The Development of a Half-Day Workshop to Assist Novice Nurses in the Identification and Management of Clinical Deterioration

by © Lindsay Dawe

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Abstract

Background: Patient safety is an essential part of quality nursing care. Promoting a culture of patient safety has been shown to improve patient outcomes. To provide quality patient care, it is important for registered nurses to have the assessment skills to detect when a patient's condition is deteriorating. The surgical inpatient unit at Carbonear General Hospital (CGH) has seen a high turnover of staff in recent years. An increased number of novice nurses employed on the unit has contributed to patient safety issues. An educational workshop, provided as part of the orientation program, would benefit novice nurses working on this unit as a strategy to promote patient safety by increasing their knowledge and expertise in the early identification and management of the deteriorating patient. **Purpose:** The purpose of this practicum project was to develop an educational workshop to help novice nurses identify and manage the deteriorating patient. **Methods:** Three methods were used in the development of this workshop. A literature review and consultations with key stakeholders (e.g., nurses, nurse educators, and nurse managers) was conducted to determine the factors influencing novice nurses' ability to identify and manage the deteriorating patient. Stakeholders were also asked to provide feedback on the content and delivery of the workshop. An environmental scan was completed with clinical educators within Eastern Health to determine what resources are available to assist novice nurses in the identification and management of clinical deterioration. **Results:** Key findings were assimilated to guide the development of the one-day workshop. The lack of knowledge, experience, and confidence of novice nurses combined with organizational problems such as unit practices, communication issues, poor staffing levels, and inconsistent patient assignments contribute to their inability to determine a change in patient status. Within Eastern Health, there are limited resources available related to the identification and management of clinical deterioration.

Conclusion: Using Morrison, Ross, Kalman and Kemp's (2013) instructional design model, Knowles' Principles of Adult Learning (1984) and Benner's Novice to Expert Theory (1982), an interactive, half-day educational workshop was developed to assist novice nurses in the early identification and management of clinical deterioration.

Key words: *clinical deterioration, novice nurse, instructional design, adult learning*

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Introduction

Patient safety is essential to the delivery of quality patient health care. The World Health Organization ([WHO], 2020) defines patient safety as "the absence of preventable harm to a patient during the process of health care and the reduction of risk of unnecessary harm associated with health care to an acceptable minimum" (para. 1). A culture of patient safety has been shown to improve patient outcomes (Johnston et al., 2015; Wilson, 2015). Globally, approximately 40% of patients are harmed in health care settings as a result of an adverse event such as failure to recognize a decline in a patients' health status; up to 80% of this harm is preventable (WHO, 2020). The Canadian Patient Safety Institute ([CPSI], 2017a) estimates that over the next 30 years there could be 400,000 patient safety incidents (PSIs) annually within Canadian acute and home care settings, costing around $6,800 per patient and generating an additional $2.75 billion in healthcare costs per year. Clinical deterioration is characterized by a period of clinical instability, which if goes undetected, can lead to an increase in patient morbidity and mortality (Al-Moteri et al., 2019; Joanna Briggs Institute, 2019; van-Galen et al., 2016). Nurses have a professional and legal obligation to provide safe and competent care to their patients (College of Registered Nurses of Newfoundland and Labrador, [CRNNL], 2019; Joanna Briggs Institute, 2020a). As such, nurses need to have the requisite knowledge and skills to identify the patient at risk for clinical deterioration and provide care in a timely manner.

To provide quality care, it is important that nurses have the assessment skills to detect when a patient's condition is deteriorating. Research suggests that nurses lack the confidence, knowledge, and experience to detect clinical deterioration (Alamri & Almazan, 2018; Allen, 2020; Chua et al., 2019; Herron, 2017; Orique & Phillips, 2019; Treacy & Stayt, 2019; Sterner et al., 2019). Organizational problems such as unit practices, communication issues, poor staffing levels, and inconsistent patient assignments are common factors that impede the nurses' ability to

determine a change in patient status (Allen, 2020; Al-Moteri et al., 2019; Brown et al., 2018; Chua et al., 2019; Hart et al., 2016; Johnson et al., 2015; Missen et al., 2016; Treacy & Stayt, 2019; van-Galen et al., 2016). To mitigate these preceding factors, it is important to implement strategies such as simulation exercises (Kim, Park & Shin, 2016), to ensure that nurses are prepared to identify and manage the deteriorating patient

Nurses at Carbonear General Hospital (CGH) struggle with the identification and management of the deteriorating patient. According to the unit's care facilitator, there have been an increased number of incident reports related to patient safety. One area of concern identified is the lack of knowledge and experience of surgical nurses. Specifically, their inability to identify and cope with a change in patient's health status. This is concerning given that the rate of adverse events in surgical patients (7.6%) is higher than that of medical patients (6.2%) (Canadian Institute for Health Information [CIHI], 2016). Adding to this is over the last decade CGH surgical unit has had a high staff turnover, hired three new surgeons, and has a large number of novice nurses with less than two years' experience. Moreover, the surgical in-patient unit is combined with obstetrics and gynecology and has a 16-patient capacity. Core staffing consists of one surgical nurse, one obstetrical/gynecology nurse, and one case room nurse. The case room is located on the floor, which means that if there is a laboring patient, the case room and obstetrics nurse may be busy with that patient leaving the surgery nurse responsible for all inpatients. This can leave a nurse to feel stressed and vulnerable. If a novice nurse is left to work on a unit alone with a potential 16 patients, there is an increased chance for errors to occur.

Following the completion of an integrative literature review, consultations with nurses and key stakeholders, and an environmental scan, this resource was developed to educate novice nurses working on the surgical unit in the identification and management of clinical

deterioration. Providing education to novice nurses will increase their knowledge, confidence, and experience in the early identification and management of clinical deterioration. Therefore, improving patient safety and patient health care outcomes.

Objectives

The overall goal of this practicum is to develop an educational workshop to help novice nurses identify and manage the deteriorating patient. The practicum objectives were:

1. To identify barriers and facilitators that influence nurses on the surgical unit at CGH ability to recognize and manage the deteriorating patient, based on consultations with key stakeholders;
2. To develop an educational workshop related to the identification and management of clinical deterioration for nurses working on the in-patient surgical unit at CGH;
3. To demonstrate application of the advanced nursing practice competencies: clinical, research, leadership, and consultation and collaboration.

Overview of Methods

To achieve the objectives of this practicum project an integrative literature review, consultations with key stakeholders, and an environmental scan were done to inform the development of a half-day workshop entitled, *The Identification and Management of the Deteriorating Patient*. Morrison, Ross, Kalman and Kemp's (2013) instructional design model, Knowles' Principles of Adult Learning (1984) and Benner's Novice to Expert Theory (1982), informed the development of the resource.

Summary of the Literature Review

An integrative review was conducted to address the research question, "What are the barriers and facilitators that influence novice nurses, working on medical surgical units' ability to identify and manage the deteriorating patient?" A search was completed using the Cumulative

Index to Nursing and Allied Health Literature (CINAHL), PubMED, and Google Scholar. Keywords and Medical headings Search (MeSH) terms used included *deterioration, clinical deterioration, vital signs, medical surgical, acute care, recognition, awareness, nurse, nursing, nursing students, novice nurse, graduate nurse, and new nurse*. To ensure current research, the search included English language articles published from January 2015 onward. English language articles only were used because it is the primary language of the reviewer. A total of 936 articles were found and 20 articles were included in the final review. These included quantitative studies (n=5), qualitative studies (n=11), and systematic reviews (n=4). Qualitative studies were critiqued using the Critical Appraisal Skills Programme ([CASP], 2017) and quantitative studies were critiqued using the Public Health Agency of Canada's (PHAC) Critical Appraisal Tool Kit (2014). Most of the qualitative studies were highly credible but there were a number of low/moderate quality quantitative studies. The full literature review can be found in Appendix A followed by the literature summary tables of each research article in Appendix B.

The search revealed three main themes: (1) nursing factors that contribute to the declining patient; (2) work life issues and (3) strategies to address these factors. The literature suggests that an educational workshop that addresses the needs of novice nurses is required to help them identify and manage the deteriorating patient. Simulation activities were noted to be an effective strategy to help novice nurses to develop the skills to care for the deteriorating patient in a safe and competent manner. Based on this evidence, an educational workshop using low-fidelity simulations for novice nurses working on the surgical unit at CGH was developed to help them acquire the knowledge, confidence, and skills to care for the deteriorating patient.

Nursing Factors Contributing to the Declining Patient

There are three key factors identified in the literature that influence the ability of nurses to identify the deteriorating patient: knowledge, experience, and confidence.

Nurse Knowledge and Experience

Research has shown that nurses do not always have the knowledge and experience to identify and manage the deteriorating patient (Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Hart et al., 2016; Herron, 2017; Missen, et al., 2016; Sterner et al., 2019; Treacy & Stayt, 2019). Three systematic reviews suggested that the failure of nurses to recognize the significance of a change in a patient's vital signs, and intervene in a timely manner, can negatively influence a patient's health care outcomes (Allen, 2020; Al-Moteri et al., 2019; Treacy & Stayt, 2019). Al-Moteri et al. (2019) reported that there was insufficient evidence to determine the exact cause of this lack of clinical judgement. Findings from two medium strength qualitative studies noted that the novice nurse's dearth of experience with making autonomous clinical decisions and managing the deteriorating patient could influence their clinical judgement (Herron, 2017; Sterner et al. 2019). As such it is important to ensure that nursing graduates have the requisite skills to identify and manage complex clinical situations.

Confidence

Lack of confidence in the clinical setting may compromise the delivery of safe, competent care. There is a consensus in the literature that novice nurses often lack the confidence needed to provide thorough patient assessments and to communicate a change in a patient's status to the appropriate person (Alamari & Almazan, 2018; Allen, 2020; Al-Moteri et al., 2019; Brown et al., 2018; Brunero, et al., 2020; Chua et al., 2019; Johnston et al., 2015). There is a strong body of evidence suggesting that the key to fostering confidence in the novice nurse, as to their ability to manage the patient at risk for clinical deterioration, is more exposure to such

situations in the clinical setting (Allen, 2020; Brunero et al., 2020; Chua et al, 2019). Drawing on the expertise of senior nurses, as a resource person, was found to foster novice nurses' confidence to manage the declining patient in another study (Chua et al, 2019). However, Brunero et al's (2020) exploratory descriptive study of medium quality, reported that nurses, regardless of years of experience, struggled with the management of a declining patient. Those with a medical-surgical nursing background were more confident in managing the deteriorating patient than mental health nurses.

Work Life

In addition to a nurse's knowledge and experience, the working environment also influences nurses' recognition and management of clinical deterioration. A nurse's work environment can negatively affect their ability to provide safe and quality patient care. Patient assignments, staffing levels, inadequate communication, and unit culture have been identified in the literature as key factors affecting nursing care.

Patient Assignments

Continuity of care means that nurses are assigned to the same patients as they were during their previously worked shifts. This provides nurses with baseline data which enables them to detect changes in patient status more effectively. Two qualitative studies of medical-surgical nurses with varying years of practice provide strong evidence that continuity of care is essential to the identification and management of clinical deterioration (Chua et al., 2019; Hart et al., 2016). This in-depth knowledge of the patient's current condition was noted to help nurses identify subtle physiological changes that may occur as the patient deteriorates (Chua et al., 2019), even before measurable clinical indicators became evident (Hart et al., 2016).

Staffing Levels

Studies have found that high nurse to patient ratios on medical-surgical units can increase nurses' workload and adversely affect patient safety leading to increased mortality and morbidity rates (Hart et al., 2016; Johnson et al., 2015; van-Galen et al., 2016). For example, one systematic review (Johnston et al., 2015) reported that an increase in the nurse-to-patient ratio was a key factor impeding nurses' ability to recognize and manage clinical deterioration. Moreover, inadequate staffing and being assigned to complex patients was noted in Hart et al. (2016) highly credible qualitative descriptive study to contribute to nurses feeling of being overwhelmed with the identification and management of the deteriorating patient. In several studies inadequate staffing and time constraints were identified as barriers to following monitoring protocols (e.g., monitoring of vitals) (Peterson, Rasmussen, & Rydahl-Hansen, 2017; van- Galen et al., 2016), leading to ICU admissions (46%) (van-Galen et al. 2016). Efforts to mitigate the preceding issues offered in the literature include providing the opportunity for the nurse to settle into the work environment in order to gain confidence and competence in their nursing skills. (Herron, 2017)

Inadequate Communication

Poor communication between health care providers can have a negative effect on patient care. Communication failures occur when nurses do not communicate abnormal clinical findings or a change in the patient's status to other nurses or the attending physician (Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Johnston et al., 2015; Missen et al., 2016; Peet, Theobald & Douglas, 2019; Peterson, Rasmussen, L. S., & Rydahl-Hansen, 2017; Treacy & Stayt, 2019). Lack of communication because of fear of intimidation was identified as a barrier in two systematic reviews (Allen, 2020; Johnston et al., 2015). Missen et al. (2016) studied experienced

nurses who rated the abilities of new graduates' communication skills; only 37.9% of respondents agreed that new graduate nurses had the ability to communicate patient changes in a timely manner. Other researchers have found that the unit culture can be a barrier to communicating patient information. For example, Peet, Theobald, and Douglas' (2019) mixed methods study revealed that some units have an established communication hierarchy in which the primary registered nurse is excluded from decision-making.

Unit Culture

Unit cultures have been found to be a barrier to performing adequate patient assessments and detecting clinical deterioration (Alamri & Almazan, 2018; Chua et al., 2019; Peterson, et al., 2017; Treacy & Stayt, 2019). While weak in quality, a cross-sectional study by Alamri and Almazan (2018) reported that nurses believe that physical assessments are the responsibility of the physician. Similar results were found in a highly credible qualitative study by Chua et al. (2019) where 22 nurses with at least six months experience stated that complex patient assessments are the responsibility of the physician. Additionally, a recent systematic review reported that nurses routinely abstain from checking blood work results because they feel it is a duty of the physician (Treacy & Stayt, 2019).

Research has revealed that on some units nurses do not engage in assessment activities that are within their scope of practice such as vital signs and respiratory assessments. Treacy and Stayt (2019) noted that nurses often omit respiratory rates during patient assessments, and they did not know the significance of this assessment, estimating the respiratory rate 20% of the time. In other units in was found that it was common practice to skip patient assessment on night shifts. For example, in a qualitative study by Peterson et al. (2017) of medium credibility, they found that nurses refuse to wake patients at night who are at an increased risk of delirium.

Strategies to Address the Issue

Strategies to improve recognition of clinical deterioration including unit orientation, educational programs, simulation, and mentorship.

Orientation

Organizations frequently conduct orientation sessions for nurses who are entering the profession or transitioning into a new or unfamiliar work area. If conducted properly, nursing orientation offers many benefits to novice nurses and the hiring institution (Alamri & Almazan, 2018; Brown et al., 2018; Butt, 2002; Herron, 2017; Pertiwi & Hariyata, 2019; Sterner et al., 2019; St-Martin, Antonacci, & Purden, 2015). Nursing orientations have been linked to the retention of nurses, job satisfaction, lower stress rates and the development of their interpersonal, technical, and critical thinking skills (Brown et al., 2018; Pertiwi & Hariyati, 2019).

Evidence also suggests that orientation programs are equally important for all nurses who are experiencing job change regardless of years of experience (Butt, 2002). There is a divide however in the research, as to the appropriate length of nursing orientation. Evidence points to the fact that new graduate nurse orientation should be at least four weeks (Pertiwi & Hariyata, 2019). Four qualitative studies suggest that new graduate nurses need supportive working environments months following the formal orientation period (Brown et al., 2018; Herron, 2017; Sterner et al., 2019; St-Martin, Antonacci, & Purden, 2015). For example, St-Martin, Antonacci, & Purden (2015) provides strong evidence that even in the post-orientation phase, nurse's assessment skills are still not adequate to detect patient deterioration cues, proposing that nurses need support long after the initial four-to-six week orientation.

Educational Programs

Development of clinical competence requires nurses to engage in continuing education programs. Education programs focused on the early identification and management of the deteriorating patient can improve nursing care of this cohort (Butler, 2018; Liaw et al., 2017; Peebles et al., 2020). For example, in Liaw et al.'s (2017) exploratory descriptive study, nurses that participated in a web-based education program reported they had a better grasp as to the meaning of subtle changes in vital signs to the patients' health status. Similar results were found in Peebles et al.'s (2020) quantitative study that evaluated a Just in Time Training (JITT) program during 534 bedside nursing encounters. This program provides nursing staff with education related to patient deterioration in the clinical setting as a patient declines. That is, when a patient begins to deteriorate, the clinical educator provides the nurse with education related to escalation of care and providing subsequent care to that particular patient. Findings from the implementation of this program saw an increase in Medical Emergency Team (MET) calls from 13.6 pre-intervention to 15.4 post-intervention suggesting that nurses did benefit from this education.

Simulation

Simulation has been documented as an effective teaching strategy that can increase nurses' ability to manage the deteriorating patient (Al-Moteri et al., 2020; Bliss & Aitken, 2018; Elder, 2017; Jefferies & Clochesy, 2012; Kim, Park & Shin, 2016; Orique & Phillips, 2018; Sapiano, Sammut & Trapani, 2018). A cross-sectional study by Sapiano, Sammut & Trapani (2018), although weak in design, reported that simulation improved nurses' knowledge and performance with management of patient deterioration. Similarly, a meta-analysis completed by Kim, Park and Shin (2016) established that simulation-based nursing education is effective given the large effect sizes for high-fidelity and medium-fidelity simulations. Sixty-two percent of the

studies in this analysis were RCTs which strengthen the study's findings. Finally, Elder (2017) found that high- fidelity simulations had a statistically significant increase in nurses' knowledge, self-confidence, and competency in the care of the deteriorating patient. Pre-intervention knowledge scores increased from a mean of 5.70 to post-intervention mean of 7.65 ($p < .000$).

Mentorship

Mentorship programs are often used as a strategy to create a positive and supportive work environment for new graduate nurses transitioning into practice (Canadian Nurse's Association [CAN], 2020; Kennedy et al., 2020; Pertiwi & Hariyati, 2019; Strauss et al., 2015; Zhang et al., 2019). A cross-sectional study by Strauss et al. (2015) provides evidence that a consistent preceptor is necessary for novice nurses to succeed in the workplace. Keeping in align with Strauss et al. (20150, a recent systematic review by Pertiwi & Hariyati (2019) found that preceptorship increases nurses' job satisfaction and retention. Zhang et al's (2019) RCT that looked at the effectiveness of a mentorship program in retaining nurses in China reported that turnover rates for the experimental group were 3.77%, 3.48%, and 8.11% as compared to 14.07%, 9.36%, and 14.19% for the control group at the end of the first three years, respectively. These results suggest that mentorship programs are effective in reducing nurse turnover, especially during the first year. Despite the benefits of mentorship programs, Kennedy et al. (2020) reminds us that that they can be challenging in implement as they require a lot of planning and preparation.

Conclusion

To provide quality patient care and decrease negative patient outcomes, it is imperative that nurses have the knowledge and expertise to identify and manage clinical deterioration. The literature has revealed that novice nurses do not recognize the significance of changes in a

patient's status, such as a change in vital signs, that could indicate they are declining. There is a strong body of evidence suggesting that increasing exposure to clinical deterioration will increase confidence in novice nurses. As such, this will allow them to identify and manage a change in patient's status.

There are several aspects of a nurse's work life which negatively affect the novice nurse's ability to identify and manage clinical deterioration. For example, continuity of care provides nurses with an in-depth knowledge of their patient's condition so they can identify subtle changes in status. Inadequate staffing levels have led nurses to be assigned to complex patients in an environment where they have little experienced staff members. Adding to these patient safety issues are communication failures between health care providers and poor unit practices.

Health care organizations must have strategies in place to provide novice nurses with the knowledge needed to provide quality care to their patients. Orientation programs for nurses are critical in ensuring that they have the requisite knowledge and skills to provide safe, competent care. Mentorship programs can help nurses successfully transition into a new work environment. Educational programs and simulation activities have been shown to increase nurses' knowledge, self-confidence, and competency in the care of the declining patient.

Summary of Consultations

The objectives for the consultations focused on identifying the content and mode of delivery of the workshop and implementation plan**.** Consultations occurred with three key stakeholders (i.e. clinical educator, care facilitator, and nurse manager) and all nurses working on the surgical unit (N=12). Findings from both the key stakeholder interviews and nursing questionnaires confirmed the results of the literature review (see Appendix C for full consultation report). Communication failures, increased nursing workload, lack of confidence

and experience, and short orientation all contribute to nurses' lack of awareness in identifying and managing the deteriorating patient.

The majority of nurses working on the surgical unit are novice nurses; many of whom report a poor orientation experience. The physical organizational structure of the surgical unit and the expectations for the senior nurses to float into the labor and delivery (LDR) unit when needed posed an issue. For some, this resulted in the orientation of the novice nurse being handed-over to another nurse thus, continuity of the orientation period was disrupted. Moreover, senior nurses felt that their workload was so high that they did not have the time to support the novice RN. Many novice nurses stated they were counted on the unit as staff thus, not given the time to learn and process information required to perform at the expected level.

There were varied opinions on the nurses' ability to manage the deteriorating patient. It was identified that novice nurses may miss signs of deterioration because they do not look at the context of the whole patient but rather focus on single details in silo. One key stakeholder did not feel there was an issue with the identification and management of clinical deterioration and stated that nurses learn these skills in their basic training and it develops with experience on the unit. Others had the mindset that it is difficult to build confidence and competence when there are no senior nurses to provide knowledge and support. To support the development of novice nurses' knowledge in the identification and management of clinical deterioration, most respondents agreed that simulation would be appropriate.

Summary of Environmental Scan

The overall goal of the environmental scan was to determine what resources are available to Eastern Health nurses to assist them in the identification and management of clinical deterioration. The environmental scan (see Appendix D) was conducted by contacting three

clinical educators who are responsible for the general surgery units at the Health Sciences Center (HSC), St. Clare's Mercy Hospital (SCM), and CGH. Eastern Health Intranet was scanned to determine if there are any available resources online. Findings noted that resources of this nature are limited. Mock code blue simulations do exists however, the focus is on the management of a cardiac arrest. There is no such simulation available within rural Avalon. Following a review of Eastern Health's Intranet, it was determined that there are currently no policies in place related to clinical deterioration. CGH however, is a rollout site for the new National Early Warning Score (NEWS) system that will be the second facility within Eastern Health to do so. Furthermore, CGH has recently purchased sixteen new Centrella Smart Beds for one of the medicine units. These beds allow for contactless monitoring of heart rate and respiratory rate which can enable nurses to identify early signs of clinical deterioration.

Theoretical Framework

To guide the planning and activities of the workshop, two theoretical frameworks were chosen that address the learning needs of novice registered nurses: Benner's Nursing Theory (Benner, 1982) and Knowles' Theory of Andragogy (1984). Benner's theory is appropriate for this project because it explains how nurses develop skills and an understanding of patient care over time and through a combination of education and past experiences. Knowles' Theory of Andragogy, which focuses on adult learners, fits this project since the target population is adult nurses.

Benner: Novice to Expert

Benner's (1982) Novice to Expert Theory was used to inform the development of this half-day workshop. Benner's model defines a process that nurses follow to become experts in their chosen area of nursing. It is based on the belief that becoming an expert occurs through

experience. There are five levels of nursing experience: novice, advanced beginner, competent, proficient, and expert (Benner, 1992). Each step builds on the previous one as principles are refined and expanded by experience and the learner gains clinical expertise. Benner's theory is applicable to this project because surgical nurses need to be exposed to clinical deterioration to build the knowledge and expertise needed to identify and manage clinical deterioration.

Novice

According to Benner (1982), the novice nurse has no experience; they are a beginning nurse such as a student nurse or a nurse transitioning to a new speciality. The novice nurse requires guidance by an experienced nurse as they progress to the next level. For student nurses in the clinical area, they would receive guidance from a preceptor. Similarly, a nurse transitioning from another speciality may receive guidance from a mentor or a senior or experienced nurse on the unit. For the purpose of this project, the novice nurse will build on the basic nursing knowledge they have (e.g. the psychomotor skill of measuring vital signs) to transition through the levels and become an expert in identifying and monitoring clinical deterioration (e.g. understanding the meaning of changes in vital signs).

Advanced Beginner

Advanced beginners have limited experience in situations in which they are expected to perform. They recognize overall characteristics of situations that can only be identified through prior experience. They have an increased efficacy in specialty skills and can perform independently with minimal prompts, but may require support from more competent nurses. In this stage, the learner continues to develop a knowledge base (Benner, 1982). Situations are still new, and it is difficult for advanced beginners to determine what aspects are most important in a clinical situation. A nurse may be at the advanced beginner stage as it relates to identification

and management of clinical deterioration if they have experience with the deteriorating patient.

Competent

A nurse who has been on the job for two or three years typically acquires this level of competency. It is in this level that the nurse is more efficient and can establish goals and plans (Benner, 1982). The competent nurse can cope with and manage clinical situations, but not at the speed and flexibility of the proficient nurse. The nurse must begin to recognize patterns and determine which elements of the situation warrant attention and which can be ignored. If the nurse is competent, they will judge the importance of different aspects of a clinical situation. For example, a registered nurse who has previous experience on a neurosurgical unit may be competent in recognizing the signs of clinical deterioration in a post-operative patient.

Proficient

A proficient nurse has worked in the same setting for several years and can understand a situation as a whole, instead of in aspects, and they can make decisions based on previous experiences. With continued practice the competent nurse can transition to the proficient stage. Experience in this level is what prepares the nurse to deal with specific events and to modify plans based on these events (Benner, 1982). This project is designed for novice nurses working on the surgical unit. Since the proficient nurse has worked in the same setting for several years, this stage may not apply. However, if there are nurses that are availing of the workshop because they are requesting extra education and they have worked in the unit for several years, they may be at the proficient stage.

Expert

The expert nurse has a concrete grasp on the skills and knowledge required and has the keen ability to accurately assess each situation (Benner, 1982). They have an intuitive

understanding of clinical situations and can anticipate potential problems. Expert nurses can be a mentor for other nurses. As they increase their skill sets, they not only see the anticipated symptoms but also the subtle signs that show the patient is deteriorating. When the nurse gets to this stage, they are experts in their chosen field of practice. In this project, this level should be attainable within a much shorter time frame for the expert medical/surgical nurse than the new graduate nurse.

Knowles Theory of Andragogy

For the development of this workshop, a second theoretical framework, Knowles' Theory of Andragogy (1984), was utilized to achieve the desired outcomes. This theory is appropriate for this project because the focus is on adult learners (nurses). Learning theories can help guide nursing practice and can assist when developing educational programs for nurses. Similar to Benner's theory, this learning theory is based on the belief that experiences are essential to build expertise. According to Knowles (1984) there are six characteristics of adult learning: 1) the need for information, 2) adults have a concept of being responsible for their own decisions, 3) the importance of past experiences, 4) the readiness to learn, 5) orientation to learning, 6) motivation to learn.

The first principle, the need for information, is based on the assumption that adults need to know why they need to learn something before taking the action to learn it (Knowles, Holton, & Swanson, 2005). If there is a perceived need for education, adults will engage in learning activities if they feel it will benefit their practice. It was evident from a review of the literature and consultations with nurses and key stakeholders that there is a need for novice nurses working on the surgical unit to have education related to the identification and management of clinical deterioration. Most of the registered nurses working on the unit have less than two years of

experience working on that unit. This workshop aims to increase the knowledge of novice nurses so they can build on existing knowledge and experience to provide quality patient care that results in better patient outcomes.

The second principle, self-concept, involves the adult's ability to be independent, self-directed, and responsible for their own learning (Knowles, Holton, & Swanson, 2005). This half-day workshop will provide valuable information that nurses can use in their everyday practice. Throughout the session, the nurses will engage in various learning activities such as group discussions and reflection which provides them with a certain level of control or self-directedness. Through attending the workshop, they are asserting their independence and taking responsibility for their own learning.

The third principle of adult learning is based on past experiences and states that adults have different life experiences than children allowing the adult to connect their learning to those life experiences to gain a better understanding of the material they are learning (Knowles, Holton, & Swanson, 2005). In this project, the nurses can draw on past experiences of patients they may have cared for that deteriorated. They can use the new knowledge they have gained and reflect upon what they may have done differently in those past experiences. Allowing for the sharing of experiences, such as the use of group discussions and reflective questions, is an important teaching method under this assumption (Knowles, Holton, & Swanson, 2005).

The fourth principle reflects the adult's readiness to learn. Adults have a desire to learn when they feel that the material will help them handle real life situations more effectively (Knowles, Holton, & Swanson, 2005). Adult learners want to learn material that they can use in the present and they are less concerned with future-oriented initiatives. Through the literature review and consultations with nurses and key stakeholders, it was determined that there was a

need for an education session related to the identification and management of clinical deterioration. This workshop will present novice nurses with information relative to their practice that will enhance patient care. Case studies at the end of the session will allow the nurses to apply their new knowledge to potential real-life scenarios.

The fifth principle involves the adult's orientation to learning. According to Knowles, Holton, & Swanson (2005), an adult views education as a process that they go through to improve their current situation in life or work. It is important for the nurses to feel that this workshop is important to their practice and that it will have a positive impact on them and their patients (Knowles, Holton, & Swanson, 2005). The results of the literature review and consultations support the development of this workshop. To promote effective learning there must be activities that actively engage the participants (Knowles, Holton, & Swanson, 2005). This workshop has an ice breaker session, a communication exercise, and many opportunities for discussion.

