A LEARNING RESOURCE FOR NOVICE LABOR AND DELIVERY NURSES IN OBSTETRICAL OPERATING ROOMS

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A report submitted to the School of Graduate Studies in partial fulfillment of

the requirements for the degree of

Master of Sciences of Nursing

Faculty of Nursing

Memorial University of Newfoundland

December 2023

St. John’s, Newfoundland and Labrador

Abstract

Background: Registered nurses working in the Case Room at the Janeway Children's hospital have a unique scope of practice that includes both labor and delivery nursing and Operating Room nursing. The orientation program for the Case Room includes extensive theoretical and practical teaching relating to vaginal childbirth but the resources to support novice nurses' knowledge development of surgical deliveries, known as Cesarean sections, is limited. As approximately one third of childbirth in Canada is via Cesarean section, a learning resource for the Janeway Case Room's Operating Room that is specific to Cesarean sections can help enhance the knowledge and skills of novice labor and delivery nurses, and ultimately, promote enhanced maternal and fetal outcomes.

Purpose: To develop a resource manual for novice labor and delivery nurses to support knowledge uptake and skill development in the Case Room Operating Rooms for nursing care of patients undergoing Cesarean section.

Methods: I completed a literature review, consultations with local key stakeholders, and an environmental scan. These methods were integral to determine if there was a need for a learning resource specific to Cesarean sections, identify content for the resource, as well as potential effective modes of delivery.

Results: The results of the literature review, consultations, and environmental scan assisted with content development of the learning resource, as well as the most appropriate mode of delivery. The evidence supported a need for a learning resource that was both specific to Cesarean sections and to the Janeway Case Room setting. Content of the educational resource includes roles and responsibilities of the Operating Room nurse, regulations for the Operating Room, instruments specific to Cesarean sections, a review of appropriate anesthesia for Cesarean sections, a timeline for typical Cesarean sections as well as emergency preparedness. The chosen mode of delivery is a hard copy of a resource manual that can also be available online in the future.

Conclusion: A learning resource for the Janeway Case Room Operating Room specific to Cesarean sections is expected to enhance the understanding of nursing care for novice labor and delivery nurses by supporting their theoretical knowledge uptake, skill development, and confidence. It is further anticipated that implementation of the learning resource will positively contribute to enhanced maternal and fetal outcomes before, during, and after Cesarean sections.

Key words: Cesarean section, Operating Room, labor and delivery, nursing, novice nurses, education, resource

Acknowledgements

This practicum project would not have been possible without the support of Dr. Renee Crossman from Memorial University, who has been my supervisor throughout the practicum and a constant source of knowledge, support, and guidance. Her influence on me both as a nurse and as an academic is insurmountable and I am forever thankful for her support.

I'd also like to thank Katie Knott, RN, the Clinical Educator for the Janeway Case Room. She has been another source of support and knowledge, helped to develop content, provided statistics and acted as a sounding board for different ideas.

To my co-workers at the Janeway Case Room, thank you for supporting me through my graduate program, for participating in my consultations, and helping to provide ideas for content development and sharing your expertise and experiences. I could not be the labor and delivery nurse that I am or have created this project without the registered nurses in the Case Room.

Finally, I would like to thank my family. To my fiancé, Zach, who patiently supported me through years of graduate school, and my parents, Paul and Tammy, who always preached the value of education and a strong work ethic. Lastly, I'd like to thank my late grandparents, Leslie and Lorraine, who have supported me in ways they could never have imagined but would have loved to see.

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The Cesarean section is the most performed surgical procedure for women in North America, and accounts for almost one-third of childbirth (Frederick et al., 2016). A Cesarean section is defined as "delivery of a baby through a surgical incision made in the mother's abdomen and uterus [...] performed when the normal vaginal childbirth is not proper for the mother or when the childbirth must be done sooner" (Roshangar et al., 2020, p. 267). A Cesarean section is indicated for a multitude of reasons, with the most common reasons including malpresentation of the fetus, labor dystocia, fetal macrosomia, abnormal fetal heart rates, placenta previa, pregnancy of multiples, maternal contraindications for vaginal delivery, and repeat Cesarean deliveries (Society of Obstetricians and Gynecologists (SOGC), 2023).

The Janeway Children's Hospital is the only pediatric tertiary care center in Newfoundland and Labrador. It is also home of the Labor and Delivery department, known as the Janeway Case Room (Knott, personal communication, 2023). The Janeway Case Room services all high-risk maternity care for the province as well as routine care for the St. John's metro area. Other hospitals in Newfoundland and Labrador that provide maternity services only have the means to support vaginal deliveries in the labor and delivery departments, and deliveries via Cesarean section require transfer to the main Operating Room of the hospital, which I discovered through anecdotes and conversations with peers. The Janeway Case Room, however, is equipped to facilitate both vaginal and Cesarean deliveries within the Case Room itself, through the management of two Obstetrical Operating Rooms that are completely staffed by Case Room staff. This makes the role of being a labor and delivery registered nurse at the Janeway Case Room unique. As such, it is imperative that labor and delivery registered nurses at the Janeway Case Room are appropriately orientated to nursing roles in the Operating Room as well as labor and delivery.

Currently, the Janeway Case Room nursing staff includes approximately 60 labor and delivery nurses that have varying amounts of labor and delivery experience. Typically, the Children and Women's Health Program hosts three formal orientation programs per year for the Case Room, facilitated by the Clinical Educator. The orientation program for new hires currently includes two weeks of theoretical learning via presentations and modules, both virtually and in person, as well as eight to ten weeks of co-signed nursing with an experienced preceptor. The learning modules include an overview of the roles and responsibilities of a labor and delivery registered nurse, as well as a theoretical review of obstetrical nursing.

I first noticed a gap in my education when I was a novice labor and delivery registered nurse completing my own orientation. This gap related to the theoretical and practical learning of Operating Room nursing, despite the fact that Cesarean sections account for 30% of births in Canada (Canadian Institute for Health Information (CIHI), 2023). The portion of orientation that is specific to Operating Room nursing includes one day of in-class presentations created and taught by staff from the main Operating Room of the Health Sciences Centre (St. Johns, Newfoundland) or the Janeway (St. Johns, Newfoundland). These Operating Rooms do not perform any obstetrical surgeries or care for any labor and delivery patients, and therefore the education provided is not specific to the Case Room or any surgical procedures performed in labor and delivery. Instead, the education consists of generalized roles and practices of a general Operating Room. This led to my idea my practicum project – the development of a learning resource to support novice labor and delivery nurses in obstetrical Operating Rooms. I felt that by creating an educational resource that is specific to the roles and responsibilities of the Janeway labor and delivery nurse in the Operating Room during Cesarean sections, I can improve the current orientation program and the skills of the novice labor and delivery nurse. I

hope to do this by addressing gaps in the learning material and supporting knowledge uptake by novice registered nurses. My overall goal is to improve the proficiency, skills, and confidence of the novice labor and delivery nurse in the Operating Room through the development of an educational resource and, thus ultimately improve maternal and fetal outcomes during and post Cesarean sections. While Cesarean sections are not the only procedure that may occur in an Obstetrical Operating Room, for the scope of this project, the focus is the Cesarean section due to the incidence in Canada and will be site-specific to the Janeway Children's Hospital. This educational resource could be used as a starting point for the creation of subsequent resources specific to other surgeries and procedures that may occur in an obstetrical Operating Room.

Objectives

The overall goal of my practicum project was to develop a learning resource to support novice labor and delivery nurses' orientation to Operating Room nursing. My resource is site-specific to the Janeway Case Room, to best suit the learning needs of the unique scope of practice for a Janeway Case Room registered nurse.

The key objectives of my practicum project are as follows:

1. To explore and examine the scope of practice of registered nurses in the Operating Room specific to case room nursing, including the roles and responsibilities of the scrub nurse, circulating nurse, and assisting nurse during an obstetrical surgery case through a literature review, consultations with nursing experts, and environmental scans with comparable health agencies, such as Central Health, Labrador-Grenfell Health, and other health agencies within Canada such as Nova Scotia Health.

2. To examine evidence to support labor and delivery nurses in operating room skills and competencies and the subsequent impact on fetal and maternal outcomes through a literature review and analysis of existing agency policies.

3. To enhance the skills and proficiencies of novice labor and delivery room nurses through an educational resource for the orientation program for the Janeway Case Room through educational resource development.

4. To demonstrate advanced nursing practice competencies, including research utilization, leadership, consultation and collaboration, education, and optimizing health systems.

Overview of Methods

As part of the development of my educational resource, my methods included a literature review, consultations, and an environmental scan. To create my resource manual, I first completed a literature review. The goal of the literature review to was to examine existing evidence literature pertaining to Cesarean sections, indicators of maternal and fetal outcomes related to delivery via Cesarean section, and nursing roles such as circulating, assisting, and scrubbing in Obstetrical Operating Rooms. I also searched for data pertaining to learning needs and knowledge development for novice nurses. I conducted my literature review to address the gap in knowledge of labor and delivery nurses pertaining to Operating Room nursing from an educational perspective.

Following the literature review, I conducted consultations with my peers at the Janeway Case Room, while simultaneously conducting an environmental scan with key stakeholders at other labor and delivery centers. The purpose of the consultations was to examine the knowledge

and confidence of the Operating Room skills for both experienced and novice labor and delivery nurses at the Janeway Case Room as well as to gather ideas for content creation and resource development. The environmental scan helped to examine existing programs, policies and standards for labor and delivery nurses in orientation and in the Operating Room, as well as scope of practice for registered nurses at other labor and delivery centers. Using information I obtained in the consultations and my environmental scan, combined with evidence from the literature review, I was able to formulate an outline for my resource. The development of my learning resource ultimately came from synthesizing the results from the three methods.

Summary of the Literature Review

Through the literature review, I analyzed both quantitative and qualitative literature pertaining to Cesarean sections. During this phase of the practicum project, I examined evidence that enabled me to enhance my own understanding of obstetrical Operating Room nursing, which is a keen interest of mine. The purpose of my literature review was to gain insight into existing evidence about Cesarean sections and the impact on maternal and fetal outcomes when labor and delivery registered nurses with enhanced education are present in the Operating Room during the Cesarean section. I also explored the impact of educational interventions on nurses' knowledge uptake and the most effective modes of delivery for the interventions. My literature review can be found in full in **Appendix A**, and the literature summary tables can be found in **Appendix B**. I searched the following databases: the Health Sciences Library, CINAHL, and the Cochrane Library. Search parameters included the role of the registered nurse in a labor and delivery Operating Room, the impact of having trained labor and delivery nurses present in the Operating Room for Cesarean sections on maternal and fetal outcomes, as well as effective modes of education delivery.

I critically analyzed and synthesized the literature using the Public Health Agency of Canada (PHAC) Critical Analysis Toolkits (Descriptive and Analytic) (2014), as well as the Joanna Briggs Institute (JBI) Qualitative Literature Checklist (2020). The literature reviewed enabled me to learn more about obstetrical and Operating Room nursing and the impact of education on Operating Room nursing skills. This knowledge helped me to create a consultation plan and perform an environmental scan to compare existing programs from the local context to the results of the literature review.

Having educated labor and delivery registered nurses in the operating room promotes positive maternal outcomes such as reduced maternal anxiety, decreased surgical time, and decreased incidence of post-operative surgical site infections, as well as promotes patient satisfaction and enhances family bonding (Bathish et al., 2022; Dias et al., 2022; Frederick et al., 2016; Roshangar et al., 2020). Additionally, there is a positive effect of having labor and delivery registered nurses with enhanced education in the Operating Room on fetal outcomes, as it promotes skin-to-skin contact, maternal-fetal bonding and increases the rate of exclusive breastfeeding (Schorn et al., 2015). Registered nurses with more opportunity for education have enhanced learning and skill development and novice registered nurses learn well through self-study modules, in-person facilitated learning sessions, and through simulation (Clark et al., 2022; Dhakal et al., 2022; Dunne, 2022; El-Nemer et al., 2009; Fuhrmann et al., 2015; Gee et al., 2021; Melendez et al., 2019; Reza et al., 2021).

Summary of Consultations

Following the literature review, I conducted consultations with peers, who are registered nurses working at the Janeway Case Room. The purpose of the consultations was to examine their existing perceived knowledge and confidence with respect to Operating Room nursing, as

well as to gather ideas for the content of the resource. Throughout this document, individuals who participated in the consultations will be referred to as consultees. I contacted consultees by sending an e-mail to all nursing staff members of the Janeway Case Room inviting them to participate in my consultation process, using Eastern Health's internal e-mail system. The e-mail included an invitation letter and a short questionnaire to be completed at their convenience, and can be found in **Appendix C.** My goal was to consult with both novice and experienced nurses. For the context of this project, I defined experienced nurses as having more than two years of experience in labor and delivery, and novice nurses having two years or less of labor and delivery experience. This sample size was chosen based on maximum variation sampling for the intended product, and included a mixture of both novice and experienced labor and delivery nurses to generate data that provides a rich, thick description of the phenomenon (Sandelowski, 1995). My consultation report can be found in full in **Appendix E**.

In the questionnaire, I included several questions to be answered with a Likert-scale style response as well as a couple of free response questions. Both types of questions focused on nursing experience, the role of the consultee in the obstetrical Operating Room, and whether consultees felt adequately prepared for that role. I also asked about content that would be beneficial to include in an educational resource for obstetrical Operating Room nursing. Consultees returned the completed questionnaires to me via email or left them in a sealed envelope in the Case Room office where I collected them in person.

After the data collection, I conducted a content analysis to describe the results of my consultations. I first used descriptive statistics to describe the findings from the Likert scale-style questions to describe, quantify, and categorize data using written and verbal themes (Elo & Kyngas, 2008). The results included that nurses are often assigned to roles within the Operating

Room and are expected to perform the role of an Operating Room registered nurse as well as an obstetrical nurse. Novice labor and delivery nurses often felt unprepared for this role, while experienced labor and delivery nurses felt prepared. There was overwhelming support for the need for an educational resource that is specific to the Janeway Case Room Operating Rooms to support novice labor and delivery nurses in their role. Most consultees suggested that novice labor and delivery nurses, in general, do not feel that they had a good understanding of the roles and responsibilities of the Operating Room nurse after the classroom orientation and subsequently felt unprepared to work with an Operating Room assignment. Most consultees suggested that maternal and fetal outcomes are impacted by registered nursing skills in the Operating Room based on their experience and suggested that outcomes are impacted by Operating Room nursing skills in terms of skill proficiency, confidence, and working speed.

I also completed a thematic analysis of the free-text response questions to identify over-arching themes to describe the phenomenon (Elo & Kyngas, 2008). The over-arching theme was that the working speed of the registered nurse in the Operating Room is a predictor of maternal and fetal outcomes in terms of task performance and identification of priorities, with a faster working speed contributing to enhanced maternal and fetal outcomes. A barrier to faster working speed for novice registered nurses was the ability to find required items and instruments and the knowledge of how to use them. Consultees (both novice and experienced) described simulation labs as their preferred mode of delivery and that an educational resource for the Case Room Operating Room would be of benefit as long as it was specific to Obstetrical operations only. Consultees also identified content for the educational resource and suggested that pictures and names of instruments specific to Cesarean sections would be helpful when trying to learn the scrub nurse's role. Finally, a timeline of a typical Cesarean section in terms of task performance

with a clear description of the roles and responsibilities of the circulating, assisting, and scrub nurse should be included in the resource. I compiled the feedback from my consultations to form an outline for my resource, with content based on the results of the consultations and the environmental scan, which occurred simultaneously.

Summary of Environmental Scan

I completed an environmental scan simultaneously with my consultations. Like the consultation process, I used e-mail to contact individuals. I sent a letter of invitation and a short questionnaire to individuals from the Women and Children's Health Programs at Western Health, Labrador-Grenfell Health, and Central Health in Newfoundland and Labrador, which can be found in **Appendix D.** These hospitals were chosen as they are the other agencies in Newfoundland Health Services that provide obstetrical services. I also contacted a representative from the Izaak Walton Killam (IWK) Centre in Halifax, Nova Scotia, as it is a tertiary care center and is comparable to the Janeway Children's Hospital in terms of programs and services. The report of my environmental scan, in combination with the consultations report, can be found in full in **Appendix E.** My goal for the environmental scan was to locate and examine other resources if they existed to determine the content to be included in my educational resource, as well as mode of delivery. I also hoped to gain insight about barriers and facilitators to implementing such a resource. In the questionnaire, I asked open-ended questions about how different organizations utilize labor and delivery nurses in the Operating Room, as well as the expectations of the orientation program for these agencies. I also completed an Internet search of current guidelines for obstetrical and Operating Room nursing. In this phase, I focused on the SOGC guidelines and Operating Room Nurses Association of Canada (ORNAC) standards, as well as Eastern Health specific policies for the Women and Children's Health Program. I also

reviewed policies from the Perioperative Program in Eastern Health that were specific to Operating Room nursing.

The emails I sent for the environmental scan had a low response rate and therefore data collected from contacts across the province and the country was limited. The responses I did receive, however, suggested that an educational resource for Obstetrical Operating Rooms would not be of benefit at the Newfoundland and Labrador (NL) facilities that I contacted. This is likely because none of the facilities in NL from which I received a response operate their own Obstetrical Operating Rooms. At these facilities, Cesarean sections require transfer of the patient from the Case Room to the main Operating Room and labor and delivery nurses are no longer responsible for care of the patient. My scan of grey literature also proved to be challenging, as many guidelines and standards from governing bodies, (i.e., SOGC and ORNAC), were either not available for public use or did not have any guidelines specific to the nursing roles in the Operating Room. There were some policies that were agency specific to the Janeway Children and Women's Health Program and general Perioperative Programs, there were no policies specifically for registered nurses in the Case Room Operating Room. The low response rate was a limiting factor of my environmental scans, and if I were to change anything about the practicum project it would be to continue to expand my environmental scan across other centers in Canada to have more data for the project. Due to time constraints, however, and having sufficient data obtained from other sources, I did feel confident in proceeding with the development of my resource.

Summary of the Resource

The findings from my literature review, consultations, and environmental scan helped to shape the plan for the development of my educational resource, specifically, the content and mode(s) of delivery. The evidence from my literature review provided a base for project development, notably the need for a resource, and helped to narrow my ideas to create an effective learning resource. While the scope of my educational resource is specific to Cesarean sections only, it could be used as a starting point to develop other resources to support orientation for less common surgeries and procedures that occur in an obstetrical Operating Rooms. The content is based on findings of the consultations conducted in the early phase of the practicum project, as well as from my literature review. The learning resource that I have created is included in **Appendix H** and was designed for both electronic and paper versions. For now, the aim is to use the paper version is used until the electronic version can be fully developed. To do this, I will have to submit the resource as a PDF to the clinical educator when the report is finished to be uploaded to the online learning system.

The content in my learning resource includes an introduction to obstetrical Operating Room nursing, a background of the Cesarean section, and guidelines pertaining to the Operating Room environment and dress code. I also included a clear description of each of the three registered nursing roles in the Operating Room (the scrub nurse, the assisting nurse, and the circulating nurse) and how they relate to Cesarean sections specifically. I reviewed instruments and equipment required for the Cesarean section, which included pictures and a brief description of how each instrument is used in the context of a Cesarean section. I outlined the Surgical Count and the Surgical Safety Checklist as per the World Health Organization (WHO), as well as provided extensive detail about different types of anesthetics used in the surgery. I have outlined

each phase of the Cesarean section from a nursing care point of view, including pre-operative, intra-operative and post-operative phases. My resource also includes an explanation of each of the required documents in the Operating Room, with examples included in an Appendix of the resource. Lastly, I also included a section about the emergency Cesarean section, as well as debriefing after emergencies. The resource is divided into chapters, and each section has a "test your knowledge" quiz following the content, with a full answer key at the end of the resource.

The theoretical framework, Knowles' Theory of Adult Learning, guided the creation of my educational resource. While this theory is not specifically a nursing theory, it is a theoretical framework directly related to my goal of the practicum project, which is to enhance the learning and knowledge uptake of novice labor and delivery nurses in efforts to improve maternal and fetal outcomes. This theory suggests that adults will have enhanced learning when the six principles of the theory are applied (Twaddell, 2019). These principles are 1) having a need to know why they should learn something, 2) having control over their own learning, 3) relating learning to life experience, 4) learning occurring at the right time, 5) learning that is task oriented, and 6) motivation from both intrinsic and extrinsic factors (Twaddell, 2019). I have developed these principles in the data collection phases of my practicum project, by allowing consultees that are representatives of the target population to have some control on content creation through suggesting topics for the resource, as well as suggestions for the mode of delivery (Twaddell, 2019). Additionally, by choosing a topic for the practicum project that is relevant to current perceptions of learning needs for the Janeway Case Room and is important to the learner population and patient population, I was able to apply Knowles' Theory of Adult Learning (Twaddell, 2019).

Advanced Nursing Practice (ANP) Competencies

Throughout this practicum project, I have worked towards meeting the competencies of the Canadian Nurses' Association (CNA), for Advanced Nursing Practice (ANP), specifically the *Research Utilization*, *Leadership*, *Collaboration*, and *Health System Optimization* competencies (2019). By working within the scope of the Advanced Practice Nurse (APN) and meeting the CNA standards, I have satisfied the objectives I initially created for this practicum project.

Research Utilization entails the commitment to evidence-based practice, through synthesis and critical analysis of literature, research evidence, and the facilitation of new research projects (CNA, 2019). I have met this standard through the completion of my literature review with the critical analysis and synthesis of existing research, as well as throughout the environmental scan phase when I evaluated grey literature. Additionally, I have analyzed and synthesized data from the consultations and environmental scan.

Leadership is another competency of the APN that I have met throughout this process. According to the CNA, the APN is a leader within organizations and communities (2019). I have acted as a leader within the Janeway Case Room by identifying a need to improve the orientation to the Case Room Operating Room, and the subsequent development of a resource to meet this need. I have incorporated content in my resource based on identified needs as suggested by peers. The *Leadership* competency is defined as actions that promote ethical behavior, strong core values, and possess a vision for strong and efficient nursing practice (CNA, 2019). *Leadership* competency also includes the considerations of nursing theories and principles.

Consultation and collaboration have been integral part of this practicum project, and is another one of the CNA competencies for the APN that I was able to meet throughout this

process. This competency includes communication with other members of the healthcare team and the community, promoting interprofessional collaboration at the organizational, provincial, national, and international levels (CNA, 2019). The consultations that I conducted along with the environmental scan are examples of meeting this competency through distributing the questionnaires and analyzing the responses to formulate content based on the data. *Consultation and collaboration* were instrumental to the data collection phase of my practicum project. These activities assisted in formulating the content to be included in my final product as well as the mode of delivery.

Optimizing Health Systems is defined by the CNA (2019) as the contribution to effective health system functioning through advocacy, promotion of client-focused care, and to system-level change by incorporating new evidence and research. The goal of my practicum project was to improve the skill, confidence, and proficiency of novice labor and delivery nurses to hopefully improve maternal and fetal outcomes at the Janeway Case Room. By creating this resource, I hope to create system-level change and satisfy this competency.

Implementation

The concluding phase of the practicum project is the plan for implementation. I have been in close contact throughout the development of this project with the clinical educator for the Children and Women's health program. The educator is responsible for delivering the formal orientation to the Janeway Case Room. At present, the next formal education for the Janeway Case Room is planned for May 2024. I plan to implement my practicum project by participating in the classroom orientation, through offering my learning resource to orientees for self-study and hosting a presentation during the classroom portion. As a part of this process, I plan to evaluate my learning resource by asking orientees to complete a short questionnaire after their

classroom orientation about their understanding of Obstetrical Operating Rooms, readiness to orientate to the Operating Room and level of helpfulness my learning resource provides. I also plan to follow up with a post-intervention questionnaire approximately three months post completion of classroom orientation to examine the impact on the knowledge uptake for novice registered nurses, as well as to explore the perceived impact on maternal and fetal outcomes.

Conclusion

For my practicum project, I developed an educational resource that is specific to the nursing role in the Obstetrical Operating Room at the Janeway Case Room. This topic was chosen in response to a gap that I identified during my own orientation program to the Janeway Case Room and through past and current conversations with peers. Additionally, this topic was chosen to recognize the unique scope of the Janeway Case Room registered nurses and the need for education that is specific to the Janeway labor and delivery site.

To develop this resource, I conducted a literature review which included the critical analysis of both quantitative and qualitative literature. Additionally, I consulted with local key stakeholders and conducted an environmental scan of local and regional health programs, as well as grey literature. Through these methods, I was able to develop an educational resource that is specific to the Janeway Case Room to support novice nurses in their orientation to the Operating Room as labor and delivery nurses. I aim to present this resource in the next formal orientation program for the Case Room in May 2024.

The development of this practicum project has allowed me to work to my full scope within ANP and helped me to meet several CNA competencies (2019), including the research utilization, leadership, consultation and collaboration competencies, and I am continuing to work

to meet the standards of the health system optimization competency (2019). I anticipate that this resource will improve nursing knowledge and skills, improve maternal and fetal outcomes, and be adapted in the future to include other surgeries and procedures that may occur in an Obstetrical Operating Room.

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Appendix A: Literature Review Report

An Orientation Module to Operating Room Nursing for Novice Labor and Delivery Nurses: A Literature Review

Cesarean sections are the most performed surgical procedure for women in North America and account for almost one-third of cases of childbirth (Frederick et al., 2016). A Cesarean section is the "delivery of a baby through a surgical incision made in the mother's abdomen and uterus [...] performed when the normal vaginal childbirth is not proper for the mother or when the childbirth must be done sooner for some reason" (Roshangar et al., 2020, p. 267). Indications for a Cesarean section include but are not limited to malpresentation of the fetus, labor dystocia, fetal macrosomia, abnormal fetal heart rates, placenta previa, pregnancy of multiples, maternal contraindications for vaginal delivery, repeat deliveries, and more recently, by maternal request (Society of Obstetricians and Gynecologists (SOGC), 2023).

The majority of births in Newfoundland and Labrador occur at the Janeway Children's Hospital Case Room in St John's (Knott, personal communication, 2023). This is a tertiary care center with approximately 2000 births per year and manages all local obstetrical cases as well as any high-risk cases for the province (Knott, personal communication, 2023). The Janeway Case Room is unique as all obstetrical surgical cases occur within independent Operating Rooms that are located within the Case Room, operated entirely by Case Room staff. This is unlike other health agencies in Newfoundland, which I discovered through anecdotes and conversations with peers. Other Case Rooms within Newfoundland Health Services transfer obstetrical surgical cases to the main Operating Rooms and resume delivery care post-operatively. As such, it is imperative that labor and delivery registered nurses at the Janeway Case Room are appropriately orientated to the Operating Room as well as labor and delivery.

Currently, the labor and delivery orientation program for registered nurses includes education about the Operating Room; however, I noticed a gap in theoretical and practical knowledge related to the nursing roles and responsibilities within an obstetrical surgical case.

Other novice registered nurses echoed this concern. This is partially due to the Operating Room portion of the orientation being taught by the Clinical Educators of the Main Operating Rooms from the Health Sciences Centre and the Janeway Children's Hospital. Melendez et al. (2019) suggested that "perioperative education of labor and delivery registered nurses may not be rigorous enough to properly prepare them to provide the highest quality of patient care during Cesarean births, which in turn may lead to an increased risk for patient safety incidents" (p. 9). This was the inspiration behind my practicum project, and my goal is to build an educational resource for orientation to the Operating Room. Specifically, my aim is to enhance the orientation for nursing roles and responsibilities during Cesarean sections for the novice labor and delivery registered nurse. By augmenting these skills and competencies, I hope to improve the competence and confidence of novice registered nurses while simultaneously promoting better maternal-fetal outcomes because of increased patient safety through evidence-based education and practice.

