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Context

- Perioperative care delivers integrated, multidisciplinary care to patients throughout the surgical pathway and can improve quality of care, experiences, and outcomes of patients having surgery when delivered efficiently.(1)
- Perioperative surgical-team assistants can play a significant role on the surgical team by providing specialized skills to support required surgical team members before, during, and after surgery.
- This rapid synthesis examines how perioperative surgical-team assistants support the surgical team in the operating room and their impacts on patient and health system outcomes.

Questions

- What is known about the role and impacts of perioperative surgical-team assistants who perform perioperative care support duties for surgical care pathways?

Rapid Synthesis

Role and impacts of perioperative surgical-team assistants

18 March 2024

[MHF product code: RS 119]

Box 1: Evidence and other types of information

+ Global evidence drawn upon

Evidence syntheses selected based on relevance, quality, and recency of search

- Forms of domestic evidence used

Data analytics

Qualitative insights

+ Other types of information used

Jurisdictional scan (Five countries: AU, NZ, UK, US and Canadian provinces and territories)

*** Additional notable features**

Prepared in five business days using an 'all hands on deck'

High-level summary of key findings

- We identified one evidence syntheses and 12 single studies relevant to the research question.
- Several of the evidence documents we identified explored the impact of using nursing health professionals as surgical assistants (e.g. registered nurse first assistants (RNFAs) and registered nurses fulfilling the role of non-medical surgical assistants (NMSAs)) and concluded that their integration into the surgical team may lead to reduced operation times and improved patient outcomes.
- Some examples of the support nurse surgical assistants can provide to surgeons include handling tissue, ligating vessels, using instruments, suturing, creating a sterile field, positioning the patient after general anesthesia, and monitoring patient progress.
- Characteristics of surgical-team assistants that were highlighted in the evidence as having a positive impact on surgical times and outcomes included familiarity of surgical assistants with their role and the operating settings, personal qualities, such as calmness, courage, and confidence throughout surgical care, and consistency within the surgical care team.
- Advancements in technology may also impact the roles and responsibilities of surgical assistants as they can provide a cost-effective approach to alleviating the burden of certain surgical tasks, according to some evidence.

- Across our jurisdictional scans, surgical assistants were found to consist of a variety of health professionals responsible for supporting surgical teams, usually through:
  - enhancing communication between the patient, theatre team, and ward
  - facilitating patient transition to surgery and to post-surgery anesthetic care units
  - preparing, sanitizing and manipulating surgical equipment and instruments
  - handling tissues or manipulating organs for exposure or access, as well as assistance with wound closure and application of dressings.
- In addition to dedicated surgical assistants, many jurisdictions work to optimize other health professionals to perform surgical assistance tasks and roles through standards, guidelines and toolkits, and education and training.
- The jurisdictional scans did not identify many relevant outcomes related to surgical assistants, but some initial assessments demonstrated promise for increasing provider satisfaction, creating a culture of safety, and improving patient outcomes.

Framework to organize what we looked for

- Perioperative support staff
  - New staff in a dedicated role (e.g., surgical assistant or technician)
  - Upskilling existing staff
    - Nurse
    - Medical (or nursing) assistant
    - Patient technician
- Other required surgical team members
  - Surgeon
  - Anesthesiologist
  - Nurse(s)
  - Other
- Role in perioperative surgical care
  - Before surgery
    - Sterilizing and inspecting the operating room and equipment
    - Cleaning and disinfecting the incision site
    - Positioning the patient on the operating table

Box 2: Approach and supporting materials

We identified evidence addressing the question by searching Health Systems Evidence AND PubMed (search 1, search 2, search 3). All searches were conducted on 12 March and 21 March 2024. The search strategies used are included in Appendix 1. In contrast to our rapid evidence profiles, which provide an overview and insights from relevant documents, this rapid synthesis provides an in-depth understanding of the evidence.

We searched for full evidence syntheses (or synthesis-derived products such as overviews of evidence syntheses), guidelines and single studies. In this rapid synthesis, we conducted jurisdictional scans for four countries (Australia, New Zealand, the U.K., and the U.S. – California and New York) as well as all Canadian provinces and territories.

We appraised the methodological quality of evidence syntheses that were deemed to be highly relevant using AMSTAR. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. The AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to evidence syntheses pertaining to delivery, financial, or governance arrangements within health systems or to broader social systems.

This rapid synthesis was prepared in a 30-business day timeline.