The final principle is that adult learners are motivated to learn by internal and external factors (Knowles, Holton, & Swanson, 2005). Through consultations with the nurses, they agreed that a workshop on clinical deterioration would be beneficial suggesting that the staff are motivated to learn. Nurses are more likely to learn and absorb information if they feel motivated to do so. The workshop will provide an environment that is safe and comfortable where the participants feel respected in expressing their opinions, creating a motivating environment conductive to learning.

Summary of the Resource: Model of Instructional Design

Based on the literature review, consultations, and informed by the principles of Knowles Adult Learning Theory (1984) and Benner's Novice to Expert Theory (1982), a half day

education workshop entitled, “Identification and Management of the Deteriorating Patient” was developed for the surgical unit at CGH. The goal of the workshop is to increase nurse’s knowledge related to the identification and management of clinical deterioration. The resource manual (see Appendix E) contains all the information necessary for a nurse educator to facilitate the workshop.

Using Morrison et al. (2013) instructional design model, the workshop was designed for adult learners (nurses) to ensure they are engaged and that they understand how the information that is being presented is relevant to their practice. The goal of instructional design model is to make learning as accessible to the learner as possible by making learning more efficient, more effective, and less difficult (Morrison et al., 2013). This model (see Figure 1) considers “instruction from the perspective of the learner rather than from the content” (Morrison et al., 2013, p. 7). This model is applicable to the development of this workshop because it considers the viewpoints and learning needs of the adult learners, in this case registered nurses.

This model defines different elements of an instructional design, and emphasizes the adoption of continuous implementation and evaluation through the instructional design process. This circular model contains three areas: the outer circle, middle circle, and the inner circle. Included in the inner circle are five elements that ensure the instructional tool is tailored for the target audience: analysis, design, development, implementation, and evaluation. The middle circle includes summative evaluation, formative evaluation, confirmative evaluation, and revisions. According to Morrison et al. (2013) there are nine key elements to instructional design, each independent of each other in that they do not need to be considered in a linear fashion and there is no particular start and end point. The nine elements that are contained in the inner circle include instructional problems, learner characteristics, task analysis, instructional

objectives, content sequencing, instructional strategies, designing the message, development of instruction, and evaluation instruments. Both the middle and outer circle represent the ongoing

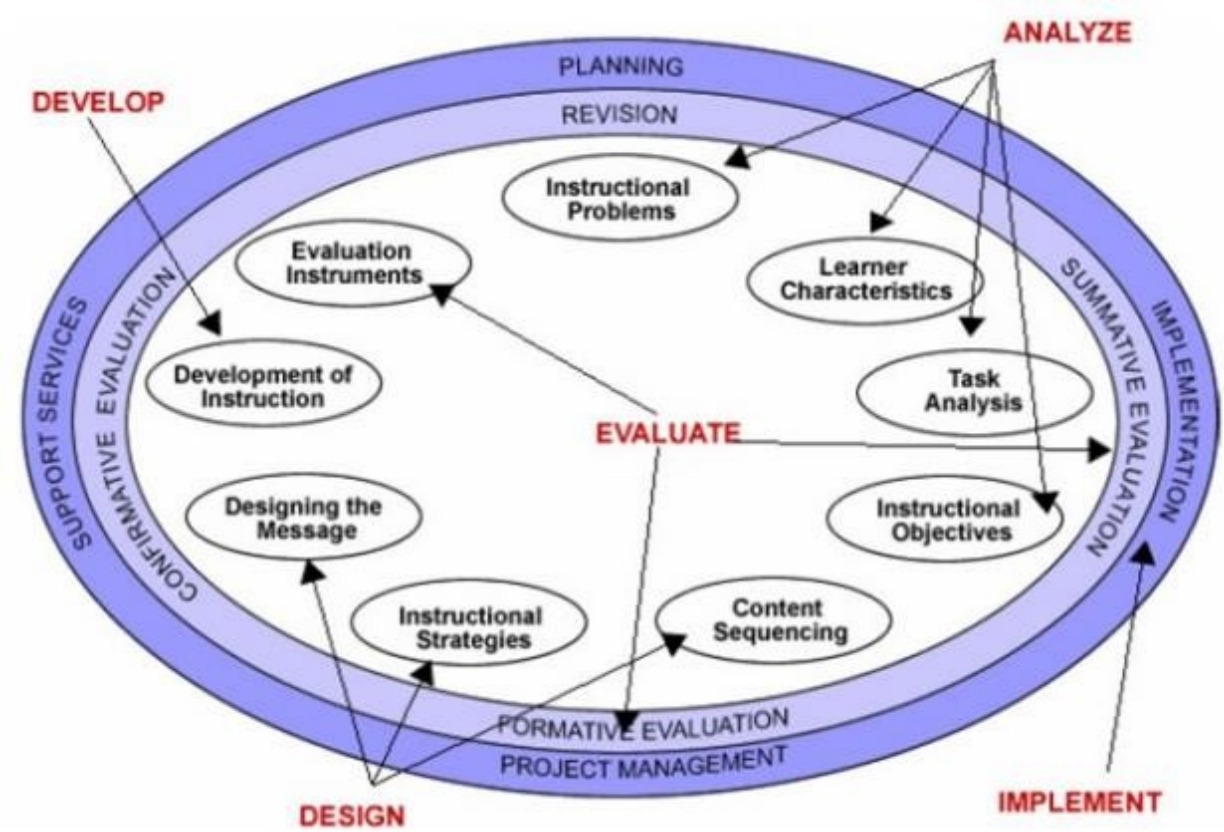

Figure 1.1. **Diagram of Model of Instructional Design (Morrison et al., 2013)**

process for the design and can be used to make any improvements to the workshop that may be suggested by participants.

Instructional Problem

The first step in the instructional design process is identifying the problem. By identifying the instructional problems, the designer can determine the program. For the purposes of this practicum project, the need that was identified through a review of the literature and consultations with key stakeholders was that novice nurses do not have the experience and skills

to properly identify and manage the deteriorating patient. Once identification of the problem occurs, an effective solution must be found. In this case, more education, support, and exposure are needed to assist novice nurses in the identification and management of the deteriorating patient. One solution that was identified in the literature and proposed by key stakeholders was the development of a half-day workshop which includes low-fidelity simulation exercises.

Instructional designers use a needs assessment to identify performance problems. A needs assessment is used to identify gaps in performance and then determine whether the gaps are worth addressing through an intervention. If a gap is worth addressing, then recommendations are made to improve performance through some type of intervention. The need addressed in this project is a felt need. A felt need is a gap between current performance and desired level. This was identified through consultations with nurses and key stakeholders.

Initial interest for this project was based on my personal experience working on the surgical unit at CGH. As a result of inadequate orientations, poor unit culture, unsupportive environments, and a high workload, I have seen novice nurses struggle with feelings of insecurity and not feeling confident or prepared to identify and manage the declining patient. An educational workshop is one strategy that can be an effective solution to this problem.

Learner Characteristics

It is important to explore the characteristics and needs of learners when using this instructional design model. Identification of the learner's characteristics that will influence and guide the planning process must occur for learning to be successful. The target audience for this workshop is nurses working on the surgical unit at CGH. Each nurse has unique characteristics such as age, past work experience, educational level, and life experience. Each audience member is a registered nurse however, not all of them are new graduates. Some bring years of experience

in other departments such as community health and obstetrics however, basic nursing knowledge should be similar. Each registered nurse should be competent with basic nursing skills such as measuring and monitoring vital signs, documentation, and communication. These nurses may have had experiences with clinical deterioration through their work or personal life that may have an impact on their knowledge level associated with clinical deterioration. The consultations have allowed me to have a greater understanding of the characteristics of nurses working on the surgical unit and what the needs of this audience are.

Topic Analysis

Topic analysis provides information on the content that will make up the learning, as well as its structure. The content can be procedures, skills, facts, concepts, rules, or principles (Morrison et al., 2013). The content of the half-day workshop on clinical deterioration was guided by an integrative literature review and consultations which occurred with nurses working on the surgical unit and key stakeholders. The literature review revealed interesting statistics related to the incidence and prevalence of clinical deterioration and reasons why clinical deterioration is not identified and managed appropriately. Results of the consultations confirmed the literature results and added further information related to the layout and content of the presentation. For example, it was initially thought that a one-hour workshop would be sufficient however, it was found that the length of the workshop should be increased to a half-day. The workshop will begin with a definition of clinical deterioration followed by background information to lay the foundation for the workshop. Next, there will be a discussion of the factors contributing to failure of identification and management of the deteriorating patient. This will allow for discussion on how we can prevent or deal with the challenges faced on the surgical unit.

Since communication errors were identified as one reason contributing to failure to identify and manage the deteriorating patient, a communication exercise in the form of an ice breaker activity will be used to help participants see how information is perceived differently by different people and that it is important to ask questions to seek clarification when given information. A video of a real-life tragic story related to clinical deterioration will also be used to emphasize the importance of communication and in addition, to recognize the importance of subtle changes in patient status, another issue which was identified in the literature. It was also revealed that novice nurses do not have the knowledge to determine the significance of changes in vital signs, therefore, a description of the common causes of altered vital signs in post-operative patients is included in the workshop. Low fidelity simulations (case studies) are used to allow the nurses to connect all the information from the workshop so that they can identify and manage the deteriorating patient effectively.

Instructional Objectives

Instructional objectives identify the instructional and learning objectives; they specify exactly what the learner must learn and master. The objectives offer a map for designing the instruction and provide the learner with what they are expected to know and be able to perform once the workshop is completed (Morrison et al., 2013). The objectives provide guidance to the instructor which allows them to design strategies and assessments correctly. According to Morrison et al. (2013) there are three objective domains: cognitive, psychomotor, and affective. This educational workshop includes objectives from the cognitive domain. All objectives were designed to be measurable, realistic, and achievable.

Objectives in the cognitive domain are related to knowledge, comprehension, application, analysis, synthesis, and evaluation (Morrison et al., 2013). The half-day workshop on the

identification and management of clinical deterioration highlights this domain. Participants are provided with background information on clinical deterioration, including incidence and prevalence, then moves to a higher level of comprehension which includes common causes of altered vita signs. Once the learner is provided with reasons why clinical deterioration is an issue, they can then use the knowledge of vital signs monitoring and communication to properly identify and manage clinical deterioration as evidenced in the low-fidelity simulations. This workshop allows learners to combine previous knowledge with new knowledge so that the learning objectives will be met. This will happen though lectures (power point presentation), group discussions and reflections, word games, and simulations. The simulations and post-test at the end will allow for an overall evaluation of the participant's learning.

Content Sequencing

Content must be arranged in a logical order for effective learning. The order in which the information is presented plays an important role in helping the learner understand and learn the information. Each fact or concept, must be arranged in a logical order to help the learner meet the instructional objectives (Morrison et al., 2013). This workshop begins with foundational information on clinical deterioration and progresses onward to the physiological changes in status that occur when a patient declines. Finally, simulations allow the learners to combine all the knowledge gained from the workshop which will allow them to better identify when a patient is deteriorating. There are three strategies for sequencing content. The strategy used in the development of this workshop is learning-related sequencing which is based on five learning concepts: identifiable prerequisites, familiarity, difficulty, interest, and development (Morrison et al., 2013).

Identifiable prerequisites allow the learner to master one skill before moving on to another. For example, each participant must learn the background information on how communication failures contributes to poor patient care before participating in a communication exercise. During the simulation activity, participants will then use the information they have learned to communicate effectively for that exercise. Familiarity means that the designer will begin with the most familiar topics before moving on to more remote topics. Similarly, less difficult concepts will be taught before more complex aspects. To spark the interest of each participant, the workshop begins with an ice breaker activity in which they are broken into groups for a quick game of health care scattergories. This is a fun, interactive activity in which participants will be broken into groups and asked to identify healthcare related terms matching a certain letter of the alphabet. A second icebreaker activity occurs in the middle of the presentation, in an effort to keep the interest and engagement of participants. This activity was developed to emphasize that communicating clearly is not easy because we all interpret the information we get differently. This is why it is important to ask questions and confirm understanding to ensure the communicated message is not distorted. Finally, since each participant is a registered nurse, each with similar basic nursing knowledge, they each are at the appropriate developmental level for each task included in the workshop.

Instructional Strategies

This is the creative stage which involves designing creative and innovative strategies to present the information, and help learners reach the stated learning objectives. Instructional strategies involve making connections between new material and what the learner already knows. This enables them to obtain a deeper understanding of new knowledge therefore allowing them to have a greater comprehension of the new material.

It is important for designers to use their creativity by choosing a variety of instructional strategies that will meet the diverse learning needs of each individual participant. The strategies I used can appeal to different learning styles. They include lecture using power point, brainstorming activities, videos, reflection, games, and case studies. The power-point presentation is developed in such a way as to not overwhelm the participants. The words on each slide were kept to a minimum. Participants can interact with each other through the icebreaker activity. Brainstorming and group discussions will be facilitated using idea bubbles throughout the power-point presentation. This will give staff the opportunity to engage with each other by listening to their own unique experiences. Case studies will be utilized to allow staff to apply all past and new knowledge as well as use critical thinking skills. The workshop is very engaging and fosters a good learning environment.

Designing the Instructional Message

The designer must plan and design the instructional message and decide how it is to be conveyed. The message is the pattern of words and pictures used to communicate with learners, and the process is the act of arranging the words and pictures. There are three pre-instructional strategies used in designing the instructional message. For this workshop, three pre-instructional strategies were used: a pretest, a set of objectives, and an overview. A pre-test is a set of questions directly relevant to the instruction and is designed to give the learners cues to the important messages included in the workshop. The second strategy is a set of objectives, simply the learning objectives that were designed for the workshop which are clearly stated in a style the learners understand. These are important as they let the learner know the expectations. The third strategy is the overview or summary of the workshop written which identifies central themes for the session (Morrison et al., 2013).

Information and materials must be developed in a way that is appealing to the learner so that important messages are communicated effectively (Morrison et al., 2013). Typographical changes are used to signal the structure of the text by identifying changes in topic, to signal important words, phrases, and ideas by making them look different from the surrounding text. Throughout the power point presentation changes in topics and important messages or words were highlighted by using **bold**, *italisized*, and <u>underlined</u> words or phrases. There are different layouts of slides used through the power-point so that every slide does not look the same, for example, inserting pictures to highlight a topic or creating more white space. To further stimulate the learners, a short video clip will be utilized in the presentation to highlight an important point. In addition, key stakeholders have reviewed the workshop and minor edits were completed.

Development of Instruction

This stage involves designing and/or selecting resources and materials to support instructional activities and determining how the information and material is communicated effectively to the learners (Morrison et al., 2013). This workshop was designed to be instructed by a registered nurse, specifically a nurse educator. Keeping in mind, that each learner is a registered nurse, instruction was developed using terminology and information at their level of understanding. Key stakeholders each reviewed the content of the workshop and felt that it was appropriate for the target population. The clinical nurse educator felt that it was important to engage the group in discussions and have interactive activities because workshops based solely on lectures can negatively affect the interest of the participants.

Morrison et al. (2013) discuss several instruction methods. The two instructional delivery methods used in this workshop are group presentation and small group learning. In group presentations, or lectures, the instructor may use media materials, such as power point slides,

sound recordings, slides, video recordings, or multimedia presentations which can be delivered in person (e.g. in a classroom) or online (e.g. Zoom). Learning is enhanced when the learners are actively involved, therefore their participation is important during the lecturing (Morrison et al., 2013). This workshop encourages learner participation through brainstorming and group discussions. A structured outline is provided so that the lecturer and participants stay on track. The power point content is visually appealing to ensure the full attention of the participants. This workshop also uses small group learning formats which provides students an opportunity to synthesize the content (Morrison et al., 2013). At the end of the lecture, participants are broken into groups to complete case studies which will help them utilize their new knowledge to solve patient deterioration problems.

Evaluation Instruments

Evaluation instruments are developed to assess and evaluate learner's mastery of the learning objectives and to determine the effectiveness of the program (Morrison et al., 2013). Evaluation is necessary because it provides the designer with an opportunity to improve the program (Morrison et al., 2013). There are two types of evaluation: formative and summative. Formative evaluation occurs during the development process and is ongoing throughout the workshop and allows problems to be addressed in the moment. It is better to determine whether the instruction is effective early, while you have time to make modifications and therefore not continuing with the implementation of an ineffective workshop (Morrison et al., 2013). Key stakeholders reviewed the workshop to determine the appropriateness of the content. Throughout the workshop, reflective questions are asked to stimulate the participants to discuss their own personal experiences of issues relating to clinical deterioration.

Summative evaluation assesses student learning at the end of the workshop (see Appendix E in resource manual) and is related to the how well the learners met the required learning objectives (Morrison et al., 2013). Confirmative evaluation means that evaluation needs to be continuous (Morrison et al., 2013). Following the instructional time, the results of the learner's pre-test from the beginning of the workshop will be compared to their post-test which is given at the end. Finally, an evaluation survey is administered to provide the participants with an opportunity to give feedback on the positive and negative aspects of the workshop (see Appendix H in resource manual). The survey is confidential, and the information provided is used by the designer to improve the workshop for future participants.

An Ongoing Process

This instructional design model contains two outer circles containing elements that are a part of an ongoing process (Morrison et al., 2013). These elements include planning, implementation, project management, support services, revision, formative evaluation, summative evaluation, and confirmative evaluation. It is not linear, but rather a circular, or continuous, process in which the instruction may change. The elements of project management and support services are dependent on the group size and complexity of the instruction. This educational workshop is designed for groups of approximately ten participants and will incur costs such as printing materials and coverage/payment for staff to attend. Implementation for any project begins at the beginning of the design process. For the purposes of this project, feedback from the key stakeholders allowed for the consideration of potential revisions and an evaluation form was designed to allow participants to offer feedback at the end of the workshop.

Discussion of Advanced Nursing Practice (ANP) Competencies

To practice at an advanced level, nurses with a graduate level education must be able to demonstrate effective clinical, research, leadership, and consultation and collaboration

competencies (CNA, 2008). These advanced practice competencies were met throughout the two courses of Nursing 6660 and 6661.

Clinical

The CNA (2008) states that an advanced practice nurse integrates their clinical experience with theory, research, and nursing knowledge to identify issues that have health implications for patients; develop new programs or policies; and plan, conduct, initiate or co-ordinate educational programs. This educational workshop aims to inform clinical practice through the development of a new educational program for nurses based on a recognized need following a review of the literature and a consultation report. The goal of the program is to improve patient safety through increasing the nurse's knowledge and confidence related to identification and management of the deteriorating patient.

Research

Advanced practice nurses read, use, apply, and develop knowledge, evidence, and information that are critical to advancing the nursing profession (CNA, 2008). This research competency was achieved through my literature search and my critical appraisal and synthesis of the literature and through the consultations and environmental scan. The literature and results of the consultations informs the content of the educational workshop. Furthermore, research on the instructional design model by Morrison et al. (2013) occurred to guide instruction.

Leadership

Advanced practice nurses are leaders within their workplace, community, and organization. They are consistently seeking to improve the delivery of care in innovative ways. They act as change agents who work to shape their organization in a positive manner (CNA, 2008). These skills involve identifying the learning needs of individuals, families, and

populations, and finding or developing programs and resources to meet those needs. This competency is met through the identification of a problem within the surgical unit at CGH and through the development of an educational workshop for the unit's nursing staff.

Consultation and Collaboration

Advanced practice nurses should effectively communicate and collaborate with individuals and multidisciplinary team members representing the nursing profession (CNA, 2008). This competency was met throughout Nursing 6660 beginning with continuous communication with my practicum supervisor. In addition, consultations were held with key stakeholders within CGH and the clinical educators within the surgical units at the city hospitals. Furthermore, during the development of the educational workshop, collaboration with the clinical educator at CGH and both the care facilitator and manager of the surgical unit occurred.

Next Steps

This project did not involve the implementation of the workshop however, the next steps would involve gaining the approval of the manager responsible for the surgical unit and collaborating with the clinical educator. The unit manager is responsible for approving educational opportunities for the unit's staff and any leave/pay/compensation necessary. The clinical educator would be responsible for instructing the educational session.

Plans for evaluation include a survey (see Appendix H in resource manual) that will be given to participants at the end of the workshop. The intent of the survey will be to address the positive and negative aspects of the workshop including sections that participants found helpful, impractical, relevant to practice and topics they believe should be modified, revised, or improved.

Conclusion

Following a review of the literature, consultations with nurses and key stakeholders, and an environmental scan, it is evident that management of clinical deterioration is an issue for nurses working on the surgical unit at CGH. A half-day workshop delivered during orientation to the surgical unit at CGH will support novice nurses by providing the education to help them in the early identification and management of the deteriorating patient. It is anticipated that this knowledge will mitigate patient safety concerns.

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Appendix A: Integrative Literature Review

Patient safety is an essential and vital component of high-quality nursing care. The World Health Organization ([WHO], 2020) defines patient safety as "the absence of preventable harm to a patient during the process of health care and the reduction of risk of unnecessary harm associated with health care to an acceptable minimum," (para. 1). The Canadian Patient Safety Institute ([CPSI], 2017a) estimates that over the next 30 years there could be 400,000 patient safety incidents (PSIs) annually within Canadian acute and home care settings, costing around $6,800 per patient and generating an additional $2.75 billion in healthcare costs per year. Early recognition and prevention of adverse events can help mitigate associated negative patient health care outcomes and costs.

Nurses have a professional and legal obligation to provide safe and competent care to their patients (College of Registered Nurses of Newfoundland and Labrador, [CRNNL], 2019; Joanna Briggs Institute, 2020). As such, nurses need to identify the patient at risk for clinical deterioration and provide care in a timely manner.

The failure to identify changes in patient status is the top medical legal risk in the Canadian healthcare system (CPSI, 2017b); approximately one in 10 patients are harmed in acute care settings annually (CPSI, 2017a). Acute care is ranked second behind obstetrics for the highest claims in cost related to adverse events (CPSI, 2017b). Clinical deterioration is "characterized by a period of clinical instability, which if prompt appropriate action is not taken may lead to increased hospital length of stay, cardiac arrest, admission to the intensive care unit (ICU) and increased morbidity and mortality," (Joanna Briggs Institute, 2019). Rapid action to recognize and provide treatment to a patient who is declining is critical. Nurses must have the knowledge and skills to quickly identify and manage the deteriorating patient to improve patient outcomes.

Research suggests that nurses have difficulty identifying the deteriorating patient. New nursing graduates and nurses who work in less acute areas have little to no exposure to acutely ill patients (Herron, 2017). This lack of experiential knowledge can impede their ability to provide safe care to the patient that deteriorates. Organizations play an important role in providing the infrastructure to recruit, educate, support, and retain qualified nurses that have a strong clinical knowledge and skillset (The International Council of Nurses ([ICN], 2012). Nursing orientation plays a pivotal role in assessing and developing nurse's competencies and the retention of nurses (Brown et al., 2018; Pertiwi & Hariyati, 2019). Evidence has shown that when nurses feel their unit orientation meets their needs, they are more satisfied with their career hence, less likely to leave the profession (Pertiwi & Hariyati, 2019). Having a cohort of senior nurses on units that are well versed in the identification and management of the deteriorating patient can help mentor and support novice nurses. Furthermore, providing education on clinical deterioration during the orientation process could alleviate the stress nurses feel when caring for this population.

This literature review starts with a brief background on the significance of addressing nursing care of the deteriorating patient followed by the literature search process. A discussion of the three main bodies of literature identified will follow: (1) nursing factors including knowledge, experience, and confidence; (2) work life issues such as patient assignments, staffing levels, communication, and unit cultures; and (3) strategies to help a novice nurse identify clinical deterioration.

Background Information

Patient safety is fundamental to nursing care. The occurrence of adverse events, or harm to patients, due to unsafe care is likely one of the ten leading causes of death and disability in the world (WHO, 2020). Globally, as many as 40% of patients are harmed in primary and outpatient

health care settings as a result of adverse events; up to 80% of this harm is preventable (WHO, 2020). At a national level, the CPSI (2017a) reported that adverse events affect one in 10 Canadians in acute and home care settings annually. Of these, the rate of adverse events in surgical patients (7.6%) is higher than that of medical patients (6.2%) (Canadian Institute for Health Information [CIHI], 2016). There are many factors which contribute to errors causing adverse events. The most detrimental errors are related to diagnosis, prescription, and use of pharmaceuticals (WHO, 2020). Since nurses are at the forefront of health care, it is important that they have the knowledge to provide safe, quality patient care to ensure patient safety. An important piece of this is being able to identify the deteriorating patient and intervene quickly.

Nurses' ability to recognize and respond to signs of patient deterioration in a timely manner plays a crucial role in patient outcomes. Early detection of clinical deterioration has been shown to reduce ICU admissions, cardiac arrest, death, sepsis, and other acute clinical conditions (van-Galen et al., 2016). When clinical deterioration is not recognized promptly, there is an increase in patient morbidity and mortality (Al-Moteri et al., 2019; Johnston et al., 2015; van-Galen et al., 2016). As a result, this population can spend considerable time in the intensive care unit, which is costly.

Approximately 20-30% of ICU admissions in community hospitals come from general wards (CPSI, 2017b). Of concern is that these patients have double the mortality rate of those patients admitted to the ICU from the emergency department or postoperative recovery room (CPSI, 2017b). While evidence does not explicitly point to nurses and their knowledge level as a key indicator of ICU admissions, saliently threaded throughout the literature is the notion that failure to identify the deteriorating patient, which is often the responsibility of nurses on the wards, is a factor (Chua et al., 2019). A retrospective observational study in Italy by van-Galen et

al. (2016) determined that human interventions caused approximately 33% of unplanned ICU admissions in patients on general wards. In addition, Johnston et al. (2015) systematic review reported a failure to rescue rate between 8.0 and 16.9% with an increased incidence in mortality rates in five studies.

Nurses assist patients to achieve optimal levels of health and they must take actions which prevents harm to the patient (Canadian Nurses Association [CNA], 2002). When nurses are providing direct care to patients, they are required to complete a head-to-toe physical assessment and document findings according to organizational policies and professional association standards (College of Registered Nurses of Newfoundland and Labrador [CRNNL], 2010). A thorough nursing assessment can detect and prevent patient deterioration that could potentially lead to patient harm and/or an adverse event (Joanna Briggs Institute, 2020). They must also report any abnormal findings to the attending physician. Evidence has shown that poor communication between health care providers has a negative effect on patient care (Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Johnston, 2015; Missen et al., 2016; Treacy & Stayt, 2019). Evidence points to the fact that novice nurses have difficulty communicating their assessment findings to other health care providers when a patient's status has changed (Chua et al., 2019; Tracey & Stayt, 2019). Failure to communicate patient information to appropriate personnel can result in increased patient morbidity and mortality rates. Knowing this, it is important that health care organizations foster the development of physical assessment and communication skills in the clinical setting.

Research suggests that novice nurses lack the knowledge, confidence, and experience to detect clinical deterioration (Allen, 2020; Chua et al., 2019; Herron, 2017; Sterner et al., 2018; Tracey & Stayt, 2019). Confidence in one's abilities is needed to provide safe, competent care.

Evidence points to the fact that novice nurses lack the confidence needed to perform thorough patient assessments and communicating abnormal findings to other health care providers (Alamari & Almazan, 2018; Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Johnston et al., 2015). Integrating education about the identification and management of the deteriorating patient into unit orientations and continuing education opportunities are important steps in addressing this issue (CNA, 2002).

Literature Search

An integrative review (Whittemore, 2005) was conducted to address the research question "What are the barriers and facilitators that influence novice nurses, working on medical surgical units, ability to identify the deteriorating patient?" For the purposes of this review, a novice nurse is defined as a nurse who has been working on a medical-surgical unit for two years or less. A search was completed in October 2020 using The Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMED and Google Scholar. To ensure current research, the search included English language articles published from January 2015 onward. English articles only were used because it is the primary language of the reviewer. Keywords and Medical headings search (MeSH) terms used included *deterioration, clinical deterioration, vital signs, medical surgical, acute care, recognition, awareness, nurse, nursing, nursing students, novice nurse, graduate nurse, and new nurse.*

Initial searches generated 936 studies. Once duplicates were removed, articles were then removed from the search based on a review of the title, relevancy to the research question, and brief review of the abstract. Thirty-three full text articles were reviewed for inclusion criteria. The studies had to focus on ward nurses' recognition and response to deterioration of the adult ward hospitalized patient. Studies that evaluated rapid response systems or track and trigger

systems were excluded. Specialized areas like critical care, emergency, and pediatrics were excluded because these clinical areas frequently use specialized equipment to monitor and survey patients at risk of deterioration that are not available on units. Specialized units also tend to have longer orientations then general medical-surgical units and have a decrease nurse-to-patient ratios that do not reflect the ward environment. A total of 20 articles were included in the literature review. All articles included in the literature review were evaluated. Qualitative studies were critiqued using the Critical Appraisal Skills Programme ([CASP], 2017) and quantitative studies were critiqued using the Public Health Agency of Canada's (PHAC) Critical Appraisal Tool Kit (2014). The review identified three main themes: (1) nursing factors that contribute to the declining patient; (2) work life issues and (3) strategies to address these factors.

Nursing Factors Contributing to the Declining Patient

There are three key factors identified in the literature that influence the ability of nurses to identify the deteriorating patient: knowledge, experience, and confidence.

