clinically based research training and safer healthcare? Drawing on knowledge from the field of ecological restoration, which is the study and repair of damaged ecosystems, we partnered the Safer Systems research program of the Faculty of Nursing, University of Alberta, with Capital Health's Royal Alexandra Hospital (RAH), the Caritas Health Group, the Canadian Patient Safety Institute (CPSI) and several funding agencies to provide hands-on training in clinical research, infection control and patient safety policy development for nursing students during the summer months. As we plan ahead, our student and staff evaluations show that together, we can make concrete, vital contributions to student education, nursing research, evidence-informed practice, clinical quality improvement and national policy. We are using what we have learned to continually expand the range of undergraduate, graduate and post-doctoral clinical learning opportunities in healthcare safety that are available year round. Our shared goal is to support current and future nurses in leading the way for safer healthcare systems and the safest possible healthcare. (Source: PubMed)

This special issue congregates 15 papers related to the use of technology to facilitate and assure the quality of care and patient safety, most of them through the nursing lens. (Source: QSEN Team)


In March 2004, responding to evidence of wide variation in the way both Harvard hospitals and hospitals nationally communicate with patients about errors and adverse events, a group of risk managers and clinicians from several Harvard teaching hospitals, the School of Public Health, and the Risk Management Foundation assembled to explore and discuss issues surrounding this subject. Lucian Leape, MD, Adjunct Professor of Health Policy in the Department of Health Policy and Management at the Harvard School of Public Health, was a leading contributor to this document. This consensus paper proposes a full disclosure and emotional support to patients and families who experience serious incidents. It also addresses ways to support and educate clinicians involved in such incidents and outlines the administrative components of a comprehensive institutional policy. Two principles guide the recommendations in this document for responding to incidents: medical care must be safe, and it must be patient-centered. (Source: QSEN Team)


The American Association of Critical-Care Nurses (AACN) commissioned VitalSmarts to conduct a study exploring communication difficulties experienced by health care personnel that may contribute to medical error. Areas of concern include broken rules, mistakes, lack of support, incompetence, poor teamwork, disrespect, and micromanagement. (Source: Publisher)


Serious events within healthcare occur daily exposing the failure of the system to safeguard patient and providers. The complex nature of healthcare contributes to myriad ambiguities affecting quality nursing care and patient outcomes. Leaders in healthcare organizations are looking outside the industry for ways to improve care because of the slow rates of improvement in patient safety and insufficient application of evidenced-based research in practice. Military and aviation industry strategies are recognized by clinicians in high-risk care settings such as the operating room, emergency departments, and intensive care units as having great potential to create safe and effective systems of care. Complexity science forms the basis for high reliability teams to recognize even the most minor variances in expected outcomes and take strong action to prevent serious error from occurring. Cultural and system barriers to achieving high reliability performance within healthcare and implications for team training are discussed. (Source: PubMed)


Nursing educators who teach outmoded manual patient handling techniques contribute to the widespread problem of musculoskeletal disorders in student and practicing nurses. The authors discuss the development and implementation of a new safe patient handling curriculum module, which was pilot tested in 26 nursing programs. The module changes the focus of patient handling education from body mechanics to equipment-assisted safe patient lifting programs that have been shown to protect nurses from injury and improve care. (Source: PubMed)

administration, 37(11), 499-503.

With only 175 reports submitted into an available close call reporting system during 2.5 years, the Good Catch Program was implemented to promote 3 strategies: (1) changing terminology from "close call" to "good catch," (2) implementing an "end-of-shift safety report," and (3) executive leadership sponsored incentives. The authors discuss the program and its positive outcomes in increasing potential error reporting. (Source: PubMed)

Milligan, F. J. (2006). Establishing a culture for patient safety - the role of education. Nurse education today, 27(2):95-102. This paper argues that the process of making significant moves towards a patient safety culture requires changes in healthcare education. Improvements in patient safety are a shared international priority as too many errors and other forms of unnecessary harm are currently occurring in the process of caring for and treating patients. A description of the patient safety agenda is given followed by a brief analysis of human factors theory and its use in other safety critical industries, most notably aviation. The all too common problem of drug administration errors is used to illustrate the relevance of human factors theory to healthcare education with specific mention made of the Human Factors Analysis and Classification System. (Source: PubMed)


