McMaster University | HEALTH FORUM

RISE Rapid-Improvement Support and Exchange

Rapid Evidence Profile #33

(11 August 2022)

Question

What is known from the evidence about optimizing out-of-hospital surgical capacity to reduce waitlists?

What we found

Following the COVID-19 pandemic, the surgical backlog has led to calls from healthcare leaders and professional associations (including in a commissioned report by the OMA) to reconsider how we deliver surgical care in Ontario. One solution is to consider how to further optimize the use of out-of-hospital surgical capacity in Ontario to reduce surgical waitlists.

To inform these approaches, we identified evidence, as well as experiences from four countries chosen (Australia, New Zealand, U.K. and U.S.) and all Canadian provinces and territories (see Box 1 for a description of our approach). We organized our findings using the framework below, which was drawn largely from an evidence brief conducted in 2013 to inform the development of community-based specialty clinics. While the COVID-19 pandemic has added a dimension to the literature, the findings from this evidence brief continue to be relevant to inform current decisions. Note that the health human resource crisis that has contributed to the problem and the policy solutions that are being put in place to address the crisis were considered out-of-scope for this rapid evidence profile.

Organizing framework

- **Identifying settings to optimize out-of-hospital surgical procedures**
  - Commissioning new out-of-hospital settings to provide surgical procedures
    - Adjusting features of existing organizations that would enable them to be eligible to be commissioned

Box 1: Our approach

We identified evidence addressing the question by searching: 1) ACCESSSS; 2) Health Systems Evidence; 3) Cochrane Database of Systematic Reviews (including hand-searches of the Cochrane Effective Practice and Organization of Care Group); 4) the COVID-END database; and 5) PubMed. All searches were conducted between on 5 and 8 August 2022. The search strategies used are included in Appendix 1. We identified jurisdictional experiences from four countries (Australia, New Zealand, U.K. and U.S.) and all Canadian provinces and territories by hand searching government and stakeholder websites for information relevant to the question. Countries were chosen by the requestor as typical comparator countries to Canada.

In addition, we hand-searched an older evidence brief prepared on creating community-based specialty clinics for highly relevant reviews.

We searched for guidelines, full systematic reviews (or review-derived products such as overviews of systematic reviews), rapid reviews, protocols for systematic reviews, and titles/questions for systematic reviews or rapid reviews that have been identified as either being conducted or prioritized to be conducted, and primary studies.

We appraised the methodological quality of full systematic reviews and rapid reviews that were deemed to be highly relevant using AMSTAR. Note that quality appraisal scores for rapid reviews are often lower because of the methodological shortcuts that need to be taken to accommodate compressed timeframes. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial or governance arrangements within health systems or to broader social systems. We appraised the quality of the highly relevant guidelines using three domains in AGREE II (stakeholder involvement, rigour of development, and editorial independence) and classified guidelines as high quality if they were scored as 60% or higher on each domain.