Melendez et al. (2019) stated "The professional development of nurses should be guided by theory and current evidence-based literature" (p. 10). I conducted this literature review to explore current evidence and policies pertaining to the prevalence of Cesarean sections in Canada. I specifically examined the impact of adequately trained registered nurses present during Cesarean sections on maternal/fetal outcomes, the impact of educational resources on nursing knowledge uptake and skill provision, as well as the impact of various modes of education delivery for novice registered nurses. I also reviewed literature about the impact of different learning programs and orientation styles to enhance the skills of novice registered nurses. Based on the literature reviewed, enhanced Operating Room education for novice nurses is beneficial because it improves nursing skills which ultimately leads to enhanced maternal and fetal

outcomes (Dhakal et al, 2022; Dunne, 2022; Clark et al, 2022; El-Nemer et al, 2009; Fuhrmann et al, 2015; Gee et al, 2021; Melendez et al, 2019; Reza et al, 2021)

Literature Review

Prevalence and Impact

In Canada, the incidence of Cesarean sections has increased to almost 30% (Canadian Institute for Health Information (CIHI), 2023). In Newfoundland and Labrador, approximately 27% of all childbirth occurs via Cesarean section (McMaster University, 2013). As such, it is imperative that registered nurses in Newfoundland and Labrador are adequately educated in the care and management of women undergoing Cesarean sections pre-operatively, intra-operatively, and beyond to promote better patient outcomes and protect patient safety.

In the Case Room at the Janeway Children's Hospital, the role of the labor and delivery registered nurses is uniquely challenging as these nurses work in both labor and delivery roles for vaginal births as well as run the Operating Room for all obstetrical surgical cases. Consequently, labor and delivery registered nurses double as Operating Room registered nurses for Cesarean sections. A thorough, evidence-based orientation program is essential to the education and skill-building of novice labor and delivery registered nurses to fulfill this role.

According to the Association of PeriOperative Nurses (AORN, 2014), "every person having surgery should have a registered nurse educated in perioperative principles" (AORN, 2014 in Gee et al., 2021). Enhancing nursing skills and proficiency in the Operating Room promotes improved maternal and fetal outcomes through increased maternal-fetal bonding, enhanced management of maternal anxiety, decreased length of surgery and errors, decreased post-operative surgical site infections, increased skin-to-skin contact and enhanced rates of

exclusive breastfeeding (Dias et al., 2016; Frederick et al., 2016; Fuhrmann et al., 2015; Koh et al., 2014; Roshangar et al., 2020). Despite these benefits, there is currently limited orientation to the specific roles and responsibilities of the labor and delivery registered nurse in the formal education content of the Case Room orientation.

Existing Programs

The current orientation for a novice Janeway Case Room registered nurse includes two weeks of eight-hour days, one week of at-home self-learning modules and one week of in-class learning modules and presentations hosted by the Children's and Women's Health Clinical Educator. Despite having a Cesarean delivery rate of approximately 27% in Newfoundland and Labrador, only one of these days out of the two-week orientation program is dedicated to the Operating Room orientation. This part of the orientation is created and taught by the educator for the main Operating Room of the Health Sciences Centre (St. Johns, Newfoundland) or the Janeway Children's Hospital (St. Johns, Newfoundland). Cesarean sections are not performed in either of these Operating Rooms; consequently, the learning material is not specific to the roles and responsibilities during Cesarean sections. Rather, they are generalized roles and practices of a general Operating Room. This portion of the orientation can therefore be improved to be specific to the role of the Janeway Case Room registered nurse to improve the proficiency and skills of the novice labor and delivery registered nurse. I reviewed the literature pertaining to perioperative nursing and labor and delivery surgical nursing in order to gather data to build an educational resource based on evidence-based practice.

Theoretical Lens

To develop this practicum project, I am guided by Knowles' Theory of Adult Learning. This theory, dating back to the 1970s and 1980s, asserts that adults learn best when the six principles of the theory are applied (Twaddell, 2019). The six principles are 1) having a need to know why they should learn something, 2) having control over their own learning, 3) relating learning to life experience, 4) learning occurring at the right time, 5) learning that is task oriented, and 6) motivation from both intrinsic and extrinsic factors (Twaddell, 2019). By understanding these six principles, I can develop the educational resource in a way that will both support knowledge uptake of my audience (novice labor and delivery registered nurses) and enhance both the content and the mode of education delivery for the educational resource (Twaddell, 2019). For example, I am employing the theoretical lens by allowing the target audience to have control over their own learning as Knowle's principles suggest through my consultations, accepting feedback from consultees, developing content based on what consultees and participants of the environmental scan felt was important to include. I will also use Knowles' six principles to guide my literature review to provide direction of topics to include in my search.

Methods

Gee et al. (2021) suggested that there is very little research available related to "specific perioperative skills education and assessment within the maternity nursing community" (p.423). This supports the need for the development of an educational resource specific to perioperative nursing in labor and delivery. To conduct this literature review, I searched the following databases: the Health Sciences Library, CINAHL, and the Cochrane Library. Key words used for the literature search were "labor and delivery nursing", "maternity nursing", "cesarean section and nursing", "perioperative nursing", "nursing education", "maternity education", and

"perioperative orientation". A summary of the literature reviewed can be found in Appendix A: Literature Summary Tables.

I included both quantitative and qualitative literature, and reviewed many diverse types of studies. I critically analyzed and synthesized the literature using the Public Health Agency of Canada (PHAC) Critical Analysis Toolkits (Descriptive and Analytic), as well as the Joanna Briggs Institute (JBI) Qualitative Literature It is important to note that the data yielded in this literature review was not plentiful, indicating the need for further study and justifying the importance of this practicum project. In this literature review, I focused on the roles and responsibilities of the Operating Room registered nurse within a labor and delivery unit, the roles and responsibilities of a labor and delivery registered nurse in general, the impact of proficient Operating Room skills for the Case Room registered nurse and how they impacted maternal and fetal outcomes. I also focused on nursing education. Specifically, I researched methods of learning and educational delivery for novice registered nurses.

Impact of Enhanced Education for Registered Nurses in the Operating Room

Several studies were investigations of the impact of having educated registered nurses in the Operating Room on maternal and fetal outcomes in the literature search. When adequately trained registered nurses are present in the Operating Room for obstetrical care, maternal and fetal outcomes are improved through skin-to-skin contact and enhanced maternal-fetal bonding, and quicker delivery times in case of urgency (Frederick et. al, 2016; Koh et al., 2014). Maternal anxiety is also decreased (Roshangar et al., 2020; Dias et al, 2022), and there is a decreased incidence of post-operative surgical site infections (Bathish et al, 2022). Fetal outcomes are also improved by an increased incidence of exclusive breastfeeding (Schorn et al., 2015).

Maternal Outcomes

I reviewed five studies that focused on maternal outcomes. Frederick et al. (2016) focused on the experience of registered nurse-facilitated skin-to-skin contact between mother and newborn in the Operating Room, while Roshangar et al. (2020) focused on the relationship between maternal anxiety, vital sign changes, and nurse companionship during Cesarean sections. Similarly, Dias et al. (2022) studied the impact of supportive dialogue based preoperative nursing care on patient anxiety, satisfaction, and postoperative outcomes. While Koh et al. (2014) focused on the impact of nursing experience and task management on maternal outcomes in terms of length of surgery, and Bathish et al. (2022) evaluated the impact of nursing skill and expertise on patient outcomes, mainly on the incidence of surgical site infections.

Enhanced Family Bonding and Patient Satisfaction

Frederick et al. (2016) conducted a medical ethnography to explore the experience of mothers holding newborns skin-to-skin during Cesarean sections as facilitated by registered nurses. Set in Texas, United States, the sample consisted of participants with scheduled Cesarean sections who agreed to participate in skin-to-skin contact immediately after birth and during surgical closure (Frederick et al., 2016). Data was collected by field observation, focusing on interactions between the mother, the neonate, and the healthcare personnel as well as loosely structured individual interviews and peer debriefing sessions (Frederick et al., 2016). A thematic analysis yielded three main themes: a feeling of mutual caregiving, the positive influence of the father's involvement in the birth of the child and the mother's perception of the Cesarean/Operating Room environment (Frederick et al., 2016). Participants felt that skin-to-skin contact as facilitated by trained registered nurses was the initiation of the dyad (mother and neonate), calming, and supported early breastfeeding initiation (Frederick et al., 2016).

Participants acknowledged the father's influence during skin-to-skin contact as the formation of the family unit for the first time, as well as having the father available as a buffer to the outside environment for mother and baby (Frederick et al., 2016). Nurse-facilitated skin-to-skin contact during Cesarean sections also alleviated anxiety caused by the surgical environment and allowed participants to feel a sense of control, but also required nursing staff for monitoring and frequent repositioning of baby's position on the mother's chest for patient safety and to allow surgeons to complete the procedure (Frederick et al., 2016).

Anxiety Management

Frederick et al. (2016) found that a reduction in maternal anxiety was one of the results of nurse-facilitated skin-to-skin contact in the Operating Room. Roshangar et al. (2020) also focused on the reduction of maternal anxiety and vital signs through preoperative nursing interventions. This study was a randomized controlled trial (RCT) at the Al-Zahra Teaching Hospital in Tabriz, Iran. Dias et al. (2022) also studied maternal anxiety reduction through nurse-led interventions in an RCT. Much like the purpose of the RCT published by Roshangar et al. (2020), Dias et al. (2022) aimed to evaluate the impact of preoperative nursing care focused on dialogue and support on patient anxiety, satisfaction, and postoperative outcomes set in Switzerland. With a two-group design chosen by random allocation, both studies had a control group and an intervention group.

In the study conducted by Roshangar et al. (2020), the control group consisted of Cesarean section candidates who received usual care, while the intervention group consisted of Cesarean section candidates who received accompaniment and support from one specific Operating Room registered nurse one hour before, during, and after the surgical procedure. A blind assessor measured the levels of anxiety and vital signs for both the control and the

intervention groups one hour before and one hour after the procedure (Roshangar et al., 2020). Data analysis revealed that while there were no statistically significant findings in the difference between anxiety levels for the control group and intervention groups for measurements taken one hour before the surgery, the anxiety level during the Cesarean section was decreased in the intervention group when compared to the control group ($p<0.001$) and one hour after ($p=0.0011$) (Roshangar et al., 2020). Additionally, the average heart rates of the mothers in the intervention group were lower relative to the participant baseline vital signs when compared to the control group ($p=1.0$) (Roshangar et al., 2020).

Dias et al. (2022) featured a control group that received usual care, while the intervention group consisted of participants that received semi-structured preoperative nurse dialogue. Maternal anxiety, patient satisfaction, and post-operative pain and nausea were measured using formalized visual-analogue rating scales, and sophisticated statistical analysis was conducted (Dias et al., 2022). The evidence presented by Dias et al. (2022) is the opposite of the evidence presented by Roshangar et al. (2020) in terms of maternal anxiety levels after pre-operative nursing care. Dias et al. (2020) suggested that pre-operative anxiety levels were reduced by a median of 21 points in the intervention group when compared to the control group ($p<0.001$), however there were no statistically significant findings related to patient satisfaction levels ($p=0.057$) or post-operative pain and nausea ($p=0.077$) (Dias et al., 2022). The contradiction between the evidence presented in these two studies indicates the need for further research on maternal anxiety reduction in the intra-operative period.

Wound Healing

Koh et al. (2014) and Bathish et al. (2015) both studied the impact of nursing experience and expertise in the Operating Room on maternal outcomes in the intra-operative and post-

operative periods. Koh et al. (2014) published a cohort study that examined the impact of nursing experience on task management and skill in the Operating Room, in the Obstetrics and Gynecology Department of a teaching hospital in Singapore. This study featured two groups: one group of experienced scrub nurses, and one group of novice scrub nurses. Koh et al. (2014) observed a sample of participants who were observed when performing their role as a scrub nurse in the Operating Room by wearing eye-tracking during one Cesarean section. In addition, data was collected through interviews with nursing managers and analyzed through independent coding of video data. Coding of the data was completed by assessors who were blinded to the experience level of each participant and focused on tasks per unit of time and number of interruptions (Koh et al., 2014). The data analysis by Koh et al. (2014) suggested that experienced scrub nurses showed a higher rate of anticipatory assistance (14.6% of the time, compared to the novice nurse rate of 7.9%, $p=0.01$), as well as lower rates of reactive assistance (1.6% compared to the novice nurse rate of 4.3%, $p=0.044$) (Koh et al., 2014). Novice nurses also had a higher incidence of unsuccessful anticipation (5.4% compared to 1.6%, $p=0.01$) and more frequent non-surgeon-triggered interruptions such as looking for surgical instruments and delays in performing surgical counts ($p=0.047$) (Koh et al., 2014). These results suggest that nursing performance is enhanced when the nurse has more experience (Koh et al., 2014).

Bathish et al. (2015) focused on maternal surgical site infections in a cross-sectional study. The setting was at Midwestern University, Illinois, United States. There was a one-group design, with various levels of scrub nurse experience amongst the group. Clinical registered nurse reviewers measured the incidence of surgical site infections through retrospective chart reviews. After extensive sophisticated statistical analysis, Bathish et al. (2015) suggested that higher levels of nursing expertise decreased incidence of surgical site infections by 5.7%

(p=0.354). The evidence presented in both the Koh et al. (2014) and Bathish et al. (2015) studies correlate and suggest that higher levels of expertise have a positive relationship with maternal outcomes in the Operating Room for Cesarean sections. Adequate training and exposure to scrub nursing skills contribute to experience and therefore will have a positive impact on surgical outcomes (Bathish et al., 2015; Koh et al., 2014).

Fetal outcomes: Maternal-Fetal Bonding and Exclusive Breastfeeding

While Frederick et al. (2016), Dias et al. (2022) and Roshangar et al. (2020) investigated the impact of competent Operating Room registered nurses on maternal outcomes, Schorn et al. (2015) investigated the impact on fetal/newborn outcomes when educated registered nurses are present in the Operating Room. The purpose of this study was to describe a quality improvement project to improve family-centered care during Cesarean sections at academic centers in the United States while identifying areas for improvement and further research (Schorn et al., 2015). Participants in this study were labor and delivery nurses, postpartum nurses and nursery staff in a one-group cohort design (Schorn et al., 2015). Each participant received training on family-centered Cesarean section birthing care, which specifically emphasized skin-to-skin contact in the Operating Room (Schorn et al., 2015). Schorn et al. (2015) analyzed the data using the Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines. Two main themes emerged from this analysis: support for skin-to-skin care, and promotion of exclusive breastfeeding (Schorn et al., 2015). Skin-to-skin contact in the Operating Room increased from 13.1% to 38.6% after the intervention, while exclusive breastfeeding rate at the time of discharge increased from 35.1% to 63.8% (Schorn et al., 2015). While Frederick et al. (2016), Dias et al. (2022), and Roshangar et al. (2020) have demonstrated the positive impact of registered nurses in the Operating Room on maternal outcomes, these results suggest that newborns will also benefit

from competent registered nursing care in the Operating Room by enhanced bonding with their mothers, skin-to-skin contact, and promotion of exclusive breastfeeding (Schorn et al., 2015). Knowing the positive impact of registered nurses educated in obstetrical Operating Rooms on maternal and fetal outcomes, the next phase of my literature search was to understand the best methods for education delivery and subsequent knowledge uptake for registered nurses.

Impact of Educational Interventions on Knowledge Uptake

Gee et al. (2021) conducted a descriptive exploratory study to evaluate the impact of an educational intervention on nursing knowledge and skills. Gee et al. (2021) specifically evaluated whether an educational intervention would impact the time between the decision to perform a Cesarean section and the first incision. Dhakal et al. (2022), El-Nemer et al. (2009), Melendez et al. (2019), and Reza et al. (2021) also evaluated the impact of an education intervention for registered nurses. Melendez et al. (2019) and El-Nemer et al. (2009) focused on the impact of an education intervention on novice registered nurse learning, while both Reza et al. (2021) and Dhakal et al. (2022) focused on the impact of an education intervention on nursing skill performance with respect to Cesarean sections.

The study by Gee et al. (2021) was set in the United States at a military hospital, and participants consisted of both junior and senior labor and delivery registered nurses. It was a one-group design, and all participants were invited to complete an online self-study module with pre- and post-intervention testing to assess knowledge and confidence in clinical perioperative skills (Gee et al., 2021). Descriptive statistics for data analysis demonstrated that total knowledge scores increased by 10% post-intervention ($p=0.121$) and confidence scores increased by one point ($p=0.3.95$) (Gee et al., 2021). The results also suggest that registered nurses with more experience have higher levels of knowledge and confidence, and more recent exposure to

obstetrical emergencies becoming surgical in nature had a positive influence on knowledge and confidence (Gee et al., 2021). Additionally, the average time from the decision for surgical intervention to the first incision of the surgery, known as the "decision-to-incision" time decreased by three (3) minutes after the educational intervention (Gee et al., 2021). The findings of Gee et al. (2021) suggest that a self-guided educational resource had a positive impact on nursing knowledge, confidence, and skills.

Melendez et al. (2019) conducted a descriptive exploratory study, to evaluate the impact of a formal education module on nursing knowledge and self-efficacy. This study was also set at an American military hospital with a one-group design of participants who were labor and delivery registered nurses with a variety of years of experience (Melendez et al., 2019). Melendez et al. (2019) utilized formal learning sessions and pre-brief sessions as educational interventions. Data collection included focus groups and a modified Nursing Care Self-Efficacy Scale. The results by Melendez et al. (2019) were consistent with the results presented by Gee et al. (2021), suggesting that education modules positively affect nursing knowledge uptake. Specifically, patient safety and perioperative self-efficacy was improved and there was a decrease in nursing errors post-intervention by almost 4% (Melendez et al., 2019).

El-Nemer et al. (2009) also analyzed the impact of education modules but focused on case-study and problem-solving learning modules in a self-study module. The study by El-Nemer et al. (2009) was set in Egypt at the Mansoura University Maternity and Gynecology Department. This grounded-theory study featured participants that were undergraduate nursing students during their maternity rotations (El-Nemer et al., 2009). All participants received the intervention about maternity nursing that included skills laboratories, case studies and presentations (El-Nemer et al., 2009). El-Nemer et al (2009) conducted focus group interviews

and distributed questionnaires post-intervention, as well as retrospective auditing of scholastic achievement. A thematic analysis revealed that students felt that problem-based learning modules increased the acquisition of new skills and presented positive experiences of different learning styles but also increased feelings of stress secondary to time pressures and uncertainty (El-Nemer et al., 2009). Student academic success improved by 15% after the education intervention, as evidenced by scholastic achievement auditing compared to previous academic markers (El-Nemer et al., 2009). The evidence presented by El-Nemer et al. (2009) suggests that participation in a problem-based education intervention improves knowledge uptake, scholastic performance and experiences of nursing students studying maternity but may also contribute to feelings of increased pressure and uncertainty. These three studies (El-Nemer et al., 2009; Gee et al., 2021; Melendez et al., 2019) have similar results, suggesting a positive correlation between receiving additional education related to maternity nursing and nursing knowledge uptake.

Reza et al. (2021) conducted an RCT to evaluate the effect of an educational intervention on the performance of the circulating registered nurse in the Operating Room. Set at Shiraz University of Medical Sciences in Iran, this study had a two-group design with participants randomly selected for an intervention group and the control group (Reza et al., 2021The study groups had an even number of participants and the intervention group received two-hour in-person training for nontechnical skills with experts (Reza et al., 2021). The control group did not receive any extra education and continued regular job performance (Reza et al., 2021). Both the intervention group and the control group had pre- and post-intervention skills assessments by trained assessors in the Operating Room (Reza et al., 2021). Those in the intervention groups in the Reza et al. (2021) study received six hours of online teaching with self-study modules and

virtual lectures, and both groups received a baseline knowledge assessment and follow-up surveys immediately after the intervention.

Dhakal et al. (2022) conducted a nonrandomized-controlled trial (NRCT) with a similar purpose: to evaluate the effectiveness and impact of education sessions on nursing students' provision of maternity care. Reza et al. (2021) focused on nontechnical Operating Room skills, while Dhakal et al. (2022) focused on the respectful and ethical provision of care. The study by Dhakal et al (2022) was set in the Obstetrics ward of a hospital in Nepal, South Asia. There were two groups of participants (an intervention group and a control group) selected with nonrandom allocation (participants volunteered to complete the extra education) (Dhakal et al., 2022). Participants were senior nursing undergraduate students (Dhakal et al., 2022).

There was excellent sophisticated statistical analysis of the data in both Reza et al. (2021) and Dhakal et al. (2022) studies, and both yielded similar results. The results of Reza et al. (2021) suggest that participation in a skills-based education intervention has a positive impact on the circulating registered nurse's performance in terms of task recognition and management and situational awareness. This mirrors the findings of Gee et al. (2021), Melendez et al. (2019), and El-Nemer et al. (2009). Education interventions increased task management skills by 30.9% ($p<0.001$); improved teamwork by 42.5% ($p<0.001$); and promoted increased situational awareness by 16.7% ($p<0.002$) (Reza et al., 2021). Communication and leadership were also improved by 26.6% and 21.0% ($p<0.001$), respectively (Reza et al., 2021). There were no statistically significant improvements found in the control group (Reza et al., 2021).

Dhakal et al (2022) suggested that students who received the intervention were more likely to recognize disrespectful maternity care (Dhakal et al., 2022). The results of the intervention group showed that 75% reported a good understanding of respectful care provision,

while 82.5% reported positive views of respectful maternity care. Further, 65% reported the knowledge gained was helpful and would be incorporated into their nursing practice, and 55% of participants reported a greater awareness of disrespectful behavior in maternity care (Dhakal et al., 2022). There were no statistically significant findings for the control group (Dhakal et al., 2022). In summary, the literature that I reviewed suggests that there is a positive relationship between knowledge acquisition and skill enhancement when registered nurses participate in a curated educational intervention. More evidence was needed to determine the most effective mode of delivery for educational interventions. Therefore, I continued to review the literature to evaluate evidence to analyze the best way to create an educational intervention.

Modes of Education Delivery

I found three articles about the mode(s) of education delivery for maternity and perioperative nursing education. Clark et al. (2022) examined the variation in nursing resources across three diverse types of maternity units in five different regions of the United States in a retrospective cross-sectional secondary analysis. Fuhrmann et al. (2015) conducted an interventional before-and-after study to evaluate the impact of simulation-based team training interventions on the proportion of emergency Cesarean sections achieved within a 30-minute time frame. Dunne (2022) evaluated how a game-based learning module for novice perinatal registered nurses impacted their ability to practice routines and scope of practice in the Operating Room. Overall, the results from these studies indicate that most labor and delivery nurses have experience, and those that are novice nurses in labor and delivery learn well through self-study modules, in-person facilitated learning sessions and simulation (Clark et al., 2022; Dunne, 2022; Fuhrmann et al., 2015).

Clark et al. (2022) had participants who were registered nurses from 707 maternity units across the country that had participated in the 2016 National Database of Nursing Quality Indicator (NDNQUI) survey. These participants worked in either labor and delivery, labor, delivery, recovery and postpartum, and/or postpartum units. This study sample is similar to the participants of the Dunne (2022) study, which was comprised of labor and delivery registered nurses, although all of the participants in the Clark et al. (2022) study were novice registered nurses and orientating to the Operating Room. Clark et al. (2022) examined nursing resources, work environments, staffing ratios, education, and specialty certification by type of nursing unit. Descriptive statistics were used to describe hospital and maternity unit characteristics and resources, as well as other formalized indexes and scales. The results of the secondary analysis demonstrate differences in years of experience, patient ratios, education, and work environments between the various units (Clark et al., 2022). These authors found that on average, labor and delivery registered nurses have an average of 13.8 years of experience, one nurse to 1-2 patient ratios, and 66% of staff had a bachelor's degree in nursing, sub-classified as 20% also having specialty certification.

While Clark et al. (2022) evaluated the levels of education and experience of registered nurses working in maternity units, Fuhrmann et al. (2015) studied the impact of continued education for maternity nurses and patient outcomes through interdisciplinary team-based simulation training. The study by Fuhrmann et al. (2015) was set in Denmark labor and delivery unit-specific operating rooms. This setting is particularly relevant to my practicum project, as there was scant literature that reflects specific labor and delivery Operating Rooms, which is the target audience for this practicum project. Participants were obstetricians, labor and delivery registered nurses, scrub nurses, anesthesiologists, and midwives. There was a one-group design

in which all participants received the intervention that was comprised of two 40-minute lectures and two simulation workshops focusing on team training, as well as a debriefing. Fuhrmann et al. (2015) collected data through retrospective analysis of one hundred emergency Cesarean sections, focusing on time from decision-making to the first incision. Participants participated in the educational intervention, and afterwards, researchers reviewed another one hundred emergency Cesarean sections (Fuhrmann et al., 2015). Statistical analysis was completed, and the results suggested that simulation-based team training decreased the time between decision-making and the first incision 30 minutes or less to 87.5% (95% CI) from 74.0% (95% CI p=0.017) (Fuhrmann et al., 2015).

Dunne (2022) also evaluated simulation-based training as a mode of delivery for education for novice registered nurses, using game-based learning by creating an "Escape Room". In this study, there was a simulation of a Cesarean section that contained clues for learners to practice each step of pre-, intra- and post-operative nursing care for patients who have undergone a Cesarean section. Unlike Fuhrmann et al (2015), this simulation-based intervention was targeted for registered nurses only and was not interdisciplinary. Participants were novice labor and delivery registered nurses who were participating in orientation to the Operating Room. Data included the observation of the learners participating in the escape room and finding clues that provided hints for skills and tasks that are routine obstetrical perioperative nursing care. The analysis included learner feedback through informal interviews with the overarching theme of a positive learning experience (Dunne, 2022). Participants felt that the escape room was a fun, interactive method of learning useful information, and that the step-by-step nature was beneficial for learning routines (Dunne, 2022). Dunne et al. (2022) noted that improvements could be made by including a written guide of the roles and responsibilities of tasks for reference

and by including interdisciplinary training as part of the escape room, similar to how Fuhrmann et al. (2015) had included interdisciplinary health care staff in their study.

In summary, when registered nurses are present in obstetrical Operating Rooms, there are positive maternal and fetal outcomes such as decreased maternal anxiety, improved nursing psychomotor skills and task management, decreased surgical site infections, increased skin-to-skin contact time and promotion of exclusive breastfeeding when registered nurses are present in obstetrical Operating Rooms (Bathish et al, 2015; Dias et al, 2022; Frederick et al, 2016; Koh et al, 2014; Roshangar et al, 2020; Schorn et al, 2015). Novice registered nurses learn best when education is delivered via self-learning modules, in-person teaching sessions and simulation-based learning (Dhakal et al, 2022; Dunne, 2022; Clark et al, 2022; El-Nemer et al, 2009; Fuhrmann et al, 2015; Gee et al, 2021; Melendez et al, 2019; Reza et al, 2021)

Conclusion

At present, there is a need for increased educational resources to support novice registered nurses through their orientation to labor and delivery with respect to training for the Operating Room. Specifically, there is a gap in the orientation program at the Janeway Children's Hospital Case Room in St. John's, Newfoundland, which pertains to the preparedness of novice registered nurses for perioperative care for Cesarean sections. The goal of my practicum project is to address this gap by creating an educational resource to support novice labor and delivery novices at the Janeway Case Room through orientation to obstetrical Operating Rooms.