High-fidelity patient simulation is becoming an essential component of prelicensure nursing education. A survey was mailed to the boards of nursing in all states, the District of Columbia, and Puerto Rico to ascertain the use of high-fidelity patient simulators for clinical time in current regulations. Participants were asked if high-fidelity patient simulation could be substituted for clinical time in the regulations and, if so, for what percentage. If not, they were asked whether they gave approval to nursing programs to substitute clinical time with high-fidelity patient simulators and, if so, for what percentage. Finally, the
participants were asked whether they felt that the regulations would be changed in the future to allow the use of high-fidelity patient simulators to substitute for clinical time. Five states and Puerto Rico have made regulation changes to allow for such substitution, but only Florida has indicated a percentage of time. Sixteen states currently give approval for simulation substitution, and 17 states may consider regulation changes concerning high-fidelity patient simulation in the future. Such findings have implications for alterations in the prelicensure nursing curriculum that could examine patient safety and quality concerns addressed by the public and leading health and nursing organizations. (Source: PubMed)


Nursing schools in the United States have not been teaching evidence-based practices for safe patient handling, putting their graduates at risk for musculoskeletal disorders (MSDs). The specific aim of this study was to translate research related to safe patient handling into the curricula of nursing schools and evaluate the impact on nurse educators and students' intentions to use safe patient handling techniques. Nurse educators at 26 nursing schools received curricular materials and training; nursing students received the evidence-based curriculum module. There were three control sites. Questionnaires were used to collect data on knowledge, attitudes, and beliefs about safe patient handling for both nurse educators and students, pre- and post-training. In this study, we found that nurse educator and student knowledge improved significantly at intervention schools, as did intention to use mechanical lifting devices in the near future. We concluded that the curriculum module is ready for wide dissemination across nursing schools to reduce the risk of MSDs among nurses. (Source: PubMed)

Increasingly, healthcare organizations are becoming aware of the importance of transforming organizational culture in order to improve patient safety. Growing interest in safety culture has been accompanied by the need for assessment tools focused on the cultural aspects of patient safety improvement efforts. This paper discusses the use of safety culture assessment as a tool for improving patient safety. It describes the characteristics of culture assessment tools presently available and discusses their current and potential uses, including brief examples from healthcare organizations that have undertaken such assessments. The paper also highlights critical processes that healthcare organizations need to consider when deciding to use these tools. (Source: PubMed)


Nursing-sensitive outcomes provide common information across sectors, thus eliminating duplication that frequently occurs as individuals move across settings. These outcomes also facilitate increased trust among colleagues and support common understandings of patient care needs, thus enhancing continuity of care. Outcomes-oriented information is also likely to increase patient safety and improve overall quality of care. Shared standards and data support consistent decision-making, as nursing decisions can be tracked back over time to assess patient care outcomes. Consequently, nurses will have the means to determine the impact of their interventions on patient outcomes. At the same time, adoption of common approaches to patient assessment leads to greater professional accountability and moves nursing care from a task orientation to an outcomes focus. For administrators, such improvements in monitoring and evaluating patient outcomes translate into improvements in efficiencies and effectiveness, thus providing a return on investment in implementing these outcomes within their agency. For nurses, integration and
utilization of outcomes information increases the visibility and significance of their decision-making and patient care. Together with patients, nurses can utilize the outcomes information to make evidence-based decisions and advocate for appropriate care. At an aggregate level, the use of outcomes information creates a continuous feedback loop that is essential to ensuring evidence-based care and the best possible patient outcomes, not only for individuals, but also for families, communities and populations. Outcomes-oriented care provides a gateway for transforming the way we care for patients; puts safe, ethical, high-quality care for patients first; embodies the principles of evidence-based practice; ensures that the value of nursing is clearly understood within the larger system; and ensures that the requirements for measurability and accountability can be achieved. This journey is continuous and is being expanded to engage all other health disciplines in understanding and documenting their contributions to patient care, both as individual practitioners and as members of a healthcare team. Preparing nursing students in an outcomes approach will facilitate systemwide adoption of HOBIC patient outcomes over time and provide a means to determine the impact of nursing care on our patients. (Source: PubMed)

Lifting patients is a major contributor to back injuries. The commonly used method for lifting patients, the under-axilla grasp method, exceeds the level of force that can safely be exerted to the lumbar-sacral area of the spine. Using assistive devices decreases the injury rate. The author discusses how student nurses can be taught to use assistive devices and thus avoid the under-axilla grasp method of transfer. (Source: PubMed)