Nurse Knowledge and Experience

The ability of medical-surgical nurses to recognize abnormalities in a patient's assessment is critical to ensure patient safety. Research has shown that novice nurses often miss the signs of patient deterioration because they do not have the knowledge to identify when a patient's health status is declining (Allen, 2020; Chua et al., 2019; Herron, 2017; Missen, et al., 2016; Sterner et al., 2018; Treacy & Stayt, 2019). Abnormalities and changes in vital signs are one of the most important signs of a change in health status (Joanna Briggs Institute, 2019). Although a change in vital signs can indicate that a patient is deteriorating, novice nurses do not always recognize these changes, nor do they have the knowledge to interpret the results (Allen, 2020). For example, in one study although nurses did document changes in vital signs, no

intervention was noted (Al-Moteri et al., 2019). Often, changes in a patient's status is so subtle, such as a decrease in activity level, that the novice nurse fails to recognize its significance (Dalton, et al., 2018; Treacy & Stayt, 2019).

A systematic review by Al-Moteri et al. (2019) (n=14) reported that nurses often miss the signs that precede clinical deterioration (e.g. cardiac, respiratory, or neurological changes). Unfortunately, there is insufficient evidence to determine the exact cause of this lack of clinical judgement however, some studies noted that judgement errors might have caused a delay in escalation of care (Al-Moteri et al., 2019). Similarly, in a systematic review by Allen (2020) (n=16 studies) while nurses acknowledged vital signs as important indicators of a client's status, changes in these parameters were not always understood nor were they documented appropriately. It must be noted, however that this review involved all medical-surgical nurses and not only novice nurses. In addition, it did not state how the articles were assessed for quality therefore the results should be used with caution.

In a phenomenological study by Herron (2017), fourteen graduate nurses were asked to share their experiences with recognition and prevention of failure to rescue (identification and treatment of the deteriorating patient). This American study found that nursing graduates are not adequately prepared to assess and deal with deteriorating patients because they are not given the freedom to make independent choices as a student or they have not had the opportunity to care for a deteriorating patient in the clinical setting. Hence, novice nurses lack the clinical preparation and experiential knowledge to detect clinical deterioration. Similarly, another qualitative descriptive (n=22) study conducted by Chua et al. (2019) with new graduate nurses working on general wards in Singapore reported that they lacked the experiential knowledge to recognize the deteriorating patient.

A cross sectional, exploratory study by Orique et al. (2019) examined med-surg nurses' capacity and tendency to perceive cues indicating clinical deterioration and nursing characteristics influencing deterioration cue perception. The researchers found that nurses with more than two years' experience had a significantly higher capacity to perceive deterioration cues compared to novice/advanced beginner nurses. This medium quality study provides evidence that novice nurses have difficulty determining clinical deterioration, suggesting the need for further education.

In a cross-sectional study by Missen et al. (2016), the researchers aimed to explore experienced nurse's perceptions of the abilities of newly registered nursing graduates to perform a variety of skills. Limited recruitment strategies weakened the overall quality of this study. Over half of respondents stated that newly registered nurses do not have adequate assessment skills and cannot perform tasks such as percussion and palpation; all critical skills used to evaluate a patient's health. This evidence suggests that it is important for nurse educators to provide opportunities for novice nurses to receive more experience in emergencies under the direction of an experienced nurse. In addition, nurse preceptors should assist novice nurses to seek out opportunities to care for patients who are acutely ill or have the potential to deteriorate.

Confidence

Lack of confidence in the clinical setting may compromise the delivery of safe, competent care. When a person is confident, they have a feeling or belief that they can do something well. It is important for nurses to believe in their own ability to provide safe patient care. Research suggests that novice nurses often lack the confidence needed to provide thorough patient assessments and to communicate when a patient's status changes (Alamari & Almazan, 2018; Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Johnston et al., 2015). Building

confidence in one's assessment skills may increase competence and quality patient care. Learning new skills may be difficult for some nurses requiring many hours dedicated to the process of learning new tasks. Acquiring the confidence to perform quality patient assessments is no different. Chua et al. (2019) explains that new nurses need to consult with more experienced nurses to seek guidance or reaffirmation when they feel their patient is deteriorating because they lack confidence in their assessment skills. In this credible qualitative study, senior registered nurses explained how novice nurses were not confident in their judgements and asked for guidance or assistance when they felt that their patient was deteriorating. Since increased knowledge makes nurses more confident, it is important for nurse educators, preceptors, and managers to ensure adequate educational opportunities to increase confidence in the clinical setting. Allen (2020) adds that nurses working in non-critical care areas do not have enough exposure to deteriorating patients to identify when a patient's health status is declining.

An exploratory, descriptive study by Brunero et al. (2020) found that exposure to clinical deterioration was key to improving overall nursing confidence. This study of mental health nurses used focus groups to gather data from sixty-four nurses and eight nurse managers to capture their experiences in relation to the management of the acutely physiologically deteriorating patient. The researchers found that participants, regardless of years of experience, with a medical-surgical nursing background were more confident in managing the deteriorating patient than mental health nurses. These findings suggest that while a nurse may be experienced in terms of years of practice, if a nurse is working on a unit where there is less exposure to clinical deterioration, they may be less confident in managing the deteriorating patient. Nurse managers must be cognizant of this and ensure that all nurses, regardless of the clinical area they are working, receives education to build confidence in managing clinical deterioration.

Work Life

In addition to a nurse's knowledge and experience, the working environment also influences the recognition of clinical deterioration by nurses. The following section will discuss how a nurse's work environment can negatively affect their ability to provide safe and quality patient care. Patient assignments, staffing levels, inadequate communication, and unit culture have been identified in the literature as key factors affecting nursing care.

Patient Assignments

Continuity of care is needed to ensure nurses know their patient's baseline and what is normal for that patient. Baseline assessment data allows nurses to plan interventions and determine the outcomes of care (Joanna Briggs Institute, 2020). "Knowing the patient" has been a key theme in recognizing patient deterioration (Chua et al., 2019; Dalton et al., 2018). When a nurse has the same patient assignment on a continual basis, it allows them to become more familiar with the patient's "normal," making it easier to detect the abnormal. This in-depth knowledge of the patient's current health status can help nurses identify subtle physiological indicators of deterioration (e.g., vital signs) even before later signs such as abnormal lab values are observed (Chua et al., 2019). Similar findings were reported in a recent systematic review comprised of qualitative and quantitative studies (n=13) (Treacy & Stayt, 2019). Although some studies in this review were rated as weak and having small sample sizes, findings revealed that subtle signs of a change in patient status often goes unrecognized leading to a delay in escalation of care.

Staffing Levels

Staffing issues on medical-surgical units result in increased workload for nurses and can have an adverse effect on patient safety (Hart et al., 2016; Johnson et al., 2015; van-Galen et al.,

2016). A systematic review of qualitative and quantitative studies (n=42) completed by Johnston et al. (2015), found that an increase in nursing workload negatively influenced their ability to recognize deterioration of the surgical patient. Delayed escalation of care, or failure to intervene when a patient's condition deteriorates, occurred in 20.7-47.1% of patients. Of these incidences, mortality rate was increased in four studies ($p < .05$). Higher nurse-patient ratios were noted to decrease morbidity and mortality rates, supporting the need for health care organizations to recruit and retain qualified nurses to staff inpatient units appropriately as an aim to improve patient care. The researchers note that there are three essential steps which are necessary for successful escalation of care to occur: 1) identification of the deteriorating patient, 2) effectively communicating the deterioration in a timely manner to a senior colleague, and 3) the senior colleague responds with appropriate management.

van-Galen et al. (2016) conducted a retrospective observational study using a root cause analysis tool to determine healthcare worker (nurses and physicians) related causes that contribute to acute unplanned ICU admissions from general wards. The most frequent root causes were healthcare worker related (46%), which were mainly failures in monitoring the patient (e.g., not monitoring the vital signs of a patient who is deteriorating). The remaining factors included intervention, knowledge, verification, coordination, and skills and slips. In addition to healthcare worker related causes, the researchers found that disease-related, patient-related, and organizational factors were also issues. Organizational root causes included management issues, lack of ICU beds, or not adhering to institutional policies. The latter may suggest monitoring of inexperienced nurses meaning it is important for nurse managers to assess novice nurses to ensure they are providing safe, competent care as expected by professional standards of practice.

Similar to the above research, a qualitative study that examined the experiences of nurses with clinical deterioration reported that inadequate staffing can result in novice nurses being assigned to complex patients without supervision causing them to become overwhelmed and stressed (Hart et al., 2016). Rural regions also experience issues with staffing experienced nurses, high workloads, lack of guidance for novice nurses, and inadequate orientations because of staffing issues (Lea and Cruickshank, 2015). Strauss et al. (2015) suggested that one approach to retaining qualified nurses is a structured orientation that provides the opportunity for the nurse to settle into the work environment and gain confidence and competence in their nursing skills. A cross sectional study by Missen et al. (2016) in Australia that looked at the perceptions of experienced nurses on the abilities of novice nurses supports the position by Strauss et al. (2015) that novice nurses do need time to develop their organizational skills before they can function independently. Findings from this study suggest that healthcare organizations should allocate resources to better prepare new nursing graduates as they transition from student nurse to registered nurse.

Peterson, Rasmussen, & Rydahl-Hansen (2017) found that inadequate staffing levels and time constraints were barriers of non-adherence to monitoring protocols. Similarly, in a study of post-operative patients, Johnston et al. (2015) found that an increased workload resulted in a delayed recognition of deterioration in the surgical patient, reiterating the importance of nursing units being appropriately staffed. Busy working environments cause increased stress and may also lead to nurses becoming distracted and unable to focus on specific tasks. Furthermore, Al-Moteri et al. (2020) explains that internal distractions (a nurse's thoughts) have caused a lapse in cue perception and processing which has resulted in a failure to recognize clinical deterioration. This means that nurses have misinterpreted a patient's clinical assessment resulting in judgement

errors and a failure to accurately interpret a change in patient status. Inadequate staffing levels may be a contributing factor to nurse distraction and therefore the inability to recognize deterioration.

Inadequate Communication

Poor communication between health care providers can have a negative effect on patient care. Communication failures occur when nurses do not communicate abnormal clinical findings or a change in the patient's status to other nurses or the attending physician (Allen, 2020; Al-Moteri et al., 2019; Chua et al., 2019; Johnston et al., 2015; Missen et al., 2016; Treacy & Stayt, 2019). Keys factors that contribute to the lack of communication of patient information by novice nurses to other health care professionals are a sense of intimidation and fear of being criticized (Johnston et al., 2015). Other researchers have found that the unit culture can be a barrier to communicating patient information. For example, Peet, Theobald and Douglas (2019) mixed methods study revealed that some units have an established communication hierarchy in which the primary registered nurse is excluded from decision making.

Interestingly, findings from Johnston et al. (2015) showed novice nurses preferred to call junior doctors rather than senior clinicians however, it is unclear why this happens. In contrast, a qualitative study by Peterson, Rasmussen, & Rydahl-Hansen (2017) found that nurses are uncomfortable calling junior clinicians, or physicians with whom they do not have a good working relationship. Nurses may regard junior doctors as invaluable team members because of their inexperience therefore, they disregard their authority and do not communicate changes in patient status (Peterson, Rasmussen, & Rydahl-Hansen, 2017). Both studies demonstrate different barriers experienced by nurses in communicating important findings to clinicians. In addition, Johnston et al. (2015) adds that nurse's desire for independence contributes to them not

calling physicians when they recognize clinical deterioration. Good communication and teamwork are essential to avoiding adverse patient events therefore, organizations must promote a culture of patient safety by ensuring adequate communication between all team members.

Unit Culture

Unit cultures pose a barrier to performing adequate patient assessments and detecting clinical deterioration (Alamri & Almazan, 2018). Unsafe unit practices in the literature include the omission of vital signs assessments (e.g., respiratory rates) and the failure to assess laboratory results. These practices can negatively affect patient care. Research suggests that vital signs, especially respiratory rates, are often not completed or are omitted from patient's charts due to time constraints or refusal to wake a patient that has an increased risk of delirium (Peterson, Rasmussen, & Rydahl-Hansen, 2017; Treacy and Stayt, 2019). Treacy and Stayt (2019) found that nurses routinely abstain from checking blood work results because they feel that this task is the responsibility of the physician. Monitoring lab results has often been left for the night shift since it tends to be less busy at night. It is not acceptable by the Standards of Nursing Practice (CRNNL, 2019) or the Code of Ethics (CNA, 2017) to omit such important aspects of nursing care.

Strategies to Address the Issue

Organizations need strategies to address the reasons why novice nurses are not appropriately recognizing clinical deterioration. The following section will describe strategies to improve recognition of clinical deterioration including unit orientation, educational programs, simulation, and mentorship.

Orientation

Nursing orientation plays a pivotal role in the competency and retention of newly hired registered nurses (Pertiwi & Hariyata, 2019) and has a significant impact on a nurse's learning (Wilson, 2015). The orientation phase shapes a nurse's attitude and satisfaction towards their job and place of employment. Organizations frequently conduct orientation sessions for nurses who are entering the profession or transitioning into a new or unfamiliar work area. Orientation programs are equally important for new graduate nurses and experienced nurses who are experiencing job change (Butt, 2002). Effective orientation programs produce nurses who provide competent, quality patient care who develop into productive members of the health care team. It is important for new graduate nurses to have a structured transition into practice which will aid in increasing nurse retention rates, and promote safe, competent, compassionate, and ethical nursing care (CRNNL, 2018). To promote a culture of patient safety, organizations must provide support for nurses in the post-orientation phase, ensure there is a focus on identification and management of the deteriorating patient, and ensure nurses have access to policies and procedures to guide practice.

St-Martin, Antonacci, and Purden (2015) states that even in the post-orientation phase, nurse's assessment skills are still not adequate to detect patient deterioration cues, suggesting that nurses need support long after the initial four-to-six week orientation that is normally provided by the employer. Orientation geared toward improved competency has been shown to build interpersonal, technical, and critical thinking skills in newly hired nurses (Brown et al., 2018; Pertiwi & Hariyati, 2019). Orientations must be more focused on recognition of and care of the deteriorating patient to provide safe patient care and better patient outcomes. For skill acquisition to occur, nurses must be provided with the education, opportunities, and resources necessary to practice the skill. A qualitative study by Herron (2017) identified that medical-

surgical unit orientations do not include education on recognition of the deteriorating patient. In addition, Alamri and Almazan (2018) states that students are not given adequate opportunities in nursing school clinical to perform physical assessments thus, they are entering the workforce lacking these skills. Orientations with a focus on clinical deterioration can provide education to nurses that will increase their knowledge (Butler, 2018) and thus provide better patient outcomes. A qualitative study using critical incident analysis was conducted to acquire narrative data from nurses, describing their clinical practice experiences of patient deterioration (Butler, 2018). This study found improvements in nurse's abilities to recognize patient deterioration and an increase in confidence. Through an understanding of nurse's experiences, nurse educators and managers can adjust education programs to fit the needs of nurses in practice.

Sterner et al. (2018) explains the importance for nurses to have access to adequate support which provides a sense of security, guidance, and confirmation for nurses. For example, policies and procedures which guide clinical decisions and actions can guide nurses in the decision-making process and provide a confirmation of best practice. These can be reviewed during orientation to place emphasis on the importance these policies and procedures play in patient safety.

Educational Programs

Development of clinical competence requires nurses to engage in continuing education programs. Education programs focused on the early identification and management of the deteriorating patient can improve nursing care of this cohort (Butler, 2018; Liaw et al., 2017; Peebles et al., 2020). For example, in Liaw et al.'s (2017) exploratory descriptive study, nurses that participated in a web-based education program reported they had a better grasp as to the meaning of subtle changes in vital signs to the patients' health status. Similar results were found

in Peebles et al.'s (2020) quantitative study that evaluated a Just in Time Training (JITT) program during 534 bedside nursing encounters. This program provides nursing staff with education related to patient deterioration in the clinical setting as a patient declines. That is, when a patient begins to deteriorate, the clinical educator provides the nurse with education related to escalation of care and providing subsequent care to that particular patient. Findings from the implementation of this program saw an increase in Medical Emergency Team (MET) calls from 13.6 pre-intervention to 15.4 post-intervention suggesting that nurses did benefit from this education.

Simulations

Research has identified simulation as a teaching strategy that can increase nurse exposure to the deteriorating patient (Bliss & Aitken, 2018; Elder, 2017; Orique & Phillips, 2018). Simulation training is an essential educational strategy for health care systems to improve patient safety. Simulation allows learners to develop, refine, and apply knowledge and skills in a realistic clinical situation as they participate in interactive learning experiences designed to meet their educational needs (Jefferies & Clochesy, 2012). The use of simulation as a teaching strategy can contribute to patient safety and optimize outcomes of care, providing learners with opportunities to experience scenarios and intervene in clinical situations within a safe, supervised setting without posing a risk to a patient (Jefferies & Clochesy, 2012). Simulation has been shown to improve nurse's knowledge and performance during patient deterioration (Al-Moteri et al., 2020; Kim, Park, & Shin, 2016; Orique & Phillips, 2018; Sapiano, Sammut & Trapani, 2018). A meta-analysis completed by Kim, Park, and Shin (2016) aimed to determine the effect size of a simulation's impact on nursing education and compare effect sizes according to the fidelity level of the simulators used. The researchers found that simulation-based nursing

education is effective given the medium-to-large effect size (0.70). 62% of the studies in this analysis were RCTs which strengthen the study's findings. Since the effect is not proportional to fidelity level, the researchers note that it is important to use a variety of educational interventions to meet all the desired educational outcomes.

A project implemented in the United States utilized simulation to increase nurse knowledge, confidence, and competency when a patient is deteriorating (Elder, 2017). 52.5% of participants in this study had less than two years' experience which is applicable to this project's focus on novice nurses. Nurses received a pre-test and post-test before and after the simulation exercise. Following the high-fidelity simulation exercise, nurses reported a statistically significant increase in knowledge, self-confidence, and competency. Pre-intervention knowledge scores increased from a mean of 5.70 and standard deviation 1.34 to post-intervention mean 7.65 and standard deviation 1.17, $t(39)=10.49$, $p<.000$. It has been discussed that nurses lack of knowledge, experience, and confidence are contributing factors to patient decline, therefore simulation is an effective intervention that could educate nurses on patient deterioration.

Mentorship

Research suggests that novice nurses need supportive work environments to succeed (Brown et al., 2018; Lea & Cruickshank, 2015). Brown (2018) states that new graduates should receive extra support in their first year of practice. New graduate nurses need to focus on time management and organizational skills in addition to assessment skills and other clinical skills when they are beginning their career. A mentorship program for registered nurses could be an effective strategy to create a positive and supportive work environment for new graduate nurses transitioning into practice.

Mentorship programs for new graduate nurses may enhance patient safety by creating a supportive learning environment, promoting professional growth, and enhancing the quality of the nursing practice environment (CNA, 2020). Mentoring can be defined as "a reciprocal and collaborative learning relationship between two, sometimes more, individuals with mutual goals and shared accountability for the outcomes and success of the relationship," (CNA, 2020, p. ii). The CRNNL (2018) recommends formal mentoring and precepting relationships for new graduate nurses, in addition to comprehensive orientation programs, to ease workplace transition for new graduates. A successful transition into the workforce can increase job satisfaction which increases retention therefore having a positive influence on patient safety.

A non-randomized controlled study by Zhang et al. (2019) was conducted in China to assess the effectiveness of a one-on-one mentorship program for nurses in reducing turnover rate. The findings showed that the turnover rates for the experimental group were 3.77%, 3.48%, and 8.11% as compared to 14.07%, 9.36%, and 14.19% for the control group at the end of the first three years, respectively. These results suggest that one-on-one mentorship is effective in reducing nurse turnover, especially during the first year. Although mentorship programs are beneficial, they may be challenging to initiate. Kennedy et al. (2020) explains that an Expert Nurse Mentor Program can assist new graduate nurses through rapidly changing clinical situations however, implementation of these programs requires a lot of planning and preparation. Nurse educators must be willing to spend time in recruiting and training mentors who participate in these programs to ensure successful implementation.

Conclusion

Nurse educators, nurse managers and nursing preceptors owe it to the new graduate nurse to determine their knowledgebase, experience, and level of confidence to produce the safest

practitioner and ultimately the best patient outcomes. Novice nurses need education to build confidence and competence in practice so they can link theory to practice and develop the ability to perform adequate patient assessments that will detect clinical deterioration. Organizations must promote a culture of patient safety and provide an environment in which nurses feel supported and capable of providing the highest quality patient care.

Evidence has shown that the orientation period has a significant impact on a nurse's learning. Focused orientation programs may be beneficial to provide the education needed to help novice nurses develop the skills necessary to identify a deteriorating patient and thus increase patient safety and decrease adverse events. Orientation which includes educational programs and simulation activities can increase nurse knowledge and confidence and mentorship programs can assist with a successful transition into the workplace.

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Appendix B: Literature Summary Tables

Study/Design	Participants/Methods	Results	Comments
Author: Alamri (2018) Design: Cross-sectional Aim: To examine the barriers to physical assessment skills among nursing students in a government university in Arab peninsula	Country/Setting: University in Saudi Arabia Sample: 206 nursing students 104 male; 102 female Over half were ages 20-25 Data Collection: Self-administered questionnaire to determine barriers to physical assessment skills of nursing students (5 point Likert scale) Sociodemographic questionnaire Analysis: Descriptive statistics for demographics Median frequency for each subscale of questionnaire Paired t test to determine differences between classroom and clinical setting (p=0.05)	Students lack confidence in accurately performing physical assessments (60.19% of students in clinical setting) 74.76% of students worried about which assessment skill to use in the classroom setting 50.97% of students agree that physical assessment is only completed in clinical setting when the patient deteriorates Only 37.86% of students in clinical setting agree that they competently use physical assessment skills Ward culture may pose a barrier to performing adequate patient assessments (e.g 64.56% agree that ward culture discourages nurses from doing physical assessments) Only 28.64% agreed that nurses encourage each other to use physical assessment skills in clinical	**Design**: Weak **Quality**: Low Strengths: Reliable and valid tool High response rate Limitations: Limited generalizability Self-reported questionnaire Does not say how participants were chosen
Author: Allen	PubMed and CINAHL		Strengths: includes

(2020) Design: Systematic review Aim: to identify and appraise studies related to barriers or factors that surround non-critical care nursing practices of detecting, reporting, and responding to signs of patient deterioration	with the keywords and MeSH terms barrier, general ward, medical surgical, vital signs, recognize, respond, cardiopulmonary arrest, adverse event, deterioration, and patient deterioration. Review of reference lists 16 articles reviewed All medical-surgical nurses	6 themes: Inadequate monitoring and observation (e.g. inadequate monitoring due to time constraints) Lack of clinical knowledge regarding changes in vital signs (e.g. some nurses did not agree that a change in RR indicated deterioration) Lack of experience (e.g. inexperienced nurses did not report a change in status in fear of looking "foolish" and less exposure in non-critical areas) Lack of confidence of nurses (e.g. recognizing and responding to deterioration invoked feelings of fear, anxiety, and panic) Communication barriers with medical staff (e.g. some nurses reported feeling intimidated by members of other disciplines) Workload affects patient care and detection of deterioration (e.g. heavy workloads are associated with negative patient outcomes)	analytic and descriptive studies and systematic reviews Clear inclusion and exclusion criteria Limitations: Does not state how studies were reviewed for quality
Author: Al-Moteri (2019)	ScienceDirect, ProQuest, and PubMed and the search engine	Nurses are missing the signs that precede clinical deterioration	Strengths: multiple database search including grey

Design: Systematic review Aim: to identify and synthesise published accounts of recognising and responding to patient deterioration in the presence of deterioration antecedents	Google Scholar 14 studies included Quality appraisal tools identified Cochrane style narrative synthesis	(cardiac-related signs, respiratory distress-related signs, and neurological-related signs) Failure due to inadequate charting: • Overall poor vital signs charting (e.g. insufficient documentation of VS) • Lack of appreciation of some VS (e.g. RR recorded less than HR and BP) Failure with adequate charting: • Judgement error (e.g. insufficient nursing intervention such as documentation of deterioration signs causes a delay in treatment • Inattention (e.g inadequate response to a change in status) • Lack of knowledge (e.g. changes in VS charted but no intervention noted) • Delay in communicating deterioration (e.g. nurses	literature Clear inclusion criteria 2 reviewers with discrepancies resolved by third reviewer Qualitative and quantitative studies Results from 7 different countries <u>Limitations</u>: includes only English language studies

		delay notifying Dr.) • Resistance to intervention (e.g. not activating MET)	
Author: Al-Moteri (2020) Design: Cross sectional Aim: to use screen-based clinical simulation scenarios and eye tracking methods to better understand lapses in cue processing when nurses fail to manage patient deterioration optimally	Country/Setting: 3 campuses of an Australian university Sample: n=40 (19 inexperienced and 21 experienced) Graduate and undergraduate students Mean age 31.4 Mean experience 4.15 years Data Collection: simulation tool FAST2ACT and Tobii eye tracking tool Simulated videos where participants clicked on screen for various interventions Minimum score of 9 needed to identify and treat patient Demographic questionnaire Experts set benchmark score for simulations Score 9/15 necessary to detect and treat hypovolemic shock Analysis: descriptive statistics, independent	78% of participants scored below 9 Significant difference in mean performance score between those with previous training in managing clinical deterioration and those without (t=-3.39, df=21.4, p=0.003) 63% (n=25) exhibited cognitive bias (internal distraction)	**Design: Weak** **Quality: Weak** Strengths: FAST2ACT widely used system for simulations Sample size determined to be adequate Limitations: length of time needed for study may have deterred participants Location limits generalizability

	t-test, ANOVA, Fisher exact test		
Author: Bliss (2018) Design: Exploratory qualitative design Aim: To explore the experiences of registered nurses to ascertain whether they perceived that simulation enhanced their skills in recognizing the deteriorating patient	Country/Setting: London, acute care hospital Sample: 8 RNs (volunteered) from acute medical surgical units. Recruited through a continuing professional development course offered to RNs (N=20) Data Collection: Semi structured interviews following course completion Interviews transcribed verbatim Analysis: Thematic analysis to identify themes	4 themes: Improvement in knowledge following simulation exercise Improved assessment of acutely ill patients Learning in a safe environment Improved decision making	**Medium Credibility** Strengths: Participants from a range of acute care settings Limitations: Participants volunteered and were not randomly selected Researcher known to participants
Author: Brown (2018) Design: Qualitative phenomenological design Aim: to identify the lived experiences of newly licensed nurses	Country/Setting: eight hospitals in Indiana, USA Sample: N=15 newly licensed RNs (3 refused to participate) Snowball sampling from recent nursing graduates who were known to the researchers Data Collection: In-depth interviews	6 themes: 1. Nursing school teaches the basics (but it is working in the actual profession that you learn the most) 2. Orientation: continuity makes a difference (e.g. having the same preceptor, nurse residency	**Highly credible** Strengths: Literature review linked to findings Data saturation reached Appropriate methods and framework Limitations: Subjective data

	including 1 open-ended question and 4 prompts Analysis: Interviews recorded and transcribed Notes taken on non-verbal communication and experiences Data saturation occurred after 10 participants Themes emailed to participants for verification and feedback	program) 3. Environment: importance of teamwork (better teamwork and communication creates a positive work environment) 4. Self-care: Taking time for yourself is important for job satisfaction 5. New nurses lack confidence during the first year 6. Doctor interactions (new nurses feel nervous interacting with physicians)	Inexperienced researchers Prompting during interviews Snowball sampling may imply the participants know each other and would have similar experiences
Author: Brunero (2020) Design: Exploratory descriptive study (part of a larger mixed-methods study) Aim: to capture the experiences of nurses in relation to the acutely physiologically deteriorating patient	Country/Setting:11 mental health wards in 3 hospitals in Sydney, Australia Sample: n=64 ward nurses and n=8 nurse managers Convenience sample (open to all nurses on the mental health wards and senior nurses in manager/educator roles) Data Collection: focus groups	Clarity: Lack of clarity in relation to management of clinical deterioration in mental health setting Uncertainty about escalation of events/interactions with MET Sense of tension about who is responsible for leadership during a deterioration event Lower confidence levels in mental health nurses with no medical background, regardless	**Medium Credibility** Strengths: Data confirmed by and checked for authenticity by 2 researchers Rigor through credibility, dependability, confirmability, and transferability Findings linked to literature Limitations: unclear

	Semi-structured format Preliminary results from cross-sectional survey presented to stimulate discussion Audio recorded sessions Analysis: Data coded Thematic analysis Transcripts checked for authenticity	of years of experience Confidence: Exposure to deterioration is key to increasing confidence Experience not the same as "seniority" Good working relationships foster supportive environment Debriefing gives an opportunity to improve Complexity: Complex patients on mental health units becoming the "new norm"	if there is relationship between researchers and participants
Author: Butler (2018) Design: Qualitative Aim: to explore nurses' experiences assessing and managing deteriorating patients in practice following completion of a relevant post-registration education program	Country/Setting: acute care hospitals, south-central UK Sample: former students who completed a post-registration program entitled 'Assessment and Management of the Acutely Ill or Deteriorating Patient' at Oxford University Purposeful sampling N=5 Data Collection: face to face semi-structured interviews Critical incident technique analysis Digitally recorded and	5 themes: 1.Translating knowledge into practice 2.Applying clinical skills 3.Deterioration cues (better recognition following program) 4.Building confidence (increased confidence and assertiveness) 5.Understanding the evidence (application of evidence into practice)	**Medium Credibility** Strengths: researcher is an educator has nursing background Findings linked to literature Limitations: unclear if there is a relationship between researcher and participants Unclear if data saturation reached

	transcribed verbatim Data coded Analysis: thematic analysis		
Author: Butt (2002) Design: Cross-sectional Aim: To explore the learning needs of nurses changing jobs	Country/Setting: Two large teaching hospitals in Ontario, Canada Sample: N=3408 (RNs and LPNs). Mean age 40.7 Three groups of nurses: • Those on the same unit that changed roles • Those working in the same area but in a different hospital • Those that moved to a completely different area Data Collection: Nursing Job Change Study (questionnaire) given to all nurses Asked about working environment, orientation, and learning needs 50.7% response rate (n=1728) 85% RNs and 15% LPNs Analysis: One-way	New knowledge needed: Nurses experiencing change need education and upgrading of clinical skills Nurses moving to a new unit had a greater need for new knowledge as opposed to nurses taking a new job on the same unit Orientation: shorter orientation for new jobs on the same unit More than 70% felt orientation met their needs	**Design: Weak** **Quality: Moderate** Strengths: Questionnaire tested for reliability and validity Large sample size of RNs and LPNs Limitations: Lack of control of group Questionably of external validity to non-teaching smaller hospitals Despite large sample size, authors believe some statistically significant results may be contributed to same