I conducted this literature review to explore and examine specific education for labor and delivery registered nurses regarding roles and responsibilities within the Operating Room and, specifically, for Cesarean sections. In particular, I reviewed literature about the impact of

adequately educated registered nurses in the Operating Room on maternal and fetal outcomes, the most efficient and effective modes of education delivery, and the impact of additional educational interventions specific to the Operating Room on novice registered nurse learning.

Having educated labor and delivery registered nurses in the operating room promotes positive maternal outcomes such as reduced maternal anxiety, decreased surgical time, and decreased incidence of post-operative surgical site infections, as well as promotes patient satisfaction and enhances family bonding (Bathish et. al, 2022; Dias et. al, 2022; Frederick et al., 2016; Koh et. al, 2014; Roshangar et. al, 2020). Additionally, there is a positive effect of having labor and delivery registered nurses with enhanced education in the Operating Room on fetal outcomes, as it promotes skin-to-skin contact, maternal-fetal bonding and increases the rate of exclusive breastfeeding (Schorn et. al, 2015).

Registered nurses with enhanced education have enhanced learning and skill development, and that novice registered nurses learn well through self-study modules, in-person facilitated learning sessions, and through simulation (Clark et. al, 2022; Dhakal et. al, 2022; Dunne, 2022; El-Nemer et. al, 2009; Fuhrmann et. al, 2015; Gee et. al, 2021; Melendez et. al, 2019; Reza et. al, 2021). Understanding the impact of educational interventions and modes of educational delivery will be key to the development of my learning resource, which I anticipate will ultimately help to improve maternal and fetal outcomes pre-operatively, intra-operatively and post-operatively for Cesarean sections.

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Appendix B: Literature Summary Tables

Study/Design	Methods	Key Results	Comments
Authors: Bathish, et al. (2015) **Design:** Secondary analysis of cross-sectional cohort **Purpose:** To evaluate the impact of nursing skill and expertise on patient outcomes, focusing on surgical site infections.	**N=** 220 **Country/Setting:** Midwestern University, USA **Group:** one group design; RN Scrub nurses and scrub technicians with wide array of experience. **Data collection and outcomes:** - 220 scrub staff were reviewed retrospectively. - OR scrub nurse expertise was calculated for each surgical case by multiplying the amount of time each nursing scrub staff member spent in the case by his or her cumulative time spent in the OR scrub nurse role. - Patient outcomes measured by SSI development calculated through chart reviews (retrospective) clinical nurse reviewers. **Analysis** - Two-tailed t test, Mann-Whitney U tests, Chi-square analysis, Fisher exact test - Logistic Regression - Hosmer-Lemeshow goodness-of-fit test - ASA classification system -6 categories and assesses the degree of a patient's "sickness" or "physical state"	**Decreased incidence of surgical site infections** - 5.7% less likely to develop a surgical site infection when the scrub nurse had higher levels of experience (p = .354). - Authors noted that future studies should include the experience and impact of the circulating and assisting nurse in relation to patient outcomes.	**Strength of design:** Moderate **Quality:** Medium **Issues:** - Sample size was limited - Incorporating additional hospitals in order to test transferability - Follow up time unclear

Study/Design	Methods	Key Results	Comments
Authors: Clark et. al, (2022) **Design:** Retrospective, cross-sectional secondary analysis **Purpose:** To examine variation in nursing resources across three different types of maternity units in five regions of the United States.[1]	**N=** 19 486 **Country/Setting:** United States, 48 states + District of Columbia **Group 1** - Participants worked in 707 different maternity units across the US, and participated in the 2016 National Database of Nursing Quality Indicator (NDNQI) Survey. - Currently employed registered nurses in maternity units: Labor and delivery (L&D), Labor, delivery, recovery and postpartum (LDRP), and postpartum (PP) units - General, critical access and non-federal government hospitals. **Data collection and outcomes:** - Secondary analysis of survey data examining nursing resources, work environment, staffing, education, specialty certification by type of maternity unit. **Analysis** - Descriptive statistics to describe hospital and maternity unit characteristics and resources - Analysis of variance - Bonferroni adjusted pairwise comparisons - National Quality Forum–Endorsed Practice Environment Scale of the Nursing Work Index, Job Satisfaction Scale	**Years of experience** - L&D: 13.8 years (SD=10.32) - LDRP: mean 15.66 years (SD=11.5) - PP: mean 14.76 years (SD=11.25) **Patient ratios** - PP: mean 7.51 patients per nurse - L&D: 5.2% had one patient per nurse, 30.9% had two patients per nurse - LDRP: mean4.95 patients per nurse **Education** - L&D: 66% had a BScN - LDRP: 57% staff had BScN - PP: 62% with BScN - Specialty certifications: 20% of staff in L&D and LDRP units, 3% on PP units ($p<0.001$) **Work Environment** - Northeast maternity units had poorest overall work environment score (2.76, $p<0.001$) - Southern regions had the lowest nurse-patient ratios (5.35 patients/nurse, $p<0.001$)	**Strength of design:** - Moderate **Quality:** - Medium **Issues:** - Lack of regression, information about validity and reliability, and other statistical analysis - 1 group design - Descriptive in nature, primary research question unclear

Study/Design	Methods	Key Results	Comments
Authors: Dhakal et al. (2022) **Design:** NRCT **Purpose:** To evaluate effectiveness and impact of an online education intervention on nursing students' perceptions towards respectful maternity care during labour and childbirth in Nepal.	**N=** 89 (power 0.83) **Country/Setting:** Nepal, South Asia **Intervention group:** - n=40 - Third year Bachelor of Nursing students from three participating colleges - Received six hours of education delivered online with various teaching strategies (three sessions x three weeks) via email - Non random allocation – participants volunteered to participate in extra education **Control group: n=49** - Third year Bachelor of Nursing students from three participating colleges - Received no extra education intervention aside from regular curriculum - Non-random allocation **Data collection and outcomes:** - Online pre and pos*t*-test surveys using the Students' Perceptions of Respectful Maternity Care scale. - Baseline assessment (pre-test) for both groups and follow-up survey 2 weeks post intervention. - Survey and self-assessments sent to the intervention group immediately after finishing the education modules to assess quality of intervention. **Analysis**	**Disrespect and abuse** <u>Intervention group:</u> - 27.5% observed at least one form of disrespect and abuse. <u>Control group:</u> - 53.1% observed at least one form of disrespect and abuse. - Baseline total mean SPRMC score was 76.44 ± 5.67 out of 90 (intervention group = 74.63 ± 6.00, control group = 77.92 ± 4.96 - Mean difference = 3.29, 95% CI: 0.99 to 5.60) was moderate (d = 0.60 **SPRMC Scores** <u>Intervention group:</u> - Statistically significant increase in total SPRMC scores within the intervention group from pre-test (mean = 74.63, SD = 6.00) to post-test (mean=81.28,SD=6.67)(t(39)=−9.13,$p \leq 0.001$). - Mean increase in SPRMC scores was 6.65 (95% CI: − 8.12 to − 5.18). <u>Control group:</u> - No statistically significant	**Strength of design: Strong** **Quality: Medium** **Issues:** - There was considerably more births witnessed by the control group (mean 3.43,SD 1.5) than the intervention group (mean 12.65,SD 5.18) which may impact results - Significant differences between results of students placed in a district hospital vs. teaching hospital – may impact transferability of results.

	- Survey based on the Student Perceptions of Respectful Maternity Care (SPRMC) scale using a Likert scale ranging 1-5 (α=0.81) - ANCOVA and non-parametric Wilcoxon Signed Rank, Kolmogorov-Smirnov test - Socio-demographic characteristics and clinical placement variables were examined using descriptive statistics. - Background characteristics and baseline (pre-test) outcome measures between control and intervention groups were compared using the independent sample *t*-test or the non- parametric Mann-Whitney *U* test.	differences overtime with respect to the total SPRMC mean scores. **Enhanced Learning** - 75% reported they had a good understanding of respectful maternity care. - 82.5% reported positive views about RMC; - 65%) reported that knowledge about RMC would be used during their practice. - 55%) had greater awareness of disrespectful behaviour.	

Study/Design	Methods	Key Results	Comments
Authors: Dias et al. (2022) **Design: :** RCT **Purpose:** To evaluate the impact of preoperative nursing care (focused on dialogue and support) on patient anxiety, satisfaction, and postoperative outcomes.	**N=** 70 **Country/Setting:** Switzerland **Intervention group:** n=35 - Surgical candidates exposed to a semi-structured preoperative nurse dialogue **Control group:** n=35 - Surgical candidates who received usual care **Data collection and outcomes:** - Anxiety measured with the auto evaluation scale, State-Trait Anxiety Inventory pre and post operative. - European Organization for Research and Treatment of Cancer Patsat32 questionnaire to assess patient satisfaction at discharge. - Post-operative pain measured using visual-analogue scale. - Post-operative nausea and vomiting, opiate consumption, and length of stay compared. **Analysis** - Sample size calculated based on primary endpoint (preoperative anxiety level) using calculator utility. - Univariate analysis, Mann-Whitney U-Test, Fischer's exact test.	**Anxiety management** <u>Intervention group:</u> - Preoperative anxiety median score=40 - Post-operative anxiety levels median = 34 <u>Control group</u> - Preoperative anxiety median score= 61 ($p<0.001$) - Post-operative anxiety median score 32 ($p=0.579$) **Patient satisfaction** - No statistically significant findings ($p=0.057$). **Pain** - No statistically significant findings ($p=0.077$).	**Strength of design:** Strong **Quality:** High - Two group design - Random sampling was used - >90% completed the study - Results were generalizable and intervention is highly likely to be repeated

Study/Design	Methods	Key Results	Comments
Authors: Dunne, (2022) **Design:** Qualitative Case Study **Purpose:** To develop a method of learning for novice perinatal nurses to practice the steps and routines of cesarean sections in a controlled manner for enhanced learning.	**N=** 100+ **Country/Setting:** Operating room simulation, unknown country. **Group 1:** Novice labor and delivery registered nurses learning the roles of the operating room during orientation. **Data collection and outcomes:** - Escape room designed to mimic the procedures, roles and responsibilities of the registered nurse during a cesarean section. - Cards hidden with clues about skills and tasks to be performed in the operating room. **Analysis:** - Learner feedback provided through open-ended informal interviews.	**Positive learning experience** - Participants stated escape room was interactive, fun, and provided the most useful information. - Participants enjoyed the step- by-step nature. - Improvements can be made by including written guide for reference, to create an interdisciplinary escape room, and the use of standardized patient actors.	**Strength of design:** Moderate **Quality:** Medium **Issues:** - Lack of clarity on number of participants (“over 100 participants).

Study/Design	Methods	Key Results	Comments
Authors: El-Nemer et al. (2009) **Design:** Grounded theory **Purpose:** To evaluate the impact of problem-based learning modules on undergraduate maternity nursing students.	**N=** 150 **Country/Setting:** Mansoura University, Egypt. Maternity and Gynecology Nursing Department. **Group 1:** Third-year nursing students participating in hybrid problem-based learning modules, 48 hours over 14 weeks. - All participants received the intervention. - Intervention consisted of clinical skills laboratories, case studies, and presentations. **Data collection and outcomes:** - Focus group interviews - Interview questionnaire sheet using Likert scale - Scholastic achievement retrospective auditing - Notes taken by facilitators throughout the intervention **Analysis** - Burnards fourteen stages of analyzing interview transcript - Pragmatic analysis - Coding for thematic analysis - Comparative graphing of scholastic achievement	**Overarching themes** 1) Acquiring new skills 2) Positive experiences of different learning styles 3) Pressures of time and uncertainty **Student satisfaction** - 68% of students had "very good" academic achievement post PBL module compared to previous academic markers (53%). - 25% of students scored excellence achievements compared to 16% pre-PBL module.	**Strength of design: Weak** **Quality: Low** **Issues:** - Lack of information re: questionnaire details. - Data analysis unclear. - More than 10 years old but relevant to literature review as data specific to maternity education. I could not find more recent study with same population.

Study/Design	Methods	Key Results	Comments
Authors: Frederick et al. (2016) **Design:** Qualitative inquiry medical ethnography **Purpose:** To explore the experience of mothers holding newborns skin-to-skin during a cesarean section, facilitated by registered nurses**.**	**N=** 14 **Country/Setting:** Texas, USA **Sample:** - N=14, - Women with scheduled cesarean sections and agreed to participate in skin-to-skin contact immediately after birth and during surgical closure. **Data collection and outcomes:** - Observation with field notes during cesarean sections focusing on interactions between mother, neonate, and health care staff. - In-depth loosely structured individual interviews following Spradley's (1979) recommendations for interviewing. **Analysis** - Iterative and recursive data collection with analysis of interview data and develop themes.	**Mutual Caregiving** - Initiation of the dyad (mother and neonate) for improved bonding. - All mothers reported skin-to-skin contact to be calming for both mother and baby. - Comforting touch. - Early breastfeeding. **Fathers influence** - Acknowledged formation of the family unit. - Fathers as a buffer to outside environment. **Cesarean environment** - Skin-to-skin contact alleviating anxiety caused by surgical environment. - Allowed for a sense of control in the operating room. - Worried the neonate was in the way of the surgical procedure. - Nursing staff required to frequently reposition mother/baby.	**Strength of design: Strong** **Quality: Strong** - Strong congruity between methodology, research question, objectives, and interpretation of results - Participants and their voices adequately represented - Conclusions drawn in research report from thematic analysis

Study/Design	Methods	Key Results	Comments
Authors: Fuhrmann et al, 2015 **Design:** Interventional before-and-after study. **Purpose:** To evaluate the effect of a simulation-based team training intervention on the proportion of emergency cesarean sections (C-section) achieved within a 30-min time frame.	**N=** 239 emergency C-sections **Country/Setting:** University Hospital, Denmark. Labor and Delivery suite operating room. **Group 1:** - Obstetricians, Labor and Delivery/Scrub Nurses, Anesthesiologists, Midwives - Mandatory participation in two simulation workshops, 40-minute lecture, and debrief - One group design in which all participants received the intervention **Data collection and outcomes:** - 100 emergency C-sections before staff received training - 100 emergency C-sections after staff received training - Outcome of interest was the proportion of 30-min ECSs achieved within a 30-min time frame. **Analysis** - Continuous data for normal distribution and described as mean (95% CI) or median (range). - Two-sample t-test/independent t-test, Mann-Whitney U-Test	**Team Training Increases Patient Outcomes by Increasing decision to delivery time** - Proportion of C-sections performed within 30 minutes increased after team training intervention (87.5%, 95% CI 79.2–93.4%) compared to before the intervention (74.0%, 95% CI 64.0–82.4%) (P = 0.017).	**Strength of design: Moderate** **Quality:** Medium **Issues:** - Lack of statistical analysis - One group design, which is problematic as there is no control group to compare results to understand impact

Study/Design	Methods	Key Results	Comments
Authors: Gee et al. (2021) **Design:** Descriptive Exploratory **Purpose:** 1) To assess whether there is a difference in clinical knowledge and confidence for maternity nurses after participating in a perioperative educational intervention. 2) To assess whether there was a difference in "decision-to-incision" times for nonscheduled cesarean births. 3) Whether clinical competency in perioperative standards of care improved after education.	**N=** 29 **Country/Setting:** USA, East Coast (Military Hospital) **Group 1:** - Junior and senior labor and delivery nurses, permanent staff members, education from diploma to graduate level. - **Data collection and outcomes:** - Participants were invited to complete an online-self-study educational module in the form of PowerPoint slide presentations pertaining to emergency cesarean births before completing a pre-test based on knowledge and confidence in clinical perioperative skills. - Pre-test and post-test designed by lead researchers based on AORN guidelines composed of 10 multiple choice questions, 4 options for each question with a passing score set at 80%. - Performance criteria adapted from the Circulation Simulation Exercise Skills List. **Analysis** - Confidence scales using a 4 point Likert scale with 15 items Nonparametric Wilcoxon signed-rank statistical analysis with p=0.05.	**Increased knowledge and confidence** - Total knowledge score increased by 10% post-intervention (p=0.121). - Confidence scores increased by one point (p=3.95). - Nurses with more experience had higher knowledge and confidence scores (p=0.008). - Nurses reported higher confidence when there had been less time since their last emergent section (0.003). **Decreased decision-to-incision times.** Average time from decision to incision decreased by 3 minutes (p=0.352), with the range of decision-to-incision times decreased by almost 40%.	**Strength of design:** Moderate **Quality:** Medium **Issues:** - Small number of participants due to short staffing and higher patient acuity - Lower levels of retention throughout the entirety of the study (participants not completing the post-tests), risk of loss of power - Risk of bias as researcher observing cesarean sections may impact regular behaviour of nurses.

Study/Design	Methods	Key Results	Comments
Authors: Koh et al. (2014) **Design:** Cohort study **Purpose:** 1) To examine the impact of experience level on task management in the operating theatre, and 2) To investigate the relationship between task management and performance.	**N=** 20 **Country/Setting:** Obstetrics and Gynecology Department of teaching hospital in Singapore **Experienced scrub nurses:** n=10, (2years+) **Novice scrub nurses:** n=10, (less than 2 years) **Data collection and outcomes:** - Initial interview with experts from hospital re: roles and responsibilities of scrub nurses. - All participants wore an eye tracker device while performing one cesarean section each. **Analysis** - Interview with nurse manager - Independent coding of video data by two engineers blinded to experience levels, plotted onto timeline with quantifiable coding system (Cohen's Kappa) - Frequencies of tasks per unit of time and interruptions tallied and compared using one-way ANOVA - Differences between experienced and novice scrub nurses frequency with anticipatory and reactive assistance were tested by Chi-square test and one way ANOVA - Behavioral rating system SPLINTS	**Task management** Experienced scrub nurses**:** - Larger number of anticipatory assistance 14.6% compared to 7.9% p=0.01). - Less reactive assistance (1.6% compared to 4.3%, p=0.044). - Provided assistance ahead of time significantly more (p=0.01). Novice scrub nurses: - Higher incidence of reactive assistance (4.3% compared to 1.6%, p=0.01). - Higher incidence of unsuccessful anticipation (5.4% compared to 1.6%, p=0.01). - Higher incidence of moving instruments (69.6% compared to 57.9%). - More non-surgeon triggered interruptions (p=0.047).	**Strength of design:** Moderate **Quality: Medium** **Issues:** - Participants recruited from a single source, have targeted characteristics and no random sampling - Assessors were not blinded - No attempt to assess validity and reliability - Limited control of confounding

Study/Design	Methods	Key Results	Comments
Authors: Melendez et al. (2019) **Design:** Descriptive Exploratory **Purpose:** To determine if utilizing the evidence-based PeriOp 101: A Core Curriculum OB led to improvements in L&D RNs' perioperative cesarean birth knowledge, self-efficacy, and documentation performance.	**N=** 26 **Country/Setting:** USA, Military hospital **Sample:** Labor and delivery nurses enrolled in performance improvement program based on limited seating – "Periop 101: A Core Curriculum OB " **Data collection and outcomes:** - Prebrief with written assessment of self-efficacy. - 22 perioperative didactic learning module with self-assessments after each module - Variables measured before and after participation in the modules. - Modified Nursing Care Self-Efficacy Scale, based on the Safe Environment of Care (Hughes, 2013; Kennedy, 2014; Welsh, 2014). **Analysis** - 10 point Likert scale to rank degree of confidence in skills - Wilcoxon nonparametric test	**Improved patient safety** - 16 modules which related to patient safety all showed statistically significant improvement after completion of the education module, with the most significant improvement being knowledge of anesthesia (p=0.102), pre-op skin prep (p=0.109), understanding of hemostasis (p=0.109), and knowledge of instruments (p=0.039). **Perioperative self-efficacy** - 7 out of 9 modules pertaining to perioperative self-efficacy showed statistically significant improvement after the intervention, with the most notable improvements in surgical attire (p=0.119) and restricted vs. unrestricted environments (p=0.91). **Outcome: Decrease in errors** - Chart review showed a decrease in errors by almost 4%. - Incident reports post-cesarean section decreased by 5.	**Strength of design: Moderate** **Quality: Medium** **Issues:** - Only 18 out of 26 nurses completed all modules (lack of participant retention/risk for bias and potential loss of power) - Low levels of statistical analysis, no information re: validity and reliability, no regression

Study/Design	Methods	Key Results	Comments
Authors: Roshangar et al., (2020) **Design:** Double-blind randomized control trial **Purpose:** To explore the relationship between maternal anxiety and changes in vital signs and nurse companionship during cesarean sections	**N=** 128 **Country/Setting:** Al-Zahra Teaching Hospital, Tabriz, Iran **Control group:** n=64, C-section candidates **Intervention group:** n=64, C-section candidates **Data collection and outcomes:** - Random allocation of participants - Control group received routine C-section care from staff without presence of researcher - Intervention group received accompaniment and support from one operating room nurse one hour before, during, and one hour after the surgery. - Levels of anxiety and vital measured by a blind researcher one hour before and one hour after the procedure. **Analysis** - Demographic information form - Visual Analogue Scale	**Anxiety Management** - No statistically significant findings in the difference between the anxiety levels for control group and intervention group for measurements taken one hour before the surgery ($p=0.081$). - Anxiety during the cesarean section was decreased in the intervention group when compared to the control group ($p<0.001$) and one hour after ($p=0.011$). **Vital Sign Changes** - Average heart rate of mothers in the intervention group was lower relative to baseline vital signs (from 1 hour before) when compared to the control group ($p=1.0$).	**Strength of design:** Strong **Quality:** Moderate **Issues:** - Potential bias as results may not be transferable across cultures; study was hosted in Iran where it is not culturally accepted for fathers/males to be present during birth. Cesarean sections are most often accompanied by fathers/support person, which may impede transferability of the data. - No comment on validity and reliability or regression

Study/Design	Methods	Key Results	Comments
Authors: Reza et al. (2021) **Design: RCT** **Purpose:** To evaluate the effect of an educational intervention on the improvement of circulating nurses' nontechnical skills.	**N=** 300 **Country/Setting:** Shiraz University of Medical Sciences, Iran **Intervention Group:** n=150 - Received 2-hour face-to-face training and education pertaining to nontechnical operating room nurse skills - Pre and posttest non-technical skills assessment, 8 weeks apart **Control Group: n=150** - Did not receive additional training - Pre and post-test non-technical skills assessment, 8 weeks apart **Data collection and outcomes:** - Authors observed in the operating room for nontechnical skills - The nontechnical skills were assessed using the circulating practitioners' list of nontechnical skills – CSPLINTS which had 43 domains of observable behaviours for measurement, grouped into five dimensions, namely, task management, teamwork, situational awareness, communication, and leadership to be scored **Analysis**	**Task Management** - Intervention group had 30.9% improvement score, median difference of 0.64 ($p<0.001$, z score 9.12). - Control group had a median score difference of 0.06. **Teamwork** - Intervention group had a 42.5% score improvement, median score difference of 0.84, $p<0.001$, z score 8.64. - Control group median score difference of 0.00. **Situational Awareness** - Intervention group had a 16.7% improvement score, median score 0.42, $p=<0.001$, z-score 9.48. - Control group median score difference of -0.14. **Communication** - Intervention group 26.6% improvement score, median difference score 0.62, $P<0.001$, z score 9.21. - Control group had a median score difference of 0.20.	**Strength of design: Strong** **Quality: High** - Appropriate statistical analysis - Study results generalizable and able to be repeated - Adequate sample size and power - Groups similar at baseline and assessed concurrently

	- Wilcoxon and Mann–Whitney tests, - Kolmogorov-Smirnov test - Kendall's tau, - Independent sample t-test - One-way ANOVA for assessment of relationship between median scores and demographics.	**Leadership** - Intervention group had 21.0% improvement score, median difference score 0.37, $p<0.001$, z-score=7.05. - Control group had median difference score of 0.11.	

Study/Design	Methods	Key Results	Comments
Authors: Schorn et al, 2015 **Design:** Quality Improvement Project **Purpose:** To describe a quality improvement process used to implement family-centered cesarean birth at one academic center, present initial outcome data, and identify areas for continued improvement and research	**N=** 2534 **Country/Setting:** Southeast United States, labor and delivery unit Level 4 Regional Academic Health Centre **Participants:** - Labor and delivery, maternity and nursery staff received training on family-centered cesarean birth with an emphasis to facilitate skin-to-skin contact in the operating room. **Data collection and analysis:** - Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines for reporting quality improvement projects - Other information not available	**Skin to Skin Care** - Skin-to-skin contact un the operating room increased from 13.1% to 38.6% after the educational intervention. **Exclusive Breastfeeding** - Monthly rates of exclusive breastfeeding at hospital discharge increased from 35.1% to 63.8%.	**Strength of design:** Medium **Quality:** Low **Issues:** - Poor documentation throughout the study - Poor congruity between research methodology, methods to collect data, and interpretation of results

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Appendix C: Consultation Letter of Invitation and Questionnaire

Hello,

My name is Lesley-Marie Lahey, and I am a Labor and Delivery Nurse at the Janeway Children's Hospital Case Room and a graduate student at the Faculty of Nursing at Memorial University of Newfoundland (MUN). As part of the requirements for the fulfillment of the Master of Science of Nursing (MScN) degree at MUN, I am completing a practicum project that is focused on resource development in collaboration with my faculty supervisor, Dr. Renee Crossman. I am in the process of creating an educational resource to support novice labor and delivery nurses' orientation to the roles and responsibilities of the Operating Room within the Janeway Case Room.

You are invited to participate in the consultation phase of data collection for this practicum project. As a staff nurse, you have expertise in the roles and responsibilities of the registered nurse in the Janeway Case Room Operating Rooms. Attached is a short questionnaire for your review and completion. The questionnaire includes questions related to your experience in the Janeway Case Room, your orientation for the Case Room Operating Rooms, your confidence in your Operating Room nursing skills (as applicable) and your experience with novice registered nurses in the Operating Rooms. It should only take a few moments of your time, should you choose to participate. Completed questionnaires can be returned to me in person at the Janeway Case Room, via email by returning completed questionnaires to me at lml671@mun.ca or placed in the allocated drop-box in the Charge nurse office. If you prefer a conversational style interview, my contact information is included below. I can be contacted via telephone or email to arrange a time to meet. There is no requirement to include your name or contact information on the questionnaire, and personal information will not be used or shared in any way. Please contact me at any time with questions, comments, or concerns.

Thank you for your time.

Best regards,

Lesley-Marie Lahey, BN RN

MScN Student

Memorial University of Newfoundland

Faculty of Nursing

Please respond to the following statements according to the scale provided with the most appropriate answer.

1. How many years of experience do you have working as a labor and delivery registered nurse?

(a) 0-2 years
(b) 2-5 years
(c) 5-10 years
(d) 10+ years

2. In your regular duties as a labor and delivery nurse, you are often assigned to roles within the Operating Room and expected to perform the roles of an Operating Room registered nurse, as well as an obstetrical nurse.

Strongly Disagree Disagree Neutral Agree Strongly Agree

3. Please respond to the following statement.

I feel adequately prepared for each of the three main nursing roles (circulating, assisting, and scrub nurse) in the Case Room Operating Rooms, both for routine cases and in case of emergency.