Medication errors are a persistent problem in today’s National Health Service (NHS). Many factors contribute to drug incidents occurring,
from the initial prescription stage through to administration and arise from both individual and system failures. The literature identifies the multi-disciplinary nature of the problem and highlights the important contribution that nurses make with regards to ensuring medication safety. However limited evidence exists in the literature regarding the extent to which the current content of undergraduate pharmacology education prepares nurses for their role in the prevention of errors. The report "Building a safer NHS for patients-improving medication safety," concludes that it is now imperative that undergraduate education should emphasise the issue of medication safety. An educational initiative was therefore introduced to address this problem. A "Medication Safety Day" which focused on the causes of medication errors was implemented to highlight how and why drug incidents may occur. This initiative recognises that nurse education should not only ensure adequate theoretical knowledge of pharmacology but should also equip students with an awareness of how many diverse factors may contribute to the occurrence of medication errors. (Source: PubMed)


By its very nature, the emergency department uses a multitude of processes that would be considered high risk and eligible for study. It is no longer acceptable to rely solely on the competence of individuals and current ED processes without questioning possible risks because "we have always done it that way." Being a safety-conscious practitioner includes thinking and working proactively (and using FMEA as a tool) before adverse events occur to achieve a safe environment, free from preventable patient harm. (Source: Publisher)

An objective of the baccalaureate nursing curriculum at Thomas
Jefferson University, Jefferson College of Health Professions is to facilitate nursing students' transfer of medication error knowledge into preventive action in the clinical unit. Using a problem-based learning approach, first-semester students are exposed to situations that reflect the real-world scope and complexity of medication administration and errors. Using the frameworks of Failure Mode Analysis and Human Error Mode and Effects Analysis, student groups identify hypotheses, devise solutions, and develop continuous quality improvement processes to prevent errors and facilitate error reporting. Problem-based learning is used in subsequent clinical experiences throughout the curriculum. This reinforcement, combined with a focus on increasingly complex pharmacological agents and medication calculations, enables students to employ critical thinking skills and develop the confidence necessary for safe, professional practice. (Source: PubMed)


Background: Contributing factors to medication errors include distractions, lack of focus, and failure to follow standard operating procedures. The nursing unit is vulnerable to a multitude of interruptions and distractions that affect the working memory and the ability to focus during critical times. Methods that prevent these environmental effects on nurses can help avert medication errors.;

Methods: A process improvement study examined the effects of standard protocols and visible signage within a hospital setting. The project was patterned after another study using similar techniques. Rapid Cycle Testing was used as one of the strategies for this process improvement project. Rapid Cycle Tests have become a part of the newly adopted Define, Measure, Analyze, Improve, and Control steps at this particular hospital.;

Results: As a result, a medication administration check-list improved focus and standardized practice. Visible signage also reduced nurses' distractions and improved focus.
Conclusion: The results provide evidence that protocol checklists and signage can be used as reminders to reduce distractions, and are simple, inexpensive tools for medication safety. (Source: PubMed)


OBJECTIVE: To change the culture of healthcare organisations and improve patient safety, new professionals need to be taught about adverse events and how to trap and mitigate against errors. A literature review did not reveal any patient safety courses in the core undergraduate medical curriculum. Therefore a new module was designed and piloted. DESIGN: A 5-h evidence-based module on understanding error in healthcare was designed with a preliminary evaluation using self-report questionnaires. SETTING: A UK medical school. PARTICIPANTS: 110 final year students. MEASUREMENTS AND MAIN RESULTS: Participants completed two questionnaires: the first questionnaire was designed to measure students' self-ratings of knowledge, attitudes and behaviour in relation to patient safety and medical error, and was administered before and approximately 1 year after the module; the second formative questionnaire on the teaching process and how it could be improved was administered after completion of the module. CONCLUSIONS: Before attending the module, the students reported they had little understanding of patient safety matters. One year later, only knowledge and the perceived personal control over safety had improved. The students rated the teaching process highly and found the module valuable. Longitudinal follow-up is required to provide more information on the lasting impact of the module. (Source: PubMed)