	ANOVA and chi-square to determine differences in groups		
Author: Chua (2019) Design: Qualitative descriptive design Aim: To conduct an exploration of the experiences of enrolled and registered nurses in recognizing clinically deteriorating patients in general wards.	Country/Setting: 1000 bed acute care hospital in Singapore Sample: 22 registered nurses from general wards (direct patient care) Purposeful sampling At least 6 months experience (years of experience ranging from 1 to more than 10) Data Collection: Individual semi-structured interviews transcribed verbatim Field notes taken Analysis: Open coding and thematic analysis by 2 researchers	4 themes: 1.Having a sense of knowing: Knowing the patient triggers intuition that something is wrong Having past experiences with clinical deterioration impacts how you deal with the current acute event 2.Patient assessment practices: Relying heavily on vital signs Attitudes that complex assessments are physician's responsibility Not confident in or comfortable with completing complex assessments 3.Delegation of routine patient care and assessment to enrolled nurses: Consulting more experienced nurses to confirm deterioration Lack in clinical knowledge to relate vital signs changes into a patient's condition and to amalgamate cues	**Highly credible** Strengths: Data saturation occurred No relationship between researcher and participants Rigor through credibility, dependability, confirmability, and transferability Findings compared to literature

		gathered from patient observations to get an overall picture of a patient's condition. Communication breakdown affects patient receiving appropriate care when acutely ill 4.Missing the big picture: Overwhelming workload and inadequate staffing affects ability to detect deterioration	
Author: Dalton (2018) Design: Qualitative Aim: To discover what factors influence how nurses assess patient acuity and their response to acute deterioration	Country/Setting: medical surgical wards within an acute NHS trust in England Sample: 10 RNs Purposeful sampling Experienced nurses (at least 2 years experience) Has cared for a deteriorating patient Data Collection: Semi-structured interviews audio recorded interviews transcribed verbatim Analysis: content and thematic analysis Information reviewed by the participants	3 main themes: 1.relationships with medical staff (close working relationships, doctors in "authority") 2. Nursing intuition (knowing when something is wrong, doctors not always acting on low MEWS score) 3. Interpretation of MEWS (nurses use MEWS to determine deterioration)	**Medium Credibility** Strengths: Results compared to the literature Sampling technique appropriate for qualitative design Limitations: Does not state if data saturation was reached Did not use a specific type of qualitative methodology, just a "generic" qualitative method Unsure if any relationship between researchers and participants

Author: Elder (2017) Design: Uncontrolled before and after Aim: To use simulation as an educational intervention to increase nurse knowledge, self-confidence, and competency when caring for patients exhibiting signs of clinical deterioration	Country/Setting: acute care hospital in USA Sample: all nurses on a med-surg unit Data Collection: Each participant given pre-test to assess pre-knowledge, confidence, and demographics Intervention: voice over slide presentation in high fidelity simulation activity (60 minutes) Post test knowledge and confidence assessed Instruments: Detecting Patient Deterioration Education Test to assess knowledge C-CEI to assess competency Clinical Decision-Making Self Confidence Scale to assess confidence Analysis: descriptive statistics and t-test	Statistically significant increase in knowledge post intervention (Pre intervention M=5.70, SD=1.34 to post intervention M=7.65, SD=1.17, t(39)=10.49 p<0.000 two tailed) Statistically significant increase in self-confidence (Pre intervention M=45.11, SD=6.99 to post intervention M=50.08, SD=7.31, t(37)=6.17, p<000 two tailed)	**Design: Weak** **Quality: Medium** Strengths: Valid and reliable tools Limitations: only one unit in one hospital limits generalizability Limited recruitment strategies
Author: Hart (2016) Design: Descriptive, qualitative approach Aim: To explore and understand	Country/Setting: An integrated healthcare system in the USA consisting of 5 hospitals Sample: 28 med-surg nurses (means years of practice 10.5)	Pattern 1: Recognizing and responding to the event: Theme 1: Early warning signs: Nurses described patients having subtle early warning signs of deterioration	**Highly credible** Strengths: Extensive training and experience in researchers Data saturation reached

the experiences of medical-surgical nurses as first responders during clinical deterioration events	Purposeful sample Data Collection: semi-structured interviews Audiotaped interviews and field notes Analysis: Constant comparative method	Theme 2: Continuity in patient care assignments (provides a baseline to monitor patient status) Theme 3: Intuition: Nurses describe intuition or "gut-feeling" as an identifier of deterioration Pattern 2: Managing the Event: Theme 1: Cognitive skills: Nurses need knowledge, experience, and training to effectively manage clinical deterioration Theme 2: Technical skills (e.g. initiating CPR) Theme 3: Behavioral skills (communication, delegation) Pattern 3: Challenges encountered during the event Theme 1: Work environment complexity. Complex work environments (staffing issues, workload issues) negatively affect caring for a deteriorating patient	Rigor established through credibility, dependability, confirmability, and transferability Limitations: Not clear if there is any relationship between researchers and participants
Author: Herron (2017)	Country/Setting: medical-surgical units in South-eastern USA	5 main themes: 1.Clinical preparation (nursing school did not	**Medium credibility** Strengths: Methods

Design: Descriptive phenomenological design Aim: To explore new graduate nurses' experiences with recognition and prevention of failure to rescue	 Sample: 14 new graduate nurses ≤ 18 months in practice All female Orientation ranged from 6 to 15 weeks Data Collection: Individual semi-structured interviews Field notes Audio recorded Transcribed verbatim Analysis: Giorgi's methods for content analysis Saldana's methods of coding	adequately prepare for complex situations) Lack of freedom to make independent choices as a student and novice nurse Large clinical groups 2. Experience with emergent situations (No experience with a critical patient in school or orientation New nurses did not know what to do during their first clinical emergency because it had never happened before (lack of experience) 3.Development of clinical reasoning (Lack of experience to support development of clinical reasoning skills and learning) Med-surg orientation does not include how to deal with deteriorating patient In the first weeks as a new nurse, focus is on time management/prioritizing and not on clinical reasoning skills (Short orientation is less acute areas) 4.Low confidence as a	adequate to describe the lived experience of nurses Rigor established through credibility, dependability, confirmability, and transferability) Data saturation reached Limitations: Does not state if any relationship between researchers and participants

		new grad: Inadequate communication skills/anxietycalling health providers Lack of experience to back up intuitive feelings 5.Responding to emergencies (e.g. feelings that something isn't right but not enough experience to determine the problem)	
Author: Johnston (2015) Design: Systematic review Aim: To determine the incidence of, and factors contributing to failure to rescue (mortality after surgical procedure) and delayed escalation of care (recognition of deterioration) for surgical patients	42 articles included in review MEDLINE, EMBASE, PsycINFO, Cochrane database, conference abstracts, reference lists, and Google. Study quality assessed using Standard Quality Assessment Criteria for Evaluating Primary Research Papers PRISMA methods applied	Factors affecting failure to rescue: 1.Hospital characteristics (greater hospital volume associated with lesser FTR rate, teaching status, hospital size >200 beds, daily census > 50%, increased nurse-patient ratios, use of technology associated with lesser FTR rates) 2.Patient characteristics (greater FTR rates in patients with more medical complications) Delayed escalation of care and its impact on outcome: Rapid ICU transfer decreased mortality Factors affecting escalation of care: 1.Identifying deterioration (visual patient assessment,	Strengths: Thorough search including grey literature Screening by two independent reviewers with disagreements resolved using a third reviewer Limitations: low quality of some studies

		EWS. Clinical inexperience, hierarchal barriers, high workload and overconfidence affect identification of deterioration Communication with a senior colleague (fear of intimidation, criticism, poor communication, desire for independence): 1.Responding to deterioration (Doctors busy or not wanting to take responsibility) Solutions: new vital signs chart, track and trigger systems,	
Author: Kim (2016) Design: Meta-analysis Aim: to determine the effect size of simulation-based educational interventions in nursing and compare effect sizes according to the fidelity level of the simulators through a meta-analysis	Electronic database search of EBSCO, Medline, ScienceDirect, ERIC, RISS, and the National Assembly Library of Korea database. Study conducted in adherence to PRISMA standards n=40 Comprehensive Meta-Analysis version 2 was used to conduct the data analysis Effect size estimates were adjusted for sample size (Cohen's d), and 95 % confidence intervals	Simulation is an effective nursing education strategy simulation-based nursing education was effective in various learning domains, with a pooled random-effects standardized mean difference of 0.70. Learning outcome effect size was the highest for HFS (0.50), followed by LFS (0.47), SP (0.32), and MFS (0.06).	**High quality** Strengths: English and Korean language Clear inclusion and exclusion criteria Possibility of a publication bias was minimal because the funnel plot appeared symmetrical. Limitations: did not consider learning-related factors in the analyses based on the fidelity level of simulators

	were calculated to assess the statistical significance of average effect sizes. Twenty five of the 40 studies (62.5 %) used random assignment, whereas the remaining 15 (37.5 %) were nonrandomized.		
Author: Lea (2015) Design: Qualitative (exploratory and descriptive) Aim: to explore experienced rural nurses' experiences of providing support for new graduate nurses during the transition to rural nursing practice	Setting/Country: 1 of 14 rural health services of Northern new South Wales, Australia Sample: N=16 experienced registered nurses working in a rural hospital Data Collection: individual in-depth interviews Analysis: Braun and Clarke's thematic analysis	Unsupportive working environments in rural areas (i.e., struggles with skill mix and low staffing levels, increased responsibility and accountability) New graduates need support with communication skills (handover, communicating with members of the medical team, recognizing when to call the doctor) New graduates need support to seek support New graduates do not always get a good orientation because they are counted as core staff too soon Lack of nurses to provide hands on clinical support and educational support to new nurses	**Highly credible** Strengths: findings linked to the literature Interviews conducted in private setting Limitations: does not state how participants were recruited or selected No theoretical framework described No discussion of relationship between participants and researchers No discussion of researcher training Does not state if data saturation was reached
Author: Liaw (2017) Design:	Country/Setting: Singapore Sample: n=26	Better understanding of vital signs changes Increased knowledge of	**Highly credible** Strengths: experienced

exploratory descriptive qualitative design Aim: to explore nurses' perspective of a web-based educational program on their clinical practice in recognizing and responding to deteriorating ward patients	Purposeful sample Data Collection: 5 focus groups completed following 3- hour web based educational program (eRAPIDS) on the care of patients with clinical deterioration Animated video, study guide, and virtual simulation 60-90 minute focus groups Audio recorded and transcribed Analysis: thematic analysis	performing physical assessments Better communication between team members	researchers 2 researchers analysed data and a third settled disagreements Rigour ensured Limitations: focus groups may have a negative affect on the information that is shared by participants
Author: Missen (2016) Design: Descriptive quantitative Aim: To explore the perceptions of qualified nurses on the abilities of newly registered nursing graduates to perform a variety of skills	Country/Setting: Nursing Federation in Australia Sample: N=245 Purposeful sample Recruitment through nurses monthly e-newsletter Mean years working 15.2 Data Collection: Survey tool of 51 clinical skills questions (5 point Likert scale), demographics, and	Over half rated focussed assessment very poor (percussion, auscultation, palpation) 34% rated very poor ability to identify and respond to the deteriorating patient Communicating patient changes in a timely fashion was rated very poorly for 23.9% of respondents 41% responded the new graduates do not work well independently	**Design: Weak** **Quality: Medium** Strengths: valid and reliable tool (content validity determined by an expert panel) Minimal missing data Trained researchers Limitations: Limited generalizability Limited recruitment strategies

	open ended questions to rate new nurses clinical abilities Analysis: Descriptive statistics		
Author: Orique (2019) Design: Cross-sectional explorative study Aim: to examine med-surg nurses' capacity and tendency to perceive cues indicating clinical deterioration and nursing characteristics influencing deterioration cue perception	Setting/Country: 8 med-surg units in a rural acute care teaching hospital in the Western USA Sample: N=85 Convenience sample Median age 35.50 Median nursing experience 5 years All nurses meeting inclusion criteria were emailed survey with biweekly reminders during data collection period (10 weeks) Data Collection: Demographics Detection trials to evaluate patient deterioration (MEWS) score OFER scale to report levels of nurse fatigue Analysis: Pearson's correlation, ANOVA, t-tests, and multiple linear regression all with a two tailed significance level of $p < 0.05$	Capacity and tendency to perceive deterioration cues: (med-surg subspecialities of nurses tend to better identify deterioration) Characteristics and capacity to perceive deterioration cues: Nurse experience influenced their capacity to perceive deterioration cues based on levels of skill acquisition (statistically small relationship) Novice, advanced beginner, and competent nurses had a lower capacity to perceive deterioration cues compared to proficient and expert nurses Nurses with more than 2 years experience had a significantly higher capacity to perceive deterioration cues (1.51 +/- 0.54) compared to novice/advanced beginner (1.26 +/- 0.37), $t(84)=2.215$, $p=0.029$ Characteristics influencing capacity to perceive deterioration	**Design: Weak** **Quality: Medium** Strengths: Previously tested tools demonstrating reliability and validity Includes nurses from multiple medical-surgical units Limitations: detection trials used low fidelity simulation which may have impacted the ability to measure deterioration cues Convenience sample limits generalizability

		cues: No statistically significant association between total years of experience, years on the unit, acute fatigue, chronic fatigue, and intershift fatigue, on perceiving deterioration cues	
Author: Orique (2018) Design: Meta-Analysis Aim: to quanitatively synthesize the effectiveness of simulation on student nurses' and registered nurses' ability to recognize and manage clinical deterioration in the acute care setting	Reports of RCTs and quasi-experimental Varying levels of simulation (low, medium, high) 6 data bases searched PRISMA diagram used n=22 studies used	Simulation activities have a positive effect on knowledge and performance Simulation improved nurse's scores on knowledge tests (d=0.964, CI=0.421, 1.507, p=0.001)	**Medium Quality** Strengths: 3 clear research questions 6 databases used Clear inclusion and exclusion criteria Limitations: only included English language studies
Author: Peet (2018) Design: mixed-methods Aim: to explore the context and culture of nursing surveillance on an acute care ward	Country/Setting: large acute care hospital in Australia Sample: purposeful sampling N=12 Data Collection: workplace observations and semi-structured interviews at the end of each observation session Detailed field notes	Nursing surveillance: The ward's established communication hierarchy excluded nurses from decision making Nurse's role not valued the same as the doctors role Therapeutic relationships enable nurses to pick up subtle cues The socio-political	**Highly credible** Strengths: researcher had no connection to unit Trained researchers Rigour ensured Findings linked to literature Limitations: unsure if data saturation occurred

	Interviews audio recorded and transcribed verbatim Analysis: Reflexive approach	process: Overreliance on biomedical model of care Hierarchy of care in hospitals	
Author: Peterson (2017) Design: Qualitative Aim: To identify barriers and facilitating factors related to use of the EWS escalation protocol among nurses	Country/Setting: medical-surgical units at an acute care facility in Denmark Sample: 18 registered nurses 18 nurses (2 male, 16 female; 7 surgical and 11 medical) Experience 1.5-22 years Data Collection: 5 focus groups held in a private room in the hospital with 3-5 participants in each group Interview guide Analysis: Krippendorff's components of text driven content analysis	Over monitoring out of concern (e.g. when nurses have a gut feeling) Adherence to monitoring frequency would frequently be set aside during busy periods for other tasks Lack of resources (e.g. staffing) leads to under monitoring Frequency of vital sign monitoring increased when patient appears acutely ill but those those extra vital signs may not get charted Assessments not completed or decreased at night because nurse wants patient to sleep or not wake due to risk of delirium Reluctance to call junior doctors or doctors whom they did not have a good relationship with	**Medium credibility** Strengths: Trained medical professionals and researchers Limitations: Focus groups may limit information shared by participants Not clear if any relationship between researchers and participants Participants selected based on recommendations from charge nurses
Author: Pertiwi (2019) Design: Systematic review	Electronic database search using Science Direct, PubMed, EBSCOhost, ProQuest, and Wiley	New graduate nurse orientation should be at least 4 weeks Successful preceptorship	**Quality: Medium** Strengths: Clearly defined selection process

Aim: To determine the most effective orientation program for new graduate nurses	Online Articles between 2008-2018 Used PRISMA model to aid in data selection Outlined 4 step process in article selection N=14	increases job satisfaction and retention rates Education about patient safety, quality initiatives, patient-centered care, communication, and teamwork resulted in fewer patient care errors and fewer unsafe practices. Orientation programs are associated with higher retention rates, higher competency levels, better job satisfaction, and lower stress levels. Orientation geared toward improved competency can build technical, interpersonal, and communication skills.	Used 5 databases for search Limitations: strengths and limitations of each study not clearly defined
Author: Sapiano (2018) Design: cross-sectional Aim: to investigate the effectiveness of virtual simulation in improving student nurses' knowledge and performance during rapid patient deterioration	Country/Setting: university in Malta Sample: all 335 students invited to participate First year students excluded Mean age 22 Data Collection: FIRST2ACT Knowledge test pre and post simulation Handover received and	Significant improvement in the student's post scenario knowledge ($z = -6.506$. $p < 0.001$) Year 3 students performed better than year 2	**Design: Weak** **Quality: Weak** Strengths: previously validated tools Widely used simulation system Limitations: limited generalizability 50% response rate Lack of a control group/randomization

	students clicked intervention on screen to determine cardiac problems, hypovolemic shock, and respiratory failure Score out of 30 (under 10 poor, over 20 distinction) Analysis: Chi squared, Kolmogorov-Smirnov test, Wilcoxin-signed rank test, Kruskal Wallis test and Spearmans correlation P , 0.05 significant		Does not state training of researchers
Author: Sterner (2018) Design: Qualitative, phenomenological design Aim: to describe factors in nursing education and during the first year as a professional nurse, that develop novice nurse's ability to provide appropriate care in acute situations	Country/Setting: 16 wards from 5 acute care hospitals in Sweden Sample: 17 registered nurses Nurses emailed to see if interested in the study 6-11 months experience Data Collection: digitally recorded semi-structured interviews transcribed verbatim Interviews at workplaces or neutral location Analysis: analysis based on Dahlgren and Fallsberg's approach	4 themes: 1.Integrating theory into practice (e.g. nursing education needs to provide better integration of theory into practice) 2.Access to adequate support (e.g. nurses need access to object support (policies and protocols) to guide decisions and actions) 3.Experience-based knowledge (e.g. novice nurses lack experience and confidence to provide an accurate assessment in acute situations) 4.Personality traits (e.g novice nurses uncertainty may be apparent in their	**Medium Credibility** Strengths: Appropriate methodology Not clear if there is a relationship between researchers and participants Limitations: specific recruitment strategies not listed Does not state if data saturation reached

		assessment of medical condition)	
Author: St-Martin (2015) Design: Qualitative descriptive study Aim: To explore new graduate nurse's perceptions of strategies offered by their organization to create healthy work environments, educational strategies to strengthen practice skills and knowledge, and personal attributes used to integrate into their role that influenced their development as a nurse	Country/Setting: a med-surg unit at a university-affiliated acute care hospital in Quebec, Canada Sample: Convenience sample of N=13 nurses Recruitment posters throughout site Invitation emails Data Collection: Semi-structured face to face interviews Interviews audio-recorded and transcribed verbatim Field noted taken Analysis: Occurred concurrently with data collection Burnard's stages of analysis Transcripts read and reread to identify themes and code them	In the post-orientation phase, assessment skills are skill not adequate to detect patient deterioration cues New nurses struggle with time management New graduate nurses seek to improve their time management skills, ability to prioritize, and adapt to unexpected change As nurses gain experience they can work more independently, apply technical skills to their practice, and have a broader understanding of their patient Time management skills improve with experience New nurses seek to improve communication skills with doctors Self-directed learning efforts are important during orientation	**Highly Credible** Strengths: experience of researchers discussed Data saturation reached and final interviews held to ensure no new themes were generated Input from entire research team during coding to reduce researcher bias Results linked to literature Limitations: sample from one hospital limits generalizability Lack of diversity in demographic variables (e.g., no male participants)
Author: Strauss (2015) Design: Cross-sectional survey design Aim: to determine whether the	Country/Setting: 4 medical institutions in Israel Sample: N=100 79% response rate Mean age 31.01, SD 8.70	Having a structured orientation is highly correlated with job satisfaction, adaptation, and support Job retention was highly correlated with having an orientation program,	**Design: Weak** **Quality: Moderate** Strengths: valid and reliable tool Variation in demographics of

transition of the graduates into the workplace included a structured orientation program, and to assess the effectiveness of the program from the new graduate's perspective	Data Collection: survey with open and closed ended questions (5-point Likert scale) Measures structure and design of orientation program and variables associated with the orientation program Analysis: correlational coefficient ($p<0.001$) and independent t-tests ($p<0.001$)	job satisfaction, adaptation, and support Orientation was difficult when a structured program was not in place A consistent preceptor is important Unrealistic expectations and heavy workloads negatively affected orientation	participants Limitations: Does not state how participants were selected Does not state expertise of researchers or relationship to participants
Author: Treacy (2019) Design: Systematic review Aim: To identify factors that influence recognition and response to adult patient deterioration in acute care hospitals	13 papers included CINAHL, Medline, and Web of Science Qualitative and quantitative studies PRISMA methods applied Thematic analysis	3 main themes: 1.Knowledge and understanding of clinical deterioration Nurses lack knowledge and understanding in assessing clinical deterioration Relying on vital signs while lacking other assessment skills Objective assessments not relayed to physicians as requested Subtle signs of deterioration not recognized Respiratory rate often omitted Nurses feel respirations	Strengths: Quality appraisal tools identified 2 independent researchers Limitations: Some studies rated as weak Many studies had small sample size and location makes it difficult to generalize findings Unsure of grey literature included

		not important 2.Organizational factors Workload and staffing issues affect ability to manage clinical deterioration Nurses routinely do not check blood work results Vital sign frequency not done according to protocol (e.g. not done often on night shift) 3.Communication Inadequate communication between health professionals	
Author: van-Galen (2016) Design: Retrospective observational study Aim: To determine the healthcare worker related causes that contribute to acute unplanned ICU admissions from general wards	Country/Setting: academic medical center in Amsterdam Sample: 49 consecutive adult patients admitted to the ICU from general med-surg units Data Collection: Root cause analysis, chart review PRISMA analysis on root causes of unplanned ICU admissions Assessment of adherence to protocols Analysis: Descriptive statistics and frequencies	46% of root causes were healthcare worker related (human error) 34% of human related root causes were due to monitoring failures (e.g. not monitoring vital signs after a change in treatment) 26% of human related errors were due to inappropriate interventions (e.g. not intervening even though vital signs were not normal) 16% of human errors were due to knowledge-based behaviours (e.g. no physical exam)	**Design: Weak** **Quality: Weak** Strengths: 2 medically and PRISMA trained investigators Limitations: 49 chart reviews (PRMISA states 50 needed for credibility) Chart reviews may have missed important information Did not use random samples, instead used consecutive cases

		5% of root causes were organizational (e.g. not monitoring inexperienced staff) Staff do not follow organizational standards (e.g. not monitoring vital signs appropriately because "nobody does it") Most transfers occurred at night	
Author: Wilson (2015) Design: Exploratory, sequential, mixed methods Aim: To determine whether the perpetual novice phenomenon exists beyond nephrology nursing where it was first described and if so, with which skills. If the phenomena is present, what are the barriers in progressing from novice to expert? -	Country/Setting: 2 university-affiliated hospitals in London, Ontario Sample: Clinical educators, CNSs, APNs, and NPs from 129 eligible participants Data Collection: Letter mailed to those meeting inclusion criteria. Reminder postcard sent 2 weeks later 3 page survey requesting feedback about perpetual novice phenomenon, essential but infrequently used nursing skills in their area, strategies to assist in moving from novice to expert, and aspects of perpetual nurses that should be explored further (5-point Likert Scale)	It is difficult for novice nurses to become experts if skills are not maintained Nurses must seek out learning experiences to maintain competencies Nurses have difficulties in obtaining and maintaining competencies in some important, infrequently used skills Some skills covered in orientation but lacked practice afterwards The orientation period has a significant impact on a nurse's learning Supportive learning culture is important	**Design: Moderate** **Quality: Medium/Highly credible** Strengths: Clearly described theoretical and conceptual framework Results compared to the literature Content and face validity discussed Reliable and valid tool Synthesis of research data reviewed with in-hospital expert Limitations: Does not specifically state how 129 initial participants were identified Self-reported data Data collection

	Open ended survey questions In-depth semi-structured interviews transcribed verbatim Analysis: Mean scores for survey responses Interviews analysed and coded, identifying themes		during summer months may have impacted participation Does not state if data saturation was obtained
Author: Zhang (2019) Design: longitudinal, non-randomized controlled design Aim: to assess the effectiveness of one-on-one mentorship program in reducing the turnover rate of nurses in China	Country/Setting: Tertiary care hospital in China Sample: N=438 new graduate nurses Control group: N=199 new graduate nurses received a basic preceptorship Experimental group: N=239 in which a one-on-one mentorship program was implemented Data Collection: Online Nursing Resource System in the Human Resources department Demographics Analysis: mean, standard deviation, median, interquartile range, paired t-test, Cox proportional	A one-on-one mentorship program is beneficial for the retention of new graduate nurses, particularly during the first year. Turnover rates for the experimental group were 3.77%, 3.48%, and 8.11% as compared to 14.07%, 9.36%, and 14.19% for the control group at the end of the first three years, respectively. The survival curves of the two groups were significantly different ($p < 0.001$) The turnover rate of new graduate nurses for the first year in the experimental group was significantly lower than that of the control group ($p < 0.05$).	**Design: Strong** **Quality: Medium** Strengths: adequate sample size Limitations: The two samples were not from the same period, which threatens the internal validity of the study Possible external factors contributing to recruitment retention problems Limited generalizability

	hazard regression		

Appendix C: Consultation Plan

Patient safety is an essential part of quality nursing care. Promoting a culture of patient safety has been shown to improve patient outcomes (Johnston et al., 2015). To provide quality care, it is important for registered nurses to have the assessment skills to detect when a patient's condition is deteriorating. Following a review of the literature it was determined that novice nurses lack the confidence, knowledge, and expertise to detect clinical deterioration (Alamri & Almazan, 2018; Allen, 2020; Chua et al., 2019; Herron, 2017; Orique et al., 2019; Sterner et al.,

2018; Treacy & Stayt, 2019). The lack of knowledge of novice nurses combined with organizational problems such as unit practices, communication issues, poor staffing levels, and inconsistent patient assignments contribute to their inability to determine a change in patient status (Brown et al., 2018; van-Galen et al., 2016; Hart et al., 2016; Johnston et al., 2015). Orientation geared toward improved competency has been shown to build interpersonal, technical, and critical thinking skills in newly hired nurses (Pertiwi & Hariyati, 2019).

The surgical inpatient unit at Carbonear General Hospital (CGH) has seen a high turnover of staff in recent years which has contributed to patient safety issues. According to the unit's care facilitator, there have been an increase in the number of Clinical Safety Reporting System (CSRS) reports that may have been avoided if nurses had properly identified and communicated a change in their patient's status. Staff nurses have also voiced their frustrations with the inexperienced novice nurse being unable to identify and manage the deteriorating patient. An educational workshop, provided as part of the orientation program, would benefit novice nurses working on this unit as a strategy to increase patient safety by increasing their knowledge and expertise in the early identification and management of the deteriorating patient.

The overall goal of this practicum is to develop an educational workshop to help novice nurses identify and manage the deteriorating patient. The practicum objectives are:

1. Identify gaps in knowledge of nurses who work on the surgical unit at CGH based on consultations with key stakeholders;
2. Develop an educational workshop related to the identification and management of clinical deterioration for nurses working on the in-patient surgical unit at CGH;
3. Demonstrate application of the advanced nursing practice competencies: clinical, research, leadership, and consultation and collaboration;

The objectives for the consultations focus on identifying the content and mode of delivery of the workshop. Specific objectives for key stakeholder consultations (clinical educator, care facilitator, and unit manager) are:

1. To gather information from key stakeholders on any existing policies and initiatives used to educate nurses on clinical deterioration;
2. To gather information from key stakeholders that will inform the content and delivery of a one-hour educational workshop on identifying and managing clinical deterioration;
3. To identify the barriers and facilitators that influence nurses' ability to identify and manage the deteriorating patient.

Specific objectives for nurse consultations are:

1. To acquire feedback on the need for a one-hour workshop on the deteriorating patient;
2. To examine nurse's attitudes and knowledge about the barriers and facilitators to identification and management of the deteriorating patient;
3. To seek feedback on the most appropriate content and mode of delivery for a one-hour workshop on the deteriorating patient.

Setting and Sample

To ensure that the most current evidence-based practices are being adopted, consultations were conducted with the following key stakeholders and staff nurses:

1. Care Facilitator of the surgery program at CGH;
2. Nurse Manager of surgical services at CGH;
3. Clinical Educator at CGH;
4. All nurses working on the surgical unit (N=12).