Strongly Disagree Disagree Neutral Agree Strongly Agree

4. An educational resource that is specific to the Janeway Case Room Operating Room would be beneficial to the learning and orientation of the novice labor and delivery nurse.

Strongly Disagree Disagree Neutral Agree Strongly Agree

5. Please respond to the following only if you identify as a novice labor and delivery registered nurse:

I had a good understanding of the roles and responsibilities of the Operating Room nurse after the classroom orientation and felt prepared to work with an Operating Room assignment.

Strongly Disagree Disagree Neutral Agree Strongly Agree

5. Please respond to the following only if you identify as an experienced labor and delivery registered nurse:

In your opinion, graduate nurses and novice labor and delivery nurses are adequately prepared for an Operating Room assignment after completing the classroom orientation.

Strongly Disagree Disagree Neutral Agree Strongly Agree

6. In your experience, maternal and/or fetal outcomes are impacted by registered nursing skill in the Operating Room.

Strongly Disagree Disagree Neutral Agree Strongly Agree

7. If you answered "agree" or "strongly agree" to question #6, please explain the impact of registered nursing skill on maternal and/or fetal outcomes in your experience. If you answered "disagree" or "strongly disagree", please continue on to question number 8.

8. Please list your preferred mode of education delivery. Examples include but are not limited to self-directed learning modules, virtual presentations, in-class presentations, assigned readings, simulation labs, case studies, etc.

9. Have you ever worked in other labor and delivery units at other health care facilities that do not have operating rooms within their labor and delivery units, or require patient transfer to outside operating rooms for Cesarean sections? If so, please comment on your experience in these units in terms of nursing roles during cesarean sections and the impact on maternal and fetal outcomes.

10. Do you think an educational resource for Operating Room nursing specific to Obstetrical nursing would be beneficial for the Janeway Case Room? If yes, what content would you like to see included in the resource?

11. Please list any comments or concerns.

_____
_____
_____
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_____
_____

Thank you!

Appendix D: Environmental Scan Letter of Invitation and Questionnaire

Hello,

My name is Lesley-Marie Lahey, BN RN. I am a Labor and Delivery registered nurse currently working at the Janeway Children's Hospital Case Room in St. John's, Newfoundland and Labrador. I am a Master of Science of Nursing (MScN) student at Memorial University of Newfoundland (MUN) Faculty of Nursing. As part of the fulfillment of my Master's degree, I am required to complete a practicum project in collaboration with my identified faculty supervisor, Dr. Renee Crossman. My practicum project is a resource development project entitled "An Orientation Module to Operating Room Nursing for Novice Labor and Delivery Nurses".

Specifically, I aim to create an educational resource to support novice labor and delivery registered nurses with the orientation to the various roles and responsibilities of the Operating Room, which is a part of regular duties at the Janeway Case Room. This letter invites you to participate in the environmental scan phase of my practicum project. The purpose of the environmental scan is to identify similarities and differences between the Janeway Case Room and other labor and delivery units, in particular, as it pertains to the orientation of registered nurses and the process of conducting nursing care for cesarean sections.

The Janeway Case Room is a tertiary care center that services all high-risk maternity care in the province of Newfoundland and Labrador, as well as the metro area. Any deliveries that occur via Cesarean section, whether they are planned, urgent, or emergent occur within the independent Case Room Operating Rooms, which is run entirely by labor and delivery staff as opposed to Main Operating Room staff. I am interested in learning about the policies and procedures of other Case Rooms for Cesarean sections; whether or not patients have surgery within the labor and delivery departments or in separate Operating Rooms. Additionally, I am interested in the orientation programs for novice labor and delivery registered nurses; in particular, content in formal orientation pertinent to Operating Room nursing care. Finally, I am looking for any agency-specific policies that support labor and delivery nurses in the operating room.

I have attached a short questionnaire for your review and completion. It should only take a few moments of your time. Completed questionnaires can be returned to me via email at lml671@mun.ca, if you choose to participate. I can also be reached via telephone at 709-697-2636 if you prefer.

Thank you for your time.

Best regards,

Lesley-Marie Lahey, BN RN

MScN Student

Memorial University of Newfoundland, Faculty of Nursing

Please respond to the following questions. If you would prefer to discuss these questions rather than the written format, please email me at lml671@mun.ca to arrange a phone call.

1. Please name your health agency and/or region, as well as your job title. (Personal names are not required).

2. In this department, approximately how many births occur per year? Of those births, how many births occur via Cesarean section? If unknown, please comment "unknown".

3. In the case of a Cesarean section, does the surgery occur in a labor and delivery/Case Room specific Operating Room(s) or does the surgery occur in the main Operating Room(s) of your hospital? Is the circulating, assisting, and scrub nurses from the labor and delivery unit or are they Operating Room staff? Please explain.

4. Are there any guidelines or agency policies specific to the roles and responsibilities of labor and delivery nurses in Cesarean sections? If these guidelines exist, could you share them with me (via my email listed above)?

5. What is included in the orientation program for novice labor and delivery nurses pertaining to their role during Cesarean sections?

6. In your experience, what are the specific learning needs and skills for novice nurses in obstetrical operating rooms? Which roles of Operating Room nursing do most novice nurses seem to find the most challenging?

7. In your opinion, would it be beneficial for novice labor and delivery nurses to have access to an educational resource for the nursing care for a patient undergoing a Cesarean section? If yes, what would you consider important to be included within the content of this educational resource?

_____
_____
_____
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_____

Thank you!

Appendix E: Consultation and Environmental Scan Report

An Orientation Module to Operating Room Nursing for Novice Labor and Delivery Nurses: Consultation and Environmental Scan Report

Cesarean sections are the most performed surgical procedure for women in North America and account for almost one-third of cases of childbirth (Frederick et al., 2016). A Cesarean section is the "delivery of a baby through a surgical incision made in the mother's abdomen and uterus [...] performed when the normal vaginal childbirth is not proper for the mother or when the childbirth must be done sooner" (Roshangar et al., 2020, p. 267). Indications for a Cesarean section include but are not limited to malpresentation of the fetus, labor dystocia, fetal macrosomia, abnormal fetal heart rates, placenta previa, pregnancy of multiples, maternal contraindications for vaginal delivery, repeat Cesarean deliveries, and more recently, by maternal request (Society of Obstetricians and Gynecologists (SOGC), 2023).

In the province of Newfoundland and Labrador, the majority of childbirth occurs at the Janeway Children's Hospital Case Room, located in St. Johns (Knott, personal communication, 2023). The Janeway is a tertiary care center with approximately 2000 births per year, which includes any high-risk cases for the province (Knott, personal communication, 2023). The Janeway is very unique regarding labor and delivery services, as the Case Room staff facilitates both vaginal births and surgical births by Cesarean section directly within the unit and does not require patient transfer. This is unlike other health agencies in Newfoundland, which I discovered through anecdotes and conversations with peers. Other Case Rooms within Newfoundland Health Services transfer obstetrical surgical cases to the hospital's main Operating Room. As such, it is imperative that labor and delivery registered nurses at the Janeway Case Room are appropriately orientated to Operating Room nursing as well as labor and delivery nursing.

Project Overview

The Janeway Children's Hospital currently has a staff of approximately 60 labor and delivery nurses with varying years of experience. Typically, there are three formal orientation programs per year, which are facilitated by the Clinical Educator for the Women and Children's Health Program and occur in May, September, and January. The current orientation to the Janeway Case Room for novice registered nurses includes two weeks of theoretical learning, delivered by a combination of self-directed learning modules and in-class structured teaching modules. The learning modules include an overview of the roles and responsibilities of a labor and delivery registered nurse and a theoretical review of obstetrical nursing. As well, there are at least eight weeks of co-signed shifts to facilitate practical learning and psychomotor skills. When I was a novice labor and delivery registered nurse completing my own orientation, I noticed a gap in my education. This gap relates to the theoretical and practical teachings related to Operating Room nursing, despite the fact that Cesarean sections account for 30% of births in Canada (Canadian Institute for Health Information (CIHI), 2023). Presently, the portion of the orientation program specific to the Case Room Operating Room includes one day of in-class presentations created and taught by staff from the main Operating Room of the Health Sciences Centre (St. Johns, Newfoundland) or the Janeway (St. Johns, Newfoundland). These Operating Rooms do not perform the obstetrical surgeries; therefore, the education delivered in this portion of orientation is not specific to the roles and responsibilities of the labor and delivery registered nurse in the Operating Room during Cesarean sections. Instead, they are generalized roles and practices of a general Operating Room.

Due to the unique role of the Janeway Case Room Operating Room staff, I felt that this portion of orientation can be improved by the development of an educational resource that is

specific to the roles and responsibilities of the obstetrical Operating Room nurse to better support novice labor and delivery nurses in this role. My goal is to improve the proficiency, skills, and confidence of the novice labor and delivery nurse in the Operating Room during Cesarean sections, and to enhance the confidence of the novice nurse through the development of an educational resource that is specific to this surgery. Ultimately, I aim to improve maternal and fetal outcomes during and after Cesarean sections by supporting and educating novice labor and delivery registered nurses in the Operating Room.

As part of the development of my educational resource, I conducted a literature review to assess the current literature surrounding labor and delivery nurses in obstetrical Operating Rooms. I focused on the impact of enhanced education for registered nurses in the Operating Room during Cesarean sections on maternal and fetal outcomes. I also explored different modes of education delivery to understand the most effective method of knowledge uptake for novice registered nurses.

In the next phase of my project, I consulted with local peers and key stakeholders within the Janeway Case Room to better understand the attitudes and perceptions of labor and delivery nurses at the Janeway towards obstetrical Operating Room nursing from both an experienced perspective and a novice perspective. My goal for the consultation process was to gain further insight into the need for this practicum project, the theoretical and practical content to include in the educational resource, as well as the most beneficial mode of delivery for education.

I also completed an environmental scan. An environmental scan is a survey of comparable settings to better understand existing programs and services (Chorneki et. al, 2020). I consulted with experts across Newfoundland and Labrador and Nova Scotia. I also reviewed grey literature including policies and procedures in Women and Children's Health departments across

Newfoundland and Labrador and Atlantic Canada to understand current practices at similar agencies. My goal with the environmental scan was to better understand the content of orientations in similar labor and delivery units to help facilitate the development of my educational resource, and how to deliver it.

Methods

I conducted the consultations and environmental scan in a two-week period in July 2023, in collaboration with my faculty supervisor, Dr. Renee Crossman. I created an introductory letter and an invitation to participate in a short questionnaire for both the consultations and the environmental scan and obtained contact information for key stakeholders within the target organization, Eastern Health, as well as contacts from comparable health agencies. I also included peers in this process. In the following sections, I will discuss the methods specific to the consultations and the environmental scan.

Data Collection

Consultations

Using the Eastern Health e-mail system, I contacted consultees within the Janeway Case Room by sending a letter and a short questionnaire to everyone on the internal mailing list for the unit. I chose this method of contact as it provided equal opportunity for those interested to participate in the questionnaire. Using the internal Eastern Health email ensured privacy as well as data protection as the internal email system requires a two-step authentication for access. In the letter and personal conversations, I included a brief introduction to my practicum project and its goals.

The consultation questionnaire was comprised of several short questions that were answered using a Likert-scale style response system. I also included open-ended questions, which I used to gain information about the learning needs of novice labor and delivery registered nurses, experiences working in other labor and delivery centers, and the content that consultees felt should be included in an educational resource. A copy of the questionnaire, as well as the invitational letter, is included in Appendix A. The questionnaire included questions pertaining to the registered nurse's role in the labor and delivery unit, and whether they are responsible for the operating room as part of their regular duties. I also included questions about the content of their orientation, if novice nurses felt adequately prepared for the operating room and asked for anecdotal evidence from consultees about the impact of obstetric-specific operating rooms on maternal and fetal outcomes. Consultees returned the completed questionnaires to me via email, or left them in a sealed envelope in the Case Room office where I collected them in person. I set a goal to have at least five questionnaires from experienced nurses (2 years or more), and at least five questionnaires from novice nurses (less than 2 years). This sample size was chosen based on maximum variation sampling for the intended product, as this number would provide data from various years of experience, providing a rich, thick description of phenomenon (Sandelowski, 1995).

Environmental Scan

I conducted an environmental scan to assess the roles and responsibilities as well as the orientation programs of labor and delivery registered nurses across the province of Newfoundland and Labrador and similar care centers across Canada. The environmental scan also occurred in July 2023. My main goal for the environmental scan was to determine the content to be included in the educational resource, and the mode of delivery. I also aimed to gain

insight about barriers and facilitators to implementing such a resource, which is important to both the development and plans for implementation of the resource. I obtained contact information for several different educators for Women and Children's Health programs and Labor and Delivery Rooms across Newfoundland and Labrador health agencies, as well as for the Izaak Walton Killam (IWK) in Nova Scotia. I included the IWK in my environmental scan as this hospital is also a tertiary care center in Atlantic Canada and is comparable to the Janeway Children's Hospital in terms of programs and services. Using my academic e-mail system, I sent these contacts a letter briefly explaining my role, education, and practicum project, and a short questionnaire. The invitational letter and environmental scan questionnaire are included in Appendix B. In the questionnaire, I asked open-ended questions to explore different roles of labor and delivery nurses, and whether Operating Room nursing was a regular part of registered nursing duties. I also inquired about the orientation program for these agencies.

As part of my environmental scan, I also reviewed grey literature. This included an Internet search of current guidelines for obstetrical and Operating Room nursing, focusing on the SOGC guidelines and Operating Room Nurses Association of Canada (ORNAC) standards, as well as Eastern Health specific policies for the Women and Children's Health Program. Additionally, I compared policies from the Perioperative Program pertaining to Operating Room nursing. I also explored the SOGC and Canadian Nurses Association (CNA) recommendations are for registered nurses in the Operating Rooms, especially for obstetrical cases. In the following section, I will discuss the findings from the consultations and the environmental scan.

Data Analysis

After data collection, I completed an inductive content analysis for both the consultations and environmental scan data. I used content analysis to describe the data in a way that is both systematic and objective and can be used to describe, quantify, and categorize data by written, verbal, and/or visual themes (Elo & Kyngas, 2008). The purpose of content analysis is to provide knowledge, demonstrate new insights, provide a practical guide for action, and describe phenomena (Elo & Kyngas, 2008).

Consultations

The consultation process yielded responses from eight novice labor and delivery registered nurses, and eight experienced labor and delivery registered nurses. This sample size surpassed my initial goal of having five novice and five experienced consultees. Overall, requests for information about my practicum project were positively received, and consultees were quite willing to complete the questionnaire as multiple consultees agreed with the need for further resources to support learning for obstetrical operating room nursing. Using a Microsoft Word document, I compiled the results of the questionnaire by open-coding the responses of the Likert-scale style questions and categorized the data using descriptive statistics. I also completed a thematic analysis of the free-response questions to identify overarching themes to describe the phenomenon from open-ended questions (Elo & Kyngas, 2008). To do this, I analyzed the words used in each response from the open-ended questions, and categorized responses based on similar words. I then completed a thematic analysis to identify overarching themes from the categories that arose from the coding system. I analyzed all responses in two categories, novice consultees and experienced consultees. I defined novice as having less than two years experience in labor and delivery nursing and experienced as having two years or more in labor and delivery

nursing. Please see Appendix C for an overview of responses from my consultation questionnaire.

The data I received in response to my consultation questionnaire suggest that consultees are often assigned to roles within the Operating Room and expected to perform the role of an Operating Room registered nurse and an obstetrical nurse simultaneously. Most novice labor and delivery nurses often felt unprepared for this role, while experienced labor and delivery nurses felt prepared. There was overwhelming support for the need for an educational resource that is specific to the Janeway Case Room Operating Rooms to support novice labor and delivery nurses in their role.

I also asked questions about the orientation program. Most consultees suggested that novice labor and delivery nurses, in general, do not feel that they had a good understanding of the roles and responsibilities of the Operating Room nurse after the classroom orientation and felt unprepared to work with an Operating Room assignment.

Consultees were also asked about their lived experience in the Operating Room, and their opinion on whether maternal and fetal outcomes were impacted by registered nursing skills in the Operating Room based on their experience. This data suggested that both novice and experienced labor and delivery nurses agreed that maternal and fetal outcomes are impacted by Operating Room nursing skills in terms of skill proficiency, confidence, and working speed. This was further developed in the free-text responses.

I conducted a thematic analysis based on the identification of an overarching theme that described phenomenon using the open-ended questions (Elo & Kyngas, 2008). The overarching theme was the working speed of the registered nurse. 100% of consultants both novice and

experienced identified that the working speed of the registered nurse in the operating room in terms of task performance and identification of priorities contributed to better maternal and fetal outcomes in Cesarean sections, noting that this is especially true in a case of emergency, such as when an abnormal or decreased fetal heart rate has been identified. The novice consultees felt that the ability to find things quickly within the operating room or knowledge of the use of equipment contributes to the working speed of the registered nurse in the Operating Room, which was not identified by the experienced consultees. The experienced consultees potentially did not recognize this as weakness due to the experience and confidence in their own knowledge and setting.

When asked to describe preferred modes of education delivery, consultees (both novice and experienced) described simulation labs as their preferred mode of delivery. Novice registered nurses also preferred case studies and in class presentations, noting that the opportunity to learn directly in the operating room by practicing psychomotor skills, and seeing and touching equipment would be helpful. Two novice consultees also stated that a printed copy of an instruction manual available for review placed in the Operating Room for quick access in time of need would be helpful. Experienced nurses preferred self-learning modules and in-class study as their preferred method of education delivery.

I also asked consultees to describe any experiences working in other labor and delivery units where the Operating Room was not a part of labor and delivery care, and patients required transfer to main Operating Rooms, if applicable. All comments on this question reflected how their experience transferring patients to a main operating room in case of emergency (such as an abnormal or decreased fetal heart rate) was stressful and increased the likelihood for poor outcomes as there was a delay in care while nursing staff navigated their way through the

hospital, and had to wait for anesthetic and Operating Room staff who were sometimes not in house for up to thirty minutes, whereas in the Janeway, staff can have babies delivered within five minutes in an emergency, as per anecdotal evidence and my own lived experience. This is partially because a full Operating Room team is always available in-house, including Obstetricians/Gynecologists, residents, and anesthesiologists. Consultees who answered this question noted how stressful it was for the staff and for the patient to wait for surgery while listening to a low fetal heart rate, and how it made staff feel helpless in that scenario.

I asked consultees whether they felt that having an educational resource for Operating Room nursing specific to the Janeway Case Room would be beneficial, as well as to describe the required content for the resource. Consultees agreed that it would be beneficial, stating that a manual with pictures and names of instruments specific to Cesarean sections would be helpful when trying to learn the scrub nursing role. Consultees also indicated that a timeline of a typical Cesarean section in terms of task performance and a clear description of the roles and responsibilities of the circulating, assisting, and scrub nurse should be included. Experienced staff commented that an educational resource should include any potential complications associated with Cesarean sections and how to manage those complications, noting the need for further education about hemorrhage management and knowledge equipment such as the Cell Saver, Bakri balloons, Alexis-O and the Traxi, as well as how to assist the physician when needed with an urgent induction of general anesthesia. Other comments included that learning Operating Room nursing skills was scary for novice labor and delivery nurses, and that nursing school did not include any preparation for the role of an operating room nurse. A few consultees reiterated the need for a labor and delivery operating room-specific resource, stating that labor and delivery nurses do not need orientation to the main operating room. Two consultees stated

that the overall predictor of better maternal and fetal outcomes in case of emergency is the speed of the registered nurse and physician.

Environmental Scan

While the consultation process was successful in terms of the amount of data from the questionnaires and consultee participation, unfortunately the environmental scan that I completed was less successful. I sent my invitation letter and questionnaire to eight Clinical Educators in Women and Children's Health Programs across Newfoundland and Labrador Health Services, and one contact from the Women's Health program at the IWK, but the response rate was low. Only one participant responded - the Clinical Educator in Western Health, Newfoundland and Labrador. This individual completed the questionnaire, indicating that registered nurses in labor and delivery units at her agency transfer the patient's care to the hospital's main Operating Room in cases where Cesarean sections are indicated. She indicated that labor and delivery nurses are solely responsible for the newborn after delivery in a Cesarean section in the facility that she represents and that orientation for Cesarean sections only includes the transfer of information and care of the neonate, including neonatal resuscitation. Novice registered nurses have increased perceived difficulty with learning the roles and responsibilities associated with neonatal resuscitation at this agency, due to the delicate and stressful nature of the task. This individual indicated that, in her opinion, an educational resource aimed to support novice labor and delivery nurses in the obstetrical Operating Room would benefit the facility she represented.

I re-sent the letter of invitation and questionnaire to the identified contacts one week after the initial contact was attempted and failed to gain any further responses. I considered extending the scope of my environmental scan in effort to gain more insight across comparable agencies by contacting Clinical Educators for the main Operating Rooms and discussed this with my

supervisor. My reasoning was to gain further insight into Operating Room nursing, and novice Operating Room nursing orientations. I received a response from one of these contacts, who indicated that Cesarean sections are not a routine procedure at her facility, but this facility did have Operating Rooms that performed a large number of surgeries. This individual indicated that novice nurses must complete four weeks of in-class learning and at least ten weeks of preceptorship-style learning during orientation. There were no educational resources specific to novice Operating Room nurses for any individual service that she was aware of but did indicate it might be helpful if there was a resource for each surgical discipline or surgeon preferences.

My environmental scan also included a review of grey literature, specifically relating to existing policies and procedures for registered nurses in the Operating Room. First, I completed an Internet search to explore if the Society of Obstetricians and Gynecologists of Canada (SOGC) had any published guidelines specific to nursing and the Operating Room. Unfortunately, the SOGC specific guidelines were not available for public viewing, and I had to consult with the medical doctors that I work with at the Janeway Case Room who had access to these guidelines to explore operating room specific guidelines for registered nurses and none could be found. Next, I searched ORNAC standards, and, similarly, ORNAC did not have guidelines for public viewing and I was unable to obtain a membership log-in at this time.

My search for Eastern Health policies relating to Operating Room nursing was more successful. Using the Eastern Health Intranet, I was able to search through Global and Program level policies. I searched through both the Women and Children's Health Program policies as well as the Perioperative Program policies. While there were numerous Operating Room specific policies, such as Performing Surgical Counts, there were no policies from either program

specifically for orientation or roles for registered nurses in the Operating Room (either the main Operating Room or the Case Room Operating Room) or their roles and responsibilities.

Facilitators and Barriers

Throughout the consultations and environmental scan processes, I noted both facilitators and barriers to data collection. The consultations were largely successful, and I attribute the success to the substantial number of facilitators present throughout this process. Firstly, I consulted with known contacts in my own place of work. Most of these consultees were peers with whom I have a personal relationship with, and this may have contributed to willingness to participate. Additionally, while I initially contacted consultees via email, I was able to give verbal reminders for completion of the questionnaire and also provide printed copies if requested or facilitate an interview instead for those who chose to participate via verbal communication. Having a personal relationship with consultees also could be considered a barrier to data collection, as I had pre-existing knowledge of attitudes and unit culture. I mitigated this barrier by having close contact with my faculty supervisor, Dr. Renee Crossman, who has no affiliation with the Janeway Case Room or labor and delivery nursing. Dr. Crossman approved my consultation process and questionnaire and was available for regular discussion throughout the consultation process.

Another facilitator for the consultation process is the fact that the Operating Room has been notorious for being intimidating to novice nurses in the Case Room and has been largely discussed around the unit as of late. Also, there have been discussions around the Case Room about changing organizational culture to one that supports novice labor and delivery nurses and to support registered nurse retention. Consultees were likely more willing to participate in efforts

to change the unit culture from one of fear to one that supports novice nurses and their learning efforts.

Thirdly, the timing of this project worked as a facilitator for this consultation process. A group of novice labor and delivery registered nurses in the Janeway Case Room are just finishing the orientation program and have been a major source of consultations and discussions about the transition to practice in labor and delivery and registered nursing in the Operating Room.

One barrier from the consultation process is the lack of extra time that registered nurses have in a shift which was required to complete the questionnaire. In labor and delivery nursing, there is often one-to-one nursing care that is quite hands on in nature, as well as staffing shortages increasing nursing workload. This may have impacted the ability of some potential consultees to complete the questionnaire, as I did receive several comments from peers throughout the consultation process that they "*keep meaning to complete the questionnaire but did not have time yet*". This indicates that the workload and/or unit acuity may have been too high to facilitate consultee's ability to participate in the consultations, but there were no negative implications from this as the target sample size had already been met.

There were more barriers than facilitators in the environmental scan process. Firstly, there was a very low response rate. This may be due to the timing of the environmental scan, being during summer holiday season. Another potential barrier was that I did not know the identified contacts from the environmental scan personally, and they have no affiliation with the Janeway Children's Hospital or the Janeway Case Room and therefore may have no personal interest in the matter. Additionally, my environmental scan was attempted via email; perhaps the scan would have been more successful had I chosen to facilitate contact via phone calls. Email was chosen as the original method of contact as email addresses were easily accessible and

individuals can answer at a time that is at their convenience. If I were to conduct a second environmental scan, I would include phone calls as a method of contact as well as emails to hopefully increase the response rate to my inquiry.

With respect to my environmental scan of grey literature, there were also some facilitators and barriers. Facilitators of the environmental scan for grey literature include the ability to find data using an Internet search quickly and efficiently. A barrier I encountered throughout this process was that many of the specific guidelines for the SOGC, ORNAC standards, and agency policies were not available for public use and/or viewing and required membership accounts or licenses to view and obtain these records. This limited the search for guidelines, standards, and agency policies.

Ethical Considerations

This practicum project is exempt from Health Research Ethics Board Approval because it satisfies item number three from the Health Research Ethics Authority (HREA) list, which is included in Appendix D. This is a quality improvement project for an educational program. Individuals who completed the questionnaires, either for the consultations or the environmental scan, will have implied consent by completing the questionnaire or participating in a conversation with me. No personal identifiers were included in the questionnaire, aside from years of experience, which is not directly identifiable data. Confidentiality was maintained by communication using password protected email which required two-step authentication or a sealed envelope for data collection, and documents were stored on my personal password protected computer.

Conclusion

The Janeway Case Room in St. John's, Newfoundland is the tertiary care center in Newfoundland and Labrador that services local and high-risk obstetrical care for labor and delivery patients across the province. The unit is unique as it is the only labor and delivery unit in Newfoundland and Labrador that has its own Operating Rooms to perform Cesarean sections, which account for 30% of all childbirths (CIHI, 2023). Other labor and delivery units in Newfoundland and Labrador transfer obstetrical patients to the main hospital Operating Rooms for Cesarean sections. As the roles and responsibilities of the labor and delivery registered nurse at the Janeway Case Room are unique, I aim to create an educational resource to support the learning needs of novice labor and delivery registered nurses that is specific to the Case Room Operating Room. As part of the development of this project, I conducted local consultations and a broader environmental scan. Both were conducted by sending emails to identified contacts, which included a letter of invitation and a short questionnaire.

The consultations with local stakeholders were very successful, and novice and experienced registered nurses both felt that an educational resource specific to the Janeway Case Room would benefit. Also, consultees indicated that, in general, maternal and fetal outcomes are improved when registered nurses have enhanced education in the Operating Room as registered nurse response time is quicker which is integral to a quick delivery in the case of emergency. In retrospect, I would have asked consultees which maternal and fetal outcomes specifically are impacted based on their experience. Consultees indicated that the roles and responsibilities of the circulating, assisting, and scrub nurse should be clearly defined in the educational resource, and the resource should include information about timelines of a typical Cesarean section, instruments, and priorities in case of emergency. The environmental scan proved to be more

difficult, and many barriers were present to data collection. In the future, completing a similar environmental scan could be improved by increasing the scope of the scans and method of contact.