This handbook prepared by the Agency for Healthcare Research and Quality (AHRQ) and the Robert Wood Johnson Foundation provides a comprehensive summary of important patient safety and quality
improvement concepts for frontline nurses. Experts in each topic area reviewed the latest published evidence to assemble sections on providing patient-centered care, nurses' working conditions and work environment, critical opportunities for improving quality and safety, and practical tools for implementing patient safety interventions for practicing nurses. (Source: Publisher)


The Institute of Medicine's 2000 report drew attention to both U.S. health care agencies and the medication errors that occur within them. However, this attention focused on a more basic and fundamental issue within the medication error concern: nurses' mathematical skills and competence. This article describes a nationwide study assessing processes to validate mathematical skills for medication administration. Practices within educational and acute care institutions are explored, and recommendations for future action are noted with a call for 100% accuracy on all mathematical examinations for medication administration. (Source: PubMed)


The work of nursing is nonlinear and involves complex reasoning and clinical decision making. The use of human factors engineering (HFE) as a sole means for analyzing the work of nursing is problematic. Combining HFE analysis with qualitative observation has created a new methodology for mapping the nursing process. A cognitive pathway offers a new perspective for understanding the work of nursing and analyzing how disruptions to the nursing process may contribute to errors in the acute care environment. (Source: PubMed)

The importance of implementing evidence-based medicine is being driven by public reporting of outcome data and linking these measures to reimbursement. Most hospitals are faced with many challenges in gaining sponsorship, staffing, creating tools, and reporting of evidence-based outcome measures. This article describes the use of the SSM Health Care (SSMHC) Continuous Quality Improvement model in implementing evidence-based practices at SSM DePaul Health Center, a community hospital member of SSMHC, including successes, opportunities for improvement, and lessons learned. Specifically, the article includes two different processes for data collection and interventions with staff, process requirements for each, and outcome data associated with each model. (Source: PubMed)


Human Patient Simulators (HPS), electronically controlled mannequins as patient models, are increasingly being used in nursing education. However, no studies have validated the influence of systematic practice with HPS on clinical performance of nursing students. This pilot study attempted to identify the nursing clinical practice parameters influenced by HPS by evaluating the clinical performance of 12 senior second degree BSN students in five categories: safety, basic assessment skills, prioritization, problem-focused assessment, ensuing interventions, delegation and communication in a complex two-patient, simulated assignment. Students who practiced with the HIPS in addition to their usual clinical training had significantly higher scores than the control group (usual clinical training alone) on Patient Identification (a subcategory of the safety category; $p = 0.001$), and on Assessing Vital Signs (a subcategory of the basic assessment category; $p = 0.009$). The control and intervention groups' performances were similar in every other category. Replication of this pilot with a larger sample is recommended. (Source: PubMed)

This mixed method study used a pre-test/post-test design to evaluate the efficacy of a teaching strategy in improving beginning nursing student learning outcomes. During a 4-week student teaching period, a convenience sample of 54 sophomore level nursing students were required to complete calculation assignments, taught one calculation method, and mandated to attend medication calculation classes. These students completed pre- and post-math tests and a major medication mathematic exam. Scores from the intervention student group were compared to those achieved by the previous sophomore class. Results demonstrated a statistically significant improvement from pre- to post-test and the students who received the intervention had statistically significantly higher scores on the major medication calculation exam than did the students in the control group. The evaluation completed by the intervention group showed that the students were satisfied with the method and outcome. (Source: PubMed)


BACKGROUND: Experts continue to decry the lack of progress made in decreasing the alarming frequency of medical errors in health care organizations. At the same time, other experts are concerned about the lack of job satisfaction and turnover among nurses. Research and theory suggest that a work environment that facilitates patient-centered care should increase patient safety and nurse satisfaction.

PURPOSES: The present study began with a conceptual model that specifies how work environment variables should be related to both nurse and patient outcomes. Specifically, we proposed that health care work units with climates for patient-centered care should have nurses who are more satisfied with their jobs. Such units should also have higher levels of patient safety, with fewer medication errors.