The above cohort was selected based on their specific roles within CGH. The care facilitator and manager of the Surgical Unit provided specific information about CSRS reports

and incidents occurring on the unit. Insights gathered can inform the focus of the workshop. The Clinical Educator can provide information about available resources and orientation experiences of novice nurses. The Clinical Educator is familiar with the skill set and the diverse learning styles of the nurses. This will help with the workshop development including content and teaching strategies.

Nurses working on the surgical unit (N=12) can identify first-hand the challenges on the unit with respects to identifying and managing the deteriorating patient. They can provide insights on their preferred learning styles, as well as content and mode of delivery for the workshop. Experienced nurses can provide information related to the expected skill level of novice nurses compared to the actual skill level of novice nurses and identify the gaps that warrant attention. The novice nurses can describe their personal experiences with clinical deterioration and factors contributing to their lack of awareness and management of the issue.

Data Collection and Analysis

An invitation email (see Appendix A) and copy of the questionnaire (see Appendix B) was sent to each registered nurse on the surgical unit by the unit manager. Participants were provided with an overview of the project, reasons why consultations are being completed and participant's privacy and confidentiality was addressed. Participants were asked to return questionnaires via email or internal hospital mail by December 15, 2020. Consent was inferred by the participants returning the questionnaires. All questionnaires (n=12) were returned by the deadline. Once questionnaires were returned, data was transcribed into a file on a password protected computer, accessible only by me. Paper questionnaires returned through internal mail were locked into a filing cabinet in my office and will be destroyed once the project is complete. All identifying information was removed. Descriptive statistics were used to describe data in

section A of the questionnaire. Thematic analysis was used to determine similarities in open-ended questions (section B of the questionnaire and interview questions from the leadership team, described below)

I sent an invitation email to the Nurse Manager, Care Facilitator, and Clinical Educator (see Appendix C). These three key stakeholders were given the option for face-to-face interviews in a setting that was comfortable and convenient for them. Each felt that their own office was the most convenient place for the face-to-face interviews. An interview guide was used which consisted of semi-structured open-ended questions (see Appendix D). Interviews were audio recorded on a password protected device then transcribed into written text which was stored on a password protected computer, accessible only by me. No names or identifiers appeared on any questionnaires or written notes. Results were returned to the participants as a summary to determine accuracy of the main themes.

Ethical Considerations

The development of this practicum project does not require review by the Health Research Ethics Authority (HREA), as indicated by the HREA screening tool (See Appendix E). It is not considered to be a research project. Approval was granted from the manager of the surgery unit to conduct consultations with staff members.

Results

All three of the identified key stakeholders agreed to an interview and 100% (n=12) of the nursing questionnaires were returned. While most respondents had more than five years of experience as a registered nurse, 83% of staff have worked on the surgery unit for less than 5 years. Findings from both the key stakeholder interviews and questionnaires confirm the results of the literature review. Communication failures, increased nursing workload, lack of confidence

and experience, and short orientation all contribute to nurses' lack of awareness in identifying and managing the deteriorating patient. The results provided below reflect the findings from the two key groups- nurses working on the unit and the nurse educator, manager, and care facilitator.

Nurses Working on the Unit

Fifty percent of nurses working on the unit had five to ten years' experience nursing; 58% of this was on the surgical unit at CGH. Nurses described the novice nurse skill level as being somewhat prepared for practice at 67% of the time. While communication skills of nurses' and confidence levels were both rated high at 92%, concern was expressed with respects to appropriate workloads (67%), poor patient assignments (58%), inadequate staffing levels (58%), lack of continuity of care (50%), and the inability of the orientation period to prepare nurses to practice independently on the unit (75%). Of particular concern was that only 33% of the surgical unit promoted a culture of patient safety and that organizational policies and procedures were followed only 42% of the time.

Nurses reported that the physical organizational structure of the surgical unit and the expectations for the senior nurses to float into the labor and delivery (LDR) unit when needed posed an issue. That is, during unit orientation it was not unusual for senior nurses to be pulled into LDR and leave the novice nurse to care for up to 14-16 floor patients alone. For some this resulted in the orientation of the novice nurse being handed over to another nurse thus, continuity of the orientation was disrupted. Adding to this is the fact that senior nurses felt that their workload was so high that they did not have the time to support the novice RN. As such, many novice nurses reported finding themselves being used on the unit as staff and not given the time to learn and process information to perform to the expected level. These factors cause some nurses to experience difficulty as they transition into their role and contributed to their inability

to identify the deteriorating patient in a timely manner. For example, novice nurses were not able to make the connection between subtle changes in vital signs and the patient's physical status.

Nurses were asked to talk about some potential strategies to identify and manage the deteriorating patient. Key suggestions included increase in orientation time, implementation of a mentoring program, the Modified Early Warning Signs (MEWS) checklist, and reorientation to basic nursing skill such as care of the surgical client. The majority of nurses suggested the use of simulation as an activity to foster critical thinking in novice nurses using case studies. Simulation was felt to be the most appropriate methods to give nurses more experience and hands on with identifying and managing the deteriorating patient. Many stated that performing the skills through simulation activities would be the preferred method and in align with their learning style as adult learners.

Key Stakeholders

There were varied opinions on the nurses' ability to manage the deteriorating patient. It was identified that novice nurses may not focus on the patient as a whole and this may contribute to them missing signs of deterioration. For example, a post-operative patient who develops shortness of breath requiring oxygen administration may have had a cardiac episode such as congestive heart failure. An experienced medicine nurse may identify these cardiac signs quicker than an experienced surgical nurse. Nurses rely on assistance and support from more experienced nurses and unfortunately, on the surgical unit, they do not always receive this guidance. This adds to the lack of awareness and identification of clinical deterioration and has contributed to an increase in CSRS reports. It is concerning that one key stakeholder did not feel there was an issue with the identification and management of clinical deterioration and stated that nurses learn

these skills in their basic training and with experience on the unit they become increasingly aware via practiced patient assessment skills. However, it is difficult to build confidence and competence when there are no senior nurses to provide their knowledge and support.

Key stakeholders have different experiences with nurses that have come forward with concerns related to their ability or another nurse's ability to manage clinical deterioration. Nurses have voiced their concerns related to increased workload and the high nurse to patient ratio which has contributed to nurses missing important signs of clinical deterioration such as abnormal lab results. It was confirmed that nurses should be educated on recognizing and managing the patient who is deteriorating through a workshop which teaches the common signs and symptoms of clinical deterioration and how to manage these symptoms. A presentation of different scenarios would also be helpful to integrate the information. Although staffing issues may present a challenge in having staff attend, having several smaller groups may be a feasible strategy to allow all staff the opportunity to attend. All key stakeholders have stated that they will support me through the development of this educational workshop and are willing to assist with presenting materials, contacting presenters, and arranging for educational leave for nursing staff.

Conclusion

In conclusion, this project will be beneficial to the surgical unit at CGH as it aims to increase nurses' knowledge, confidence, and ability to identify and manage clinical deterioration. It is anticipated that this project will have a positive impact on patient safety. Based on consultations, it has been determined that a one-hour educational workshop may not be long enough. I will pilot a half-day workshop with a focus on simulation activities and re-evaluate

based on feedback from nursing staff.

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Appendix A

Dear ***(insert participant's name):***

This letter is an invitation to consider participating in a project that Lindsay Dawe is undertaking as part of her master's degree in nursing at Memorial University under the supervision of Professor April Pike. The overall goal of this practicum is to develop an educational workshop to help novice nurses identify and manage the deteriorating patient.

Participation in this project is voluntary. It will involve the completion of a questionnaire which will take approximately ten to twenty minutes. You may decline to answer any of the questions if you wish. All information you provide is considered completely confidential. Your name will

not appear in any report resulting from this project. Data collected during this project will be held in a locked cabinet in her office until the project is complete and stored on a password protected computer accessible only by her. There are no known or anticipated risks to you as a participant in this project.

Completed questionnaires can be returned directly to Lindsay through her Eastern Health email at lindsay.dawe@easternhealth.ca or through the hospital's internal mail by December 15, 2020.

We hope that the results of this project will be of benefit to the surgical unit at Carbonear Hospital.

Thank you in advance for your assistance in this project.

Yours Sincerely,

Tonya Somerton, BN, MTM

Appendix B

Nursing Questionnaire

Part A

1. How many years have you worked as a Registered Nurse?
   __2 years or less
   __2-5 years
   __6-10 years
   __more than 10 years

2. How many years have you worked on the surgery unit at CGH?
   __2 years or less
   __2-5 years
   __6-10 years
   __more than 10 years

3. How would you describe the skill level of novice nurses?
   __Extremely prepared
   __Somewhat prepared
   __Unable to decide
   __Somewhat unprepared
   __Extremely unprepared

4. How would you describe the roles and responsibilities of the nurses who work on the surgery unit?
   __Extremely appropriate for novice nurses
   __Somewhat appropriate for novice nurses
   __Unable to assess
   __Somewhat inappropriate for novice nurses
   __Extremely inappropriate for novice nurses

5. How would you describe the communication skills of nurses working on the surgical unit?
   __Excellent
   __Good
   __Unable to assess
   __Fair
   __Poor

6. How would you describe the patient assignments of nurses working on the surgical unit?
   __Extremely inappropriate for novice nurses
   __Somewhat inappropriate for novice nurses
   __Unable to assess
   __Somewhat appropriate for novice nurses
   __Extremely appropriate for novice nurses

7. Is continuity of care promoted on the surgical unit?
   __Always
   __Sometimes
   __Neutral
   __Rarely
   __Never

8. How would you describe the confidence level of novice nurses who work on the surgical unit?
   __Extremely confident

__Somewhat confident
__Unable to determine
__Somewhat not confident
__Not at all confident

9. Do you feel the surgical unit promotes a culture of patient safety?
__Always
__Sometimes
__Neutral
__Rarely
__Not at all

10. Are staffing levels appropriate on the surgical unit?
__Definitely appropriate
__Somewhat appropriate
__Neutral
__Somewhat inappropriate
__Extremely inappropriate

11. How often do nurses not follow organizational policies and procedures due to poor unit cultures such as time constraints?
__All the time
__Sometimes
__Neutral
__Rarely
__Never

12. Do you feel the orientation period adequately prepares novice nurses to work independently on the surgical unit?
__Yes
__No
__Unable to determine

Part B

13. What experiences have you had with orientating new nurses to the surgery unit? If not applicable, write N/A.
_____
_____
_____
_____
_____

14. Have nurses had difficulty in identifying clinical deterioration? Can you provide an

example? If not applicable, write N/A.

_____
_____
_____
_____
_____

15. What strategies do you feel would help nurses learn more about recognizing and managing a deteriorating patient (e.g., simulation, case studies)?

_____
_____
_____
_____
_____

16. How do you learn best?

_____
_____
_____
_____
_____

Appendix C

Dear ***(insert participant's name):***

This letter is an invitation to consider participating in a project that I am undertaking as part of my master's degree in nursing at Memorial University under the supervision of Professor April Pike. The overall goal of this practicum is to develop and education workshop to help novice nurses identify and manage the deteriorating patient

Participation in this project is voluntary. It will involve an audio-recorded interview consisting of open-ended questions which will take approximately ten to twenty minutes. Data from the audio recording will be transcribed into written text with any identifying information removed. You

may decline to answer any of the questions if you wish. All information you provide is considered completely confidential. Your name will not appear in any report resulting from this project. Data collected during this project will be held in a locked cabinet in my office until the project is complete and stored on a password protected computer accessible only by me. There are no known or anticipated risks to you as a participant in this project. Interviews can be held in your office or mine, whichever you decide is more comfortable for you.

I hope that the results of this project will be of benefit to the surgical unit at Carbonear Hospital.

Thank you in advance for your assistance in this project.

Yours Sincerely,

Lindsay Dawe, BN, RN

Appendix D

Interview guide for nurse leaders

1. Do you think that nurses working on the surgical unit are able to identify and manage the deteriorating patient? Why or why not? Do you have an example?

2. Can you explain if there have been any recent increases in the number of CSRS reports on the surgical unit related to novice nurses and clinical deterioration? Can you provide an example?

3. Have nurses bought forward any concerns about their ability or that of another nurse to identify and manage the deteriorating patient? Can you provide an example?

4. What strategies do you feel would help nurses learn more about recognizing and managing the patient who is deteriorating?

5. Do you think that a one- hour education workshop on the deteriorating patient would be helpful? Why or why not?

6. Do you think that a workshop focusing on the early identification and management of the deteriorating patient would be helpful? What would this workshop look like to you? What do you think it should include?

7. What challenges do you foresee with development and implementation of a workshop? Do you think a workshop is feasible? Why or why not?

_____
_____
_____

8. Can you support me in the development and implementation of an education workshop focused on the identification and management of the deteriorating patient? How so?

_____
_____
_____
_____
_____

Appendix E: Health Research Ethics Authority (HREA) Screening Tool

Student Name: Lindsay Dawe

Title of Practicum Project: The Development of an Educational Workshop to Assist Novice Nurses in Identifying and Managing the Deteriorating Patient

Date Checklist Completed: December 3, 2020

This project is exempt from Health Research Ethics Board approval because it matches item number three from the list below.

1. Research that relies exclusively on publicly available information when the information is legally accessible to the public and appropriately protected by law; or the information is publicly accessible and there is no reasonable expectation of privacy.
2. Research involving naturalistic observation in public places (where it does not involve any intervention staged by the researcher, or direct interaction with the individual or groups; individuals or groups targeted for observation have no reasonable expectation of privacy; and any dissemination of research results does not allow identification of specific individuals).
3. Quality assurance and quality improvement studies, program evaluation activities, performance reviews, and testing within normal educational requirements if there is no research question involved (used exclusively for assessment, management or improvement purposes).
4. Research based on review of published/publicly reported literature.
5. Research exclusively involving secondary use of anonymous information or anonymous human biological materials, so long as the process of data linkage or recording or dissemination of results does not generate identifiable information.
6. Research based solely on the researcher's personal reflections and self-observation (e.g. auto-ethnography).
7. Case reports.
8. Creative practice activities (where an artist makes or interprets a work or works of art).

For more information, please visit the Health Research Ethics Authority (HREA) at https://rpresources.mun.ca/triage/is-your-project-exempt-from-review/

Appendix D: Environmental Scan

The surgical inpatient unit at Carbonear General Hospital (CGH) has seen a high turnover of staff in recent years which has contributed to patient safety issues. According to the unit's care facilitator, there have been an increase in the number of Clinical Safety Reporting System (CSRS) reports that may have been avoided if nurses had properly identified and communicated a change in their patient's status. Staff nurses have also voiced their frustrations with the inexperienced novice nurse being unable to identify and manage the deteriorating patient. An

educational workshop, provided as part of the orientation program, would benefit novice nurses working on this unit as a strategy to increase patient safety by increasing their knowledge and expertise in the early identification and management of the deteriorating patient.

The overall goal of this practicum is to develop an educational workshop to help novice nurses identify and manage the deteriorating patient. The practicum objectives are:

1. Identify gaps in knowledge of nurses who work on the surgical unit at CGH based on consultations with key stakeholders;
2. Develop an educational workshop related to the identification and management of clinical deterioration for nurses working on the in-patient surgical unit at CGH;
3. Demonstrate application of the advanced nursing practice competencies: clinical, research, leadership, and consultation and collaboration;

Specific Objective(s) for the Environmental Scan

The objectives for the environmental scan are:

1. To determine what educational resources are available within Eastern Health acute care sites (rural Avalon and city hospitals) to assist novice nurses with the identification and management of clinical deterioration;
2. To identify what resources are available within Eastern Health to inform the content and delivery of an educational workshop on clinical deterioration;
3. To identify the policies and procedures available to guide decision making related to identification and management of clinical deterioration.

Sources of Information

The environmental scan was conducted by contacting three clinical educators who are responsible for the general surgery units at the Health Sciences Center (HSC), St. Clare's Mercy

Hospital (SCM), and CGH. Clinical educators are responsible for conducting and developing orientation programs for novice nurses. They would be knowledgeable about any written educational resources or interactive workshops that are available to novice nurses that would assist them in identification and management of the deteriorating patient. They would also be familiar with any policies and procedures that are available within the health authority. I also scanned the Eastern Health Intranet to determine if there are any available resources online.

Data Collection and Analysis

An email was sent to the clinical educators (see Appendix A) outlining the purpose of the practicum project and the information I wanted to obtain. Three guiding questions were asked:

1. Are there any resources available to nurses that can assist in the identification and management of clinical deterioration?
2. Do you think a simulation exercise would be an appropriate resource to develop to assist nurses in identification and management of clinical deterioration?
3. How long do you think an educational workshop on clinical deterioration should be?

They were informed that participation in the project was completely voluntary and any information received is confidential. Content analysis is used to describe the information obtained from the three guiding questions.

Ethical Considerations

The development of this practicum project does not require review by the Health Research Ethics Authority (HREA), as indicated by the HREA screening tool (See Appendix B). It is not considered to be a research project.

Results

Limited resources exist within Eastern Health city center hospitals that address the early recognition and management of the deteriorating patient. Mock code blue simulations do take place however, the focus is on the management of a cardiac arrest and the immediate period leading up to the arrest when the patient starts to deteriorate. A mock code blue scenario in a safe, simulated environment serves as a means to ultimately improve client outcomes by initiating the code blue in a timely manner and promoting effective teamwork. Learning objectives of these simulations include:

1. Recognize the deterioration of the client condition prior to a cardiac arrest and apply a team approach to care;
2. Initiate timely and appropriate code blue response;
3. Provide effective client care in a code blue situation prior to and after the arrival of the resuscitation team.

At the end of the code blue scenario, the facilitator describes staff actions and responses, as well as identify ways to improve staff response and patient care during a code blue scenario. There is no such simulation available within rural Avalon.

All three educators that were contacted agreed that an educational session on clinical deterioration is an appropriate resource to assist nurses in the identification and management of clinical deterioration however, there were varying opinions on the length of such a workshop. One educator felt that the length of the session would be dependent upon whether staff were attending on their day off or if they would be pulled from the unit while working. She felt that a one-hour session would be too long if nurses were required to attend education during their work day. The others agreed that two hours would likely be sufficient (if attending on the employee's day off) however, feedback from staff may be necessary to determine how long the session

should be.

Following a review of Eastern Health's Intranet, it was determined that there are currently no policies in place related to clinical deterioration. When nurses assess that a patient is deteriorating they simply notify the attending physician for direction. Interestingly, CGH is a roll-out site for the new National Early Warning Score (NEWS) system which will be the second facility within Eastern Health to do so. The NEWS was developed to improve the detection of and response to clinical deterioration in patients with acute illness. The NEWS was created to standardize the process of recording, scoring, and responding to changes in routinely measured physiological parameters in acutely ill patients. It was founded on the premise that early detection, timeliness, and competency of the clinical response comprise a triad of determinants of clinical outcomes in people with acute illness (Royal College of Physicians, 2017).

CGH has recently purchased sixteen new beds for one of the medicine units. These beds, which are designed to identify early signs of clinical deterioration, will be delivered in February, 2020. The Centrella Smart Bed is designed for contactless monitoring of heart rate and respiratory rate which is displayed on a smart screen at a location outside the patient's room. This can assist in identifying when patients are in the midst of declining. Alerts enable nurses to act on altered vital signs immediately when a change is detected.

Conclusion

Based on the environmental scan, there are limited resources available to assist nurses in early identification and management of the deteriorating patient. This project will be beneficial to the surgical unit at CGH as it aims to increase nurses' knowledge, confidence, and ability to identify and manage clinical deterioration. The environmental scan results reinforce the need for an educational session since there is no other educational resource available within the health

authority. This session would be a minimum of one hour but up to a half day and will be assessed based on feedback from participants and key stakeholders.

References

Royal College of Physicians (2017). National early warning score (NEWS) 2. Standardizing the assessment of acute illness severity in the NHS.

Appendix A

Dear (*insert participant's name),*

I am writing this email as a part of an environmental scan I am completing for a project that I am undertaking as part of my master's degree in nursing at Memorial University under the supervision of Professor April Pike. The overall goal of this practicum is to develop an education workshop to help novice nurses identify and manage the deteriorating patient. I was hoping you could answer the following questions:

1. Are there any resources available to novice nurses which assist in the identification and management of clinical deterioration?

2. Do you think a simulation exercise would be an appropriate resource to develop to assist novice nurses in the identification and management of clinical deterioration?

3. How long do you think an educational workshop on clinical deterioration should be?

Any information shared is completely confidential and will be erased once the project is complete.

Thanks,

Lindsay Dawe, BN RN

Appendix B: Health Research Ethics Authority (HREA) Screening Tool

Student Name: Lindsay Dawe

Title of Practicum Project:

Date Checklist Completed:

This project is exempt from Health Research Ethics Board approval because it matches item number 3 from the list below.

1. Research that relies exclusively on publicly available information when the information is legally accessible to the public and appropriately protected by law; or the information is publicly accessible and there is no reasonable expectation of privacy.
2. Research involving naturalistic observation in public places (where it does not involve any intervention staged by the researcher, or direct interaction with the individual or groups; individuals or groups targeted for observation have no reasonable expectation of privacy; and any dissemination of research results does not allow identification of specific individuals).
3. Quality assurance and quality improvement studies, program evaluation activities, performance reviews, and testing within normal educational requirements if there is no research question involved (used exclusively for assessment, management or improvement purposes).
4. Research based on review of published/publicly reported literature.
5. Research exclusively involving secondary use of anonymous information or anonymous human biological materials, so long as the process of data linkage or recording or dissemination of results does not generate identifiable information.
6. Research based solely on the researcher's personal reflections and self-observation (e.g. auto-ethnography).
7. Case reports.
8. Creative practice activities (where an artist makes or interprets a work or works of art).

For more information please visit the Health Research Ethics Authority (HREA) at https://rpresources.mun.ca/triage/is-your-project-exempt-from-review/

Appendix E: Resource Manual

Identification and Management of Clinical Deterioration:

An Educational Workshop for Registered Nurses

Table of Contents

Introduction

Patient safety is an essential and vital component of high-quality nursing care. The World Health Organization ([WHO], 2020) defines patient safety as "the absence of preventable harm

to a patient during the process of health care and the reduction of risk of unnecessary harm associated with health care to an acceptable minimum" (para. 1). The Canadian Patient Safety Institute ([CPSI], 2017A) estimates that over the next 30 years there could be 400,000 patient safety incidents (PSIs) annually within Canadian acute and home care settings, costing around $6,800 per patient and generating an additional $2.75 billion in healthcare costs per year. Early recognition and prevention of potential adverse events can help mitigate associated negative patient health care outcomes and health care costs.

The occurrence of adverse events due to unsafe care is likely one of the 10 leading causes of death and disability in the world (WHO, 2020). Globally, as many as 40% of patients are harmed in primary and outpatient health care settings; up to 80% of this harm is preventable (WHO, 2020). The CPSI (2017a) reported that one in 10 Canadians are harmed annually in acute and home care settings. Of these, the rate of harm in surgical patients (7.6%) is higher than the rate of harm in medical patients (6.2%) (Canadian Institute for Health Information [CIHI], 2016). There are many factors which contribute to errors causing adverse events, or harm to patients. Since nurses are at the forefront of health care, it is important that they have the knowledge to provide safe, quality patient care to ensure patient safety. An important piece of this is being able to identify the deteriorating patient and intervene quickly.

Nurses' ability to recognize and respond to signs of patient deterioration in a timely manner plays a crucial role in patient outcomes. Early detection of clinical deterioration has been shown to reduce ICU admissions, cardiac arrest, death, sepsis, and other acute clinical conditions (Johnston et al., 2015; van-Galen et al., 2016). When clinical deterioration is not recognized promptly, there is an increase in patient morbidity and mortality (Al-Moteri et al., 2019; van-Galen et al., 2016). As a result, this population can spend considerable time in the intensive care

unit, which is costly.

The half-day workshop "Identification and Management of Clinical Deterioration: An Educational Workshop for Registered Nurses" was designed for registered nurses working on the surgical unit of Carbonear General Hospital. The goal of the workshop is to increase the knowledge of registered nurses related to the identification and management of clinical deterioration to improve patient outcomes. There are three learning objectives through which various teaching-learning strategies are used to achieve the desired outcome. The first learning objective is for participants to identify three key factors negatively impacting the nurse's ability to identify and manage the deteriorating patient in a group discussion. The second objective requires that the learner demonstrate effective communication skills to manage the deteriorating patient following a communication exercise. The final learning objective is to formulate a plan of action to identify and manage a deteriorating patient in a low-fidelity simulation activity. Using case studies at the end of the session will allow learners to integrate all the knowledge they have learned throughout the workshop.

The workshop is intended to be delivered by a clinical nurse educator or other registered nurse who is experienced in the identification and management of clinical deterioration. Approval from the unit's nurse manager is needed to allow staff to avail of educational leave or paid compensation to attend the workshop. The manager may assign staff attendance though the nurses six week posted schedule. The workshop is designed to allow for a maximum of 10 participants. An introduction email will be sent to all staff by the unit manager prior to the workshop indicating the title of the workshop, the reason why the workshop is necessary, and the time and location of the workshop (see Appendix A).

This resource manual provides you with all the information needed to implement the half

day workshop. It is important to review the manual and the power point presentation (see Appendix B) prior to conducting the session. The power point presentation will guide the session which includes 11 agenda items (see Appendix C). The preface will outline what steps need to be taken prior to conducting the session and each resource needed for the session is included in the appendices. In the pages that follow, there is a description of each agenda item: introduction/housekeeping items, pre-test, ice breaker activity, background information/ significance of the problem, issues identified in the literature, a second ice breaker activity, a communication and reflection exercise, physiological changes associated with the deteriorating patient, case studies, post-test and evaluation.

Preface

Prior to beginning the workshop, the instructor must:

- Read the resource manual and review power point and notes.
- Book the group meeting room for the workshop.
- Confirm participant's attendance with the unit manager and ensure education leave has been approved.
- Ensure there are enough chairs for facilitator(s) and participants (12).
- Ensure all supplies are available:
    1. Print Agenda (see Appendix C).
    2. Print Sign-in sheet (see Appendix D).
    3. Print copies of pre and post-test (see Appendix E).
    4. Copies of Scattergories game. Letters need to be cut and placed in hat/bag (see Appendix F).
    5. Blank 8.5 x 11 paper.
    6. Pens/pencils.
    7. Print copies of case studies (see Appendix G).
    8. Print copies of evaluation (see Appendix H) and have envelopes to maintain confidentiality.
    9. Print copies of Certificate of Completion (see Appendix I).
    10. Print off copies of Eastern Health Policies (see Appendix K, L, and M).
- Have a copy of the jump drive containing the power point presentation.

Agenda Items

Item 1: Introduction and Housekeeping Items

The goals of this agenda item are to ensure you are prepared to conduct the session and that the participants are aware of how the day will unfold.

- Ensure room is set up (i.e., enough chairs, smart board/projection screen).
- Connect jump drive containing PowerPoint presentation to smart board and ensure screen is visible to all participants and begin slide show.
- Ensure all items are printed as outlined in the Preface.
- Ensure you have pens/pencils and blank 8.5 x 11 paper for each participant.
- Pass out sign in sheet (see Appendix D) and ensure it is signed by all participants.
- Introduce yourself and provide the audience with the overall goal of the workshop.
- Discuss the learning objectives for the workshop.
- Pass out Agenda and review (See Appendix C).
- Discuss housekeeping items.
- Introduction of participants.

Item 2: Pre-Test (Appendix E)

The goal of this item is to provide the baseline knowledge level of each participant related to the identification and management of clinical deterioration.

- Ensure you have adequate printed copies of the pre-test (See Appendix E) and pens/pencils.

- The pre-test will give the participants' baseline knowledge on clinical deterioration.
- Circulate test and allow approximately ten minutes for completion.
- Allow participants to hold on to test to use as a comparison at the end of the workshop when the post-test is completed. Answers will be reviewed following completion of the session.

Item 3: Ice Breaker Activity #1: Scattergories (Appendix F)

The goal of this activity is to promote engagement of participants.

- Class must be divided into pairs or groups of 3.
- Each group receives a list of categories.

- Choose a letter from a bag/hat and that will determine the first letter of each answer for each category in the game.
- Allow 4 minutes for completion.
- Score each team as outlined in Appendix F.

Item 4: Overview, Background and Significance of the Problem

The goal of this section is to provide learners with an overview of the workshop followed by background information pertaining to clinical deterioration. This will help learners understand the significance of the problem and why it is imperative that they build on their existing knowledge.

- Follow PowerPoint presentation (See Appendix B).
- There are two “pause-and-think” idea bubbles to engage staff by stimulating discussion about their past experiences.

Item 5: Issues Identified in the Literature

The goal of this item is to educate nurses on the factors impeding nurse’s ability to identify and manage clinical deterioration.

- This section will help describe the issues that were identified in the literature that are contributing to nurse’s inability to identify and manage clinical deterioration.

- This information will bring awareness of contributing problems so that nurses on the unit can advocate for changes to unit practices (e.g., patient assignments for continuity of care).

Item 6: Ice Breaker #2: Communication Oragami (Appendix J)

The goal of this item is to engage participants and educate them on the importance of good communication.

- Communicating clearly is not easy and we all interpret the information we get differently. This is why it is very important to ask questions and confirm understanding to ensure the communicated message is not distorted.
- For example, when you are receiving handover report, if something is not clear you must ask questions OR if a family member provides information about a patient you should seek clarification if necessary.