A separate appendix document includes:
1) methodological details (Appendix 1)
2) details about each identified evidence synthesis (Appendix 2)
3) details about single studies (Appendix 3)
4) details from the jurisdictional scans of other countries (Appendix 4a) and Canadian provinces and territories (Appendix 4b)
5) documents that were excluded in the final stages of review (Appendix 5).

        - Other
    - During surgery
        - Monitoring vital signs
        - Providing surgical instruments and equipment to the surgeon
        - Safety monitoring
        - Other
    - Following surgery
        - Preparing samples and sending them to a lab to testing
        - Monitoring patients' arrival into the recovery unit
        - Other
- Other features of perioperative support staff
    - Where training is obtained
        - University degree
        - College degree
        - Certificate
        - Apprenticeship (or other in-work training)
    - Duration of training required
    - Certification required
    - Remuneration provided
- Outcomes
    - Health outcomes
    - Patient experience
    - Provider experience
    - Costs

Key findings from evidence sources

We identified one evidence synthesis and 12 single studies relevant to the research question. Several of the single studies we identified explored the impact of using nursing health professionals as surgical assistants, including nurse practitioners, registered nurse first assistants (RNFAs) and registered nurses fulfilling the role of non-medical surgical assistants (NMSAs). One medium-quality evidence synthesis found that integrating nurse practitioners and physician assistants into surgical/trauma services may lead to positive outcomes, including reduced patient length of stay, stable morbidity and mortality rates, improved workload for surgical support team members, and high satisfaction rates among patients and healthcare workers.(2) A 2016 study determined that the master's level training and preparation of RNFAs to identify disease processes that lead to intraoperative complications and impact postoperative recovery make them uniquely positioned to assist operating room teams with patient care across the surgical continuum, leading to improved patient outcomes, surgical efficiency, and patient satisfaction.(3) Some examples of the support RNFAs can provide to surgeons include handling tissue, ligating vessels, using instruments, suturing, creating a sterile field, positioning the patient after general anesthesia, and monitoring patient progress. One perioperative care nurse who reported on her experience in a case study described using her advanced skills as an RNFA to manage a patient's hemorrhage after a total abdominal hysterectomy by identifying the condition and risk factors of the patient and performing a physical examination to ultimately recommend life-saving surgery.(4)

A qualitative study highlighted that nurses acting as non-medical surgical assistants (NMSAs) have demonstrated an ability to maintain surgical services and enhance perioperative care provided to Australians by decreasing theatre preparation and true operating time, allowing for more procedures per session, and subsequently enhancing cost-effectiveness.(5) However, the use of NMSAs in the private sector rather than the public sector was found to be the preference of most Australian surgeons in a 2017 survey, as they felt that their integration into the public sector may negatively affect the training of junior doctors.(6) Lastly, one retrospective study that assessed the effectiveness of using nurse clinicians as NMSAs compared to medical surgical assistants concluded that there were no statistically

significant differences in patient outcomes based on the type of surgical assistant employed, highlighting the viability of utilizing nurse clinicians in these roles.(7)

We also identified evidence exploring characteristics of surgical assistants in surgical care that can impact surgical times and outcomes. Familiarity of certified surgical assistants with operating settings and supporting the surgeon was found to reduce operation time and minimize complications during complex surgeries, according to a 2018 retrospective study.(8) However, another study we identified found that the level of training of a surgical assistant (i.e., first-year residents compared to second-, third-, or fourth-year residents) may not have any significant bearing on operation time and outcomes.(9) Consistency in the surgical care team was also found to be impactful. A recent study evaluating the effect of surgical team consistency on surgical efficiency and patient outcomes found that surgical care teams consistently comprised a certified surgical assistant, certified surgical technologist, and a circulating nurse were found to reduce time to first incision, procedure duration, turnover time, and odds of prolonged hospitalization compared to low-consistency teams.(10) Personal qualities (e.g., calmness, courage, and confidence) were also identified as potentially playing a big role in providing quality surgical assistance, alongside technical skills and knowledge.(11)

Finally, we found that technological advancements may be cost-beneficial but reduce the need for traditional uses of surgical assistants. A 2017 study exploring the utilization of surgical assistants during vitreoretinal surgeries in the U.S. from 2000 to 2014 attributed the significant decline in reliance on surgical assistants to technological advancements that enhanced surgeon autonomy (e.g., hands-free viewing systems and small-gauge vitrectomy) and the decline in scleral buckling procedures, which traditionally require more assistant involvement.(12) While technologies may provide means to carry out certain tasks of surgical assistants, these advancements can be seen as additional supports for the surgical team rather than replacements for surgical assistants. For example, another 2017 study highlighted that the benefits of using robotic camera holders during surgeries included addressing surgical assistant fatigue and image tremor and providing a cost-effective approach to broaden service delivery.(13)