        - Identifying new organizations that would be eligible to be commissioned and any restrictions on their eligibility
        - Establishing new infrastructure investments to facilitate commissioning out-of-hospital procedures
        - Adjusting criteria for local impact assessments and establishing the requirements for reporting about adherence to price, volume and quality criteria
    - Leveraging existing out-of-hospital settings already providing surgical procedures
- **Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings**
    - Expanding the list of procedures provided out-of-hospitals
        - Pre-operative procedures
        - Operative procedures
        - Post-operative procedures
    - Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures (i.e., no high-risk patients)
    - Adjusting the price, volume and quality criteria of procedures delivered out-of-hospitals
    - Identifying the appropriate model to bundle surgical procedures in out-of-hospital settings
        - One or very few services (i.e., focused-factory model)
        - A number of services provided by a single subspecialty (i.e., single subspecialty clinic)
        - Many services by a single specialty (i.e., single specialty clinic)
        - Many services by a number of specialties but in a targeted clinical domain (i.e., multi-specialty targeted clinic)
        - Many services by a number of specialties across a wide variety of clinical domains (i.e., ambulatory day clinic or day hospital)
        - All secondary and tertiary care that can be provided safely without an overnight stay (one-stop specialty clinic)
        - All secondary and tertiary care that can be provided safety without an overnight stay and that is delivered with strong integration with primary/community care and public health (i.e., one-stop integrated specialty clinic)
- **Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures**
    - Introducing or changing legislation and other regulatory arrangements that govern what out-of-hospital procedures can be provided, where they are provided, and who provides them
        - Policy authority
        - Organizational authority
        - Commercial authority
        - Professional authority
        - Consumer and stakeholder involvement
    - Introducing or changing financial arrangements to support optimizing out-of-hospital surgical capacity
        - Funding organizations
        - Remunerating providers
        - Adjusting the list of covered/reimbursed organizations, providers, and procedures
        - Adjusting restrictions (or caps) in coverage/reimbursement rates for organizations, providers, and procedures
    - Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
        - Optimizing prioritization, care pathways, and continuity of care
        - Optimizing the health workforce for out-of-hospital procedures

- Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)

We identified 31 evidence documents relevant to the question, of which we deemed 16 to be highly relevant. The highly relevant evidence documents include:

- one scoping review;
- 13 single studies that provide additional insights; and
- two commentaries.

We outline in narrative form below our key findings related to the question from highly relevant evidence documents and based on experiences from other countries and Canadian provinces and territories. A detailed summary of the evidence is provided in Table 1, while experiences from other countries and from Canadian provinces and territories are provided in Table 2 and 3, respectively. A detailed summary of our methods is provided in Appendix 1, the full list of included evidence documents (including those deemed of medium and low relevance) in Appendix 2, and hyperlinks for documents excluded at the final stage of reviewing in Appendix 3.

Key findings from highly relevant evidence sources

There is a significant amount of literature that examines the safety, effectiveness and efficiency of providing surgeries in out-of-hospital settings. While a fulsome review of this literature was out of scope given the timelines for this rapid evidence profile, many of the included reviews and studies indicate that for a growing number of procedures, out-of-hospital surgery can result in significant time and cost-savings without jeopardizing patient safety. However, these decisions require careful consideration of the types of procedures and patients for whom changes in surgical setting is appropriate (including the nature and extent of any volume-outcome relationships).

Relatively few findings from highly relevant sources related to commissioning new out-of-hospital settings, however, one recent medium-quality scoping review examined the use of hospital annexes to prioritize low-complexity surgery. In addition, the previously mentioned evidence brief lays out the process and key considerations for commissioning new settings of care. There is also a dialogue summary available that complements the evidence brief.

Significantly more literature describes integrating or adjusting structures that are already in place to make the best use of current capacity. Examples of these approaches include:

- the development of surgical hub and spoke models, whereby resources are shared and coordinated among surgical centers within existing regional partnerships;
- the use of centralized waitlists or single-entry models for low-complexity, high-volume surgeries;
- reconsidering the prioritization of surgeries from two distinct categories of urgent and elective to a continuum of time-sensitive care to allow some predictable access to scheduled cases based on considerations other than urgency alone (e.g., likelihood of becoming urgent, significant impact on quality of life), which is based on a commentary and not one or more primary research studies;
- implementing new scheduling and booking algorithms that better account for individual surgeons and time needed for surgeries as well as immediate post-operative recovery (based on estimates derived from data on past surgeries);
- pre-booking surgical appointments rather than booking from a wait list;
- extending surgical schedules to allow for weekend surgeries (with the caveat that this is resourced appropriately and does not place additional burden on healthcare workers); and

- developing and implementing enhanced recovery pathways that help to maximize the number of patients able to safely and successfully receive surgeries outside of hospital operating rooms.