METHODOLOGY/APPROACH: We examined perceptions of nurses from three acute care hospitals in the eastern United States. FINDINGS:
Nurses who perceived their work units as more patient centered were significantly more satisfied with their jobs than were those whose units were perceived as less patient centered. Those whose work units were more patient centered reported that medication errors occurred less frequently in their units and said that they felt more comfortable reporting errors and near-misses than those in less patient-centered units. PRACTICE IMPLICATIONS: Patients and quality leaders continue to call for delivery of patient-centered care. If climates that facilitate such care are also related to improved patient safety and nurse satisfaction, proactive, patient-centered management of the work environment could result in improved patient, employee, and organizational outcomes. (Source: PubMed)


Nurse leaders need to explore partnerships between education and practice areas, and the statement must be clear that the BSN does make a difference. It is necessary to articulate policy addressing the differentiation of practice that the BSN can achieve. Tuition contracts requiring employment with the organization are one way to insure continued employment of the BSN-prepared nurses. Identifying the motivators and barriers to BSN completion will allow nursing administrators to mobilize efforts to support RNs in the quest for the BSN. This will enhance patient safety in a cost-effective manner while increasing the personal fulfillment of RNs. (Source: QSEN Team)


Confidence and accuracy in medication calculation ability continue to be problematic among nursing students. This deficiency has been attributed to poor basic mathematical skills, inconsistent teaching methods, and inconsistent or incorrect use of multiple mathematical formulas. This article provides evidence of the value of dimensional analysis as an effective teaching strategy for calculating drug dosages.

Background: Safety initiatives have primarily focused on physicians despite the fact that nurses provide the majority of direct inpatient care. Patient surveillance and preventing errors from harming patients represent essential nursing responsibilities but have received relatively little study. Methods: The study was conducted between July 2003 and July 2004 in a 10-bed academic coronary care unit. Direct observation of nursing care and solicited and institutional incident reports were used to find potential incidents. Two physician reviewers rated incidents as to the presence, preventability, and potential severity of harm of errors and associated factors. Results: Overall data were collected for 147 days, including 150 hours of direct observation. One hundred forty-two recovered medical errors were found, including 61% (86/142) during direct observations. Most errors (69%; 98/142) were intercepted before reaching the patients. Errors that reached patients included 13% that were mitigated before resulting in harm and 18% that were ameliorated before more severe harm could occur.

Discussion: Protecting patients from the potentially dangerous consequences of medical errors is one of the many ways critical care nurses improve patient safety. Interventions designed to increase the ability of nurses to recover and promptly report errors have the potential to improve patient outcomes. (Source: PubMed)


BACKGROUND: Through simulations health care workers can learn by practicing skills taught and experiencing mistakes before interacting with an actual patient. A number of areas within the health care industry are currently using simulation-based training to help
individuals and teams improve patient safety. WHAT IS SIMULATION-BASED TRAINING? The key components of simulation-based training are as follows: performance history/skill inventory, tasks/competencies, training objectives, events/exercises, measures/metrics, performance diagnosis, and feedback and debrief. WHAT DOES IT TAKE FOR SIMULATION-BASED TRAINING TO BE EFFECTIVE? To be effective, simulation-based training must be implemented appropriately. The guidelines are as follows: understand the training needs and requirements; instructional features, such as performance measurement and feedback, must be embedded within the simulation; craft scenarios based on guidance from the learning outcomes; create opportunities for assessing and diagnosing individual and/or team performance within the simulation; guide the learning; focus on cognitive/psychological simulation fidelity; form a mutual partnership between subject matter experts and learning experts; and ensure that the training program worked. CONCLUSION: The health care community can gain significantly from using simulation-based training to reduce errors and improve patient safety when it is designed and delivered appropriately. (Source: PubMed)

Healthcare's increasing focus on quality and safety seem like a "natural" for nursing. The profession has prided itself in being the patient's advocate and the keeper of quality and safety. While nursing has clearly provided consistent and committed leadership in these arenas, it is also possible that exclusive professional ownership of quality and safety may actually work against the best interest of both nursing and patients. This editorial challenges nursing to reconsider its role in and approach to quality and safety improvement. Building on the important perspectives presented in this issue of Nursing Outlook, the author identifies the need for nursing to advance its own professional contributions through building on the shared values and commitments common to health professions. Establishing common ground and extending the concept of care teams to incorporate others
beyond direct-care providers are explored as a fundamental component of nursing's work in quality and safety improvement. (Source: PubMed)