Overall, the consultations and the environmental scan were integral as I develop a resource that supports novice labor and delivery registered nurses in the Operating Room. This is because the consultations and environmental scan helped to provide the basis for content for the educational resource, to be delivered via self-learning modules and/or a hard copied manual.

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Appendix F: Learning Resource

A Learning Resource for Novice Labor and Delivery Nurses in Obstetrical Operating Rooms

The Janeway Children's Hospital, St. Johns, Newfoundland and Labrador

Developed by: Lesley-Marie Lahey, BN RN

Memorial University of Newfoundland, Faculty of Nursing
December 2023

Table of Contents

Introduction to Obstetrical Operating Room Nursing

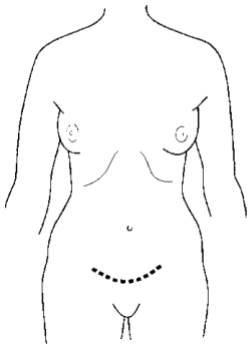
Welcome to Labor and Delivery nursing! This learning resource manual has been developed to support the knowledge and skill development of novice labor and delivery nurses as they enter the world of Operating Room nursing, to fulfill the scope of practice for Labor and Delivery nurses at the Janeway Children's Hospital in St. John's, Newfoundland. This resource has been developed specifically for the Case Room Operating Room within the Children and Women's Health Program, in consultation with nursing experts. Experts consulted in the development of this resource include the clinical educator, K. Knott, MN RN, divisional manager A. Pomeroy, BN RN, and Dr. Renee Crossman, Memorial University of Newfoundland Faculty of Nursing, as well as collaboration with registered nursing staff of the Janeway Case Room.

The intention of this learning resource is to enhance the orientation program by supporting education specific to the Janeway Case Room Operating Room. This is a unique nursing role that is not shared by labor and delivery nurses in any other health facility in Newfoundland and Labrador at the time of the development of this resource. Content within this resource has been specifically curated to meet the learning needs of novice labor and delivery nurses, addressing gaps in the orientation to labor and delivery nursing that are specific to the Case Room Operating Room. This manual may also be used as a resource to support clinical practice for those wanting to enhance their knowledge and skills for Operating Room nursing, or as a quick reference guide for clinical roles and responsibilities associated with Operating Room nursing in labor and delivery.

The Janeway Case Room is equipped to facilitate several different surgical procedures within the on-site Operating Rooms, which include elective, urgent, and emergent Cesarean sections, dilatation and curettages (D&C), emergency hysterectomies, stage IV vaginal laceration repairs, tubal ligations, and cerclage placements. This resource manual will focus on the Cesarean section, including the registered nursing roles and responsibilities associated with this particular surgery. This resource will supplement the formal classroom and practical orientation program facilitated by the clinical educators at the Janeway Case Room. While this resource is specific to Cesarean sections, it is expected that content and concepts specific to other surgeries could be included later.

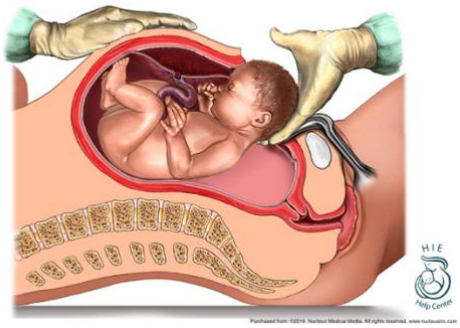
The Cesarean Section

The Cesarean section is the most common surgical procedure performed for women in North America and facilitates approximately 30% of all incidences of childbirth in both Newfoundland and Labrador and Canada (Frederick et al., 2016). The Cesarean section has been defined as the "delivery of a baby through a surgical incision made in the mother's abdomen and uterus [...] performed when the normal vaginal childbirth is not proper for the mother or when the childbirth must be done sooner for some reason" (Roshangar et al., 2020, p. 267). Indications for a Cesarean section include but are not limited to malpresentation of the fetus, labor dystocia, fetal macrosomia, abnormal fetal heart rates, placenta previa, pregnancy of multiples, maternal contraindications for vaginal delivery, repeat deliveries, and more recently, by maternal request (Society of Obstetricians and Gynecologists (SOGC), 2023).



The Cesarean section is an abdominal surgery typically performed on the lower segment of the patient's abdomen using a Pfannenstiel incision (Lippincott Williams & Wilkins, 2012). The Pfannenstiel incision is an incision on the lower transverse abdomen which allows for lateral retraction of the abdominal rectus muscles (Blackbourne, 2012). The abdomen is opened in layers using specialized surgical instruments to safely remove a fetus and placenta with membranes from the patient's uterus and is completed by the uterine repair and closure of the abdomen in layers by closing the organ, the muscles, the fascia and finally, the skin (Lippincott Williams & Wilkins, 2012). Patients are most commonly anesthetized with epidural or spinal anesthesia and are alert and oriented for the procedure to be alert for the birth of their baby. Patients also are typically permitted to have one support person present in the Operating Room for the duration of the surgical procedure. Upon completion of the surgical procedure, the patient, the newborn, and the support person are typically transferred to the Recovery Room as a family unit.

At the Janeway Case Room, Cesarean sections are performed by the attending Obstetrician/Gynecologist (OB/GYN), with surgical assistants that are typically OB/GYN resident doctors and/or clinical clerks. There are three registered nurses also assigned to every Cesarean section; the scrub nurse, the circulating nurse and the assisting nurse. Nursing care for both the patient and the baby, once delivered, is a unique combination of both Operating Room nursing and Labor and Delivery Nursing and requires a special set of nursing skills to work to the scope of practice of the Janeway Case Room Operating Room registered nurse.



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HIE Help Center (2017)

Regulations for Personnel in the Operating Room

All personnel employed in the Operating Room must abide by standard operating procedures and regulations as per the Public Health Agency of Canada (PHAC), with respect to the Operating Room environment and dress code. Additionally, the Operating Room Nurses Association of Canada (ORNAC) has set guidelines and position statements for all perioperative registered nurses regarding dress code for Operating Room nursing.

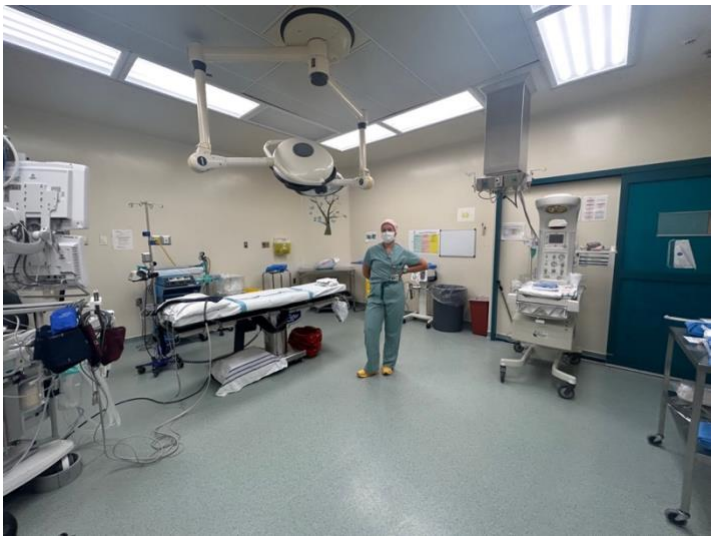
Environment

Regulations have been set as national standards by ORNAC and PHAC with respect to temperature and humidity control in perioperative areas to promote infection control. Temperature range within an Operating Room in Canada should be between 20 to 24 degrees Celsius, with a maximum temperature of 24 degrees Celsius for storage rooms containing sterile equipment (Curless et al., 2021). Obstetrical operating rooms may have an exception to these regulations in the case of preterm deliveries of infants. In this circumstance, the Operating Room is put on maximum heat (23 to 25 degrees Celsius) for the safety of the preterm infant (Balest, 2022; Bhatt, 2018**).** The acceptable humidity range is between 20% and 60% for Operating Rooms, with a maximum humidity of 60% for storage rooms containing sterile equipment Curless et al., 2021). If the temperature and humidity ranges are not appropriate upon entry to the Operating Room, the Operating Room may not be used and maintenance is required.

Dress Code

The Janeway Case Room Operating Room maintains the same standards of dress code as other perioperative programs across Canada. This dress code pertains to registered nurses, physicians, anesthesiologists, students, support people and anyone who has to enter the perioperative area. If these standards cannot be met, individuals are not permitted to enter the perioperative area. These standards include:

- Fingernails that are short, clean, natural and in good condition. No artificial nails, nail enhancements, or nail polish is permitted (Association of Operating Room Nurses (AORN), 2019; Nova Scotia Health Authority (NSHA), 2019; ORNAC, 2015)
- All hand and arm jewelry must be removed. Any other jewelry and/or accessories must either be removed or confined within the surgical attire (AORN, 2019; NSHA, 2019; ORNAC, 2015)



- Fresh and clean hospital provided scrubs that have been laundered at a central laundry facility and retrieved on arrival to the hospital must be worn by all personnel. Personal jackets and street clothing are not permitted (AORN, 2019; NSHA, 2019; ORNAC, 2015)
- Sneakers must be indoor only and only worn inside the hospital, or shoe covers must be included (AORN, 2019; NSHA, 2019; ORNAC, 2015).
- All hair must be tied back and contained in a surgical cap or bouffant (AORN, 2019; NSHA, 2019; ORNAC, 2015).
- All personnel must wear a surgical mask in the Operating Rooms (AORN, 2019; NSHA, 2019; ORNAC, 2015).

Test your knowledge: Regulations for personnel in the Operating Room

1. What is the temperature range of a standard Operating Room?

2. What is the humidity range of a standard Operating Room?

3. True or False*:*
   Staff may wear any kind of jewelry in the Operating Room as long as they can secure it.

4. True or False:
   All personnel must wear agency-supplied scrubs in an Operating Room.

Roles of the Obstetrical Operating Room Nurse during a Cesarean Section

The Scrub Nurse

The scrub nurse is one of three essential roles of the registered nurse during a Cesarean section. The scrub nurse is responsible for ensuring sterile technique and a sterile environment is maintained by all appropriate participants in the Operating Room, as well as assisting the surgeon and resident doctors by having an in-depth knowledge of the required instruments for the Cesarean section as well as preparing and providing these instruments when needed. A review of the appropriate instruments specific to the Cesarean section is included on pages 11-19 of this manual.

The scrub nurse must be competent in scrubbing of hands, donning a sterile surgical gown and gloves, as well as providing surgeons and surgical assistants with donning their own sterile surgical attire. The scrub nurse is responsible for setting up the Operating Room table with the proper sterile instruments and being able to provide them quickly and efficiently when they are needed (Blackbourne, 2012). Another important role of the scrub nurse is performing the surgical counts at the right time throughout the surgery to ensure there are no missing instruments, sponges, or equipment (Blackbourne, 2012). The scrub nurse must be focused, attentive, and calm in case of emergency, and be able to supervise the environment to ensure sterility and standard operating procedures of the Operating Room are followed. The role of the scrub nurse in the Janeway Case Room Operating Room is very similar to the role of the scrub nurse in any Operating Room and with any surgical discipline; however, some of the instruments used and order of operations are unique to Obstetrical surgery and Obstetrical scrub nursing.

The Circulating Nurse

In the Obstetrical Operating Room, the circulating nurse and the assisting nurse share mutual responsibility of the nursing tasks for standard operating procedures before and throughout the surgery. The circulating nurse, however, is primarily known as the “patient nurse”. Specific roles of the circulating nurse are ensuring maximal safety and comfort of the patient, including the support person when appropriate, conducting the surgical safety checklist, including the surgical briefing, time-out and debriefing, as well as completion of the appropriate documentation. Details about the surgical safety checklist and required Operating Room documentation can be found on page 21 and 24, as well as in Appendix B and C, respectively, of this resource. There are many similarities between the circulating nurse in an Obstetrical Operating room and a regular Operating room.

The Assisting Nurse

In the Obstetrical Operating room, many nursing roles for general operation are shared between the circulating nurse and the assisting nurse. While the circulating nurse is typically known as the "patient nurse", the assisting nurse is known as the "baby nurse". This is a role that is very unique to Obstetrical Operating Room nursing.

The role of the assisting nurse includes the care and full head-to-toe assessment of the newborn, assessment of vital signs, administration of Vitamin K with parental verbal consent, and facilitation of skin-to-skin in the Operating Room when both patient and newborn are in stable condition and there is a maternal request. At the Janeway Case Room, the Neonatal Intensive Care Unit (NICU) Resuscitation team attends all Cesarean births and will provide resuscitation and monitoring of the newborn when required, but the assisting nurse may be required to provide assistance to the Resuscitation team at times. The assisting nurse may also take photos at patient request of the patient, newborn, and support person just after time of birth.

Summary of Operating Room nursing roles

- Scrub nurse: responsible for instruments, maintaining sterility, setting up the Operating Room table and assisting the surgeons.
- Circulating nurse: Shares responsibility of preparing the patient for surgery, documentation, and general duties of the Operating Room but is specifically responsible for care and assessment of the mother during a Cesarean section
- Assisting nurse: Shares responsibility of preparing the patient for surgery, documentation, and general duties of the Operating Room but is specifically responsible for care and assessment of the baby during a Cesarean section

Test your knowledge: Roles of the Obstetrical Operating Room Nurse during a Cesarean Section

1. The _____ nurse is primarily known as the “baby nurse”. Specific roles of this nurse include the care and full head-to-toe assessment of the newborn, assessment of vital signs, administration of Vitamin K with parental verbal consent, and facilitation of skin-to-skin in the Operating Room when both patient and newborn are in stable condition and there is a maternal request.

2. The _____ nurse is responsible for ensuring sterile technique and a sterile environment is maintained by all appropriate participants in the Operating Room, as well as assisting the surgeon and resident doctors by having an in-depth knowledge of the required instruments for the Cesarean section as well as preparing and providing these instruments when needed.

3. The _____ nurse is primarily known as the “patient nurse”. Specific roles of this nurse include ensuring maximal safety and comfort of the patient, including the support person when appropriate, conducting the surgical briefing, time-out and debriefing, as well as completion of the appropriate documentation.

Instruments and Equipment for the Cesarean Section

The following instruments and equipment are required to facilitate a standard Cesarean section at the Janeway Case Room. Please note, there may be differences in equipment and instruments between obstetricians. All nurses in the Janeway Case Room Operating Rooms are responsible for recognizing each instrument and their purpose. It is not necessary to anticipate when the surgeon will need each item, but the scrub nurse should be able to recognize and find the instrument for immediate use (Liehn & Schlautmann, 2022).

The Janeway Case Room Operating Room #1.
Photo taken Sept 21, 2023 by L. Lahey

Clamps

Allis: Small rounded serrated clamps most commonly used for securing equipment such as suction and cautery (Blackbourne, 2012; Visenio, 2015). May also be known as a “towel clip”.

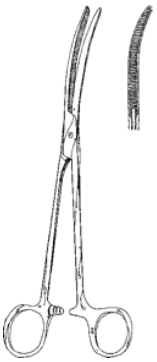
Blackbourne, 2012

Arteries: A small clamp that is multifunctional, but primarily used to hold on to other equipment or sutures. Arteries may also be known as “hemostats”, “locking forceps”, or “snaps”. (Visenio, 2015).

Visenio, 2015

Babcocks: Small clamps with rounded tips that are typically used for grasping small, delicate organs and vessels (Blackbourne, 2012; Visenio, 2015). In Obstetrics, they are used to grasp Fallopian tubes if a tubal ligation is added to the Cesarean section.

Blackbourne, 2012

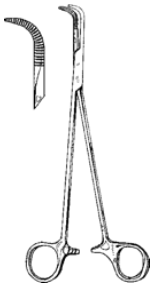


Kellys: Large clamps that are used for holding thick tissues and vessels (Visenio, 2015). In Cesarean sections, Kelly clamps are typically used for clamping the umbilical cord.

Blackbourne, 2012

Kockers: Similar to the Kelly clamps, Kockers are large clamps with teeth used for holding thick tissue (Blackbourne, 2012; Visenio, 2015). They are most commonly used to hold and retract fascia (Blackbourne, 2012; Visenio, 2015)

Blackbourne, 2012



Right angles: Most often used for grasping and dissecting tissue, or to hold tissue for the purpose of cauterizing it Blackbourne, 2012

Blackbourne, 2012

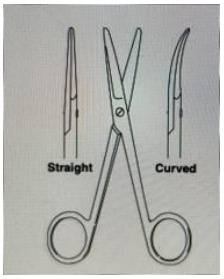
Sponge sticks: Used for grasping delicate organs in an atraumatic manner (Liehn & Schlautmann, 2022). In a Cesarean section, they are typically used to help remove the placenta and membranes. They may be informally called “rings”.

Liehn & Schlautmann, 2022

T-Clamps: A type of forcep typically used for grasping an organ. In Cesarean sections, T-Clamps are vital in grasping each side of the uterus to initiate suturing for the purpose of uterine repair as quickly as possible after delivery of the fetus to prevent hemorrhage (Liehn & Schlautmann, 2022).

Liehn & Schlautmann, 2022

Scissors



Mayo scissors: Available in both curved and straight varieties. Mayo scissors are typically used for cutting thick tissue and/or sutures. Typically, curved mayo scissors are used for cutting heavy tissue such as fascia, while straight mayo scissors are used for cutting sutures (Blackbourne, 2012; Visenio, 2015)

Blackbourne, 2012

Blackbourne, 2012

Metzenbaum scissors: Scissors used for cutting delicate tissue. Informally known as the "Metz" scissors, this instrument is used in Cesarean sections typically when the surgeon is cutting near the bladder (Visenio, 2015).

Retractors

Blackbourne, 2012

Abdominal Retractor "The Lower End": This retractor is used to allow the surgeon to hold the abdominal wall and other organs to the side to better visualize an organ (i.e., the uterus) (Liehn & Schlautmann, 2022).

Blackbourne, 2012

Army Navy: Retractor typically used for assisting with isolating and suturing fascia (Blackbourne, 2012).

Blackbourne, 2012

Richardson: Another option of a retractor typically used for isolating and suturing fascia (Blackbourne, 2012).

Two additional retractors may be added onto the sterile set-up depending on need. These are the neonatal vacuum and the C-Scoop. Both assist with delivering the fetus when the fetal head may be impacted.

Scalpels

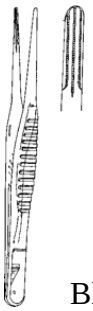
Blackbourne, 2012

#10 Blade: Used in most surgeries for large primary skin incisions (Visenio, 2015). For Cesarean sections, this scalpel is informally known as the “outside knife”.

Blackbourne, 2012

#15 Blade: A smaller, finer blade used for making delicate incisions (Visenio, 2015). This blade is used in a Cesarean section for the uterine incision to reveal the fetus.

Tissue Forceps



Blackbourne, 2012

Debakey: A long, thin, tissue forcep traditionally used for dissecting or for use with cautery (Blackbourne, 2012).

Liehn & Schlautmann, 2022

Toothed pickups: Also known as Adson forceps, these forceps are used for handling dense tissue, such as the skin, and when using staples or sutures (Visenio, 2015).

Blackbourne, 2012

Non-Toothed pickups: Used for handling tissue and dissection (Visenio, 2015).

Russians: These forceps have a distinct circular shape at the tip and come in small and large sizes. This type of forcep is typically used for holding tissue during dissection and suturing (Visenio, 2015).

Liehn & Schlautmann, 2022

Bonny's: Forceps that are thick, heavy and often used for handling and closing thick tissue such as fascial closure (Visenio, 2015).

Liehn & Schlautmann, 2022

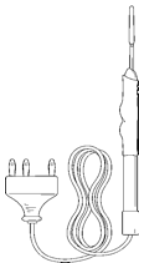
Suturing

Needle holders: A long, thin instrument that has a small clamp on the end for the purpose of holding and using needles and/or sutures (Liehn & Schlautmann, 2022).

Blackbourne, 2012

Atraumatic needles: The generalized name for different needles with sutures attached that may be used throughout the surgery. The type and brand of suture may vary between surgeons, agency, and product availability. Be sure to check with the on-call surgeon's preferences when preparing the Operating Room for surgery.

Other instruments



Blackbourne, 2012

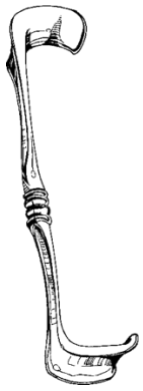
Bovie and Cautery: Instruments used during surgery to either cut or cauterize tissue using electrical currents, and must be connected to an external Insufflator (Blackbourne, 2012; Visenio, 2015).

StayGuard Wound Care, 2023

Large abdominal sponges: Also known as Laparotomy "Lap" Sponge, these are absorbent pads used during surgical procedures to remove blood and debris to better visualize tissues, vessels, and organs (StayGuard Wound Care, 2023).

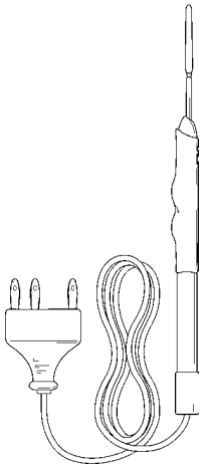
Test your knowledge: Instruments and equipment for the Cesarean section

Identify the following instruments.

1. 

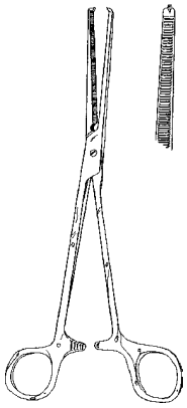
Blackbourne, 2012

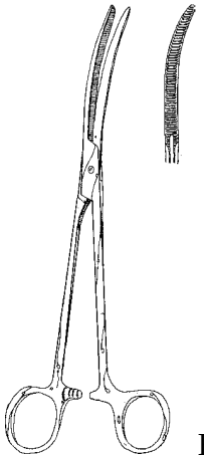
_____

2. 

Blackbourne, 2012

_____

3.  Blackbourne, 2012 _____

4.  Blackbourne, 2012 _____

5. 

_____

Visenio, 2015

Surgical Safety Checklist

The Surgical Safety Checklist was created in 2009 as a tool to maximize patient safety and enhance communication in the Operating Room and is recommended by the World Health Organization (WHO) (Haynes et al., 2009). Operating Rooms in Canada have adopted this practice, based on a template created by the Canadian Patient Safety Institute (CPSI) in 2009 and it is now a standard practice. The aim of the Surgical Safety Checklist is to decrease surgical complications and increase communication between team members (Haynes et al., 2009). Implementation of the Surgical Safety Checklist by the WHO from a global health perspective has shown to reduce perioperative morbidity and mortality (Haynes et al., 2009).

There are three components to the Surgical Safety Checklist; the briefing, the time-out, and the debriefing. It is important that the Operating Room is a quiet, controlled environment during the Surgical Safety Checklist and that all parties (nursing, Obstetrics, and Anesthesia) are involved and present. The document outlining the full details of the Surgical Safety Checklist as per CPSI is included in Appendix A. The following section will outline the process of the Surgical Safety Checklist in a context that is specific to the practice at the Janeway Case Room Operating Room.

The briefing

The briefing occurs after the registered nursing team brings the patient into the Operating Room and assists the patient onto the table. The Anesthesia team should be present and ready to proceed, but *the briefing must occur before the induction of anesthesia* (CPSI, 2009). The registered nurse should call the Obstetrician or the Obstetrics resident to perform the briefing. Upon arrival to the Operating Room, the physician should ask the patient their full name and date of birth, as well as what procedure they are here for (CPSI, 2009). The physician should then proceed to confirm the patients name, date of birth, and procedure, as well as acknowledge any allergies, the indication for the Cesarean section, if the patient received the prescribed antibiotics, venous thrombo-embolism (VTE) prophylaxis, and any indications of enhanced risk (CPSI, 2009). The physician should then ask the Anesthesiologist if there are any concerns with anesthesia, then ask the nursing staff is there are any nursing concerns. If there are no concerns from Anesthesia, nursing, or Obstetrics, the briefing is complete and the Anesthesiologist may continue and begin induction of anesthesia (CPSI, 2009).

The time-out

The time-out is similar to the briefing, but is conducted by the registered nurse (usually by the circulating nurse) and *occurs before the first skin incision* (CPSI, 2009). The time-out should include the confirmation of the patient's name, date of birth, any allergies, and the surgery that is about to start as well as the indication for the surgery (CPSI, 2009). The time-out should then include a confirmation that antibiotic administration has been completed and confirmation of VTE prophylaxis (CPSI, 2009). The registered nurse should then ask the Anesthesiologist if there are any concerns with Anesthesia, followed by the Obstetrician, and

finally the scrub nurse. If there are no concerns with either party, the surgery may begin (CPSI, 2009).

Debriefing

The debriefing follows the same format as the briefing and the time-out, and is conducted by the registered nurse (usually the circulating nurse) *after the surgery is complete and before exiting the Operating Room* (CPSI, 2009). The debrief includes the patients name, the procedure that occurred, and any unexpected events that may have occurred during the surgery (CPSI, 2009). The debrief should also include a review of the surgical counts, and state that all counts were correct at closure (CPSI, 2009). The registered nurse should then ask Obstetrics, Anesthesia, and the scrub nurse if there are concerns for recovery and management of this patient (CPSI, 2009). After completion of the debrief, the patient may be transferred to the recovery room at the discretion of the Anesthesiologist.

Test your knowledge: Surgical Safety Checklist

1. _____ occurs after the surgery is complete and before exiting the operating room, and is a review of the patient identification, surgery received, review of surgical counts, and any concerns or complications for patient recovery.

2. _____ occurs before the induction anesthesia, and includes proper patient identification, allergies, planned procedure, indication for procedure, patient preparation, and any concerns for the procedure.

3. _____ occurs before the first skin incision, and includes proper patient identification, allergies, planned procedure, indication for procedure, patient preparation, and any concerns for the procedure.

Required Documentation in the Operating Room

There are several documents that are required for the Operating Room in labor and delivery, and it is the responsibility of the registered nurse to complete this documentation. This section will briefly review each required document. Copies of the required documents have been included in Appendix B.

1. **Operating Room Count Sheet:** This form is used to count and document every instrument used in surgery, as per the Surgical Count policy. The initial, first, second, and third count must be documented on this form and signed by the scrub nurse and a second registered nurse who completed the count. Any discrepancies on this form must be addressed before exiting the Operating Room.

2. **PeriOperative Record: Labor and Birth:** This document is used to record all perioperative details pertaining to care of the patient. It includes a patient identifier, the procedure, preparation details, specific times for starting and finishing, as well as other specific details pertaining to the operation.

3. **Labor and Delivery Flow Chart:** This document is in the style of a booklet, and is used for both vaginal and Cesarean births. Most of this document will not be relevant to a Cesarean birth, but page VII and VIII must be filled out completely regardless of Cesarean or vaginal birth. Page VIII will serve as the document to be completed for the care of the patient in the recovery room.

4. **Labor and Delivery Record:** This document is used as part of the health record for both the mother and the newborn. Details of risk factors, delivery, anesthetic, as well as newborn information go on this form. Newborn identification numbers are added to this form after delivery.