In addition to the changes to delivery arrangements, we also identified several supports that can be used to optimize out-of-hospital surgical procedures, including:

- pre-operative calls between surgical nurses and parents or guardians for paediatric surgeries;
- text messaging of pre-operative and post-operative instructions (study 1 and study 2);
- decision aids, clinical decision support and remote surgical coaches to maximize the appropriate use of out-of-hospital settings; and
- triggers in electronic records for improved detection, measurement and tracing of adverse events in out-of-hospital settings.

Key findings from the jurisdictional scan

The jurisdictional scan of experiences from Australia, New Zealand, U.K. and U.S. highlighted that the surgical backlog is a global issue and that many countries are examining how to optimize the use of out-of-hospital settings to address it. Some of the approaches used include:

- purchasing of surgical capacity from the private hospital sector to cover public-sector patients (Australia);
- extending typical hours of operation (Australia, U.S.);
- creating surgical hubs to share resources within regional health partnerships (U.K.);
- extending weekend surgeries for high-volume, low-risk procedures (U.K., U.S.);
- re-evaluating operating room block allocation (U.S.); and
- proactively contacting patients in advance of surgeries to limit cancellations (U.S.).

Note that the terms used for non-hospital surgical facilities vary across settings with them typically called day hospitals or community surgical centres, elective surgical unit in the U.K, and ambulatory surgical centre in the U.S.

In Canadian provinces and territories, non-hospital surgical facilities are used in almost all jurisdictions. Approaches that are being used to optimize their use to reduce surgical wait lists include:

- contracting with private surgical clinics that agree to delivery publicly funded services (B.C., Alberta, Saskatchewan, Manitoba);
- investing financial resources to increase the number of out-of-hospital settings and number of procedures provided within them (Alberta, Saskatchewan, Ontario, Northwest Territories);
- contracting out-of-province (or out-of-territory) surgery clinics to help address waitlists (Saskatchewan, Northwest Territories);
- adjusting diagnostic pre-operative requirements to, where possible, capitalize on more accurate and less resource-intensive procedures (Manitoba);
- expanding the hiring and use of anesthesia clinical assistants to support optimal use of anesthesiologists (Manitoba); and
- expanding the list of procedures provided in out-of-hospital settings (Nova Scotia).

Table 1: Key findings from highly relevant evidence documents on optimizing out-of-hospital surgical capacity

Area of focus		Summary of key findings
Identifying settings to optimize out-of-hospital surgical procedures	Commission new out-of-hospital settings to provide surgical procedures	• One recent scoping review (AMSTAR rating 6/10) found that setting up hospital annexes devoted exclusively to resolving low complexity surgeries reduced wait times for patients needing the prioritized priorities procedures, but only to the extent that additional funds were allocated to support it • One older evidence brief outlines the process of commissioning new out-of-hospital settings to provide surgical procedures and the accompanying systematic reviews to inform decisions for each step
	Leveraging existing out-of-hospital settings already providing surgical procedures	• One recent primary study describes the development of surgical hubs, whereby resources are shared and coordinated within multiple hospitals in a region to ensure surgical procedures can still be undertaken for a centralized wait list of patients while contending with COVID-19 ○ Surgeries were prioritized by local clinical-prioritization groups (multidisciplinary teams of professionals) in an effort to remove decisions removed from a specific specialty and instead allocate decision to hospitals within the 'spoke' based on the level of COVID-19 and anticipated capacity
Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings	Expanding the list of procedures provided out-of-hospitals	• None identified
	Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures	• None identified
	Adjusting the price, volume and quality criteria of procedures delivered out-of-hospitals	• None identified
	Identifying the appropriate model to bundle surgical procedures in out-of-hospital settings	• One older primary study suggested optimizing surgical care by shifting low-complexity surgeries to high-volume, multi-specialty ambulatory surgical centres
Introducing or changing the health-system arrangements required to	Introducing or changing legislation and other regulatory arrangements that govern what out-of-hospital procedures can be provided, where they	• None identified

support optimizing out-of-hospital surgical procedures	are provided, and who provides them	
	Introducing or changing financial arrangements to support optimizing out-of-hospital surgical capacity	• None identified

	Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity	• One recent primary study reported on the use of a pilot weekend surgical program in Ontario that prioritized low-acuity, short surgical procedures with long wait-times (as defined by the provincial out-of-window status) and found that surgical times and turnovers were quicker than comparable lists during the week
		  ○ However, the study noted that it is critical for an expanded version of this approach to be properly resourced to ensure health professionals are not placed under additional pressures
		• One older primary study found that using a data-driven scheduling strategy that takes into consideration the full range of blocked time that patients require as they move from pre-operative to post-operative care increased the capacity of surgical units
		  ○ However, the implementation of this model led to significant rescheduling of surgical times and, as a result, required significant managerial and top-down leadership support to implement
		• One older primary study found that pre-booking surgical appointments rather than booking from a waitlist reduced the risk of surgery cancellation for both high-priority and medium-priority elective procedures
		  ○ The study also found that a larger proportion of patients on wait lists were likely to undergo their operation if procedures were pre-booked with the surgeon at the time of deciding to operate
		• One recent primary study examined the differences in complexity of surgeries completed in large academic medical hospitals compared to outpatient ambulatory settings and found ambulatory settings had lower rates of surgical procedures considered physiologically complex, often with lower-risk patients
		  ○ Recommendations from the study for screening patients for appropriateness of outpatient surgery include screening for co-morbidities, obesity and high body mass index, obstructive sleep apnea, and risk of hospital admission based historic data from surgery type
		  ○ Similarly, a second primary study found the use of an algorithm to stratify patients for surgery in ambulatory surgical centres (including by level of comorbidity and age), resulted in a low rate of perioperative complications and zero hospital admissions
		• One recent primary study found the use of carefully planned enhanced recovery pathways maximized the number of patients able to successfully undergo outpatient joint replacement without additional post-surgical complications

		○ Key components of the pathway included patient engagement, creation of goals/expectations, the development of an individualized opioid-sparing multimodal pain control program, and a JointCoach to support patient follow-up • One recent commentary suggests the use of a single-entry model that addresses waitlists by creating a single queue that directs each patient to the next available provider based on their acuity and placement ○ The commentary cites single studies which have found that these approaches have reduced wait times for elective surgeries such as joint replacements, cardiac surgeries, cancer surgeries and transplantations ○ The commentary notes that this is only suitable for common and standardized procedures • A second recent commentary on the surgery backlog in Ontario suggests reframing the categorization of surgeries as urgent or elective to instead considering it as a continuum of time-sensitive care, allowing urgent cases that can wait until the end of their urgency window to do so and allowing for predictable access to scheduled cases ○ In addition, the commentary makes a number of other suggestions for innovations to address surgical wait lists, including: schedule changes to permit increased capacity when demands are predictably lower such as in the spring and summer and on the weekends; implementing novel surgical booking systems (including centralized booking and machine learning algorithms); and developing ambulatory surgical centres that function within regional healthcare partnerships rather than as siloed entities
	Optimizing the supports available for out-of-hospital procedures	• One recent primary study found pre-operative calls for pediatric surgeries between nurses and parents or guardians reduced surgery cancellation rates by 8% within three months • Two recent primary studies (1, 2) examined the use of text messages for pre-operative and post-operative follow-up and found them to be an efficient tool to confirm information with patients ○ One of the studies found that pre-operative text messages increased compliance to pre-operative instructions, time of arrival, fasting and hygiene rules, resulting in fewer surgery cancellations • One recent primary study found the use of triggers within an electronic record (compared to surgeon self-reporting) allowed for improved detection, measurement, and tracing of adverse events in outpatient settings ○ Triggers were used as 'red flags' to initiate more detailed chart audits and in some cases were used as opportunities to prevent adverse events and future hospitalizations ○ Triggers independently associated with adverse events include antibiotic prescription within 90 days of surgery, emergency department visit within 90 days of surgery, and bone, joint or blood culture within 90 days of surgery • One older primary study described methods to improve the value of outpatient surgical care at ambulatory surgical centres, including using decision aids and clinical decision-supports as well as providing surgical coaching