To begin to address the problem of psychomotor skills deficiencies observed in many new graduate nurses, a skills laboratory course was developed using a web-enhanced approach. In this quasi-experimental study, the control group attended weekly lectures, observed skill demonstrations by faculty, practiced skills, and were evaluated on skill performance. The experimental group learned course content using a web-enhanced approach. This allowed students to learn course material outside of class at times convenient for them, thus they had more time during class to perfect psychomotor skills. The experimental group performed better on the final cognitive examination. Students in the traditional sections were more satisfied with the course, however. It was concluded that a web-enhanced approach for teaching psychomotor skills can provide a valid alternative to traditional skills laboratory formats. (Source: PubMed)


Poor communication of medical information at transition points of care--at admission, transfer, and discharge--often results in medication errors, but various strategies can reduce the likelihood of error. (Source: PubMed)


The study was designed to compare the efficacy of controlled simulation mannequin (SM) assisted learning and case study presentation on knowledge and confidence of nurse practitioner (NP)
students in managing a cardiac event. Twenty-three volunteer students were randomly assigned to the experimental (simulation) or control (case study presentation) group. All participants were instructed on atrial arrhythmias, were pre- and post-tested on knowledge and confidence, and completed an evaluation of the experience. There were no statistically significant differences in knowledge test scores, although the control group scored significantly higher on post-test confidence (p=.040). Both groups rated their experience as valuable. The simulation and case study presentation had similar outcomes. Additional research is needed to determine the effectiveness of this teaching modality. (Source: PubMed)


This column describes a mnemonic device that can be used as a safety strategy to help nurses avoid IV medication errors. Before they hang or push a medication, it prompts nurses to think about compatibilities, allergies, tubing, site, pump, right rate, release, and return and reassess. (Source: QSEN Team)


Chemotherapy education at a mid-sized community hospital was redesigned to help novice oncology nurses improve patient safety and their own practice by implementing error prevention techniques during chemotherapy administration. Using a proactive approach with multidisciplinary participation and open communication, a systems analysis was conducted to identify potential chemotherapy errors. Then, chemotherapy processes were devised or strengthened to avoid errors. The project required a philosophical shift from error measurement to safety promotion. (Source: PubMed)

Sherwood, G., & Drenkard, K. (2007). Quality and safety curricula in

Health care delivery settings are redesigning in the wake of staggering reports of severe quality and safety issues. Sweeping changes underway in health care to address quality and safety outcomes lend urgency to the call to transform nursing curricula so new graduate competencies more closely match practice needs. Emerging views of quality and safety and related competencies as applied in practice have corresponding implications for the redesign of nursing education programs. Nurse executives and nurse educators are called to address the need for faculty development through strategic partnerships. (Source: PubMed)


A patient admitted to a teaching hospital with a mild episode of acute pancreatitis initially improved, but then her condition deteriorated and she subsequently died. The initial deterioration probably reflected bowel obstruction, as shown on an abdominal radiograph that an on-call intern forgot to review. This diagnostic delay was compounded by poor communication that resulted in a medical student inserting a feeding tube--rather than a nasogastric tube--to decompress the bowel, followed by failure to recognize how ill the patient had become. The case highlights the hazards of patient handoffs as well as the importance of clear communication techniques and knowing when to ask for help. The discussion also shows the vicious circle that results when attending physicians fail to provide effective supervision: Not only is safety compromised but trainees lose the experience of being supervised. Consequently, trainees have no models of effective supervision on which to draw when they become supervisors. They then fall into the same trap as those who taught them, busying themselves with direct patient care and providing supervision only as time allows. (Source: PubMed)

Roseanne Shorthall reflects on a potentially adverse event that occurred when she was a nursing student to demonstrate how communication failures can hamper patient care. (Source: Publisher)  


Concerns about the quality and safety of health care have changed practice expectations and created a mandate for change in the preparation of health care professionals. The Quality and Safety Education for Nurses project team conducted a survey to assess current levels of integration of quality and safety content in pre-licensure nursing curricula. Views of 195 nursing program leaders are presented, including information about satisfaction with faculty expertise and student competency development related to 6 domains that define quality and safety content: patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. With competency definitions as the sole reference point, survey respondents indicated that quality and safety content was embedded in current curricula, and they were generally satisfied that students were developing the desired competencies. These data are contrasted with work reported elsewhere in this issue of Nursing Outlook and readers are invited to consider a variety of interpretations of the differences. (Source: PubMed)  