5. **Newborn Assessment Labor and Delivery:** This document includes identification numbers for the newborn, gestational age, measurements, weight, and details of the initial newborn assessment including vital signs. Additionally, this document includes information about Vitamin K and skin-to-skin contact.

The Surgical Count

Performing the surgical counts is a requirement for all surgeries to ensure that no instruments or equipment are retained in the body cavity during the procedure (Freitas et al., 2016). This is a standard practice of Operating Rooms, supported by the WHO with the aim of increasing patient safety (Freitas et al., 2016). The initial surgical count should be performed by the Scrub nurse and either the circulating nurse or the assisting nurse before the surgery starts, followed by subsequent counts when closing an organ (i.e., closure of the uterus for the first count) closing the fascia (second count), and upon closing the skin (third/final count) (Freitas et al., 2016). The initial count and subsequent counts should all reflect the same number of instruments, and any additions to the surgical instrument set-up throughout the procedure should be noted on the surgical count form and included on all counts thereafter (Kinsella, 2022). When the count is completed, the nurse completing the count with the scrub nurse should announce to the room that the first/second/final count is correct so that all parties involved are aware the count is correct (Kinsella, 2022). At the Janeway Case Room Operating Room, there is an agency policy which supports performing surgical counts and provides a guideline for how to perform the count. This policy is included in Appendix C. There is also a specific document that is part of the required health record that is used for documenting the surgical counts, which is also included in Appendix B.

Sometimes, there is not an opportunity to perform an initial surgical count in times of emergency Cesarean sections. This is rare, and should only happen when delivery of the fetus must occur immediately to save the life of either the fetus or the mother. In these circumstances, when there is no initial surgical count, follow-up counts should not be performed as there is no initial count to compare with (Kinsella, 2022). Instead, there should be an x-ray ordered and performed after closure of the skin to ensure there are no instruments or equipment retained during the surgery (Kinsella, 2022). The surgeon must view the x-ray to ensure the x-ray is clear before the patient is transferred to the recovery room (Kinsella, 2022).

Test your knowledge: The Surgical Count

1. The first count should be completed as the surgeons are closing the _____.

2. The second count should be completed as the surgeons are closing the _____.

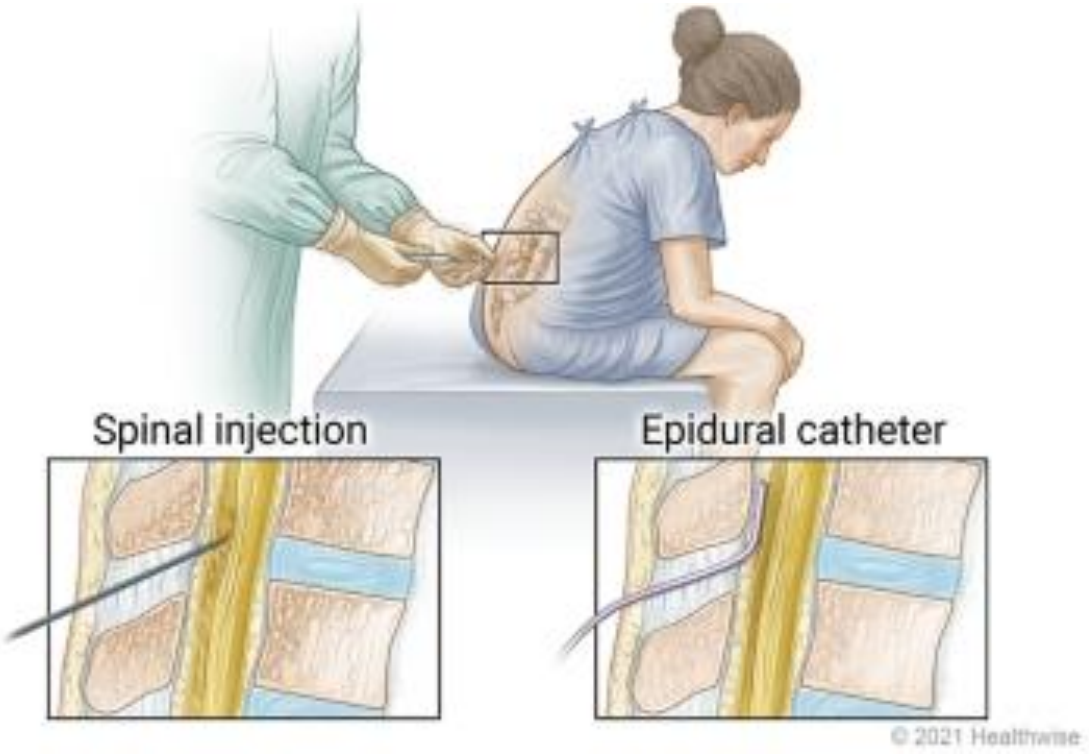
3. The final count should be completed as the surgeons are closing the _____.

Anesthesia in the Operating Room

A Cesarean section is an abdominal surgery that is performed for pregnant people for the purpose of the delivery of a fetus (Roshangar et al., 2020). As such, anesthesia plays a large role in the delivery of safe and competent care of the patient. The majority of the time, patients are awake for the surgery, anesthetized by a form of neuraxial anesthesia, where patients are conscious and able to be awake and participatory throughout the Cesarean section (Ituk & Wong, 2023; Simmons et al., 2019). In case of emergency, or when conscious anesthetic is contraindicated or unsuccessful, patients will be anesthetized with a general anesthetic. It is imperative that care providers understand the various types of anesthesia used for Cesarean sections. There is also an agency policy that outlines the proper nursing care for Obstetrical Epidural Anesthesia, which is included in Appendix C.

Neuraxial Anesthesia

Neuraxial anesthesia is a form of anesthesia that is administered by an injection in or around the central nervous system, specifically in or around the spinal nerves and/or the epidural space (Ituk & Wong, 2023). This type of anesthesia is appropriate for lower abdominal surgery or lower extremity surgery, and patients are able to remain alert for the duration of the surgery (Ituk & Wong, 2023). Examples of neuraxial anesthesia include spinal anesthesia, epidural anesthesia, or a combination of spinal-epidural anesthesia (Ituk & Wong, 2023).



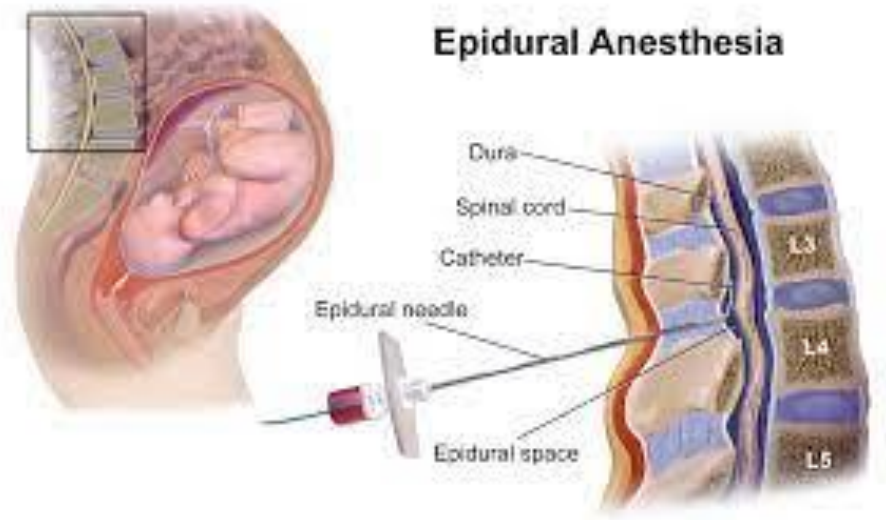
MyHealth Alberta, 2022

Spinal anesthesia

Spinal anesthesia is a form of neuraxial anesthesia that blocks nerves with a rapid onset (Ituk & Wong, 2023). It is administered by a single injection using a spinal needle into the subarachnoid space of the spinal cord (Ituk & Wong, 2023). This type of anesthetic is placed by an anesthesiologist by a single injection, and there are no products, needles or catheters left in the patient after the completion of the injection (Simmons et al., 2019). It also may increase the speed of the return of muscle function after the surgery is complete (Ituk & Wong, 2023). Benefits of spinal anesthesia include being a form of single-shot anesthesia with no products remaining in the patients back, thereby decreasing risk of infection, as well as relatively easily and quickly administered. Spinal anesthesia is usually tolerated well by the patient, as the procedure is quick. Disadvantages of spinal anesthesia include an increased risk of hypotension, nausea, and vomiting, and a finite life span of the anesthetic which can cause problems if complications are encountered throughout the surgery (Ituk & Wong, 2023).

Epidural anesthesia

Epidural anesthesia is a form of neuraxial anesthesia that is similar to spinal anesthesia, except the injection occurs in the epidural space, and an epidural catheter is threaded through the spinal needle and left in the patients back for the duration of time that anesthesia is required (Ituk & Wong, 2023). Epidural anesthesia has a more gradual onset than spinal anesthesia and allows for a continuous infusion of anesthetic medications, as well as the direct injection of anesthetics in the catheter (Ituk & Wong, 2023). Benefits of epidural anesthesia include the ability to control the dose of anesthetic through the infusion, which may be of benefit in circumstances where more or less sedation is required or to manage side effects such as hypotension, or to continue to provide anesthetic is surgeries that encounter complications or are prolonged (Ituk & Wong, 2023; Simmons et al., 2019). Additionally, the epidural catheter can be left in situ and used to provide additional anesthesia and analgesia after the surgery is complete (Simmons et al., 2019). Disadvantages of epidural anesthesia include increased risk of spinal infection due to the indwelling epidural catheter, and increased

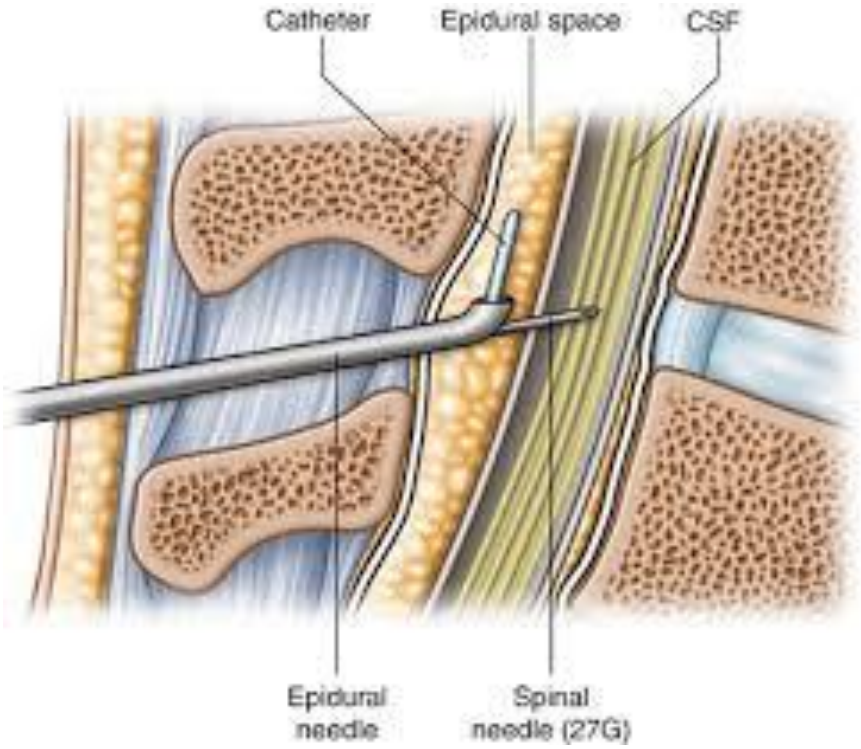


Klinik St. Jean, 2023

incidence of nausea, vomiting, and spinal headaches (Ituk & Wong, 2023; Simmons et al., 2019).

Combined Spinal-Epidural (CSE)

A combined spinal-epidural (CSE) is a form of neuraxial analgesia that functions as a combination of both spinal and epidural anesthesia (Ituk & Wong, 2023; Simmons et al., 2019). A CSE consists of an injection of anesthetic into the subarachnoid space, followed by the insertion of an epidural catheter into the epidural space, allowing small doses of anesthetic to be administered through the catheter via an infusion or direct injection (Simmons et al., 2019). It has a gradual onset, and shares the advantages and disadvantages of spinal and epidural anesthesia (Simmons et al., 2019).



Turnbull & Aleshi (2015).

Nursing care of the patient receiving neuraxial anesthesia

Upon entry to the Janeway Case Room Operating Room for a Cesarean section, the patient should be guided to a seated position on the Operating table. This is where the induction of neuraxial anesthesia will take place. The type of neuraxial anesthesia to be used for the

Cesarean section is at the discretion of the anesthesiologist, except for the case of emergency Cesarean sections, in which patients usually receive general anesthetic.

The circulating nurse should explain the position the patient should try to assume for the procedure, which is the *sitting decubitus position with flexion of the back*. The circulating nurse should stand in front of the patient and provide support and encouragement throughout the procedure, while helping the patient maintain the proper sitting position. Meanwhile, the assisting nurse should apply a blood pressure cuff, pulse oximetry, and be available to assist the anesthesiologist with the procedure as needed.

Figure 1: *Nurse supported sitting decubitus position with flexion of back (Toledano & Van de Velde, 2023)*

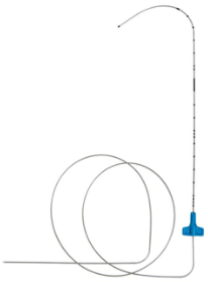
After the completion of the procedure, both the circulating nurse and the assisting nurse should assist the patient to a supine position with the Operating table set to have a left pelvic tilt while continuing to provide encouragement and reassurance to the patient. Then, the circulating and assisting nurses should continue to prepare the patient and the operating room for the upcoming Cesarean section. More information about preparing the patient for the surgery is available on pages 34 and 35 of this resource.

After the surgery is complete, the patient is transferred to the recovery room. The assigned nurse should continue to provide post-operative care as per usual, while continuing to monitor the return of muscle function and sensation of lower extremities. The neuraxial block can be monitored by testing the neuraxial block, usually completed by assessing the dermatome

sensation to cold using ice. If the patient had a spinal anesthetic, there will be no anesthetic products left in the patient's back, and effects of the anesthesia will be short-term. If the patient had an epidural or CSE, there will be a small catheter in situ that is secured with an adhesive dressing. The assigned registered nurse should speak with the anesthesiologist to obtain an order for the removal of the epidural catheter.

Removal of the epidural catheter

An epidural catheter, also known as an *epicath,* is a long, thin catheter that is left in situ to provide neuraxial anesthesia (Ituk & Wong, 2023; Simmons et al., 2019). Upon completion of the Cesarean section and before transfer to the post-partum and/or surgical ward, the epicath can be removed with a doctor's order. The removal of an epicath can be performed by the Anesthesiologist or Anesthesia resident. Additionally, the epicath can be removed by a registered nurse who has been educated on the skill by an anesthesiologist, as it is a advanced nursing skill. The removal of an epicath is within the scope of practice of registered nurses in the Janeway Case Room, as long as the registered nurse has completed the appropriate training during their orientation.



Teleflex, 2023

To remove the epidural catheter, the registered nurse should first ensure there is a doctor's order to do so. Next, the registered nurse should perform hand hygiene and don gloves. Instruct the patient to resume the sitting decubitus position with flexion of back. Remove the tape that secures the epicath to the patient's back. With gentle pressure, the epicath can be pulled straight out while the patient maintains the sitting position, ensuring that the end of the epicath comes out with the black tip intact. Document on the Labor and Delivery flow sheet that the epicath was removed with tip intact. Cover the epidural catheter site with a small dressing. The registered nurse should dispose of the epicath in an appropriately labeled receptacle. Registered nurses should note that this procedure should not be painful, and there should be no resistance. If resistance is met, the registered nurse should abort the procedure and contact the anesthesiologist.

General Anesthesia

In case of emergency, when the fetus needs to be delivered immediately and there is insufficient time for neuraxial anesthesia, or in circumstances where attempts to achieve neuraxial anesthesia were unsuccessful or contraindicated, general anesthetic may be indicated. General anesthesia is defined as the “drug induced, reversible condition that includes specific behavioral and physiological traits [...] with concomitant stability of the autonomic, cardiovascular, respiratory, and thermoregulatory systems” (Brown et al., 2010, p. 2638). Informally known as “being put to

sleep", this type of anesthesia leaves patients completely unconscious, with physiological function maintained by a combination of sedating medications, paralytic agents, opioids, along with ventilation via endotracheal tube and thermoregulatory support (Brown et al., 2010). When a Cesarean section is performed under general anesthesia in the Janeway Case Room, it is usually in a case of urgency and a high-stress environment. Support personnel are not permitted in the Operating Room during surgeries being performed with a general anesthetic.

Nursing care of the patient receiving general anesthesia

When a Cesarean section is being performed under general anesthetic, it is usually in a case of urgency and it is important for nursing staff to be alert and competent in assisting with induction of anesthesia. The anesthesiologist will require the assistance of at least one registered nurse to intubate the patient to prepare for ventilation before the surgery can begin. It is important that there is a registered nurse in the Operating Room whose dedicated role during the induction of anesthesia is assisting the anesthesiologist. This is usually an extra nurse on top of the regular Operating Room assignment (circulating, assisting, scrub nurse) to provide extra help in case of emergency.

The registered nurse should expect to assist the Anesthesiologist with finding medications and equipment that will be required to intubate and sedate the patient. Applying cricoid pressure at the direction of the Anesthesiologist is another critical role of the registered nurse during induction of general anesthesia. The cricoid is a small piece of hyaline cartilage located on the patient's throat that encircles the trachea (Matthews & Jain, 2023). The purpose of applying cricoid pressure is to try to prevent pulmonary aspiration of any gastric contents during the intubation process (Dunn, 2022). The Anesthesiologist may also ask for assistance holding and securing equipment.

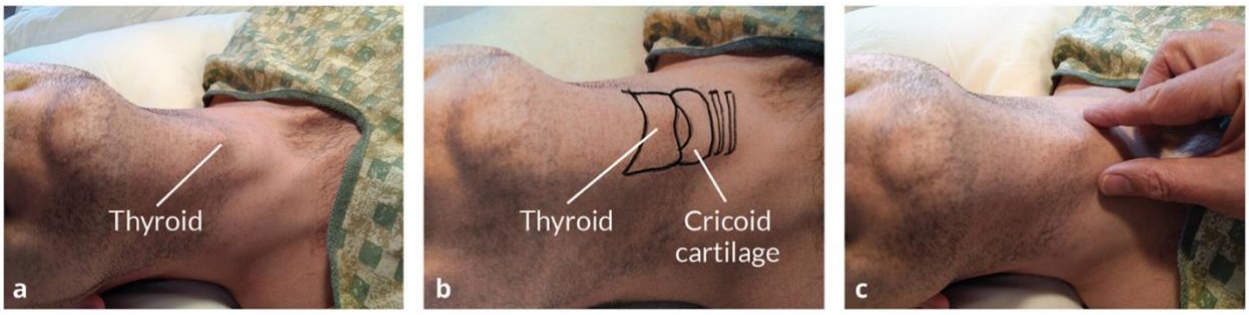


***Figure 2**: Cricoid, Thyroid, and example of cricoid pressure (Dunn, 2022).*

Test your knowledge: Anesthesia in the Operating Room

1. _____ is a form of anesthesia that is administered by an injection in or around the central nervous system, specifically in or around the spinal nerves and/or the epidural space (Ituk & Wong, 2023).

2. _____ is a form of anesthesia that blocks nerves by a single injection using a spinal needle into the subarachnoid space of the spinal cord (Ituk & Wong, 2023).

3. _____ is a form of anesthesia that is delivered by an injection in the _____ space, and an _____ catheter is threaded through the needle and left in the patients back for the duration of time that anesthesia is required (Ituk & Wong, 2023).

4. Informally known as “being put to sleep”, this type of anesthesia (_____) leaves patients completely unconscious, with physiological function maintained by a combination of sedating medications, paralytic agents, opioids, along with ventilation via endotracheal tube and thermoregulatory support (Brown et al., 2010).

5. Applying _____ at the direction of the Anesthesiologist is a critical role of the registered nurse during induction of general anesthesia.

Timeline for a typical Cesarean section:

Pre-Operative Phase Part 1: Pre-Operative Area

- Patients typically arrive 1.5-2 hrs prior to their booked Cesarean section.
- Positive patient identification
- Check Allergies
- Provide patient with appropriate gown and provide instructions on other dress code requirements, ensure no bra, underwear, jewelry present as well as provide bouffant for patient's hair
- Check and appropriately document patient vital signs, fetal heart rate
- Review patient history and indication for surgery
- Complete Pre-Op Checklist
- Insert 18G IV, left arm if possible. The 18 gauge IV allows for the fast infusion of fluids and/or blood products during the operation. Placing the IV in the left arm allows for the IV and tubing to be on the side of the anesthesiologist's work station and decreases interruption of skin-to-skin contact in the Operating Room if this is desired.
- Initiate IV fluids, usually Ringers Lactate
- Ensure the patient has a signed informed consent
- Administer any prescribed preoperative medications as per previous Anesthesia orders
- Take measurements for and assist patient into TED stockings
- Prepare antibiotic order if appropriate (usually Cefazolin 2g IV x 1 on transfer to Operating Room unless contraindicated)
- Provide support person with appropriate OR attire
- Assist patient to the washroom as needed prior to transfer to Operating Room
- Acquire narcotic medications and freezing agents for the Anesthesiologist prior to transfer to the Operating Room
- Provide support, answer any questions, reassure patient and support person.

Timeline for a typical Cesarean section:
Pre-Operative Phase Part 2: Induction of Anesthesia and Surgical Preparation

- Ensure attending physician and anesthesiologist are in the building before transfer to the Operating Room.
- Verify medication order for antibiotic administration, administer antibiotic on transfer
- Explain to support person to wait until nurse retrieves them before entry to Operating Room
- Circulating and assisting nurse enter designated Operating Room with patient, scrub nurse to go perform surgical scrub
- Assist the patient to a seated position on the side of the Operating table in preparation for spinal or epidural anesthesia. Apply blood pressure cuff, oxygen saturation monitor, cardiac monitor. Provide support and anxiety management intervention at this time. Circulating nurse to stand in front of patient for support, while assisting nurse is available to assist Anesthesiologist as appropriate as well as pass instruments and equipment in sterile fashion to Scrub nurse
- Phone for doctor to complete the pre-surgical briefing as per the Surgical Safety Checklist
- Assist with induction of anesthesia as needed
- Assist patient to supine lying position and position privacy drape.
- Circulating nurse and assisting nurse to ensure that the following roles are complete:
- Insert indwelling foley catheter into bladder and connect to straight drainage
- Apply Sequential Compression Devices and ensure tubing is connected
- Apply cautery grounding pad
- Place safety straps to patient's legs, below the knee and being careful to assess and monitor pressure points
- Complete abdominal preparation using Chlorhexidine solution
- Ensure all required instruments and equipment are available to scrub nurse and complete an initial count
- Continue to provide support and reassurance to patient
- Complete required documentation
- Call for physicians to scrub in
- Scrub nurse to assist physician and surgical assistants with donning sterile surgical gown, gloves, and applying surgical drape.
- Circulating nurse should perform a time-out before the initiation of the surgery as per the Surgical Safety checklist
- The assisting nurse calls for NICU Resuscitation team to prepare for pending delivery
- After receiving confirmation from the surgeon and/or anesthesiologist, the circulating or assisting nurse is to retrieve the support person from the pre-operative area.

[Surgical Preparation of the Abdomen], 2023

Timeline for a typical Cesarean section:
Intra-Operative Phase

- All staff should remain attentive in the Operating Room once the surgery begins so as to be available to retrieve equipment, instruments, and anything else that the Scrub nurse, surgeon, or anesthesiologist may need
- Brief NICU on the patient history, maternal gestation, indication for Cesarean section and any risk factors present
- Continue to support the patient and support person through the surgery
- Complete required documentation (available in Appendix B) such as
    - Peri-Operative Record
    - Labor and Delivery Partogram
    - Labor and Delivery Record
- Prepare to complete the head-to-toe newborn assessment, and document it on the Newborn Assessment Record (available in Appendix B) as well as prepare the baby identification bands
- Be available to take photos for the patient on their cell phones if they desire
- Be available to assist NICU team if neonatal resuscitation is required
- Assist with skin-to-skin contact for the patient and the newborn if both parties are in stable condition and wanting to do so
- Assess and record neonatal vital signs within 15 minutes of birth, and continue to monitor the status of the newborn throughout the surgery

Valenzuela, 2018

- Conduct the first surgical count with the scrub nurse with the closure of the uterus, the second surgical count with the closure of the fascia and the final count with the closure of the skin
- Apply baby bands that have been double checked by two registered nurses to the newborn, mother, and support person
- Complete the head-to-toe newborn assessment when time allows
- Escort the support person to the recovery room when the surgery is complete to await transfer of the patient and newborn
- Call the surgical debrief to review the case and any concerns that may have arisen, as per the Surgical Safety Checklist
- Clean up Operating Room supplies once the surgery is complete and the final surgical count is correct and prepare the patient and newborn for transfer to the recovery room. This includes cleaning up the patient, swaddling the newborn, dissembling the instruments and set-up, and transferring patient to a stretcher from the Operating Room table.

Timeline for a typical Cesarean section:

Post-Operative Phase and the Recovery Room

- Nursing staff will assist the Anesthesiologist with transfer from the Operating Room to the Recovery Room (also located within the Janeway Case Room)
- Once in the Recovery Room, obtain patient vital signs while receiving a report from the Anesthesiologist pertaining to medications administered intra-operatively and any concerns with the patient's hemodynamics
- Apply a Bair Hugger if the patient's temperature is stable
- Begin post-partum checks by performing a fundal massage and assess vaginal bleeding. These should be performed Q15 minutes x 4, followed by Q30 minutes x 2, and then Qhourly, although the patient is usually ready for transfer after one hour in recovery if all checks are stable.
- Along with post-partum checks, post-operative checks should be performed simultaneously including vital signs, an assessment of the incision site for any bleeding, an assessment of the Foley catheter bag, and an assessment of the patient's sedation level as per the Epidural Protocol policy (included in Appendix C).
- Assist with feeding the newborn by teaching and assisting the patient with breastfeeding if they choose to do so, or with formula feeding if they choose to do so.
- Monitor the patient's pain, and provide analgesia with a doctor's order as appropriate
- After the patient has had at least four stable post-partum and post-operative checks and the patient's neuraxial block has receded, prepare the patient for transfer to the inpatient unit, 5 North B. This includes removing the epidural catheter with a doctor's order (if present), calling 5 North B and giving a full patient report to the receiving registered nurse.

Madison Women's Health, 2021

Test your knowledge: Timeline of a typical Cesarean section

Arrange the following events in the appropriate chronological order.

#7. __ Ensure the patient has a signed informed consent.

#1. __ Circulating and assisting nurse enter designated Operating Room with patient, scrub nurse to go perform surgical scrub.

#5. __ Assist the patient to a seated position on the side of the Operating table in preparation for spinal or epidural anesthesia. Apply blood pressure cuff, oxygen saturation monitor, cardiac monitor. Provide support and anxiety management intervention at this time. Circulating nurse to stand in front of patient for support, while assisting nurse is available to assist Anesthesiologist as appropriate as well as pass instruments and equipment in sterile fashion to Scrub nurse

#8. __ Phone for doctor to complete a pre-surgical briefing

#4 __ Assess and record neonatal vital signs within 15 minutes of birth, and continue to monitor the status of the newborn throughout the surgery.