Table 2: Experiences in other countries optimizing out-of-hospital surgical capacity

Country	Summary of experiences
Australia	• The Australian Commission on Safety and Quality in Health Care (ACSQHC) is responsible for safety and quality improvement, including establishing standards for day surgery centers to ensure accreditation • The Government of Australia recently updated a 2020-2021 report about Australia's hospitals at a glance o The government established new modes of delivering healthcare services such as telehealth and virtual-care models to re-direct patients seeking non-urgent care o Due to restrictions of elective surgery, wait times increased for tonsillectomy, varicose vein treatment, and total knee replacement o 50% of patients waited at least 48 days for admission from elective surgery waiting lists in 2020-2021, with longer admission times for Indigenous Australians • On 31 March 2020, the Australian government announced a partnership with the private hospital sector, where state and territory governments were able to purchase surgical capacity for public patients, with 50% of the cost covered by the national government o The volume of public hospital elective surgery admission was down by 10% in 2019-2020 compared to 2018-2019; non-elective surgery declined the most (18.4% in 2018-2019 compared to 2019-2020) • According to a 2019 report from Day Hospitals Australia, there are 357 private stand-alone facilities that provide surgical, diagnostic, and medical care, which can include for-profit and non-for profit organizations, large corporate, religious or single owner operators and private health insurance funds o Approximately 60% of all acute procedures are performed in day hospitals, and nearly 90% of some specialties such as ophthalmology are performed in o Facilities range from one-theatre units to large theatre complexes, and some have moved to 23-hour licensing for a wide range of service delivery in different specialties (e.g., general surgery, oncology, and orthopedic) o Innovations in anesthesia and new surgical techniques have contributed to the rapid growth in day surgery
New Zealand	• Widespread delays and cancellation of surgeries were reported in every public hospital in New Zealand in July 2022 because of winter illnesses, and the Minister of Health has announced that a taskforce is in the process of creating a national plan to tackle the backlog and long wait lists that has caused delays in care • Elective surgery in New Zealand is provided in a two-tiered system by both publicly funded and private hospitals, but it is unclear if any actions have been taken to outsource elective surgeries to out-of-hospital settings
United Kingdom	• In February 2022, the NHS released a Delivery Plan for Tackling the COVID-19 backlog of elective surgical care that sets out an agenda for how the NHS will recover elective surgeries during the next three years by focusing on four areas of delivery: o Increasing healthcare service capacity – Elective and urgent/emergency services will be separated while expanding elective and diagnostic service capacity to ensure the resilience of elective delivery o Prioritising diagnosis and treatment – This will include a return to the delivery of the six-week diagnostic standard, and providing patients with alternative locations for treatment with shorter wait times if they have been waiting a long time for care o Transforming how elective care is provided – Examples include increasing activity using surgical hubs, reforming the delivery of outpatient appointments, and increasing flexibility for patients needing elective surgeries