The article reports on a survey conducted by the National League of Nursing (NLN) regarding pre-licensure registered nurse clinical nursing education. The 51-item survey was designed to describe current practices in clinical nursing education and it was developed by Dr. Marilyn Oermann. The respondents vary from administrators to faculty
who teach in the pre-licensure registered nurse programs. Expert nurse educators who serve on the NLN advisory councils and task groups also participated in answering the survey. Some of the findings of the survey were also presented. (Source: Publisher)

A focus group, composed of professional nurses, addressed issues related to reducing health care errors. Issues included the system and culture of tolerance, barriers to reporting and resolving error, breaking down the barriers, education and training. A Web-based patient safety education module for nurses will be created to raise competencies related to these and other issues. (Source: PubMed)

Staff members need appropriate training before the investigation and causal analysis of accidents in any complex system. Otherwise results will be incomplete and will be focused on the least manageable contributors, such as the unsafe acts of frontline operators. This article outlines an incident investigation and root cause analysis workshop developed to address this training need in a spectrum of healthcare settings and reviews feedback from participants. (Source: PubMed)

The role of the nurse leader in patient safety can be characterized as follows: to establish the right culture; to infuse that culture with shared leadership so that the expert voice at the bedside is really defining the work; to possess the competencies necessary to coordinate and advance this complex initiative; and to forge both internal and external partnerships, because we will not be able to do this work alone. To further the work on this topic, nurse leaders who participated in the
Nursing Leadership Congress are committed to identifying additional resources to help nurse leader colleagues drive patient safety efforts throughout their organizations. (Source: PubMed)


Patient safety has assumed an international focus. In the past, the focus on detecting and preventing errors was up to the individual clinician, often the registered nurse. With impetus from the Institute of Medicine and other national agencies, a shift to emphasis on systems and processes and near miss and error reporting has occurred. Information from caregiver reporting has taken on new importance. This study was conducted to explore nurses' willingness to report errors of varying degrees of severity and the factors that impacted that intent. Registered nurses were selected randomly from the Texas Board of Nurse Examiners' roster and surveyed regarding perceptions of the environment for reporting, perceptions of reasons for not reporting, knowledge of the nursing practice act, and demographic variables. A majority of nurses were willing to report all levels of errors. Primary position, reasons for not reporting, and years since initial licensure were predictors of intent to report incidents with no injury and those with minimal injury. All but four nurses (99%) indicated that they would report incidents resulting in moderate to severe injury or death. (Source: PubMed).


In 2002, the National Patient Safety Foundation® conducted a needs assessment as part of its “Improving patient safety through web-based education” project. A major objective of this project is to develop patient safety educational curriculum for physicians and nurses. The two-phased needs assessment sought to explore each group’s experiences with error in medicine, to understand their attitudes and knowledge with regards to patient safety, and to identify key
informational needs. In the first phase, NPSF convened focus groups to discuss and determine the origins of, and ways to reduce, healthcare error. NPSF conducted a self-administered mail survey to identify patient safety educational and training needs. This report summarizes the key findings. (Source: Publisher)

Wakefield, A. B., Carlisle, C., Hall, A. G., & Attree, M. J. (2008). The expectations and experiences of blended learning approaches to patient safety education. *Nurse education in practice, 8*(1), 54-61. E-learning facilitates access to educational programmes via electronic asynchronous or real time communication without the constraints of time or place. However, not all skills can be acquired via e-learning, thus blended approaches have emerged, where traditional academic processes have been combined with e-learning systems. This paper presents qualitative findings from a study evaluating a blended approach to patient safety education. The 3-day face-to-face training in Root Cause Analysis supported by e-learning resources was designed by the National Patient Safety Agency. The study evaluated the efficacy of the blended learning approach, and explored how operational practices in NHS organisations supported staffs' skill in using electronic resources. Data collection techniques included pre and post-course Confidence Logs, Individual Interviews, Focus Groups and Evaluation Questionnaires. Students' views on blended learning varied. Some were positive, while others felt e-learning did not suit their preferred learning style, or the subject matter. Many students did not engage with the e-learning resources. Lack of awareness regarding the e-learning component, combined with inconsistent access to computing facilities may have contributed to this. For this reason a series of recommendations are outlined to guide those wishing to adopt blended learning approaches in the future. (Source: PubMed)