#5 __ Apply labeled baby bands that have been independently checked by two registered nurses to ensure proper patient identification to the newborn, mother, and support person.

#3 __ Assist the Anesthesiologist with transfer from the Operating Room to the Recovery Room (also located within the Janeway Case Room).

#2 __ After the patient has had at least four stable post-partum and post-operative checks and the patient's neuraxial block has receded at least two dermatomes, prepare the patient for transfer to the inpatient unit, 5 North B. This includes removing the epidural catheter with a doctor's order (if present) and calling 5 North B and giving a full patient report to the receiving nurse.

In case of emergency during a Cesarean section

While approximately 30% of childbirth occurs via Cesarean section, a small percentage of Cesarean sections occur as a result of an emergency situation. (Bousleiman et al., 2022; CIHI, 2023). These instances usually are because of risk factors or abnormal graphs produced by Electronic Fetal Monitoring (EFM). Emergency Cesarean sections are usually performed under General Anesthesia, and can be quite stressful due to the urgency of the delivery, the working speed that is required, and the enhanced risk for poor outcomes for the patient and/or the fetus. Registered nurses in the Operating Room need to be competent with a strong knowledge base and be able to prioritize tasks in case of emergency. It is also essential to have a good understanding of where equipment is located and how it is used to be able to retrieve it and set it up correctly for quick use.

When the Obstetrician makes the decision to perform an emergency Cesarean section, the time from this decision to the time of the first incision should be as quick as possible (Bousleiman et al., 2022). When the decision to incision time is longer, there is an increased risk for poor neonatal outcomes in the case of an emergency delivery (Bousleiman et al., 2022). A longer decision to incision time has been shown to negatively impact neonatal cord blood gasses, APGAR scores, and incidence of hypoxic ischemic encephalopathy (Bousleiman et al., 2022). Teamwork is essential in times of emergency to decrease the decision to incision time (Bousleiman et al., 2022).

Barnick, 2020

Priorities in case of emergency Cesarean section should include:

- Calling the on-call anesthesiologist and the NICU team and making them aware of the emergency case and pertinent patient history
- Obtaining the required drugs for the Anesthesiologist
- Moving the patient into the Operating Room
- Scrub nurse scrubbing in and donning sterile dress
- Opening sterile instruments, cautery, suction, light handles, gloves and gown
- Obtaining IV access
- Inserting indwelling Foley catheter
- Assisting anesthesiologist with induction of anesthesia
- Preparing the abdomen for surgical start. In case of an emergency, the abdomen can be prepared by pouring Bridine solution over the abdomen

Remember, these instances are emergency situations and the goal of the entire surgical team should be to deliver the fetus as soon as possible in order to try to improve fetal outcomes while still preserving the health outcomes of the patient. Typical measures taken for elective and urgent Cesarean sections such as prophylactic antibiotic administration, anti-embolism stockings, sequential compression devices, a full chlorhexidine abdominal preparation, and an organized scrub table can all be managed after the delivery of the fetus or post-operatively for the sake of promoting fetal outcomes. All members of the team in the Operating Room should ensure to take measures to deliver the fetus as soon as possible.

Another instance in which Cesarean sections can turn into urgent and/or emergent situations is intra-operatively, if the patient has a severe postpartum hemorrhage after the delivery of the fetus. In this circumstance, circulating and assisting nurses should be extra attentive to the needs of the surgical team, including the anesthesiologist, so as to be able to obtain more instruments, supplies, and/or medications quickly and efficiently. The anesthesiologist may have to convert from neuraxial anesthesia to general anesthesia, and will require the assistance of a registered nurse to do so. The anesthesiologist will require the assistance of a registered nurse to obtain equipment, drugs, and open items in preparation to intubate and sedate the patient. For more information about general anesthesia, please see page 31 of this resource. Registered nurses working in Obstetrical Operating Rooms should also familiarize themselves with how to contact the hospital's Blood Bank and how to obtain units of packed red blood cells (PRBCs) for transfusion if necessary. Equipment that Operating Room nurses should be able to find and operate quickly include:

- **Blood warmer:** A device used to warm blood for rapid transfusion and absorption. Requires a doctor's order for use (NHSA, 2022)
- **Cell saver:** A device used to collect the blood lost during surgery, clean the blood to separate red blood cells and return them back to the patient as a mechanism of management of severe hemorrhage (NSHA, 2023).
- **Surgicel:** Sheets of cellulose applied directly to the bleeding site intra-operatively that act as a framework for platelets to facilitate clotting in case of extra bleeding (Blackbourne, 2012; NSHA, 2023).
- **Surgical Snow:** A powdered version of Surgicel
- **Hemoclips:** Metallic clips used intra-operatively for clipping bleeding vessels (Blackbourne, 2012).
- Extra abdominal sponges (may be required in cases of extra bleeding)
- Extra sutures (may be required in cases of extra bleeding) Instrument tray for hysterectomy in case the case converts to a Cesarean Hysterectomy (C-Hyst)

Registered nurses in Obstetrical Operating Rooms should also be familiar with the appropriate drugs used for the pharmacological management of postpartum hemorrhage, as well as where to obtain them. Examples of pharmacologic management of hemorrhage include:

- **Oxytocin:** A prostaglandin that works as a synthetic hormone to stimulate the oxytocin receptors in the myometrium to cause myometrial contractions to improve the tone of the uterus and reduce bleeding (Berghella, 2023)
- **Tranexamic Acid (TXA):** An antifibrinolytic used to prevent the breaking down of blood clots to reduce blood loss (NHSA, 2023)
- **Misoprostol:** A synthetic prostaglandin that may be used to prevent and/or manage hemorrhage by increasing uterine muscle tone (Berghella, 2023)
- **Hemabate (Carboprost):** Another example of a synthetic prostaglandin which is used to cause uterine contractions in order to manage and decrease bleeding and improve uterine tone (Berghella, 2023)
- **Ergometrine (Ergot):** A form of ergot alkaloid which is used in the management of hemorrhage to cause contraction of the muscle lining of the uterus in order to improve tone (Berghella, 2023)
- **Voluven:** Used to expand the volume of blood (NHSA, 2023)

Test your knowledge: In case of emergency

1. What is the first goal of the Obstetrical team in case of emergency?

2. In case of an obstetrical emergency, the abdomen can be prepared by pouring _____ over the abdomen.

3. Registered nurses working in Obstetrical Operating Rooms should also familiarize themselves with how to contact the hospital's _____ and how to obtain units of _____ for transfusion if necessary.

Debriefing

Labor and delivery nurses are at a high risk of experiencing critical events which may cause strong emotions and anxieties, particularly to do with navigating emergency cases and poor maternal/fetal outcomes. Debriefing after critical events has been shown to help mitigate these feelings and protect the mental health and wellness of registered nurses in labor and delivery, as well as allow for reflection and to improve interdisciplinary communication (Ackenbom et al., 2014, Faron et al., 2015). Debriefing after obstetrical emergencies is also a beneficial tool to help analyze what went well during a patient experience, analyze thoughts, find meaning in situations and emotions, as well as what could be improved in the future to ultimately improve patient care (Greer et al., 2019; Joy et al., 2019). This is a completely different type of debrief than the post-surgical debriefing that is completed as per the Surgical Safety Checklist, and can typically be organized by the leadership team.

Laerdal (2023)

A good format for a structured debrief is to allow space for participants to have an emotional release if experiencing emotions of anxiety, grief, stress, or otherwise in response to an event. This can be continued by objectively analyzing the situation that has occurred, and identifying strengths and weaknesses of the process while accepting input from participants. The debrief should conclude with a summary of key points and ideas and any further indication for follow-up (Greer et al., 2019).

Test your knowledge: Answer Key

Regulations in the Operating Room

1. The appropriate temperature of a standard Operating Room is **20-24 degrees.**

2. The appropriate humidity range of a standard Operating Room is **20-60% humidity.**

3. **False.** No hand, wrist, or arm jewelry of any kind, no earrings. Other jewelry and accessories are only permitted if they are able to be secured within the Operating Room attire (AORN, 2019; NSHA, 2019; ORNAC, 2015).

4. **True.** Fresh and clean hospital provided scrubs that have been laundered at a central laundry facility and retrieved on arrival to the hospital must be worn by all personnel. Personal jackets and street clothing are not permitted (AORN, 2019; NSHA, 2019; ORNAC, 2015).

Roles of the Obstetrical Operating Room Nurse during a Cesarean Section

1. The assisting nurse.

2. The scrub nurse.

3. The circulating nurse.

Equipment and Instruments in the Operating Room

1. Richardson retractor: A retractor typically used for isolating and suturing fascia (Blackbourne, 2012).

2. Bovie and Cautery: Instruments used during surgery to either cut or cauterize tissue using electrical currents, and must be connected to an external Insufflator (Blackbourne, 2012; Visenio, 2015).

3. Kocker clamps: Similar to the Kelly clamps, Kockers are large clamps with teeth used for holding thick tissue (Blackbourne, 2012; Visenio, 2015). They are most commonly used to hold and retract fascia (Blackbourne; Visenio, 2015)

4. Kelly clamps: Large clamps that are used for holding thick tissues and vessels (Visenio, 2015). In Cesarean sections, Kelly clamps are typically used for clamping the umbilical cord.

5. Arteries: A small clamp that is multifunctional, but primarily used to hold on to other equipment or sutures. Arteries may also be known as “hemostats”, “locking forceps”, or “snaps”. (Visenio, 2015).

The Surgical Count

1. The uterus.

2. The fascia.

3. The skin.

Surgical Safety Checklist

1. Debrief.

2. Briefing.

3. Time-out.

Anesthesia in the Operating Room

1. Neuraxial anesthesia

2. Spinal anesthesia

3. Epidural anesthesia

4. General anesthesia

5. Cricoid pressure

Timeline of a typical Cesarean section

1. Chronological order: 7, 1, 5, 8, 4, 6, 3, 2.

In case of emergency

1. To deliver the baby as fast as possible to improve fetal outcomes.
2. Bridine solution
3. Blood bank; packed red blood cells (PRBCs)

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Appendix A: Surgical Safety Checklist

cpsi Canadian Patient Safety Institute

SURGICAL SAFETY CHECKLIST

www.safesurgerysaveslives.ca

Your Organizational Logo

BRIEFING – Before induction of anesthesia

Hand-off from ER, Nursing Unit or ICU

- ☐ **Anesthesia equipment safety check completed**
- ☐ **Patient information confirmed**
  - **Identity (2 identifiers)**
  - **Consent(s)**
  - **Site and procedure**
  - **Site, side and level marked**
  - **Clinical documentation**
  - **History, physical, labs, biopsy and x-rays**
- ☐ **Review final test results**
- ☐ **Confirm essential imaging displayed**
- ☐ **ASA Class**
- ☐ **Allergies**
- ☐ **Medications**
  - **Antibiotic prophylaxis: double dose?**
  - **Glycemic control**
  - **Beta blockers**
  - **Anticoagulant therapy (e.g., Warfarin)?**
- ☐ **VTE Prophylaxis**
  - **Anticoagulant**
  - **Mechanical**
- ☐ **Difficult Airway / Aspiration Risk**
  - **Confirm equipment and assistance available**
- ☐ **Monitoring**
  - **Pulse oximetry, ECG, BP, arterial line, CVP, temperature and urine catheter**
- ☐ **Blood loss**
  - **Anticipated to be more than 500 ml (adult) or more than 7 ml/kg (child)**
  - **Blood products required and available**
  - **Patient grouped, screened and cross matched**

- ☐ **Surgeon(s) review(s)**
  - **Specific patient concerns, critical steps, and special instruments or implants**
- ☐ **Anesthesiologist(s) review(s)**
  - **Specific patient concerns and critical resuscitation plans**
- ☐ **Nurses(s) review(s)**
  - **Specific patient concerns, sterility indicator results and equipment / implant issues**
- ☐ **Patient positioning and support / Warming devices**
- ☐ **Special precautions**
- ☐ **Expected procedure time / Postoperative destination**

TIME OUT – Before skin incision

- ☐ **All team members introduce themselves by name and role**
- ☐ **Surgeon, Anesthesiologist, and Nurse verbally confirm**
  - **Patient**
  - **Site, side and level**
  - **Procedure**
  - **Antibiotic prophylaxis: repeat dose?**
  - **Final optimal positioning of patient**
- ☐ **"Does anyone have any other questions or concerns before proceeding?"**

DEBRIEFING – Before patient leaves OR

- ☐ **Surgeon reviews with entire team**
  - **Procedure**
  - **Important intra-operative events**
  - **Fluid balance / management**
- ☐ **Anesthesiologist reviews with entire team**
  - **Important intra-operative events**
  - **Recovery plans (including postoperative ventilation, pain management, glucose and temperature)**
- ☐ **Nurse(s) review(s) with entire team**
  - **Instrument / sponge / needle counts**
  - **Specimen labeling and management**
  - **Important intraoperative events (including equipment malfunction)**
- ☐ **Changes to post-operative destination?**
- ☐ **What are the KEY concerns for this patient's recovery and management?**
- ☐ **Could anything have been done to make this case safer or more efficient?**

Hand-off to PACU / RR, Nursing Unit or ICU

PATIENT INFORMATION

Surgical Safety Checklist: Canada
Version 1, January 9, 2009

Appendix B: Required documentation in the Operating Room

Eastern Health

Operating Room Count Sheet (Part I)

CR1030 0013 07 2012

Name:

HCN#:

Date of Birth:

Date: DD/MM/YYYY Surgeon:

Operative Procedure:

SHARPS AND MISCELLANEOUS	Initial Count	Additions	Count Totals 1st	2nd	Change Over	Final
Abraumatic Needles						
Blades						
Cautery Tips						
Drill Bits (Dental)						
Eyed Needles						
Hooks						
Hypodermic Needles						
Ardlog						
Bull Dogs						
Clip Bars						
Drains/Tubes						
Grey Feet						
Irrigating Tips						
Marking Pen						
Nuts/Screws						
Reels						
Ribbons/Surgifish						
Rubbers						
Rubber Shods						
Ruler						
Scratch Pad						
Shield						
Snares						
Stapling Cartridge						
Syringes						
Tape/Loop						
Tips/Tops						

SPONGES	Initial Count	Additions	Count Totals 1st	2nd	Change Over	Final
2 x 2's						
Cotton Balls						
LAS						
Neurological						
Neats/Peanuds						
Patties						
Raytec						
SAS						
Throat Packs						
Tonsil Sponge						
XLLAS						

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Eastern Health

Operating Room Count Sheet (Part II)

OR1030 0013 07 2012

Name

HCN:

Date of Birth:

Date: DD/MONTH/YYYY

INSTRUMENTS	Initial Count	Additions	Count Totals 1st	2nd		Change Over	Final
Allis							
Arteries							
Babcocks							
Bowel Clamps							
Duvals							
Hysterectomy Clamps							
Kellys							
Kockers							
Mosquitoes							
Needle Holders							
Pyloric Spreader							
Right Angle Clamp							
Scissors							
Sponge Sticks							
Stone/Packing Forceps							
Tenaculums							
Towel Clips							
Tubing Clamps							
Vascular Instruments							
Wire Twisters/Cutters							
Caliper							
Clip Appliers							
Dilators							
Hooks (Instruments)							
Penfields							
Probes							
Retractors – Handheld							
Self-Retaining and Parts							
Scalpels							
Staplers							
Stylet							
Suction							
Tissue Forceps							
Trials							

Name	Signature	Initials

Initial Count (Initials)

Scrub Nurse:_____

Circulating Nurse:_____

C - Correct I - Incorrect/Incomplete Count UTV - Unable to View

	Sharps	Sponges	Instruments	Initials
1st				1.
				2.
2nd				1.
				2.
				1.
				2.
Changeover				1.
				2.
Final				1.
				2.

Incorrect/Incomplete Count	Yes	No	Incorrect/Incomplete Count	Yes	No
Search			Surgeon Notified		
X-Ray Taken			If yes, Interpreted by:		

Nurse's Note:

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Eastern Health
Child/Women's Health Program

Perioperative Record
Labour and Birth

ORI720 0143 08 2012

Name

HCN:

Date of Birth:

☐ Elective ☐ Urgent ☐ Emergency Weight:_____Kg

Allergies: ☐ **No Known**

Date: DD/MONTH/YYYY Room Number:_____
Pre-op Diagnosis: _____
Operation (s) Performed: _____
Assessment Completed/Consent and Procedure Confirmed: ☐ Yes
Comment: _____

Airway
☐ O_2 ☐ Nasal Prongs
☐ Airway ☐ Intubated
☐ Laryngeal Mask ☐ Cricoid
☐ Fiberoptic Intubation

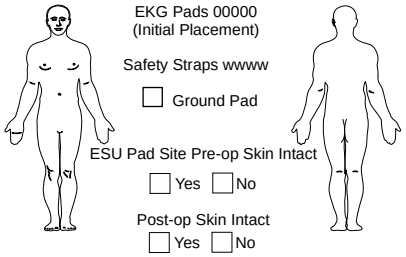
Surgeon(s): _____ Scrub Nurse(s): _____
Surgical Assistant(s): _____
Circulating Nurse(s): _____
Anesthetist(s): _____
Anesthetist Assistant(s): _____
Anesthesia Type: ☐ General ☐ Epidural ☐ Spinal ☐ Other: _____

Times:
Enter O.R. _____ Anesthesia Start: _____
Surgical Start: _____ Surgery Complete: _____ Exit O.R. _____
Delay Comments: _____
Skin Condition Pre-op: _____

Monitoring Devices
☐ Cardiac ☐ Blood Pressure
☐ Pulse Oximeter ☐ Arterial Line
☐ CVP ☐ PA Line
☐ Other _____

Surgeon Notified: ☐ Yes ☐ N/A Comments: _____
Hair Removal: ☐ N/A ☐ Done prior to Admission Clipping: ☐ Yes ☐ No Area: _____ Time: _____
Abdominal Prep: ☐ N/A ☐ Providine Solution ☐ Chlorhexidine ☐ Other: _____
Time:_____ Allowed to Dry: ☐ Yes ☐ No Vaginal Prep: ☐ Yes ☐ No ☐ N/A

Position: _____
Physical Limitations: _____
Support Mechanisms: ☐ Head Rest ☐ Pillows ☐ Stirrups
Right Arm: greater than 90° Padded ☐ At Side ☐ Arm Board ☐ Across Chest
Left Arm: greater than 90° Padded ☐ At Side ☐ Arm Board ☐ Across Chest
Pressure Points/Position Checked by: ☐ Surgeon ☐ Anesthetist ☐ Nurse
Comment: _____



ESU:(Serial Number)_____ ☐ N/A Intra-op Medications: _____ ☐ N/A
Setting Cut: _____ COAG: _____ Packing: ☐ Yes ☐ No Type: _____
Catheter: ☐ Yes ☐ No Dressing: _____
Size: _____ Type _____ Drain(s): ☐ Yes ☐ No ☐ Stab ☐ Incision
Inserted by: _____ Type/Site: _____
Specimens:_____ ☐ N/A **Estimated Blood Loss**: _____ **cc**

Surgical Safety Checklist completed:
Briefing: ☐ Yes ☐ No Time out _____hours Debriefing: ☐ Yes ☐ No

*Name:*_____ *Signature:* _____

White Copy - Chart Yellow Copy - Labour and Delviery Division ch-0143 2022/10

Eastern Health

Dermatome Chart (Part XI)

FS1970 0339 08 2012

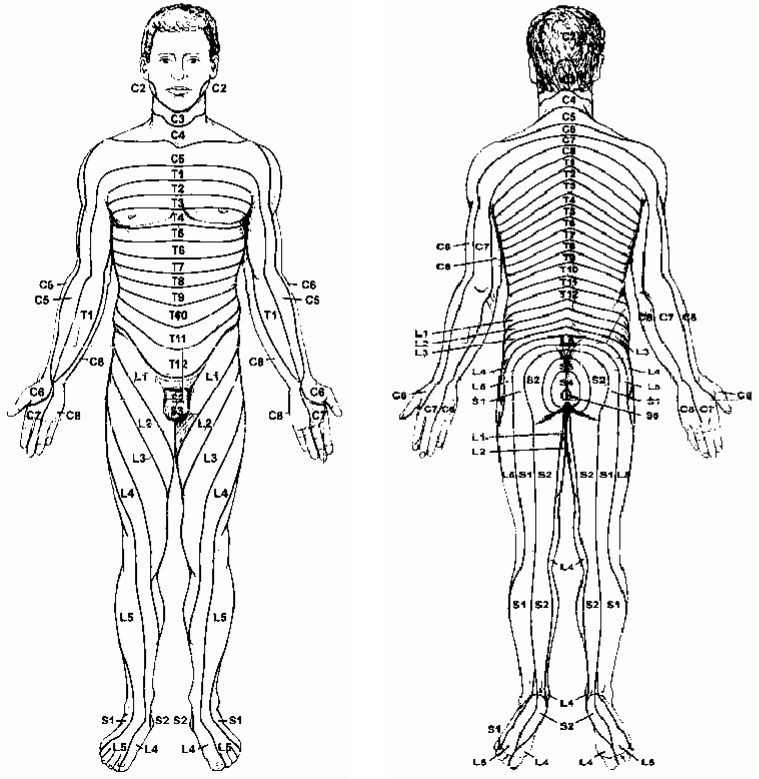
Name:

DOB:

Date of Birth:

Use the following Dermatomes to determine level of anesthetic:

1. Cervical Levels C1 - 8	2. Thoracic Levels T1 - T12	3. Lumbar Levels L1 - L5	4. Sacral Levels S1 - S5
Little Finger C8	Nipple T4	Groin L1	
Voice C3	Umbilicus T10		
	Pubis T12		



Ch-0102 2014/03

Eastern Health

Child/Women's Health Program

FS1970 0339 08 2012

Name:

DOB:

Date of Birth:

Labor and Delivery Flow Chart

ch-0339 2020/06

Eastern Health
Child/Women's Health Program

Labor and Delivery Flow Chart (Part VII)

FS1970 0339 08 2012

Name:

HCN:

Date of Birth:

Delivery Room Data

Physician Called:_____ Arrived:_____ Resident Called:_____ Arrived:_____

NeoNatal Team Called:_____ Arrived:_____ Anesthetist Called:_____ Arrived:_____

Delivery done by:_____ Catheterized: ☐ Yes ☐ No

Electronic Fetal Monitoring: ☐ Yes ☐ No If No, Fetal Heart must be assessed after each contraction in second stage of labor.

Cord Arterial Blood Gas: ☐ Taken Sent at_____ Cord Venus Blood Gas: ☐ Taken Sent at_____

Date:__DD/MONTH/YYYY__

Fetal Monitoring ☐Auscultated ☐ Electronic			
TIME	BFHR	Rhythm FHRV	Periodic Changes

Progress Note: _____

Code for Fetal Heart Rate

BFHR = Baseline Fetal Heart Rate
FHRV = Fetal Heart Rate Variability
Ab = Absent (Undectable)
Min = Minimal (less than or equal to 5 bpm)
Mod = Moderate (6 - 25 bpm)
Mar = Marked (greater than 25 bpm)

Code for Periodic Changes

E = Early Deceleration
Vunc = Variable Uncomplicated
Vcom = Variable Complicated
L = Late Deceleration
A = Acceleration

(may be documented using arrows to denote nadir and duration, e.g.↓90➞30)

Nurse's Name	Nurse's Signature	Initials	Nurse's Name	Nurse's Signature	Initials

Eastern Health
Child/Women's Health Program

Labor and Delivery Flow Chart (Part IV)

FS1970 0339 08 2012

Name:

HCN:

Date of Birth:

Medication Administration Record

Date	Time	I/V Medications (Rate & Concentration) No. 1	No. 2	No. 3	Medications	Epidural Hourly Infusion / Cumulative Dose	Initials	Comfort Measures

Codes for Comfort Measures

1. Ice chips / fluids
2. Pericare / pads
3. Backrub
4. Position change
5. Bed bath
6. Change linen
7. Assist to washroom
8. Mouth care
9. support and coaching
10. I/V site checked every1hour
11. Heat to back

Nurse's Name	Nurse's Signature	Initials	Nurse's Name	Nurse's Signature	Initials

Eastern Health
Child/Women's Health Program

Labour Delivery Record

OR1450 0104 08 2012

Name:

HCN:

Date of Birth:

SECTION 1 - TO BE COMPLETED BY PHYSICIAN

ANTEPARTUM STATUS

LMP ☐ EDC ☐ Gestn. At Del. ☐
☐ Singleton ☐ Twins ☐ Other

Grava ☐ Para ☐ Abort ☐ SB ☐ NND ☐

ABO Rh
Blood Group ☐☐ Rh Titre ☐ HGB ☐ Rubella Titre ☐ HB Ag. ☐ Group B Strep ☐

MEDICAL HISTORY ☐ Normal ☐ Abnormal
Specify:

Problems Previous Pregnancy or Infant ☐ No ☐ Yes
Specify:

COMPLICATIONS OF THIS PREGNANCY ☐ None
☐ Bleeding ☐ Toxemia ☐ Diabetes
☐ PROM ☐ Premature Labour ☐ IUGR

LABOUR ☐ Spontaneous
☐ Induced — ☐ ARM ☐ Oxytocin ☐ Prostaglandin
☐ Augmented
☐ Prior Caesarean ☐ Attempted VBAC
Indication for Induction: _____

DELIVERY ☐ SVD
☐ Operative/Vaginal
☐ Outlet ☐ Low ☐ Mid ☐ Trial
Manual ☐ Vacuum ☐ Forceps ☐
Rotation ☐ ☐ ☐
Traction ☐ ☐ ☐
Position at Delivery ☐
Operative Indication: _____
Position at Intervention ☐

Caesarean ☐ LS Trans. ☐ LS Vert. ☐ Classical
Breech ☐ Spont. ☐ Assisted ☐ Forceps ☐ Extracted
Episiotomy ☐ None ☐ Midline ☐ Mediolateral
Lacerations ☐ None ☐ Cervical ☐ Perineal ☐ Vaginal ☐ Anal Sphincter ☐ Rectal Mucosa

Placenta ☐ Spont. ☐ Assisted ☐ Manual
Umbilical Vessels ☐ 3 ☐ 2 Abnormalities: _____

Post Partum Estimated Blood Loss _____
Oxytocin ☐ None ☐ Bolus ☐ Infusion
☐ **Ergometrine** ☐ **Prostaglandin**

FETAL HEART Interpretation ☐ Electronic ☐ Auscultation
Last Fetal pH Result _____ Time _____

Stillbirth Last Fetal Movement _____ FHR _____

Signature of Delivering Physician

SECTION 2 - TO BE COMPLETED BY NURSE

MEMBRANE RUPTURE
☐ Spontaneous ☐ Questionable ☐ ARM
Date ☐ Time ☐ Duration ☐
T. ≥ 38 in Labour _____

MECONIUM ☐ Yes ☐ No Time First Noted _____

1st STAGE Date _____ Time _____ Dur. _____

2nd STAGE Date _____ Time _____ Dur. _____

DELIVERY Date _____ Time _____

3rd STAGE Date _____ Time _____ Dur. _____

DRUGS

Time	(Within 24 Hours) Drug/Dose/Route

ANAESTHESIA
☐ Local ☐ None ☐ Entonox ☐ Spinal
☐ Epidural ☐ Pudendal ☐ General
Signature: _____

SECTION 3 - TO BE COMPLETED BY PHYSICIAN & NURSE

Sponge and Needle Count
Initial Count: Sponges _____ Needles _____
1st Signature _____
2nd Signature _____
Final Count: Sponges _____ Needles _____
1st Signature _____
2nd Signature _____

SECTION 4 - TO BE COMPLETED BY NEONATAL TEAM

CONDITION AT BIRTH	1 min	5 min	10 min
Tone			
Colour			
Respiration			
Response			
Heart Rate			
APGAR SCORE			

RESUSCITATION:
☐ None
☐ Oxygen Only
☐ Pos. Pres. Bag and Mask
☐ Pos. Pres. Bag and Tube
☐ Pos. Pres. Began _____ to _____
☐ ET Suction Meconium ☐ Yes ☐ No

BABY ☐ Girl ☐ Boy Weight _____ Cord pH _____

COMMENTS:

Signature of Neonatal Nurse/Physician

WHITE - MOTHER'S CHART CANARY - INFANT'S CHART PINK - PHYSICIAN'S OFFICE GOLD - DISCHARGE SUMMARY ch-0104 2014/04

Eastern Health
Child/Women's Health Program

Newborn Assessment Labour and Delivery (Part II)

NB1090 0116 08 2012

Name:

HCN:

Date of Birth:

Date and Time of Birth: DD/MONTH/YYYY HH:MM Weight:_____grams ☐ SGA ☐ AGA ☐ LGA

Gestation:_____weeks (dates) Head Circumference:_____cm

HN Number:_____ Length:_____cm

ID Band Number:_____

Checked by:

Nurse's Name:_____ Nurse's Signature:_____

Nurse's Name:_____ Nurse's Signature:_____

Time of Assessment	Normal		If No, Comment
	Yes	No	
Head			
Face			
Neck			
Chest			
Respiratory Rate			
Colour			
Heart Rate			
Rhythm			
Abdomen			
Genitalia			
Anus			
Legs			
Arms			
Feet			
Initials:			

Cord Care _____

Erythromycin Opthalmic Ung._____

Time_____Initials_____

Vitamin K _____

Time HH:MM Initials _____

Skin to Skin: ☐ Yes ☐ No If Yes: ☐ 1 hour or greater

Start Time: HH:MM Finish Time: HH:MM

If No, specify why: _____

Routine Procedures Performed while Skin to Skin:

☐ Yes ☐ No ☐ N/A Mother or infant not stable

Prenatal breastfeeding education including importance of breastfeeding, risk of not breastfeeding and duration recommendations:

☐ Yes ☐ No Initials:_____

Breastfeeding assistance within 2 hours from birth; including positioning, latch, hand expression and milk transfer: ☐ Yes ☐ No

☐ N/A Mother or infant not stable

☐ N/A Exclusively feeding human milk substitute

Initials:_____

Date and Time	Temperature	Heart Rate	Respirations	Glucose	Feeding	Urine	Meconium/Stool	Initials

Nurse's Name	Nurse's Signature	Initials

TPR at birth and every hour x 4
Glucose - See Policy: Guidelines for Care of the Healthy Newborn

Ch-0116 2023/10

Appendix C: Agency policies for the Janeway Case Room

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-
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(c) Perioperative registered nurses

(d) All other operating room personnel and students are attentive and participate as required.