Item 7: Communication

The goal of this item is to educate nurses on the importance of effective communication and how communication failures have a negative impact on patient care.

- Immediately following coffee break, a video called "Vance's story" will be played. It highlights the importance of listening to family's concerns, "knowing the patient," and communicating with other members of the health care team. Following the video, staff will be encouraged to share their thoughts on the video and express their feelings about how their practice may relate to this story. Ask participants if they have had experiences when a patient deteriorated because of poor communication?
- Encourage participants to talk about their experiences of communication failures (e.g., inadequate handover report during shift changes or inadequate report when a patient is transferring in from another unit) and how these experiences have negatively affected patient care.
- If necessary, review Eastern Health policies on handover report (see Appendix K) and transfer of information (See Appendix L).

Item 8: Physiological Changes Associated with Clinical Deterioration

The goal of this item is to describe the common causes of altered vital signs in post-operative patients.

- Emphasis is on changes in vital signs.
- Reflection discussion is a chance for the facilitator to see if the participants recognize the fact that a change in vital signs is one of the first indicators of clinical deterioration. Participants can describe past experiences with inadequate documentation and intervention related to a change in vital signs.
- Follow PowerPoint notes to describe frequent vital signs and the physiology behind abnormal results.
- If necessary, review Eastern Health Policy on post-operative monitoring (See Appendix M).

Item 9: Case Studies (Appendix G)

The goal of this item is to integrate all the knowledge from the session and use this knowledge to think critically while solving issues within the case studies.

- Break class into groups of three or four depending on the class size.
- Handout one scenario to each group.
- Allow 10 minutes for each group to discuss the scenario.
- Once each group is finished, each scenario will be discussed, and the respective group will discuss their actions. Other participants will be asked if they have anything to add to each case, so each scenario is discussed with the entire class.

Item 10: Post-Test (Appendix E)

The goal of this item is to evaluate the effectiveness of the workshop which is reflected through an increase in pre-test and post-test scores.

- Ensure you have adequate copies of the post-test printed and pens/pencils for participants
- Allow approximately ten minutes for completion
- Once participants have completed the test, correct as a group. Participants can compare pre-test and post-test answers. Facilitator will collect all paper copies of pre and post tests for evaluation purposes.

Item 11: Evaluation (Appendix H)

- Ensure adequate paper copies of evaluation, pens or pencils and envelopes for confidentiality (see Appendix H).
- Evaluation forms are to be returned to designer following completion of the workshop.
- Complete Certificate of Completion (see Appendix I).
- Complete Continuing Education Tracking Form (see Appendix A) and give to participants

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Appendix A: Notification of Education Session

Notification of Education Session

Dear (employee name),

This year we will begin offering a half-day educational workshop titled "*The Identification and Management of Clinical Deterioration*" for nurses working on the surgical unit at Carbonear General Hospital. It has been recognized that there are many challenges facing nurses on the unit and some of these issues are having a negative impact on patient care.

It is important that nursing staff provide the highest quality nursing care. We are offering this workshop in hopes that we can increase the knowledge and skill of nurses that will assist in the identification and management of clinical deterioration. The first workshop will be held on (*insert date here)* in Group Meeting Room 3 on the 8th floor. For full time staff, these sessions will be scheduled into your six-week schedule. Casual employees will have the opportunity to choose from either of the dates provided. This is an excellent opportunity to gain CCP hours for CRNNL licensure and a certificate of completion will be presented at the end of the workshop.

We are excited to offer this session and look forward to positive outcomes.

Sincerely,

(*manager's name)*

(date)

Continuing Education Tracking Form

This form is to allow RNs/NPs to document and provide verification of attendance at education sessions that do not provide certificates of attendance. Please ensure you complete the form in its entirety and have the form signed by your nursing manager, the presenter, or a colleague who attended the session with you and can verify to the

CRNNL Audit Committee that you attended the session. In certain situations, a signature may not be required: for example, where an RN/NP is submitting an agenda as verification for Formal Continuing Learning hours, a signature would not be required.

Participant Name: _____ Date of Session:_____

Topic: _____

Offered By: _____
(organization name)

Presenter:_____ _____
(Name and Title) Length of Program: (CL Hours)

_____ _____
Signature of person verifying your attendance Date

Appendix B: Power Point Presentation

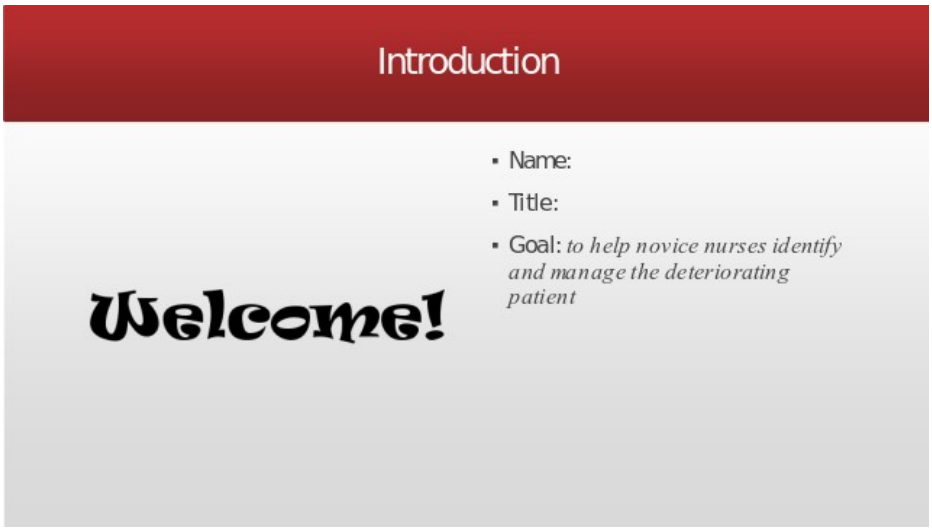
Slide 1

Identification and management of the deteriorating patient

Lindsay Dawe, BN, RN
April, 2021

AN EDUCATION WORKSHOP FOR SURGICAL REGISTERED NURSES

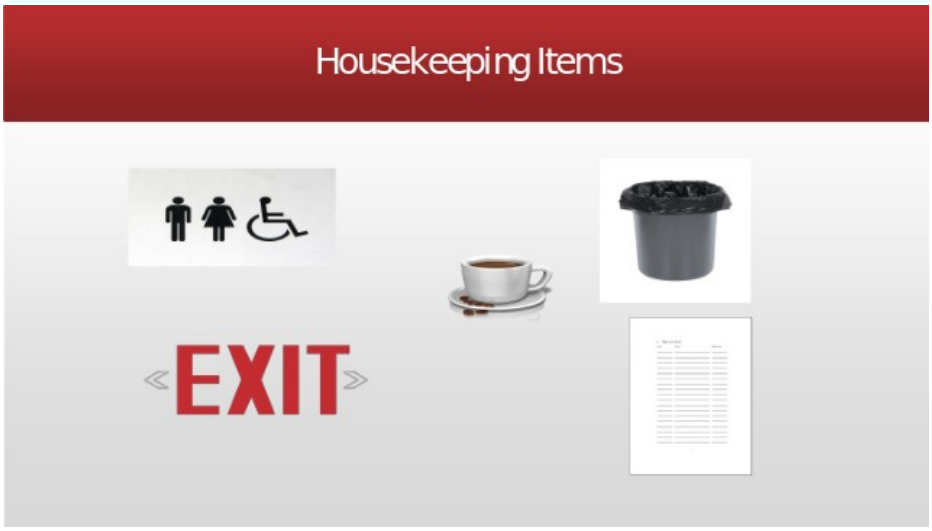
Slide 2



Tell a bit about yourself, your title, and why this is an important topic for nurse education.

Providing education to nurses on the identification and management of clinical deterioration is important for nurses because it has a positive impact on the delivery of quality patient care. To provide quality care, it is important that nurses have the assessment skills to detect when a patient's condition is deteriorating. Nurses' ability to recognize and respond to signs of patient deterioration in a timely manner plays a crucial role in patient outcomes. Early detection of clinical deterioration has been shown to reduce ICU admissions, cardiac arrest, death, sepsis, and other acute clinical conditions (Johnston et al., 2015; van-Galen et al., 2016). When clinical deterioration is not recognized promptly, there is an increase in patient morbidity and mortality (Al-Moteri et al., 2019; van-Galen et al., 2016).

Slide 3

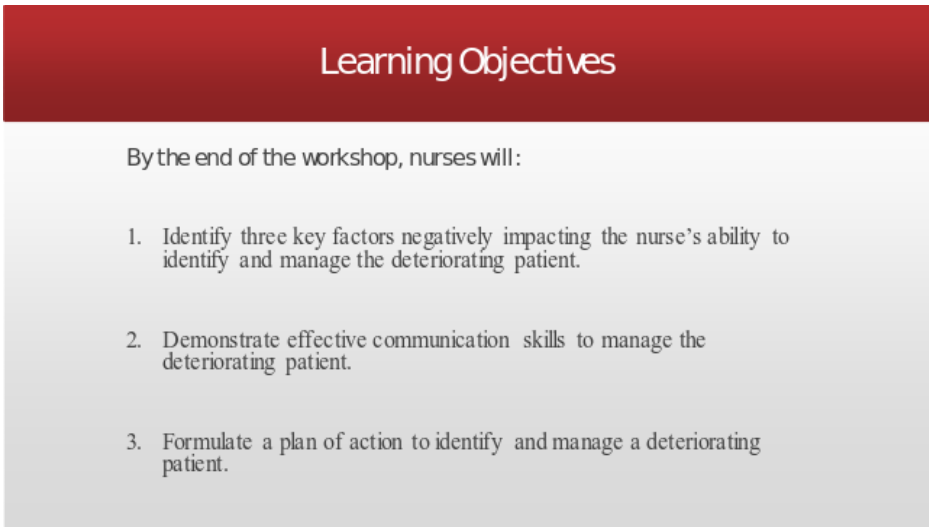


Provide class with the following information: location of washroom facilities, fire exits and trash cans. Reminder to sign attendance sheet (Appendix D). Coffee break mid-morning.

Slide 4

Ensure agendas (Appendix C) are printed. Hand out paper copy of agenda to each participant and discuss how the day will unfold.

Slide 5



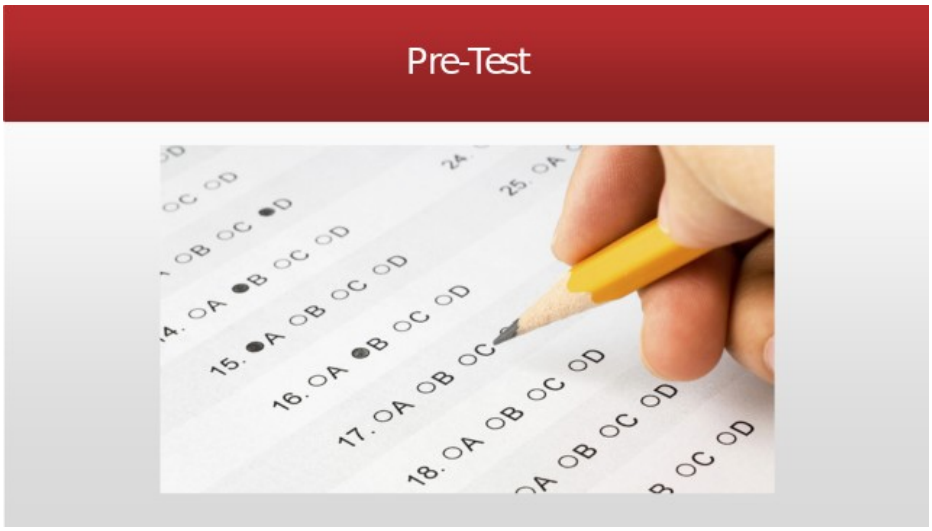
Each learning objective will be met by utilizing different teaching and learning strategies.

- A description of literature findings and group discussions will achieve this objective.
- A video, communication exercise, and results of the literature will achieve this goal.
- Completion of case studies will achieve this goal.

Slide 6

Ask each participant in the room to introduce themselves and how long they have been employed on the surgical unit or why they have an interest in this area.

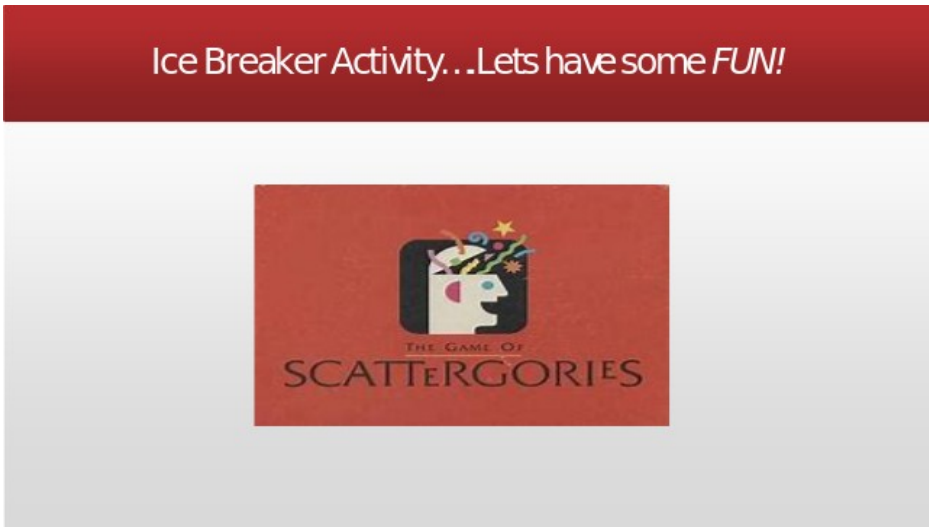
Slide 7



Ensure enough tests for each participant. Hand out pre-test (see Appendix E) and allow 10 minutes to complete. Have pencils/pens on hand for staff. Pre-test will be corrected at the end and compared against the post-test to determine session effectiveness.

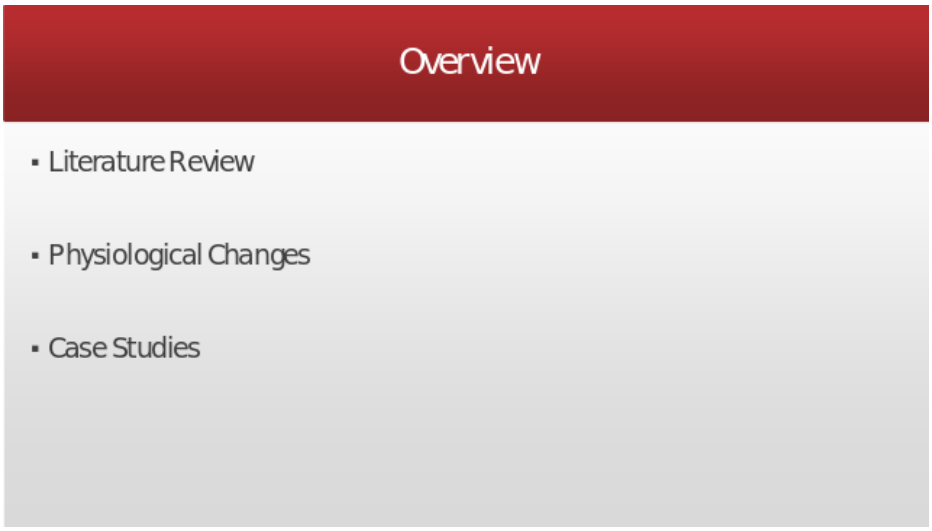
Rationale for pre-test: to determine the baseline knowledge of participants.

Slide 8



See Appendix F for overview of game and handout (handouts to be printed prior to beginning of workshop).
Cut letters, place in bag or hat, and draw a letter to determine which letter will be used for the game.
Break class into pairs or groups of 3 (depending on class size).
Each group receives a handout.
The group which receives the most points wins.

Slide 9



A review of the literature will allow participants to become familiar with the reasons why nurses have difficulty with the identification and management of clinical deterioration.

A description of physiological changes, such as changes in vital signs, will educate participants on the common reasons for altered vital signs in post-operative patients.

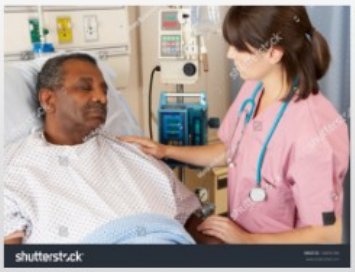
Case studies will integrate all the knowledge from the workshop.

Slide 10

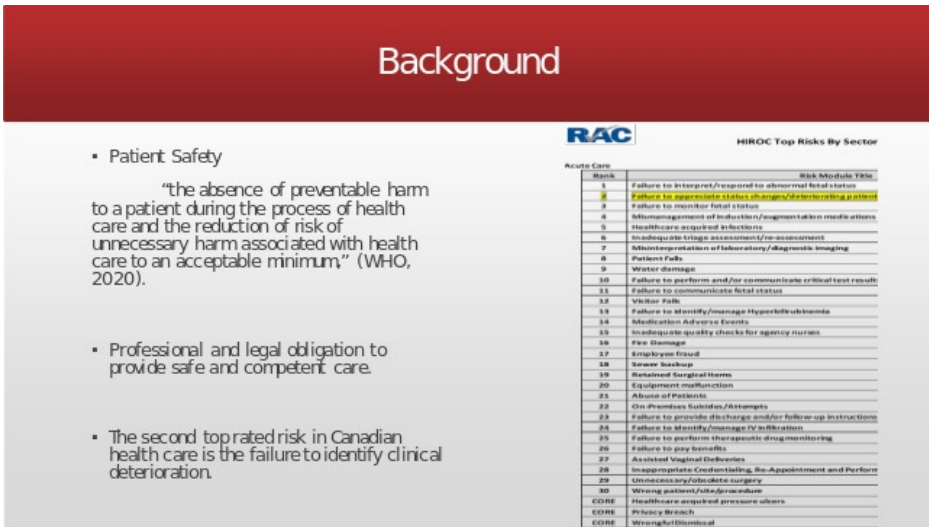
What is Clinical Deterioration?

"Clinical deterioration is characterized by a period of clinical instability, which if prompt appropriate action is not taken may lead to increased hospital stay, cardiac arrest, admission to the ICU, and increased morbidity and mortality."

(Joanna Briggs Institute, 2019)

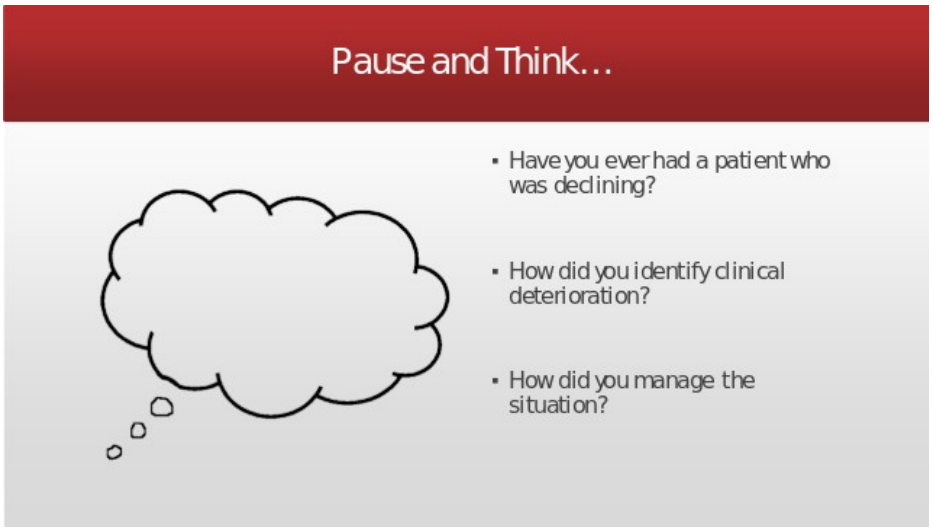


Slide 11



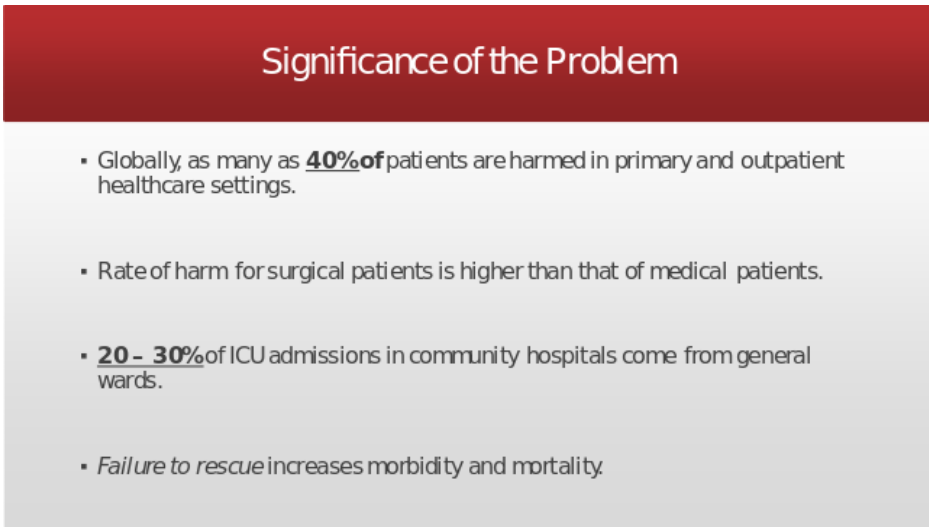
- Patient safety is an essential and vital component of quality nursing care.
- Nurses have a professional and legal obligation to provide safe and competent care to their patients, therefore nurses must be able to identify the patient at risk of clinical deterioration in a timely manner.
- HIROC (Health Insurance Reciprocal of Canada is a health care safety advisor and offers insurance to health care organizations) states that the second highest legal risk in Canada, is "failure to appreciate status changes/deteriorating patient."

Slide 12



Allow a chance for group discussions.
Prompt staff to discuss differences in how novice nurses and expert nurses handled a situation.
Were there any contributing factors that led to a negative outcome?
Did the nurse feel confident in managing the deteriorating patient?
Did they display an adequate knowledge base related to the deteriorating patient?
Encourage reflection.

Slide 13

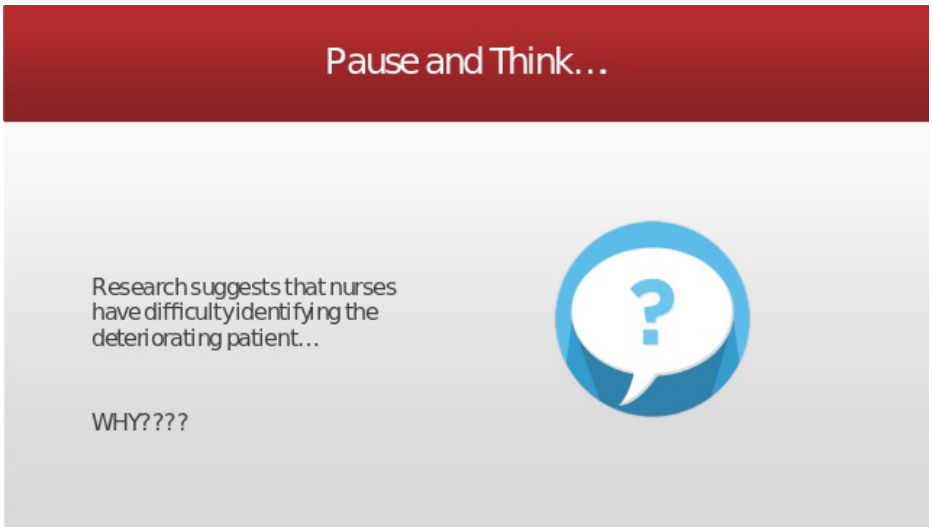


Point 1: Up to 80% of this harm is preventable.

Point 4: ICU admissions from general wards have higher mortality rate than those from ER and PORR.

Point 5: Failure to rescue means that the nurse did not properly identify the deteriorating patient.

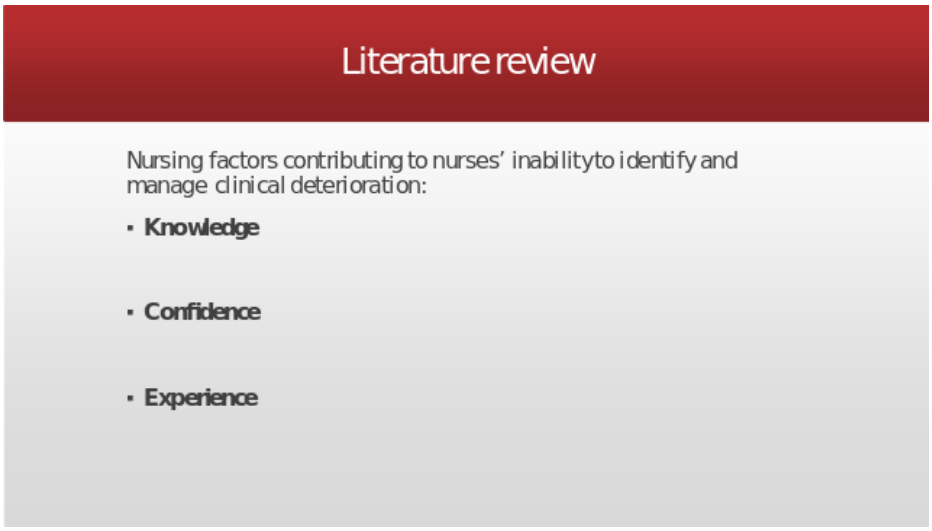
Slide 14



Encourage participants to think about their unit. What are possible contributing factors resulting in novice nurses not properly identifying the deteriorating patient?

- New grads working in less acute areas have little to no exposure to acutely ill patients
- Inadequate nursing orientation
- Inadequate numbers of senior/experienced nurses on units
- Lack of freedom/opportunity in clinical

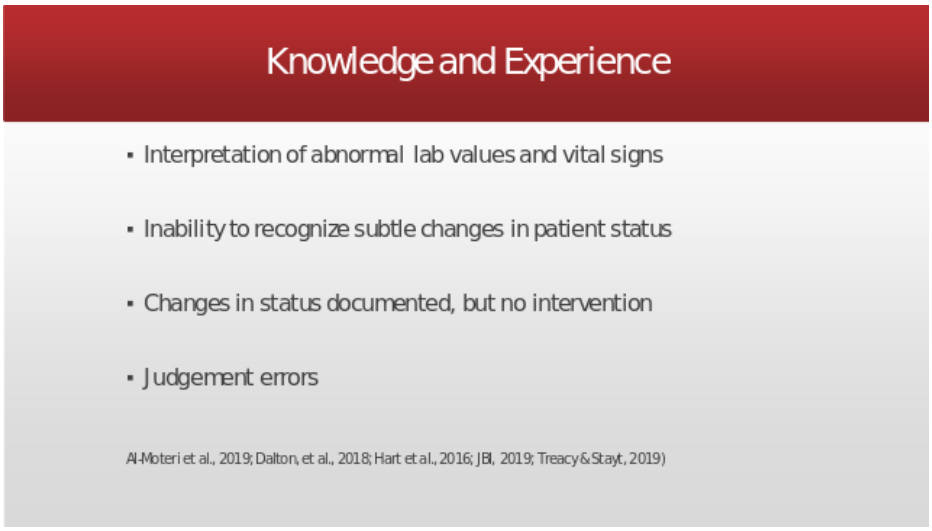
Slide 15



The literature has identified 7 themes in the literature which contribute to nurse's inability to identify and manage clinical deterioration. They are divided into two headings: nursing factors and work-life factors.

Nursing factors include: knowledge, experience, and confidence.

Slide 16



Research has shown that novice nurses often miss the signs of patient deterioration because they do not have the knowledge and experience to identify when a patient's health status is declining. Objective data through physical assessments provides key information on patient status. Nurses must have the ability to detect when something is wrong.

Novice nurses don't have the knowledge and experience to interpret abnormal results or the meaning of changes in vital signs. Vital signs are one of the most important signs of a change in health status. In a systematic review by Treacy & Stayt (2019) med-surg nurses inaccurately interpreted vital signs such as perceiving blood pressure as the first sign of deterioration.

Lack of experience causes an inability to identify subtle cues. Ask nurses if they have experienced subtle changes in status (e.g., decreased activity level).

They do not have the knowledge and experience to understand the interventions necessary when a change in status occurs.

Judgement errors cause a delay in escalation of care (e.g., calling the physician).

Slide 17

Ask why nurses are not confident? Are there unit specific issues contributing to a lack of confidence? (e.g., ineffective orientation, lack of exposure in school clinical, lack of exposure on the units, more experienced nurses taking charge when there is a deteriorating patient).

Ask: Do you have experience with missing subtle signs of deterioration, or have you worked with a novice nurse who missed those subtle signs?

Ask: What are your thoughts on a nurse's confidence? Do you think that an experienced medicine nurse would be confident working on a surgical unit?

Ask: What are the differences in the confidence levels in a new grad as a novice nurse and a nurse who is entering the surgical unit from another area such as community health?

A lack of confidence in the clinical setting may compromise the delivery of safe, competent care.

A study by Chua et al. (2019) explains that novice nurses need to consult with more experienced nurses to seek guidance or reaffirmation when they feel their patient is deteriorating because they lack confidence in their assessment skills.

Communication hierarchy is established on some units and a fear communicating with senior staff.