foundation of healthcare practice and education both in the UK and internationally. Recent research and policy initiatives have highlighted this issue. The paper highlights the significance of this topic as an aspect of study in its own right by examining not only the fiscal but also the human costs such events invite. Yet if healthcare educational curricula were to recognise the value of learning from errors, such events could become part of a wider educational resource enabling both students and facilitators to prevent threats to patient safety. For this reason, the paper attempts to articulate why patient safety should be afforded greater prominence within medical and nursing curricula. We argue that learning how to manage errors effectively would enable trainee practitioners to improve patient care, reduce the burden on an overstretched health care system and engage in dynamic as opposed to defensive practice. (Source: PubMed)

Waldner, M. H., & Olson, J. K. (2007). Taking the patient to the classroom: Applying theoretical frameworks to simulation in nursing education. *International journal of nursing education scholarship, 4*(1), 1-14. Upon completion of their education, nursing students are expected to practice safely and competently. Societal changes and revisions to nursing education have altered the way nursing students learn to competently care for patients. Increasingly, simulation experiences are used to assist students to integrate theoretical knowledge into practice. Reasons for and the variety of simulation activities used in nursing education in light of learning theory are discussed. By combining Benner's nursing skill acquisition theory with Kolb's experiential learning theory, theoretical underpinnings for examining the use of simulations in the context of nursing education are provided. (Source: PubMed)

errors to patients and families. Yet few studies examine how to effectively train healthcare professionals to deliver communications about adverse events to family members of affected pediatric patients. This pilot study uses a preintervention-postintervention study design to investigate the effects of medical error disclosure training in a simulated setting for pediatric oncology nurses (N=16). The results of a paired t test showed statistically significant increases in nurses' communication self-efficacy to carry out medical disclosure (t = 6.68, p < .001). Ratings of setting "realism" and simulation effectiveness were high (21 out of 25 composite score). Findings provide preliminary support for further research on simulation-based disclosure training for healthcare professionals. (Source: PubMed)

Wolf, Z. R., Hicks, R., & Serembus, J. F. (2006). Characteristics of medication errors made by students during the administration phase: A descriptive study. Journal of professional nursing, 22(1), 39-51. Faculty concentrate on teaching nursing students about safe medication administration practices and on challenging them to develop skills for calculating drug dose and intravenous flow rate problems. In spite of these efforts, students make medication errors and little is known about the attributes of these errors. Therefore, this descriptive, retrospective, secondary analysis study examined the characteristics of medication errors made by nursing students during the administration phase of the medication use process as reported to the MEDMARX, a database operated by the United States Pharmacopeia through the Patient Safety Program. Fewer than 3% of 1,305 student-made medication errors occurring in the administration process resulted in patient harm. Most were omission errors, followed by errors of giving the wrong dose (amount) of a drug. The most prevalent cause of the errors was students' performance deficits, whereas inexperience and distractions were leading contributing factors. The antimicrobial therapeutic class of drugs and the 10 subcategories within this class were the most commonly reported medications involved. Insulin was the highest-frequency single medication reported. Overall, this study shows that students' administration errors may be more
frequent than suspected. Faculty might consider curriculum revisions that incorporate medication use safety throughout each course in nursing major courses. (Source: PubMed)

Wright, K. (2007). Student nurses need more than maths to improve their drug calculating skills. *Nurse education today, 27*(4), 278-285. Nurses need to be able to calculate accurate drug calculations in order to safely administer drugs to their patients. Studies have shown however that nurses do not always have the necessary skills to calculate accurate drug dosages and are potentially administering incorrect dosages of drugs to their patients. The literature indicates that in order to improve drug calculations strategies need to focus on both the mathematical skills and conceptual skills of student nurses so they can interpret clinical data into drug calculations to be solved. A study was undertaken to investigate the effectiveness of implementing several strategies which focused on developing the mathematical and conceptual skills of student nurses to improve their drug calculation skills. The study found that implementing a range of strategies which addressed these two developmental areas significantly improved the drug calculation skills of nurses. The study also indicates that a range of strategies has the potential ensuring that the skills taught are retained by the student nurses. Although the strategies significantly improved the drug calculation skills of student nurses, the fact that only 2 students were able to achieve 100% in their drug calculation test indicates a need for further research into this area. (Source: PubMed)