Key findings from jurisdictional scans

International perspectives on the role and impacts of perioperative surgical-team assistants

Across the jurisdictional scans we conducted for Australia, New Zealand, the U.K., and in two states in the U.S. (California/New York), surgical assistants consisted of a variety of health professionals responsible for supporting surgical teams, usually through: 1) enhancing communication between the patient, theatre team, and ward; 2) facilitating patient transition to surgery and to post-surgery anesthetic care units; 3) preparing, sanitizing, and manipulating surgical equipment and instruments; and 4) handling tissues or manipulating organs for exposure or access as well as assistance with wound closure and application of dressings. Efforts to better leverage surgical-team assistants who perform perioperative care-support duties for surgical care pathways generally consisted of: 1) standards and organizing frameworks informing how surgical assistants contribute to perioperative care teams; 2) guidelines and toolkits to provide practical guidance for perioperative care (including for surgical assistants); and 3) training and education to improve competencies related to perioperative care for health providers to step into or improve their competencies in surgical assistant roles.

Standards and organizing frameworks for perioperative care provide standards for professional practice, health human resource needs, and safe care environments. In Australia, for example, the Australian College of Perioperative Nurses (ACORN) sets standards for perioperative nurses and interdisciplinary teams to ensure safety and quality care. The Framework for Perioperative Care in Australia and New Zealand provides a broader framework for medical staff for their respective roles within perioperative medicine teams, including nurses and allied health staff providing supportive roles, and ensures they work with surgeons and primary care doctors more effectively. In the U.K., the Allied Health Professionals: Critical Care Professional Development Framework outlines how physiotherapists, occupational therapists, speech and language therapists, dieticians, therapy support workers, and other allied health professionals should be skilled up to help support perioperative care.

Guidelines and toolkits were the most common example we found in our jurisdictional scan for optimizing health human resources on perioperative surgical teams. In the U.K., it is recommended that Surgical First Assistants follow the Association for Perioperative Practice Voluntary Code of Conduct for Registered Practitioners Working in Advanced Surgical Roles. Other guidelines work to support other health professionals performing surgical assistant tasks. The Centre for Perioperative Care's Guidance on Establishing and Delivering Enhanced Perioperative Care Services provides workforce considerations for nurses, allied health professionals, pharmacists, administrators, and other medical providers involved in perioperative care. Among these, it suggests that although nurses in acute areas of care will have transferable skills that assist their transition to enhanced perioperative care roles, opportunities should also be given to anyone interested in this service. Additionally, specialist nurses (e.g., pain, stoma, and enhanced recovery nurses) should have input into postoperative care planning in the enhanced perioperative care unit and an onsite clinical nurse educator with appropriate competencies should also be available. The Perioperative Toolkit in New South Wales, Australia, aims to improve the quality of perioperative care for patients undergoing surgery and anesthesia by employing evidence-based practices and clinical reasoning focused on: 1) measuring outcomes to promote quality improvement; 2) improving preoperative and pre-habilitation supports; and 3) enhancing care for high-risk patients with chronic multisystem diseases undergoing moderate to major surgeries.

Examples of training and education that we identified largely included certificates and in-work training programs, as well as postgraduate qualifications. For example, in the U.K., Surgical First Assistants are trained through the completion of nationally recognized programs of study through accredited programs or through in-house training packages. Health professionals are eligible for training after one to two years of post-registration experience. For hospitals to ensure that there is enough staff with adequate training to provide surgical assistance, it is recommended that at least one nurse on each shift hold or be working towards a postgraduate qualification relevant to enhanced perioperative care, and that the core team working in enhanced perioperative care should possess the National Competency Framework for Registered Practitioners: Level 1 Patients and Enhanced Care Areas (or be working towards achieving it). In Australia, the Rural Perioperative Team Training Program by Queensland Health is an initiative that aims to support clinicians in rural and remote Queensland to deliver and sustain safe healthcare services through comprehensive team-focused training programs that improve role understanding, communication, staff satisfaction, patient safety, performance, and healthcare quality. In New York, and the United States more broadly, Surgical Assistants can be certified through education programs of the National Board of Surgical Technology and Surgical Assisting (NBSTSA), the National Commission for the Certification of Surgical Assistants (NCCSA), and the American Board of Surgical Assistants (ABSA). In New York State, Registered Specialist Assistants must be 21 years or older and meet education, examination, and experience requirements related to their specific area of specialty. Finally, the Mount Sinai Perioperative Nursing course provides training and education on the standards of the Association of periOperative Registered Nurses' Perioperative program to new graduate nurses or nurses previously employed in non-operating room nursing positions, which consists of an eight-week course that includes online and didactic coursework with hands-on practice and 50 hours of clinical observation.