3. The surgeon/surgical resident (if designated by the surgeon) or perioperative registered nurse leads the *Briefing* and *Time-Out* phases of the checklist. The perioperative registered nurse leads the *Debriefing*. Any discrepancies identified during the *Briefing*, *Time-Out*, or *Debriefing* are rectified and/or communicated to ensure safe patient care.
4. All disciplines are provided with education on the Surgical Safety Checklist. Reference guidelines are provided in the Canadian Patient Safety Institute (CPSI) Implementation Kit.
5. The perioperative registered nurse documents the completion of the three phases of the Surgical Safety Checklist. If components of the checklist are not completed or incomplete, it is noted with comments. The checklist is not part of the patient's chart.
6. When the surgeon is required to leave the O.R. area due to an emergency and there is no surgical resident, the *Briefing* is conducted with the remainder of the team, including anaesthesiologist and nursing staff, with the surgeon by phone, ensuring the following criteria are met:
   (a) The surgeon identifies his location.
   (b) The surgeon has met the patient in the PWA, positive patient identification is completed, consent is verified, and surgical markings applied as required, *etc*.
7. Audits on compliance with the Surgical Safety Checklist are conducted regularly and reported to the Regional Surgical Services *(Perioperative)* Program.

Scope

All healthcare disciplines within the operating rooms of Eastern Health.

Purpose

To enhance patient safety and improve team communication in the perioperative setting.

Procedure

1. During the calling of the *Briefing, Time-Out* and *Debriefing*, other conversations cease within the operating room.
2. A near miss or occurrence that is identified is reported using the Clinical Safety Reporting System (CSRS).

Supporting Documents

- Haynes et al. (2009). A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population: New England Journal of Medicine.
- ORNAC (2011). Standards, Guidelines, and Position Statements for Perioperative Registered Nursing Practice,10th edition.
- Canadian Patient Safety Institute (2009). Implementation Kit for the Surgical Safety Checklist.

Linkages

- Positive Patient Identification Policy: PRC-130

Key Words

surgical safety checklist, briefing, time-out, debriefing, operating room, perioperative

Definitions & Acronyms

WHO	World Health Organization
CPSI	Canadian Patient Safety Institute
O.R.	operating room
PWA	patient waiting area

SURGICAL COUNT	Operative Phase 260-OR-340
Issuing Authority	**Lynnette McCarthy Woodrow, Director Regional Surgical Services** **Signed by Lynnette McCarthy Woodrow** **Dated: August 31, 2021** **Amy Howard, Director Children and Women's Health** **Signed by Amy Howard** **Dated: September 7, 2021**
Office of Administrative Responsibility	Operating Room
Authors	Wanda Glover, Clinical Educator Orla Ring, Clinical Educator Sarah Davis, Clinical Educator
Level	Four (IV)
Original Approval Date	February 14, 2013
Effective Date	Upon signature
Scheduled Review Date	March 2017; June 2024
Actual Review Date	September 7, 2021
Revised Date*(s)*	January 21, 2014; March 26, 2014; June 9, 2020; September 7, 2021

Overview

Surgical count is a procedure to reconcile and record all items used in the sterile field. Unintentionally retained items after surgery are 'never events', which are preventable patient safety incidents.

The surgical count is a team responsibility. The perioperative nurse is part of the team that is responsible for ensuring all surgical items, including instruments, sponges, sharps, and other miscellaneous items used are accounted for, prior to the patient leaving the operating room.

POLICY

1. Any item required during the surgical intervention that has the potential for being retained is counted and documented on the Operating Room Count Sheet (ch-0013).

   **The exception is during craniotomy and spinal cord tumor surgeries, in which*

Raney clips are required. The neurosurgeon is responsible to visually check the surgical field before closure to ensure all Raney clips have been removed.

2. All attempts are made to ensure that items used are radiopaque.
3. If a radiopaque item must be cut, additional portions are added to the Operating Room Count Sheet (ch-0013). All additional portions must contain radiopaque identification.
4. All items are counted audibly and viewed concurrently by two perioperative nursing professionals, one of whom is a registered nurse. If only one registered nurse is available, a surgeon may count with the registered nurse.

   **Exception: during Dental procedures with dental assistants. The dental assistant may count with one perioperative registered nurse.*
5. The scrub nurse shall be aware of all counted items throughout the operative procedure and be involved in all parts of the count. In the event of emergent/urgent cases or high-volume blood loss and the scrub nurse is unable to attend to the counting off of used sponges, two circulating perioperative registered nurses may perform the counting off of sponges and inform the scrub nurse.
6. Packages containing incorrect numbers of sponges/needles are bagged, labeled, isolated from the rest of the sponges/needles, and removed from the Operating Room prior to the initial count. After the initial count is completed if any incorrect numbers of sponges/needles are found, they are bagged, labeled, and isolated. Those items are not recorded on the Operating Room Count Sheet (ch-0013).
7. Counts are done:
   a) Prior to the commencement of surgery
   b) When a cavity is being closed, or the first layer of wound closure
   c) At skin closure
   d) Prior to closure of a cavity within a cavity, i.e., uterus as part of a caesarean section
   e) Any time a member of the team requests it
   f) A changeover count is performed when there is permanent relief of the scrub nurse. The relieving scrub nurse performs the changeover count. The scrub nurse who performed the previous count shall remain in the operating room until the changeover count is completed.
8. A changeover count is not required when the initial circulating nurse relieves the scrub nurse. In this situation the initial circulating nurse has to be present throughout the procedure (barring breaks) until they relieve the scrub nurse.
9. If an incision is re-opened after the final count, additional counts are performed as required.
10. Once a count has been started, it is completed. If an interruption occurs, the count is resumed at the last recorded item.
11. In the event of a misplaced item, and the misplaced item is located, the misplaced

surgical item is recounted from the beginning.

12. If a procedure requires more than one set-up:
    a) Separate count sheets are required for each set-up
    b) The extent of the count for each set-up will default to the most extensive count performed
    c) Items are not exchanged from one set-up to another
    d) For each incision closure, counts shall be completed.
13. The surgeon is informed of the closure count results. The circulating nurse ensures that the surgeon gives verbal acknowledgment.

Documentation

14. All perioperative nurses are provided education on surgical count documentation.
15. Documentation must be completed with blue or black non-erasable and non-gel ink.
16. If a surgical count is completed during a surgical intervention, an Operating Room Count Sheet (ch-0013) is completed, and Yes (Y) is indicated on the Operating Room Case Record under 'Surgical Count Performed'. If a count is not required, a count sheet is not completed, and not applicable (N/A) is indicated on the Operating Room Case Record under 'Surgical Count Performed'.

    If a surgical count is performed for procedures by use of electronic documentation, exclusively HSC Day Surgery and Ophthalmology case records, the Operating Room Count Sheet (ch-0013) is not completed. Reconciliation of the count is indicated with a Yes or No in the Operating Room case record. If computer downtime is required, HSC Day Surgery and Ophthalmology are to complete ch-0670 and ch-0686 respectively, which includes count records.
17. All staff involved in a surgical count document their signature, with professional status and corresponding initials, on Part II of the Operating Room Count Sheet (ch-0013).
18. All counts are documented numerically and signed by the circulating nurse and scrub nurse, if applicable.
19. Any item added to the surgical set-up is counted, documented, and initialed on the Operating Room Count Sheet (ch-0013).
20. If the case does not require a scrub nurse and two circulating nurses are not available to count, the count is performed by the circulating registered nurse and surgeon. The surgeon initials and signs the Operating Room Count Sheet (ch-0013) in the appropriate places.
21. The Operating Room Count Sheet (ch-0013) is part of the patient record. The count sheet is dated and labelled with a Meditech barcoded label on both sides, and the surgeon*(s)* and surgical procedure*(s)* are recorded.

Extent of Surgical Count

22. A major count includes all sponges, miscellaneous items, sharps, and instruments. It must be performed when the following cavities are entered:
    a) peritoneal

b) pelvic
c) retroperitoneal
d) thoracic

23. For minimally invasive surgeries entering a major body cavity, a full count is required prior to commencement of surgery. If the procedure remains endoscopic, a minor count is required upon closure.
24. A minor count includes all sponges, sharps, and miscellaneous items. It is performed:
    a) When a major count is not indicated
    b) When a superficial count is not indicated
    c) Prior to closure of a cavity within a cavity
    d) At skin closure.
25. A superficial count includes all sharps. It is performed when the procedure is superficial, i.e., an area where a sponge/instrument cannot be retained.
26. When the necessity of a major count is questionable, it is performed prior to commencement of surgery. The count required at closure will be determined by the extent of the surgery performed, i.e., hernia repair that extends into peritoneum will require a major count at the time a first count is required.
27. Items used in an organ-procurement procedure are accounted for in their entirety, in the same manner as for any surgical procedure.
28. When a procedure uses a large number of instruments intra-operatively, an x-ray may be used in lieu of the final instrument count, prior to the incision closure. This is limited to ORIF pelvis and anterior spine with instrumentation. A minor count is always required.

Count Discrepancy

29. In the event of an incorrect count, the following steps are taken:
    a) A recount is performed. A search of the surgical wound, surgical field, floor, garbage, and laundry is initiated.
    b) The surgeon is notified.
    c) The circulating nurse confirms with the surgeon that an intra-operative x-ray is required. If the surgeon denies an x-ray, it is documented on the patient's chart, the Operating Room Count Sheet (ch-0013), and a CSRS is completed.
    d) The x-ray is completed and interpreted by the surgeon/designate prior to the patient leaving the Operating Room. Document on Operating Room Count Sheet (ch-0013) if x-ray was taken, and who interpreted the x-ray. If the x-ray is reviewed by surgeon/designate and no retained item is seen, the on-call radiologist must be contacted by the surgical staff to review and interpret the image(s) prior to the patient leaving the Operating Room, if the patient's condition permits.
    e) The count is repeated if the missing item is found.
    f) The incorrect count is documented on the Operating Room Count Sheet (ch-0013).

g) The surgeon assumes responsibility for retrieval or non-retrieval of the item.

h) An occurrence report is completed. Document on the occurrence report measures taken to locate the item, the x-ray findings and which physician read/cleared the x-ray.

i) The division manager/designate is notified.

30. It is the physician's responsibility to disclose to patient/family a count discrepancy and/or refusal of x-ray if deemed necessary.

31. In an emergency situation, when an initial count is not performed, the perioperative registered nurse documents the reason an initial count was not performed on the Operating Room Case Record. If an initial count is started it cannot be completed once the incision is made. If an initial surgical count is not performed, follow the steps taken for an incorrect count.

Therapeutic Packing

32. All counted sponges intentionally left in the patient as packing at the end of surgery are radiopaque.

33. The type and number of sponges are documented on the Operating Room Case Record as packing.

34. On the Operating Room Count Sheet (ch-0013), this is documented as an incorrect/incomplete count, with the number of sponges remaining in the surgical site clearly identified under nurses' notes.

35. When intentionally leaving therapeutic packing, the steps for count discrepancy are not followed.

36. For patients returning to the operating room for removal of radiopaque packing:

a) Nursing staff will refer to the previous Operating Room Case Record and Operating Room Count Sheet (ch-0013) to confirm the number and type of packing left in the patient.

b) The packing is removed from the sterile field, bagged, and identified as packing material.

c) The type and number of packing removed from the wound are reconciled with the previous Operating Room Case Record and Operating Room Count Sheet (ch-0013) and documented on the current Operating Room Case Record in nurses' notes. If the type and number of packings cannot be reconciled, follow the steps under Count Discrepancy.

d) If the surgical site is being permanently closed, an x-ray is completed prior to the client leaving the operating room. Record the x-ray findings and which physician read/cleared the x-ray on the Operating Room Case Record.

Scope

All registered nurses, operating room technicians, and surgeons/surgical residents within the operating room.

Purpose

Surgical counts are performed to ensure patient safety during surgical intervention.

Procedure

1. The recommended order of a count is: sponges, sharps, miscellaneous items, and instruments. Ensure each item is counted individually.
2. Items remain together until the initial count is completed. Instruments are not arranged for the procedure until the initial count has been completed. Instruments shall not be placed on the Mayo tray until they are counted.
3. All items are documented as they are counted, before proceeding to the next item.
4. Once a count is initiated, items are not removed from the OR theatre, including garbage and laundry, until the final count is complete and correct.
5. At closure, items are counted in sequence or reverse sequence:
   - incision
   - Mayo stand
   - back table/Gerhardt
   - items off the field
6. Sponges are to be counted by:
   - Breaking the band of the sponge package
   - Completely opening and separating each sponge
   - Each package of sponges is counted twice; and
   - Radiopaque tags on LAS, SAS and XLAS shall be pull-tested to ensure attachment at the initial count.
7. Used sponges are removed from the sterile field and are visible to the circulating and scrub nurse (or RN designate) for counting. Sponges are counted twice in the unit of issue and placed into a plastic bag, sponge counter, or container.
8. Bagged and counted sponges remain visible to scrub nurse throughout procedure and at all counts.
9. Small sponges, i.e., peanuts or neuts, remain in containers on the sterile field. If counted off the sterile field, they are kept in separate containers.
10. When a sponge is used for temporary packing, the scrub nurse informs the circulating nurse of the type, number, insertion, and removal of the sponge. A reminder is made of such for all personnel to visualize (i.e. white board). Temporary packing is not to be noted on the Operating Room Count Sheet (ch-0013) as it could be mistaken for permanent packing or impede with incorrect count documentation.
11. Small sponges, i.e., neuts or peanuts, are attached to an instrument when used in a

body cavity.

12. All types of needles, i.e., hypo, eyed and atraumatic, are counted separately. The needle and cover are counted as one item.
13. All types of opened needles/sharps are confined and contained to prevent injury, i.e., within needle holder, sharps container, and/or original packaging.
14. All segments of broken sharps are accounted for.
15. In the event of a missing atraumatic needle smaller than 10 mm, the count is recorded as incorrect, the surgeon is notified, and a CSRS report is completed. An x-ray is not indicated.
16. If there are large numbers of atraumatic needles, a full sharps container may be passed off to facilitate the final count:
    a) Needles are placed one needle per space until the counter is full.
    b) Needles are counted, and the counter is sealed and labeled with the number of needles.
    c) This is kept in full view for the final count.
    d) Do not subtract on the count sheet.
17. When counting miscellaneous items, the following statements should be considered:
    a) All component parts of instruments are counted:
        i. Nuts/screws include screws, bolts or nuts that are detachable from instruments.
    b) Tips/Tops include small accessory pieces within the surgical field.
    c) Drill bits for oral procedures are counted.
    d) Drains/tubes that are used intraoperatively without intent of insertion are counted.
    e) Marking pens are counted as one, including cover(s).
    f) Syringes are counted as one, including plunger.
    g) Poole Suctions are counted as one, including guard.
    h) Hypodermic needles are counted as one, including cover.
    i) Rubber dam clamps used in dental surgery are counted as Tips/Tops.
18. All instruments are counted during initial count when it is anticipated that a cavity will be entered during the procedure. This includes retractors such as:
    a) Self-retaining retractors and all component parts.
    b) Hand-held retractors.
    c) Ribbons/surgical fish for closure are counted separately on Part 1 of the count sheet.
19. Radiopaque sponges are not to be used for dressings.
20. Gauze dressings are not added to the set-up until the final count is complete. Gauze dressings that come in a custom pack shall be packaged in a separate bag

and remain isolated on the sterile field until the wound is closed.

21. All closure counts are directed by the circulating registered nurse.

Extent of Surgical Procedure

22. Patients with an increased body mass index are at an increased risk of retained surgical items. Therefore, for surgeries when a cavity is not entered, a more extensive count or an intra-operative x-ray may be considered. This will be at the surgical team's discretion.

Documentation

23. The initial count is documented numerically in the initial count column.
24. Each type of sponge used on the sterile field is counted, documented, counted off, and bagged in units of issue.
25. If an item on the count sheet is not part of the count, a dash (-) is placed in the initial count column next to the item showing it was considered. If that item is added later during the surgical intervention, it is indicated in the 'additions' column.
26. All additions to the surgical count are recorded numerically in the 'additions' column with a '+' sign between each addition. The circulating nurse adding the item initials in superscript to the right of the number (i.e., + 5^{DR}).
27. The nurse records counted-off sponges by crossing out the number and initialing in subscript to the right. (i.e., $\not{5}_{DR}$).
28. When a count is performed, the total number of each item is recorded numerically in the appropriate column.
29. Verification of count is recorded in the designated area for sharps, sponges, and instruments. Record **C** for correct, **I** for incorrect, and a **dash (-)** if that grouping is not indicated.
30. If there are instances when visualization of items cannot be achieved, i.e., at permanent relief of the scrub nurse, or the closure of a cavity within a cavity, those items are documented as **UTV** (unable to view). In addition, under verification of count, record "UTV" in the appropriate column.
31. For each count performed, the scrub nurse (if applicable) and circulating nurse must initial the corresponding row.

Supporting Documents

- AORN (2014). Standards, Recommended Practices and Guidelines. Association of Operating Room Nurses, Inc.
- Phillips, N. (2016). Berry & Kohn's Operating Room Technique (13th edition). St. Louis, Missouri: Mosby's Inc.
- Meeker, M.H., & Rothrock, J.C. (2018). Alexander's Care of the Patient in Surgery (14th edition). St. Louis: Mosby.
- ORNAC (2019). The ORNAC Standards, Guidelines, and position Statements for

Perioperative Registered Nurses. 14th Edition.

Linkages

- Clinical Documentation: PRC-020
- Additional Precautions: IPC-090
- Disclosure: QRM-030
- Extent of the Surgical Count: 260-OR-350
- Guidelines for Documentation of Surgical Count: 260-OR-330
- Hand Hygiene: IPC-150
- Incomplete Surgical Count: 260-OR-370
- Incorrect Surgical Count: 260-OR-360
- Personal Protective Equipment: IPC-190
- Positive Patient Identification (PPI): PRC-130
- Privacy & Confidentiality: ADM-030
- Routine Practices: IPC-200
- Safe Work Practices & Procedures: HR-OH(o)-260
- Surgical Safety Checklist: 260-OR-250
- Day Surgery Case Record ch-0670
- Case Record Ophthalmology ch-0686

Key Words

surgical count, operating room, O.R., surgery, perioperative

Definitions & Acronyms

BMI	Body Mass Index
LAS	Large Abdominal Sponge
O.R.	Operating Room
Packing	The filling of a wound or cavity with gauze, sponges, pads, or other material; also, the material used for this purpose.
Permanent relief	When a scrub nurse is leaving the Operating Room with no intention to return to the procedure.
Radiopaque	Material that blocks passage of x-rays, so it appears visible on x-ray image
SAS	Small Abdominal Sponge
XLAS	Extra-Large Abdominal Sponge

Policy History This policy replaces the following policies:

Board	Policy #	Policy Name	Date Revised
EH	260-OR-340	Surgical Count	July 16, 2020
EH	260-OR-350	Extent of Surgical Count	July 16, 2020
EH	260-OR-330	Guidelines for Documentation of Surgical Count	July 16, 2020
EH	260-OR-370	Incomplete Surgical Count	July 16, 2020
EH	260-OR-360	Incorrect Surgical Count	July 16, 2020

Key: EH-Eastern Health

OBSTETRICAL EPIDURAL ANESTHESIA: CARE OF PATIENT	Regional Maternal, Newborn Gynecology Policy Manual 270-MNG-ALD-205

Issuing Authority	**Dr. Kamra, Obstetrical Anesthesia** **Signed by Dr. Kamra** **Dated: October 18, 2021** **Amy Howard, Regional Director Children and Women's Health Program** **Signed by Amy Howard** **Dated: September 21, 2021**
Office of Administrative Responsibility	Children and Women's Health Program
Author	Krista Kinsella, Clinical Educator for MORE^{OB} and Quality Improvement for Women's Health
Level	III (Three)
Original Approval Date	March 21, 2013
Effective Date	Upon signing
Scheduled Review Date	March 2016; March 2024
Actual Review Date	October 18, 2021
Revised Date(s)	October 18, 2021

Overview

Labor and delivery results in severe pain for many women. In the absence of a medical contraindication, maternal request is a sufficient medical indication for pain relief during labor. Epidural analgesia has become the mainstay in labor pain management (Reproductive Care Program of Nova Scotia, 2019).

Epidural analgesia involves lumbar access into the epidural space with the injection, by an anesthesiologist, of local anesthetics and/or opioids. These drugs can be administered either intermittently or with a continuous infusion with a possible option of patient controlled epidural analgesia (PCEA). Spinal analgesia or combined epidural-spinal analgesia may be used to provide pain relief for operative vaginal deliveries and/or Cesarean Section (American College of Obstetricians and Gynecologists (ACOG), 2019).

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Ambulating Procedure for use with Programmed Intermittent Epidural Bolus (PIEB)

Eastern Health

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- Electronic Fetal Monitoring 270 MNG-ALD-180
- Personal Protective Equipment IPC-190
- Hand Hygiene IPC-150
- Routine Practices IPC-200
- Positive Client Identification PRC-130
- High Alert Medication PHA-150
- Automatic Stop Order For Medications(Acute Care) PHA-128
    - Clinical Documentation PRC-020

Key Words

Epidural analgesia, Labor, Spinal analgesia, Intrapartum, Fetal heart rate surveillance, Intermittent auscultation

Policy History This policy replaces the following policies:

Legacy Board	Policy #	Policy Name	Date Revised
HCCSJ	11.10	Epidural Anesthetic: Nursing Responsibilities ((Grace Hospital policy)	1994 12
PHCC	II M - 2646	Epidural Analgesia	2000 03

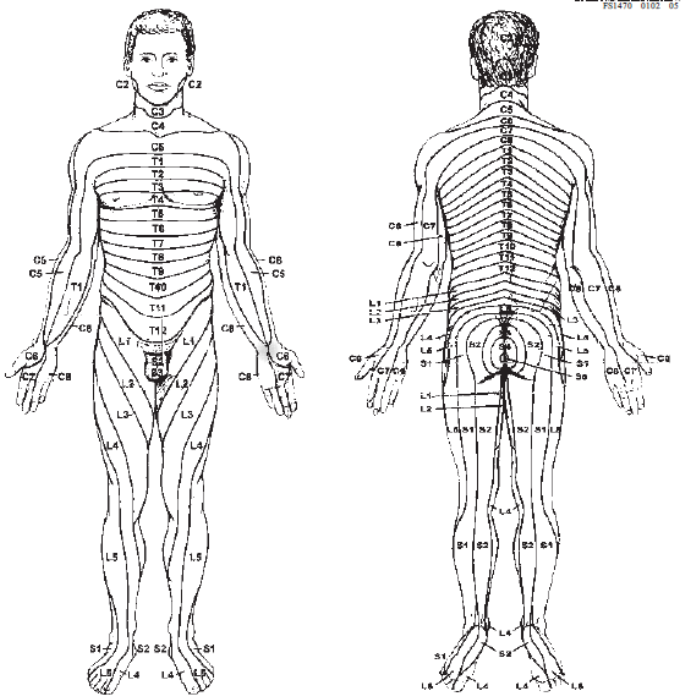
Key: HCCSJ – Health Care Corporation of St. John's
PHCC – Peninsulas Health Care Corporation

Appendix A

DERMATOME CHART

Use the following Dermatomes to determine level of anesthetic:

1. Cervical Levels C1 - 8	2. Thoracic Levels T1 - T12	3. Lumbar Levels L1 - L5	4. Sacral Levels S1 - S5
Little Finger C8	Nipple T4	Groin L1	
Voice C3	Umbilicus T10		
	Pubis T12		



Description of the Bromage Score:

Grade	Definition
0	No motor block
1	Inability to raise extended leg; able to move knees and feet
2	Inability to raise extended leg and move knee; able to move feet
3	Complete block of motor limb

dh-0102 2014/04

Appendix B

Score	Criteria
1	Complete block (unable to meet feet or knees)
2	Almost complete block (able to move feet only)
3	Partial block (just able to move knees)
4	Detectable weakness of hip flexion while supine (full flexion of knees)
5	No detectable weakness of hip flexion while supine
6	Able to perform partial knee bend

Modified Bromage Score

(IWK Patient Controlled Epidural Analgesia (PCEA) for Women in Labour, Policy 7002, March 2019, p.15)