Slide 18

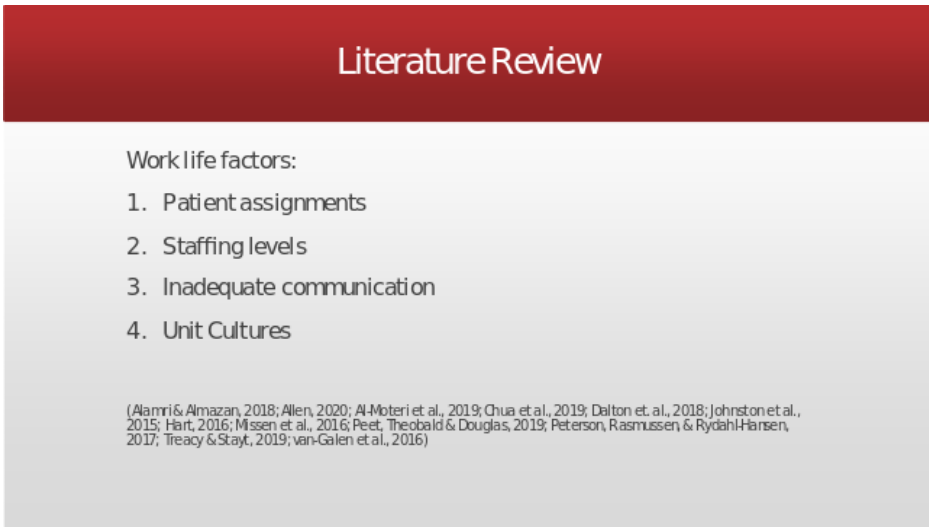
Slide 19

Nurses who are experienced in one clinical area may not be experienced in another.

Years of experience in one area does not translate to the same experience in a new area.

Ask participants, “What are your thoughts on a nurse’s confidence? Do you think that an experienced medicine nurse would be confident working on a surgical unit?” AND
“What are the differences in the confidence levels in a new grad as a novice nurse and a nurse who is entering the surgical unit from another area such as community health?”

Slide 20



- Continuity of care is needed to ensure knowing a patient's baseline. This was identified in the literature as a key theme in identifying patient deterioration.
- Chua et al. (2019) found that in-depth knowledge of current health status helps identify subtle changes in status even before physiological changes are recognized.

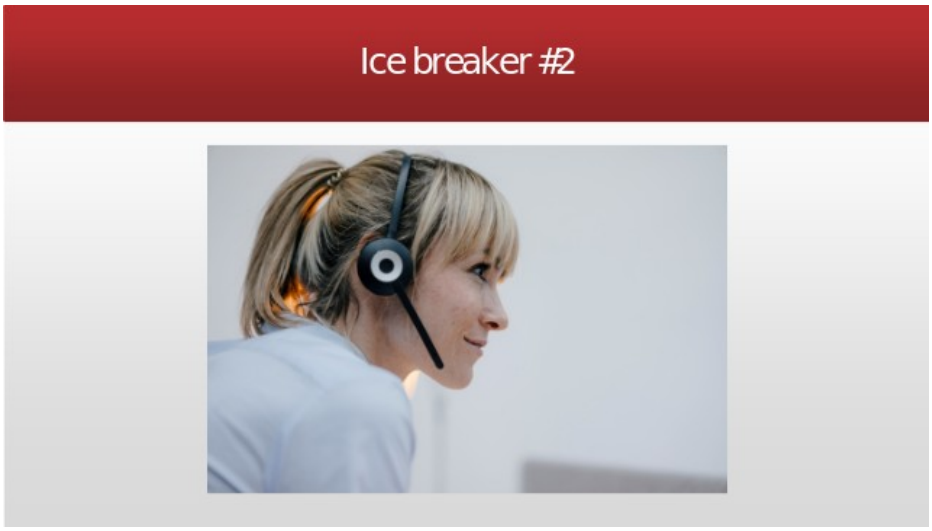
- Reduced staffing levels at night affects continuity of care and patient safety.
- Increased workload affects ability to recognize clinical deterioration. Johnston et al., (2015) found that delayed escalation of care (interventions) due to increased workloads occurred in 20.7-47.1% of patients.
- Higher nurse-patient ratios have been found to lower the incidence of morbidity and mortality.
- Complex patient assignments.
- Ask: "How do you feel that the workload of the surgical nurse affects patient safety?"

- Poor communication between health care providers can have a negative impact on patient care.
- Communication issues between nurses (e.g., handover) and physicians (e.g. communication hierarchy)
- Peet, Theobald and Douglas (2019) mixed methods study revealed that some units have an established communication hierarchy in which the RN is excluded from decision making.
- Nurses fear being criticized and they have a sense of intimidation.
- Ask: "Do you feel ineffective communication affects patient care on the unit?"

- Leaving things like lab work until night shift.
- Omission of respiratory rate in the nursing assessment.
- Leaving lab results for the physician to check.

- Peterson, Rasmussen, & Rydahl-Hansen (2017) found that nursing assessments are not completed at night because nurses do not want to wake patients at risk of delirium or because they want patients to sleep through the night.

Slide 21



Communication Origami (See Appendix J)

- Give one sheet of standard-sized paper (8.5 x 11 inches) to each participant.
- Tell your participants that you will be giving them step-by-step instructions on how to fold their piece of paper into an origami shape.
- Inform your participants that they must keep their eyes and mouths closed as they follow instructions; they are not allowed to look at the paper or ask any clarifying questions.
- Give the group your instructions on how to fold the paper into the origami shape of your choice.
- Once the instructions have all been given, have everyone open their eyes and compare their shape with the intended shape.

You will likely find that each shape is a little bit different! To hit the point home, refer to these discussion points and questions:

- Make the point that each paper looks different even though you have given the same instructions to everybody. What does this mean? (people interpret information differently and sometimes it is important to seek clarification and ask questions).
- Ask the group if you think the results would have been better if they kept their eyes open or were allowed to ask questions.

- Communicating clearly is not easy, we all interpret the information we get differently that's why it's very important to ask questions and confirm understanding to ensure the communicated message is not distorted.

- For example, when you are receiving handover report, if something is not clear you must ask questions OR if a family member states something about a patient you should seek clarification if necessary.

Slide 22

Half-hour coffee break

Before beginning the second half of the session, hand out the three policies on handover report, transfer of information, and post-op monitoring (Appendix K, L, and M).

Slide 23

Vance's story emphasizes the importance of open communication between healthcare providers, patients and families. It stresses the need for a good handover report.

Eastern Health policy on handover report (see Appendix K).

Transfer of information is necessary when transferring from one unit to another (See Appendix L).

Review policies if staff request, otherwise hand them out for staff to read on their own time.

Slide 24

Ask participants “What are the first signs that indicate a patient is deteriorating?” and engage staff in discussions through their answers.

The literature has stated that the first sign of clinical deterioration is a change in vital signs.

We want to find out if staff are aware of this and how imperative it is that accurate vital sign assessment and documentation occurs and that the necessary interventions are taken to correct a change in vital signs.

Slide 25


I hope you don't mind -
I'm training a brand-new assistant and I've asked her to check your blood pressure.
CARTOONSTOCK
Search ID: cton226

Slide 26

The literature states that a change in vital signs is one of the main indicators of a change in patient status.

Slide 27

Refer to Eastern Health Policy on post-op monitoring (Appendix M). Ask participants if they would like it reviewed, otherwise they can read it later.

Discuss importance of documentation. The literature shows that nurses often increase frequency of vital signs when there are abnormal results but do not document it. NEWS score (discussed later) states that when there are abnormal vital signs, nurses must increase frequency of assessment to hourly.

Recognizing changes in VS allows early detection of complications and timely interventions that can prevent further patient decline.

Novice nurses often do not recognize the connection between altered VS and a change in status.

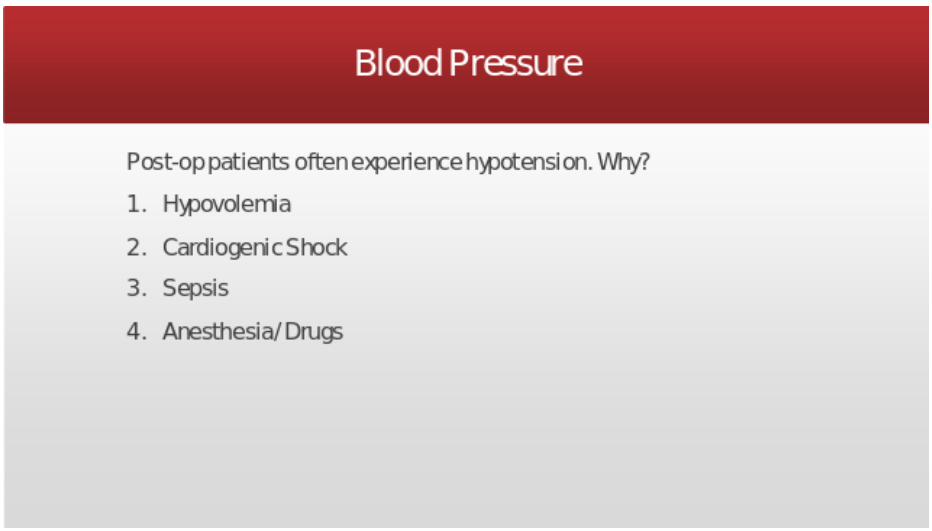
Ask: What's a normal BP, Pulse, RR, Temp and 02 sat for an adult?

BP: 120/80
P: 60-100

Mosby's: https://point-of-care.elsevierperformancemanager.com/skills/426/quick-sheet

https://point-of-care.elsevierperformancemanager.com/skills/678/quick-sheet

Slide 28

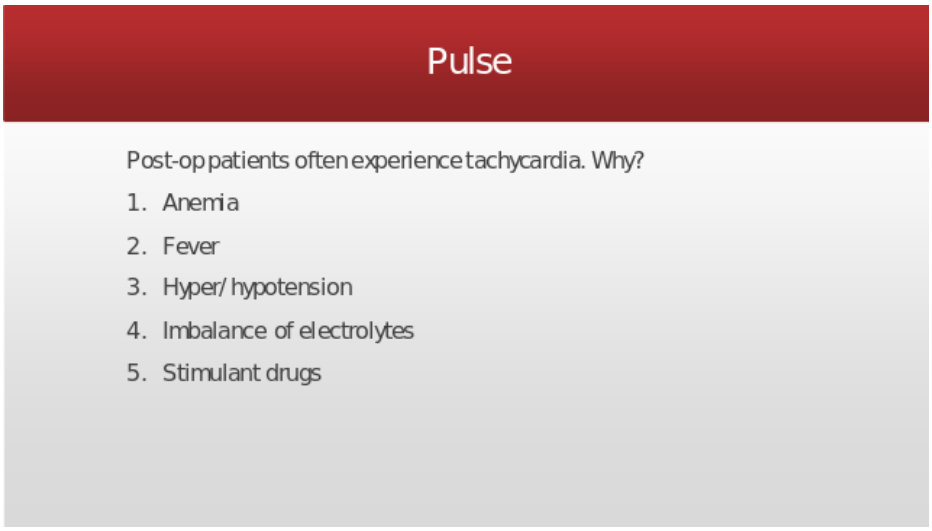


- This occurs when there isn't enough blood volume in the body. One of the most common causes is a hemorrhage, where blood spills out of the veins. When there is a hypovolemic shock, the blood pressure drops, the pulse rate goes up and the urine output decreases.
- This happens when the heart can't contract and pump blood effectively. Cardiogenic shock is usually caused by myocardial infarction
- When the body is overwhelmed by an infection, the arteries dilate, and there isn't enough blood to keep up the strong pressure. As a result, blood pressure drops, sometimes dramatically. The patient will also have fever and a fast heart rate.
- due to blockade of the sympathetic nervous system causing arterial and venous vasodilation with subsequent “functional” hypovolemia.

(newhealthadvisor.org)

https://www.facs.org/-/media/files/education/core-curriculum/postoperative_care.ashx

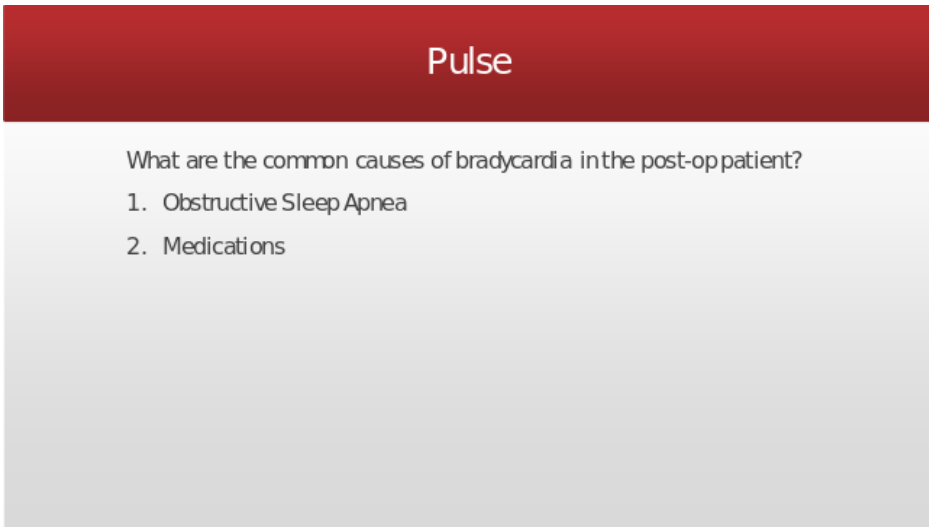
Slide 29



- The hearts way of compensating for lack of RBC
- Sweating during fever causes fluid loss
- BP changes can cause changes in the electrical functioning of the heart
- Certain electrolytes affect electrical functioning of the heart
- stimulants increase the activity of dopamine and norepinephrine

Uptodate.com

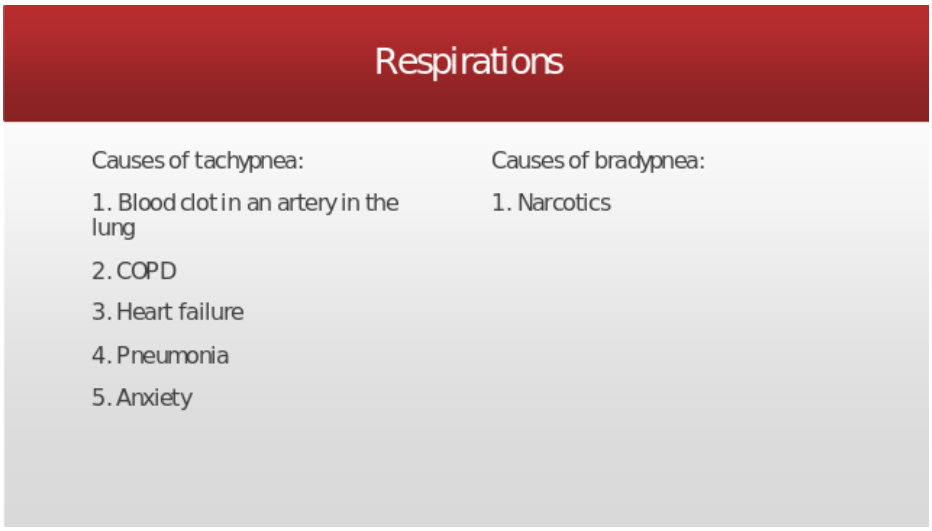
Slide 30



- Because the body does not get enough oxygen
- Medications given during surgery may slow the heart rate

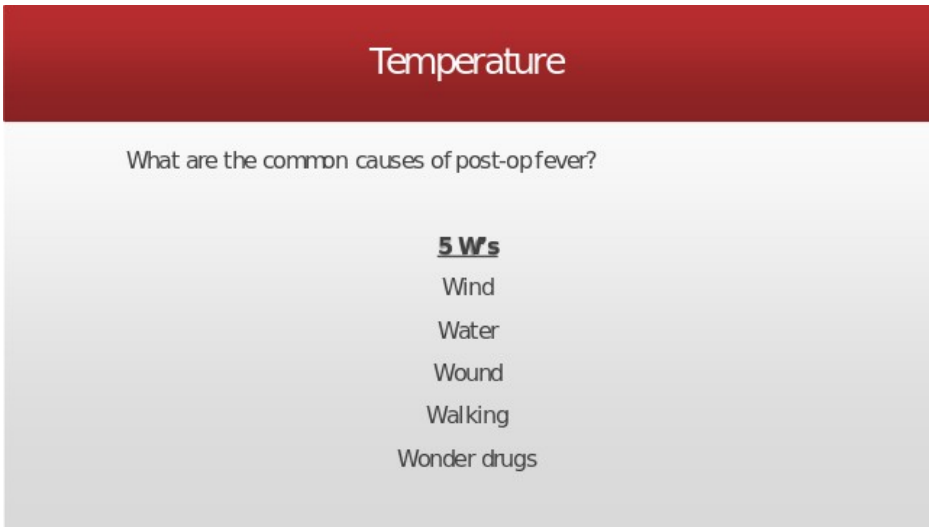
https://www.uptodate.com/contents/sinus-bradycardia?search=obstructive%20sleep%20anea,%20bradycardia&source=search_result&selectedTitle=2~150&usage_type=default&display_rank=2

Slide 31



https://medlineplus.gov/ency/article/007198.htm

Slide 32



- Atelectisis, pneumonia, aspiration
- UTI
- Surgical Site Infection
- DVT or PE
- Transfusion reaction, drug-induced fever

https://www.facs.org/-/media/files/education/core-curriculum/postoperative_care.ashx

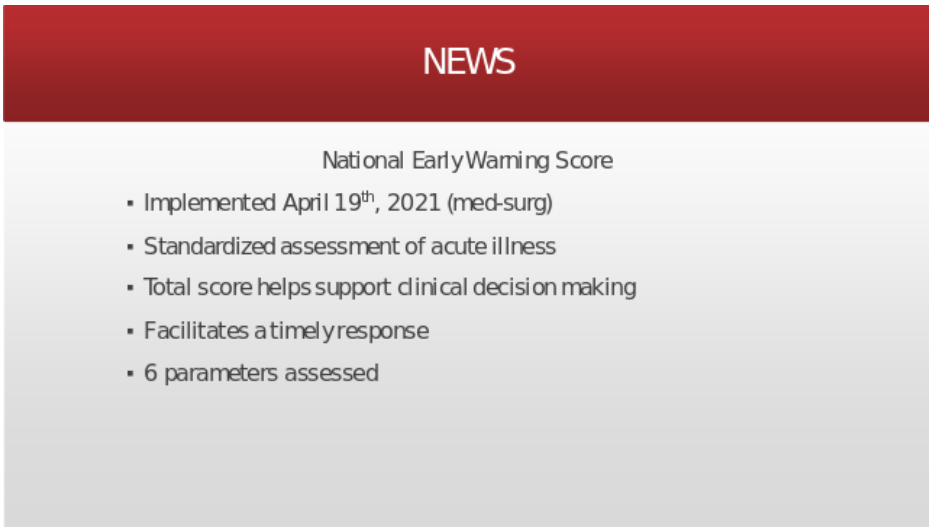
Slide 33

It is important to know your patient's "normal" or their baseline.

When monitoring a post-op patient, you must know their history, baseline vital signs, and any intra-operative complications

For example, the normal O2 saturation for a person with COPD is 88-92%. This would be considerably low for a healthy person.
OR: A patient who is a runner may have a normally low resting heart rate.

Slide 34



National Early Warning Score (NEWS) was developed to facilitate early detection of patient deterioration by categorizing their severity of illness.

Implemented April 2021 on all med-surg units at CGH.

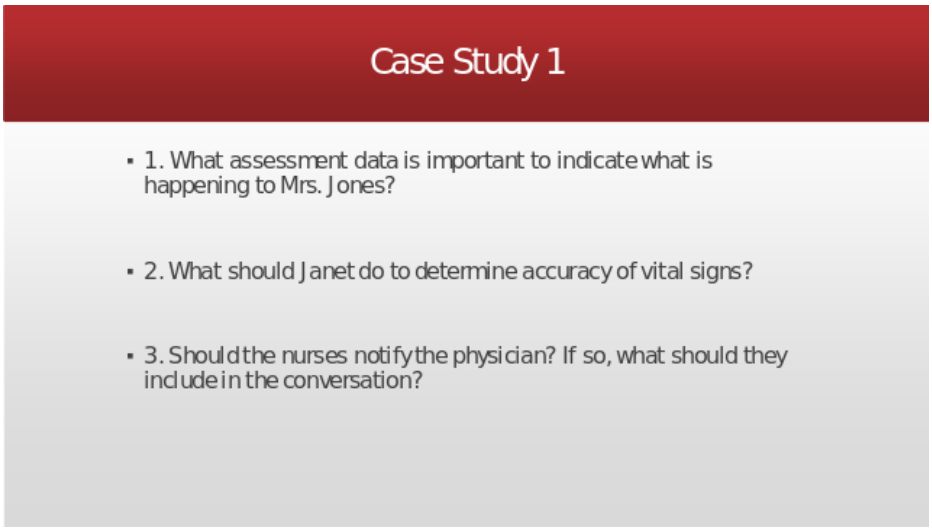
Standardization of assessment of acute illness severity in a systematic method to measure simple physiological parameters in patients 16 years of age and older.

Total score is assessed to determine illness which helps support clinical decision making such as appropriate clinical response and ongoing monitoring.

Adopting an Early Warning Score is beneficial for standardizing the assessment of acute illness severity and facilitating a timely response using a common language across acute care hospital settings.

6 parameters assessed: pulse, temperature, respirations, blood pressure, oxygen saturation, and level of consciousness.

Slide 35



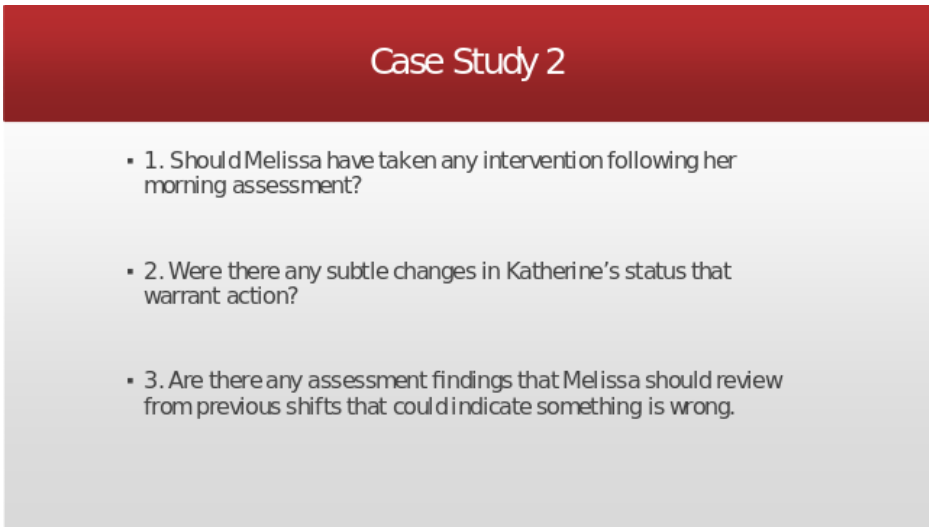
Divide class into groups of 3 or 4. Each group receives a case study (see Appendix G). Each group discusses their respective case study and once everyone is ready, discuss all three as a group.

- Low blood pressure and bloody drainage on the bandage may indicate internal bleeding.
- Check manual blood pressure and ensure BP cuff and sat probe are not on the same side.
- The physician should be notified. Altered vital signs and saturated dressing should be communicated.

Important to note: the change in VS was greater than 20% which questions whether the patient should have been discharged to the ward from the PORR.

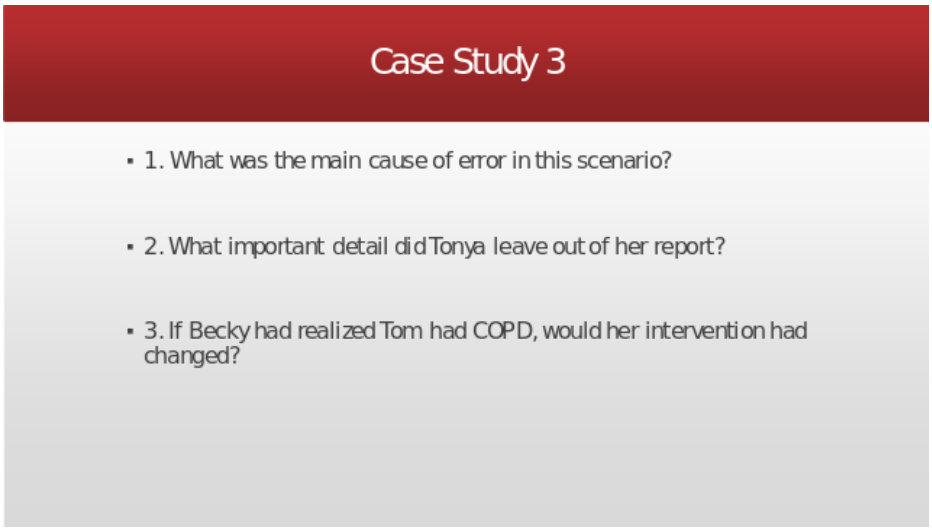
What could you do about the dressing? Apply pressure dressing.
What might the physician order? Bolus fluids to increase BP

Slide 36



- Yes, the physician should be notified of cloudy urine.
- Yes, a decrease in activity.
- Yes, check previous vital signs, color or urine, activity level, wound status.

Slide 37



- Not receiving a full and accurate report which lead to her not knowing his history.
- A history of COPD was left out of the report.
- Yes, she would have known that increasing the level of oxygen he was receiving would cause an imbalance of 02/C02.

Slide 38

Hand out printed copies to participants. Allow time to compete the test.

Review Answers (See Appendix E) and compare to pre-test.

Slide 39

Hand out printed copies to participants. Once survey is complete, place in sealed envelope to maintain confidentiality and return to developer to make adjustments if necessary.

(See Appendix H)

Slide 40

Questions??