Canadian perspectives on the role and impacts of perioperative surgical-team assistants

In Canada, approaches to support surgical assistants and leverage other health professionals to perform surgical assistance tasks and roles vary considerably across provinces. However, all provinces recognize Registered Nurse First Assistants as an enhanced perioperative nursing practice. Operating Room Nurses Association of Canada highlights the roles nurses can play to support perioperative surgical support teams to improve quality of care and relieve surgeons. Nurses can also participate as Anaesthesia Assistants to monitor vitals and administer anesthetic medication. Nurses should have a minimum of 2,000 hours of clinical experience in the operating room, intensive care unit, or emergency department. In Manitoba, Operating Room Assistants can be trained through a comprehensive 12-week paid program to prepare for a full-time role working alongside surgical team members to perform tasks such as managing sterile instrumentation and sterile field; assisting with preparation of surgical instruments before a procedure; safe positioning and transfer of patients; and post-procedure handling and cleaning

of instruments, supplies, and equipment necessary during the procedure. Between April 2020 and June 2023, the province of British Columbia hired 385 perioperative nurses to support the increased volume of patient surgeries.

Like other countries, many Canadian provinces provide additional training to enhance health provider capabilities to perform surgical assistance tasks and roles. Training health professionals to perform surgery roles largely focused on certificates and in-house training. For example, the British Columbia Institute of Technology (BCIT) offers an advanced certificate in perioperative nursing (online delivery) and a combined perioperative nursing specialty program (online delivery). In Alberta, Foothills Medical Centre offers a 14-week Post-Graduate Perioperative Program that supports registered nurses in obtaining advanced training in perioperative medicine, and MacEwan University offers a post-diploma certificate in perioperative nursing through its Faculty of Nursing that consists of five online courses over the course of the fall, winter, and spring/summer terms. The University of Calgary offers a Perioperative Medicine Fellowship that focuses on risk stratification and mitigation from surgical planning to the patient's transition back to the community. Saskatchewan Polytechnic's advanced certificate in perioperative nursing programs for registered nurses and licensed practical nurses provide 33-week programs for preparing nurses for perioperative roles. In Ontario, perioperative nursing programs are offered to registered nurses by Fanshawe College, Durham College, George Brown College, and Centennial College.

Additional supports to better leverage health professionals in surgical assistant roles include guidelines and perioperative team models that work to coordinate team members by clarifying roles and expectations. For example, the Nova Scotia's Collaborative Care Guidelines for Perioperative Nurses has recommendations for the scope of practice of registered and licensed practical nurses on the surgical team. Pre-surgery, nurses can be engaged in the surgical planning and care team and preparing the patient and operating room. During surgery, nurses can provide surgical instruments (e.g., tools and lights), assist with keeping the surgical area sterile and organized, assist with drapes, and provide supports towards maintaining client dignity. While no outcomes were reported, perioperative nurses are expected to improve health outcomes and safety and decrease complications in the surgical room. Similarly, the Department of Northwest Territories Health and Social Services Authority provides guidelines for registered nurses providing operative assistance and Licensed Practical Nurses (LPN) supporting as surgical-team assistants. In B.C., an Anaesthetic Care Team model of care leveraging Anesthetic Assistants has been identified as a viable solution to allow for anesthesiologists to respond to the increased clinical demands of the health system. An initial analysis of Anesthetic Assistants working in these models demonstrated overwhelmingly positive responses for enhanced safety climate and job satisfaction among anesthesiologists, surgeons, and anesthesia assistants, as well as bringing about cost savings. Finally, Enhanced Recovery After Surgery models (ERAS) have been used across a number of contexts and for a number of types of surgical procedures to help coordinate the perioperative teams' work. ERAS teams generally consist of at least a surgeon, anesthesiologist, and nurse coordinator that serves to support patients' transitions through pre-, intra-, and postoperative stages while supporting communication across perioperative team members.

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The rapid-response program through which this synthesis was prepared is funded by the British Columbia Ministry of Health. The McMaster Health Forum receives both financial and in-kind support from McMaster University. The views expressed in the rapid synthesis are the views of the authors and should not be taken to represent the views of the British Columbia Ministry of Health or McMaster University.

ISSN 2292-7999 (online)