Slide 41

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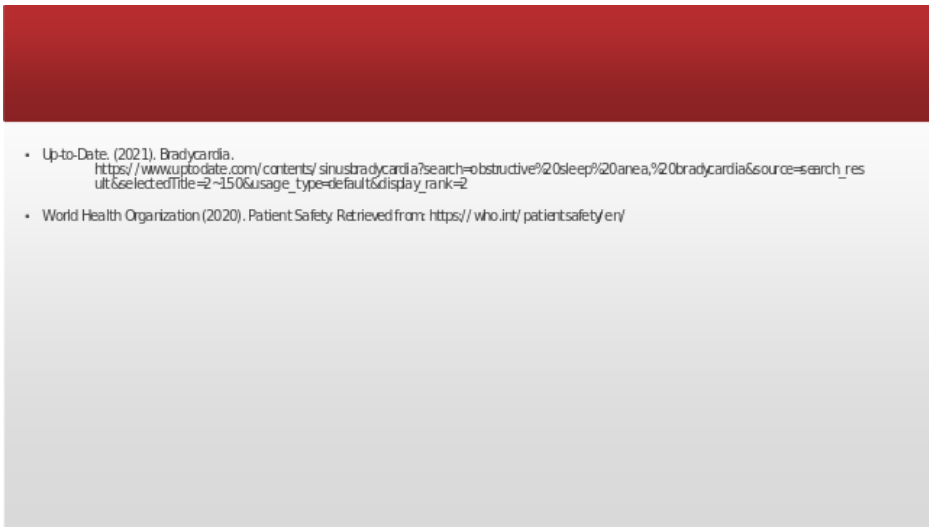

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Appendix C: Agenda

Agenda

- 0800 – 0815: Introduction and Housekeeping Items
- 0815 – 0825: Pre-test
- 0825 – 0840: Ice Breaker #1
- 0840 – 0910: Overview and Background Information

  Significance of the Problem

  Issues Identified in the Literature

  Issues Identified through Consultations
- 0910 – 0920: Ice Breaker #2
- 0920 – 0950: Refreshment Break
- 0950 – 1030: Communication and Reflection Exercise
- 1030 – 1100: Physiological Changes associated with the deteriorating patient
- 1100 – 1130: Case Studies
- 1130 – 1200: Post-test and Evaluation Survey

Appendix D: Sign-in Sheet

Sign in Sheet

Name	Employee Number	Email	Phone Number

Appendix E: Pre and Post Test

Pre and Post-Test

1. What is clinical deterioration?

   _____
   _____
   _____

2. Globally, as many as ____% of patients are harmed in primary and outpatient healthcare settings.

   A. 10
   B. 50
   C. 70
   D. 40

3. Which of the following work life factors contributes to the inability of the novice nurse to identify and manage clinical deterioration:

   A. Patient assignments
   B. Staffing levels
   C. Inadequate communication
   D. Unit Cultures
   E. All of the above

4. Which of the following vital sign parameters is most frequently not assessed correctly:

   A. Pulse
   B. Respirations
   C. Oxygen Saturation
   D. Temperature

5. According to HIROC, clinical deterioration is rated as the _____leading health care risk in Canada.

   A. 5^{th}
   B. 1^{st}
   C. 10^{th}
   D. 2^{nd}

6. ICU admissions from this unit has the highest mortality rate:

   A. ER

B. PORR
C. Obstetrics
D. General med-surg units

7. Research suggests that novice nurses have difficulty identifying clinical deterioration because:

   A. They lack confidence
   B. They lack experience
   C. They lack knowledge
   D. All of the above

8. In most cases, what is the first indicator of clinical deterioration?

   A. A change in vital signs
   B. Altered level of consciousness
   C. A change in hemodynamics
   D. All of the above

True or False

9. Rate of harm for surgical patients is higher than that of medical patients _____

10. Failure of the nurse to identify a change in patient status in a timely manner increases morbidity and mortality _____

11. 20 – 30% of ICU admissions in community hospitals come from general wards _____

12. Higher nurse-patient ratios have been found to lower the incidence of morbidity and mortality _____

13. A communication hierarchy has been shown to impact nurses management of clinical deterioration. _____

14. During busy day shifts, nurses often neglect to compete tasks such as checking blood work results. _____

15. One of the most important ways to increase nurse confidence in identification and management of clinical deterioration is to increase exposure. _____

16. Novice nurses often do not have the skills to detect subtle changes in a patient's status. _____

17. Continuity care does not affect the nurse's ability to detect subtle changes in patient status. _____

18. Novice nurses often feel intimidated by physicians and senior nurses. _____

19. Inadequate patient assessments often occur at night. _____

20. A nurse's years of experience is always an adequate measure of their exposure to clinical deterioration. _____

Pre/Post Test Answer Key

1. What is clinical deterioration?
   Clinical deterioration is characterized by a period of clinical instability, which if prompt appropriate action is not taken may lead to increased hospital stay, cardiac arrest, admission to the ICU, and increased morbidity and mortality

2. Globally, as many as ____% of patients are harmed in primary and outpatient healthcare settings.

   A. 10
   B. 50
   C. 70
   D. 40

3. Which of the following work life factors contributes to the inability of the novice nurse to identify and manage clinical deterioration:

   A. Patient assignments
   B. Staffing levels
   C. Inadequate communication
   D. Unit Cultures
   E. All of the above

4. Which of the following vital sign parameters is most frequently assessed incorrectly:

   A. Pulse
   B. Respirations
   C. Oxygen Saturation
   D. Temperature

5. According to HIROC, clinical deterioration is rated as the _____leading health care risk in Canada.

   E. 5^{th}
   F. 1^{st}
   G. 10^{th}
   H. 2^{nd}

6. ICU admissions from this unit has the highest mortality rate:

   E. ER

F. PORR
G. Obstetrics
H. General med-surg units

7. Research suggests that novice nurses have difficulty identifying clinical deterioration because:

E. They lack confidence
F. They lack experience
G. They lack knowledge
H. All of the above

8. In most cases, what is the first indicator of clinical deterioration?

E. A change in vital signs
F. Altered level of consciousness
G. A change in hemodynamics
H. All of the above

True or False

9. Rate of harm for surgical patients is higher than that of medical patients: **True**

10. Failure of the nurse to identify a change in patient status in a timely manner increases morbidity and mortality: **True**

11. 20 – 30% of ICU admissions in community hospitals come from general wards: **True**
12. Higher nurse-patient ratios have been found to lower the incidence of morbidity and mortality: **True**

13. A communication hierarchy has been shown to impact nurses management of clinical deterioration: **True**

14. During busy day shifts, nurses often neglect to compete tasks such as checking blood work results: **True**

15. One of the most important ways to increase nurse confidence in identification and management of clinical deterioration is to increase exposure. **True**

16. Novice nurses often do not have the skills to detect subtle changes in a patient's status. **True**

17. Continuity care does not affect the nurse's ability to detect subtle changes in patient status. **False**

18. Novice nurses often feel intimidated by physicians and senior nurses. **True**

19. Inadequate patient assessments often occur at night. **True**

20. A nurse's years of experience is always an adequate measure of their exposure to clinical deterioration. **False**

Appendix F: Ice Breaker 1

Health Care Scattergories

Directions:

1. Divide people into small groups of about 3-4 (game can also be played individually if necessary).
2. Provide each team with a pen and a piece of paper.
3. Cut letters of alphabet into squares and put in bag or hat.
4. Pull letter from a bag or a hat to determine the letter that will be used for the game.
5. There are 10 categories listed on the sheet. Don't let teams see the categories until time has started.
6. Each team has 4 minutes to think of words for each category that start with the letter chosen. Teams write their answers on their paper. After time is up, go through the categories and have each team say their answer.
7. Points are awarded only for unique answers (if no other team had the same word), so creativity is encouraged! Double points are awarded if the word for the category is two words that start with the letter. For example, asthma attack would get two points if no other team thought of the same word.
8. The team with the most points is the winner

Categories:

1. Hospital attire, something you would see worn in a hospital _____
2. Types of jobs in a hospital (not only health related) _____
3. Causes of medical errors _____
4. Things you dread at the doctor _____
5. TV shows which take place in hospitals _____
6. Movies that take place in hospitals _____
7. Celebrities associated with healthcare/hospital _____
8. Way to prevent a medical mistake _____
9. Book about healthcare _____
10. Things you shouldn't touch in a hospital/healthcare setting _____

A B C D E F G

H I J K M N

O P Q R S T

U V W X Y Z

Appendix G: Case Studies

Case Study #1

Janet is a novice nurse working on the surgical unit. This is Janet's third shift following completion of her orientation. She is an experienced community health nurse who wanted a career change. Mrs. Jones, an 88-year-old Caucasian female, is received to the surgical ward from the postop recovery room (PORR) following an umbilical hernia repair. Janet receives report from Trudy, the PORR nurse. Mrs. Jones had an excessive blood loss during the surgery causing her blood pressure to drop from 126/74 pre-op to 84/58 intra-op. Her pulse elevated slightly from 90 pre-op to 98 intra-op. She required a 1L bolus of ringer's lactate during the surgery. Her vital signs in the PORR were stable and prior to transfer to the unit were: BP 102/68, P 92, T 36.4, RR 18, and O2 saturation 98%. Her dressing was dry and intact.

During Janet's initial assessment of Mrs. Jones, she places the automatic BP cuff on her right arm and the oxygen saturation probe on her right index finger and sets the automatic cuff to every 15 minutes as per post-op policy. Her vitals are now: BP 90/68, P 98, T 36.6, RR 20 and O2 sat 98%. Her dressing is 90% soiled with blood.

The unit is extremely busy, and Janet does not reassess Mrs. Jones for 45 minutes. Her vitals are now: BP 74/46, P 110, RR 24, O2 sat 96%, and T 36.4. Janet begins to panic when she reads the vital signs monitor and rushes to find one Tracey, one of her colleagues who has worked on the unit for 3 years.

Questions:

1. What are the important indicators of what is happening to Mrs. Jones?
2. What should Janet do to determine accuracy of the vital signs?
3. Should the nurses notify the physician? If so, what important things should be included in the conversation?

Case Study #2

Katherine, a 55-year-old female, has been a patient on the surgical unit for 4 weeks due to her complex wound dressing. She was admitted to the unit following an emergency surgery for necrotizing fasciitis. Her past medical history includes anxiety and diabetes.

Today Katherine's assigned nurse is Melissa, a new graduate nurse who has worked on the unit for three months. This is only the third shift that Melissa has been assigned to Katherine. During the morning assessment, Katherine's vital signs are: BP 120/84, T 36.8, RR 18, O2 sat 99%; VAC dressing is intact, and she is having mild abdominal discomfort for which she denied the need for analgesia; and foley catheter is draining adequate amount of cloudy yellow urine. Late in the day, Melissa notices that Katherine has not gotten out of bed and has been sleeping most of the day. She does not pay any attention to this and goes on about her day because one of the senior nurses who was familiar with Katherine stated that "She's just having a bad day because of her anxiety." Katherine's nursing notes state that her activity level has been great since admission and she ambulates multiple times a day.

During the evening rounds, Melissa assesses Katherine's vital signs again and her temperature has increased to 38.8. Her discomfort has gotten worse, and she is tired even though she has slept most of the day.

Questions:

1. Should Melissa have taken any interventions following her morning assessment?
2. Were there any subtle changes in Katherine's status that may have warranted immediate action?
3. Are there any assessment findings that Melissa should review from previous shifts to give an indication that something may be wrong?

Case Study #3

Tonya just finished a busy shift on the surgical unit and rushes to finish her day. She is handing off report to Becky, a novice nurse, who is preparing for her night shift. Becky's patient assignment includes Tom, a 72-year-old male, who was admitted the previous day following a partial gastrectomy. Tonya's report states that Tom's "vital signs are stable, his dressing is dry and intact, he remains NPO, IV fluids are NS at 100cc/hr, and he spent a good day." Becky attempted to ask questions about Tom's medical history and pain level, but she was ignored. When Becky proceeds to complete her assessment, she notices that Tom's oxygen saturation is 88% on room air and proceeds to place him on 2L O2 via nasal prongs. 30 minutes later she returns to assess Tom's oxygen saturation again, but it has only increased to 89%. She continues to increase the oxygen to 4L hoping that this would increase the saturation to above 90%. While Becky was busy continuing her rounds, it would be almost 2 hours until she reassessed Tom. During this next assessment, his 02 was 92%. While he slept, she did not adjust the oxygen level and it remained at 4L. During hourly checks, Tom continued sleeping. At 0200, Becky attempted to wake Tom for a complete assessment of his vital signs and dressing however, Tom was difficult to arouse. Becky immediately called the physician who ordered an ABG because Tom has a history of COPD. The results showed an increase in C02.

Questions

1. What was the main cause of error in this scenario?
2. What important detail did Tonya leave out of her report?
3. If Becky had realized that Tom had COPD, would her intervention have changed?

Appendix H: Evaluation

WORKSHOP EVALUATION FORM

Name of Presenter: _____ Date: _____

Title of Workshop:

_____

Overall, how would you rate this workshop?

_____

1. How would you rate the usefulness of the content?

1 2 3 4 5

2. How would you rate the interactive activities?

1 2 3 4 5

3. How would you rate the presenter's knowledge in the subject?

1 2 3 4 5

4. How would you rate the presenter's style of teaching?

1 2 3 4 5

5. How would you rate the pace of the presentation?

Too fast____ Too slow____ Just right____

6. I feel I have increased my knowledge base regarding clinical deterioration.

1 2 3 4 5

7. What did you like best or find most useful about the presentation?

_____

_____

_____

_____

8. What did you find most interesting about the presentation?

_____

_____

_____

_____

9. What did you find least interesting about the presentation?

_____

_____

_____

_____

10. What would you change about the presentation?

_____

_____

_____

_____

11. Any other comments?

_____

_____

_____

_____

_____

Appendix I: Certificate of Completion

Certificate of Completion

This certificate is awarded to

_____

for the completion of

The Identification and Management of the Deteriorating Patient

_____ _____

Authorizing Signature Date

Appendix J: Communication Oragami

Communication Oragami

- Hand out a blank sheet of 8 x 11.5 paper
- Instruct participants to close their eyes, do not speak, and do not look at the paper but follow your instructions.
- Instructions:

  Start off with a sheet of paper and fold it in half downwards.

  Fold in half again (you don't need to make the crease from top to bottom – you just need to mark the center).

  Bring corners to the center so that you get a triangle shape with a rectangle under it.

  Fold the rectangle part under the triangle upwards then flip your origami and do the same on the other side.

  Grab the center of the triangle and pull both sides (holding the red spot) out. Flatten.

  Fold the front layer up and flip the origami boat to be facing upwards and do the same with the back layer. You'll get a triangle shape.

  Pull the sides outwards and you'll again get the square shape. Slowly pull the top parts outwards and you have your paper boat!

You will likely find that each shape is a little bit different! To hit the point home, refer to these discussion points and questions:

- Make the point that each paper looks different even though you have given the same instructions to everybody. What does this mean?
- Ask the group if you think the results would have been better if they kept their eyes open or were allowed to ask questions.
- Communicating clearly is not easy, we all interpret the information we get differently that's why it's very important to ask questions and confirm understanding to ensure the communicated message is not distorted.

Appendix K: Handover Report Policy

Eastern Health

HANDOVER TOOL: REGIONAL SURGICAL SERVICES (PERIOPERATIVE)	Administration of Perioperative Services 260-PO-330

Issuing Authority	**Debbie Walsh, Director - Regional Surgical Services (Perioperative)** Signed by Debbie Walsh Dated January 3, 2014
Office of Administrative Responsibility	Operating Room Post-Anaesthesia Care Unit Surgical Day Care
Author*(s)*	Carol Purchase, Clinical Educator Karen Chaffey, Clinical Educator Paula Taylor, Clinical Educator
Level	Three (III)
Original Approval Date	January 3, 2014
Effective Date	Upon Signature
Scheduled Review Date	June 2016
Actual Review Date	
Revised Date*(s)*	

Overview

Handover report occurs any time there is a transfer of responsibility for a client from one caregiver to another. The goal of handover is to provide timely, accurate information about a client's care plan, treatment, current condition and any recent or anticipated changes.

POLICY

All registered nurses within the Regional Surgical Services (Perioperative) follow the attached handover checklist when transferring clients to another department or during change of shift.

Scope

Perioperative registered nurses within Regional Surgical Services (Perioperative).

Purpose

To promote safe and consistent handover of client information at change of shift and during departmental transfers.

Procedure

1. Communicate applicable sections of the handover checklist using the SBAR format at change of shift and/or transfer of care **(**see **Attachment A)**.
2. Document handover report on the appropriate perioperative documentation tool (*e.g.,* Operating Room Record, Post-Anaesthesia Care Unit Record, *etc.*).

Supporting Documents

- Accreditation Canada (2012). Required Organizational Practices.
- AORN (2012). Perioperative Standards and Recommended Practices.
- Handover Report: Regional Surgical Services (Surgery): 220-COM-005.
- National Association of Perianesthesia Nurses of Canada (2011). *Standards for practice* (2nd edition). Pembroke, ON: Author.
- ORNAC (2013). Standards for Perioperative Registered Nursing Practice (11th edition).

Linkages

- Clinical Documentation: PRC-020
- Documentation on the Ambulatory Record: 260-SDC-040
- Documentation on the Post Anesthesia Care Unit Record: 260-PACU-020
- Hand Hygiene Policy: IPC-150
- Perioperative Documentation: 260-OR-310
- Personal Protective Equipment: IPC-190
- Privacy & Confidentiality: ADM-030
- Routine Practices: IPC-200

Key Words

change of shift, handover, handover tool, perioperative, Post-Anesthesia Care Unit, PACU, operating room, O.R., report, surgery, Surgical Day Care, SDC

Definitions & Acronyms

transfer of information	communication of client information between staff and service providers, which may be written or verbal
SBAR	situation, background, assessment, recommendation/ results

Attachment A

S -Situation B – Background A – Assessment R-Recommendations/Results

Handover Checklist	
S	Clients Name & Age
	Preoperative Diagnosis
	Surgeon & Surgical Procedure
	Anaesthesiologist & Type of Anaesthetic
	Pre-Op Mental Status
	Code Status/Advanced Care Directive
B	Allergies
	Isolation Precautions
	Pre-Existing Conditions (*e.g.,* diabetes, HTN)
	Cultural Considerations *(e.g.,* language barrier)
	Physical Limitations (*e.g.,* deafness, blindness, amputation)
	Client's Belongings (*e.g.,* hearing aids)
A	Vital Signs
	IV/CVAD's
	PCA's/Epidural
	Drains & Tubes (*e.g.,* Foley, Jackson Pratt, Hemovac)
	Intake & Output
	Estimated Blood Loss (available blood products)
	Surgical Site (*e.g.,* dressings, packings)
	VTE Prophylaxis (TEDs, SCDs)
	System Specific (*e.g.,* neurological, integumentary)
	Count/Pathology Sheet Complete
	Pain & Nausea
	Medications/Infusion Administered
R	Labs/ECG/Radiology (include pending results)
	Unexpected Events
	Special Equipment (*e.g.,* CPAP machine)
	Physician Orders

Appendix L: Transfer of Information Policy

TRANSFER OF INFORMATION	Patient/Resident/Client Care

– CLIENT PATIENT RESIDENT TRANSFER	PRC-175

Issuing Authority (sign & date)	**Debbie Molloy, Vice President** Signed by Debbie Molloy Dated July 27, 2017
Office of Administrative Responsibility	Quality, Patient Safety and Risk Management Department
Author	Deanne Emberley Quality and Clinical Safety Leader &Leslie Ann Rowsell Quality and Clinical Safety Leader
Level	Two (II)
Original Approval Date	March 6, 2014
Effective Date	Upon signature
Scheduled Review Date	March 2017; July 2020
Actual Review Date	
Revised Date(s)	July 27, 2017

Overview

This document provides guidance for the development of processes that support a consistent approach to transferring client information throughout Eastern Health (EH).

The accurate and timely Transfer of Information (TOI) ensures that EH clients receive quality care through transition points across the continuum of care. Miscommunication of health history and care requirements may lead to delays in care, negative outcomes, or harm.

Transition points for TOI are:

- Change of shift Report
- Breaks or off unit requirements
- Change in the client's condition
- Transfer within the site – unit to unit
- When the client leaves their area to temporarily visit another area i.e. to Inpatient to Diagnostic Imaging, Bungalow resident to Physiotherapy, Rural hospital to Endoscopy.
- Transfer via Ambulance Ground or Air
- Site to Site within the Health Authority
- Outside of the Health Authority
- Discharge Home with EH Community Follow-up
- Discharge Home

Each Program is accountable for the implementation of TOI processes using a standardized regional approach. All staff of EH will transfer the appropriate client information through approved processes and tools.

Effective communication is a critical element in improving client safety, particularly with regard to transition points such as shift changes, end of service, and client movement to other health services or community-based providers.

Guiding Principles of TOI are:

- Standardize whenever possible
- Simplify/ minimize redundancy
- Standard Documentation
- Develop supporting tools where appropriate
- Reflect best practice
- Maximize safety, minimize risk
- Patient and family centered
- Congruent with child friendly and senior friendly initiatives
- Involve patients and families
- Share information (transparency and open-ness)
- Electronic, where possible
- Legible
- Cohesive approach
- Supported by education/training
- Sustainable/Evaluation plan

POLICY

Eastern Health will have mechanisms in place to ensure:

- Timely and accurate transfer of information at care transition points
- Adherence to established mechanisms to transfer information
- Established safeguards are in place to protect the confidentiality of the information

All professional disciplines will identify care transition points related to their practice and assure that information and accountability is transferred appropriately. TOI is documented as being given or received in the health record. All tools used in the transfer of information will be retained with the health record.

When a client is escorted by the primary Health Care Professional (HCP), a TOI tool is not required. In this case, the escort must be knowledgeable regarding all aspects of the client's history and care and document accordingly.

Programs will develop an Audit plan. Effectiveness of communication will be evaluated and improvements will be made based on feedback received/auditing

processes.

Scope

All HCP involved in patient information transfer will utilize effective communication regarding client information at any point of transfer in care.

Purpose

The purpose of this policy is to identify the expected standard of Transfer of Information for all Healthcare Professionals.

Procedure

A. <u>Transfer of Information Handover Report:</u>

Handover/Bedside report occurs at every shift change between the incoming and outgoing HCP.

1. The HCP ensures all documentation is accurate and up to date in the client's health record (inclusive of Medication Administration Record (MAR), kardex etc).
2. Safety Round includes the following but not limited to:
    i. checking that a client armband is present and correct
    ii. if appropriate that an allergy band is present and correct,
    iii. side rails are appropriately engaged and bed alarms on
    iv. visual check of the any intravenous infusions (with or without medications) and
    v. A safety check of the environment (call bell within reach of patient) including the identification of potential safety risks and that supplemental equipment is present and working, example; accurate oxygen therapy.
3. The HCP can then ask if the client/family has any questions or anything to add to the transfer of information.
4. Documentation of TOI is completed by the outgoing and/or incoming HCP.

B. <u>Transfer of Information: Client is temporarily off the unit.</u>

When a Patient has to leave the unit for a temporary reason, i.e. appointment, diagnostic test, procedure, treatment etc. TOI must occur within the health care team as appropriate; i.e. escort, paramedicine, receiving unit.

1. In cases where the client has an escort, verbal report will occur. This must be documented in the Health Record.

2. In cases where the Temporary SHARE/Kardex tool is used, the receiving areas will review the information and complete the documentation on the tool or in the Health Record as required
3. All inpatients transported for diagnostic tests will have with them the required documents for TOI, i.e. Patient Chart, MAR and/or SHARE tool. After completion of the diagnostic test, any appropriate documentation will be completed. Communication from the DI area to the primary HCP will occur if there are specific instructions for the client. Patients accessing DI from ambulatory programs, will use the referral as the primary source of TOI.
4. Clients leaving their unit for care in another area for a temporary period will require transfer of information and follow up as per existing policies for that specialty area, example; Peri-operative, Labour and Delivery, Mental Health and Addictions etc.

C. <u>Transfer of Information: Transfer of Client from the Emergency Department to an Inpatient Unit</u>

1. A verbal report of the client status will be given to the receiving unit HCP prior to the transfer of the client, including equipment requirements for the receiving unit. Completion of a SHARE tool must occur.
2. Any changes in the client's status between the time of report and the time of transfer will be communicated to the receiving unit HCP upon transfer of the client.
3. Receiving unit signs the SHARE tool upon receiving patient.

D. <u>Transfer of Information: Client Permanent transition between units/sites</u>

A verbal report of the client's status will be given to the receiving unit HCP prior to the transfer of the client. This includes equipment requirements for the receiving unit and completion of a SHARE / Electronic tool or alternate must occur.

1. Any changes in the client's status between the time of report and the time of transfer will be communicated to the receiving unit HCP upon transfer of the client.
2. Confirm resource requirements are in place before transfer, such that a safe transfer can be accomplished (e.g., equipment needs, oxygen, bariatric considerations, medication etc).
3. Review expected route and time of transfer.
4. Ensure the transporting staff receive appropriate TOI for care needs enroute.
5. Sending/receiving unit documents TOI has taken place.
6. The completed TOI tool must be retained with the health record.

C. Transfer of Information: Health Care Professionals (Community Health / Social Worker, Physiotherapist, /Occupational Therapist /Respiratory Therapist /Dietician/Speech Language Pathologist Psychologist)

Anticipated transfer

In anticipation of a client transfer, the transferring HCP documents information in the client's health record that will guide the ongoing discipline specific intervention. The receiving professional will document review of TOI.

Unanticipated transfer

When notified of a client transfer after it has occurred, the transferring HCP assesses whether additional or updated written documentation is needed.

The points for consideration are:

- Whether relevant information is documented in the client's health record; and if there is information that requires immediate attention (e.g., safety concerns), which is to be provided to the receiving HCP as soon as possible.
- The transferring HCP contacts the receiving HCP of the same discipline, to advise of the transfer.
- If unable to make contact with the receiving discipline specific HCP, provide notification of transfer to a member of the health care team of the receiving unit
- Whether the receiving HCP needs to contact the transferring HCP for any information requiring clarification, and documents in the client's health record that the TOI was held
- The use of the most appropriate communication tool to convey the necessary information. Example; The Community Health Referral or the SHARE tool.

D. Transfer of Information: Client to Home/Discharge

Clients may require assistance from community services in preparation for discharge to home.

- The discharge plan will be reviewed with the client and family, and an opportunity for discussion and clarification will occur.
- The client may then bring his/her own TOI tool to the next care provider. The decision to provide the client with the paper discharge information is at the discretion of the first health care provider, considering the timeframe for mail delivery, and the clients expected date of follow up with next provider.
- All discharge information will be scanned /emailed or faxed to the next HCP as per existing practice.

- Referrals will be made to appropriate providers based upon the assessment by the health care team.

G. Transfer of Information: Audit plan

Programs will audit standardized TOI processes using tools designed by each respective program. This will include audits of the transition in care points using direct observation and chart reviews.

Audits will need to be completed at a minimum of once per quarter. The results are to be shared within the program and the TOI Steering Committee.

Supporting Documents *(References, Industry Best Practice, Legislation, etc.)*

- Accreditation Canada Required Organizational Handbook 2017
- Evans.B, Potvin.C, Johnson.G, Henderson.N, Yuen,I, Smith.T, Metham.S, Taylor.S,and Snieker.D (2011)*Enhancing Patient Flow in an Acute Care Hospital: Successful Strategies at the Juravinski Hospital*, Vol.14 No. 3, p.66- 75.
- Pennsylvania Patent Safety Advisory (2008) *Care at Discharge-A Critical Juncture for Transition to Posthospital care*,Vol.5,No.2,p.39-43

Linkages

- Accreditation Canada ROP Handbook 2017
- Circle of Care Policy- (ACP-015)
- Discharge from Hospital PRC-033
- Handover Tool: Regional Surgical Services (Perioperative)- Administration of Perioperative Services (260-PO-330)
- Handover Report: Regional Surgical Services (Surgery)- Communication 220-COM-005
- Occurrence Reporting and Management (QRM – 080)
- Over Capacity Protocol (PRC – 120)
- Physician Responsibility for Completion of Health Records RM-CR(1V)-150
- Positive Patient Identification Policy – (PRC-130)
- Provision and Access to Information for Ongoing Care and Service to Treating Health Care Providers (RM-CR(I)-200)
- Security of Patient Client Resident Personal Health Information (RM-CR (VI)-100)
- Transfer of Accountability at Change of Shift in a Nursing Home Environment (307-DOC- 190)
- Transfer of Patients-Interfacility: 310-ER-ATD-20
- Transfer of Information for Inpatients Receiving Diagnostic Imaging (DI-210)
- SHARE Tool Transfer of Information Part I&II Ch-1211
- SHARE Tool Transfer of Information Temporary Transfer Ch- 0231

Key Words

Transfer of information
Transition points
Client Patient Resident Safety
Safe Transitions
Report
Handover
TOI
SHARE Tool
Information
Effective communication

Definitions & Acronyms

Caregivers	All licensed and unlicensed individuals who provide care/services to Eastern Health clients/ patients/ residents.
Client	Refers to all recipients of care along the continuum of services provided by Eastern Health. (Client/Patient/Resident)
Handover Report	Handover report will include the verbal reporting of the client plan of care, treatment, current condition and any recent or anticipated changes with the use of the SBAR (Situation, Background, Assessment, Recommendation) communication tool to enhance client engagement and a visual "bedside check" to enhance client safety.
Temporary Transfer	When a client and his/her care transitions temporarily to another care team with anticipation of returning to original care provider. This may be within or between facilities.
Permanent Transfer	When a client and his/her care transitions permanently to another care team. (Note: When a resident transfer from Long Term Care to the Emergency Department, there is potential for permanent transfer and therefore the permanent TOI tool will be used).
Transfer of Information (TOI)	Process to ensure that accurate client/ patient/ resident information in efficiently communicated between caregivers to provide quality care through transition points.

HCP	Health Care Professional is a person who by education, training, certification, or licensure is qualified to and is engaged in providing health care to a patient/healthcare consumer

Appendix M: Post-Operative Monitoring Policy

Eastern Health

POSTOPERATIVE MONITORING	General Therapeutics 204(NUR)-6-040

Issuing Authority (sign & date)	**Mollie Butler, Regional Director of Professional Practice** Signed by Mollie Butler Dated March 18, 2015
Office of Administrative Responsibility	Professional Practice
Author	Kelly Quinlan, Gloria Earle & Kelli Pitcher, Clinical Educators
Level	Three (III)
Original Approval Date	March 25, 2010
Effective Date	April 12, 2010
Scheduled Review Date	April 2013; March 2018
Actual Review Date	December 2014
Revised Date(s)	March 18, 2015

Overview

Nursing care of the postoperative client is divided into two phases. The first phase occurs during the immediate recovery period in the post anesthesia care unit (PACU).

The second phase (convalescent period) occurs from the time the client is discharged from PACU and continues until the client is discharged from the hospital. Postoperative care is dependent upon the type of surgery, preexisting medical conditions and complications encountered. Postoperative clients are at risk of clinical deterioration and it is vital that this is monitored.

POLICY

1. Initial assessment of the postoperative client in the convalescent period is the responsibility of the Registered Nurse.

2. Vital sign assessment includes heart rate, blood pressure, respiratory rate, temperature and oxygen saturation.

3. In the convalescent postoperative period vital signs are monitored at a minimum of:

    - Adults: Every hour for 4 hours, then every 4 hours for 48 hours

- Pediatrics: Every 15 minutes for 30 minutes; every 30 minutes for 1 hour; every hour for 2 hours; then every 4 hours for 48 hours.

4. More frequent assessment may be required based on client condition, unit specific policy or clinical pathway/protocol.

Scope

This policy applies to Registered Nurses and Licensed Practical Nurses.

Purpose

To establish the minimal standard of care for clients in the convalescent postoperative period.

Procedure

1. For information on care of the postoperative client in the convalescent phase please refer to Mosby's Nursing Skills:
   - "Postoperative Care: "Convalescent Period" and
   - "Postoperative Care: Convalescent Period (Pediatric)"

2. Neurovascular and /or Neurological assessment may be required based on the surgical intervention performed.

Supporting Documents *(References, Industry Best Practice, Legislation, etc.)*

- Academy of Medical-Surgical Nurses (AMSN) 2014.
- Liddle, C (2013). Principles of monitoring postoperative patients .Nursing Times;109:22,24 -26
- Mosby's Clinical Skills

Linkages

- PRC -020 Clinical Documentation Policy
- IPC -200 Routine Practices Policy
- IPC -150 Hand Hygiene
- PRC –130 Positive Patient Identification Policy
- IPC -190 Personal Protective Equipment
- PRC-040 Epidural Protocol
- PRC-125 Patient Controlled Analgesia for Acute Pain
- PRC-025 Continuous Peripheral Nerve Block

- 220-PC-001 Assessment of Acute Pain for Adult Inpatient Surgical Clients
- 270CWH-NB-10 Infant Pain Assessment and Management
- 204(NUR)-8-140 Medication Transcription and Administration

Key Words

- Postoperative
- Post -op
- Vital Signs
- Neurovascular
- Neurological

Definitions & Acronyms

Convalescent period	Occurs from the time the patient is discharged from PACU and continues until the patient is discharged from the hospital.
Nurse	Registered Nurse or Licensed Practical Nurse

Policy History

This policy replaces the following policies:

Legacy Board	Policy #	Policy Name	Date Revised
EH	204(NUR)-6-040	Postoperative Care for Inpatients	2010-03