	○ Providing better information to patients using digital technology • To support elective recovery as described in its Delivery Plan, the UK Government plans to invest £5.9 billion in capital for new beds, equipment, and technology • A criticism of the NHS's Delivery Plan from an opinion piece is that the proposed plan does not provide sufficient detail on which parts of the health system the plan aims to address, the accountability and structure for delivering the plan, how the private sector will play a part in reducing backlog, and exactly how the health workforce will be expanded • As of 6 April 2022, the first ever Health and Social Care Levy in the UK began raising funding for tackling the COVID-19 backlog and delivering up to 160 community diagnostic centres across the country ○ In addition to the community diagnostic centres, levy funding will support the delivery of nine million checks, scans and operations by 2025, new surgical "hubs" that will add to the existing network of over 40 hubs that help to reduce wait times for cataract surgery and hip replacements, and expanded operating theatres and diagnostic centres for cancer ○ It is anticipated that over £36million over the next three years will be accumulated to invest in the health and social care system • A new online service, My Planned Care, has been created by NHS England to inform patients about wait times and advise them on how to prepare for treatment ○ The website is updated weekly, and users can search for their hospital and the specialty service required by region • Moorfields Eye Hospital has carried out 725 operations in one week by using surgical hubs to reduce the time cataract patients spend in hospital, while Nottingham NHS Trust has launched 'Super Saturdays' during which NHS staff perform cataract services all day to reduce changeover times for staff and equipment
United States	• Ambulatory surgery centers (ASCs) provide same-day surgical care as an alternative to hospital-based outpatient procedures ○ Oversight of ASCs are regulated by state and federal government to ensure patient safety, where most are Medicare certified and accredited by major independent healthcare rating agencies ○ Of the Medicare-certified ASCs by specialty type, the most common are orthopedic (37%), pain (35%), ophthalmology (35%), and endoscopy (32%) ○ Of the single-speciality, Medicare-certified ASCs by specialty type, the most common are ophthalmology (25%), endoscopy (27%), and other (18%) ○ Of the multi-specialty, Medicare-certified ASCs by specialty type, the most common are orthopedic (69%), pain (60%), podiatry (54%), and plastic (52%) ○ Based on a recent ambulatory surgery care association (ASCA) survey, 52% of ASCs are physician-owned, 21% physician-hospital owned, 15% physician-corporation owned • A U.S. survey conducted by McKinsey identified a range of different approaches are being used to clear the surgical backlog, many of which focus on improving the use of existing infrastructure, including: ○ extending typical hours of operation, including scheduling elective procedures on weekends; ○ reevaluating operating-room block allocations; ○ proactively contacting patients in advance to limit cancellations; ○ hiring additional staff; and ○ increasing the use of virtual care to enhance outpatient access and management of post-operative care.

Table 3: Experiences in Canada optimizing out-of-hospital surgical capacity

Province	Summary of experiences

British Columbia	• The College of Physicians and Surgeons of British Columbia's Non-Hospital Medical and Surgical Facilities Accreditation Program (NHMSFAP) assesses and accredits out-of-hospital surgical facilities
	  ○ The NHMSFAP governs both out-of-hospital surgical facilities as well as physicians that provide services in these facilities
	• The NHMSFAP has established standards, guidelines, and policies for out-of-hospital surgical facilities that cover the following domains:
	  ○ Facilities management
	  ○ Patient experience
	  ○ Procedure specific standards and policies
	  ○ Building services
	  ○ Emergency preparedness
	  ○ Infection prevention and control
	  ○ Safety and risk
	  ○ Procedural pain management
	• All medical staff working in out-of-hospital surgical facilities in BC must apply to the NHMSFAP for the privilege to provide a predetermined set of procedures in these facilities
	  ○ These applications first go through the facility's medical director, who then submits the application to the NHMSFAP
	  ○ The granting of these privileges is subject to the requirements set out in the BC Medical Quality Initiative dictionaries for each medical specialty
	• The NHMSFAP also governs the construction, renovation, and other aspects related to the physical infrastructure of out-of-hospital surgical facilities
	  ○ Accredited facilities must adhere to the Canadian Standards Association (CSA) Z8000 standard for the planning, design and construction of health-care facilities
	  ○ Groups interested in establishing new facilities are instructed to involve the College as well as an experienced healthcare interdisciplinary design team before beginning construction
	• The BC government's 7 May 2020 'Commitment to Surgical Renewal in BC' mentions that increasing capacity at contracted private surgical clinics that agree to follow the Canada Health Act and not extra bill patients is one way to increase surgical capacity and deal with the pandemic-induced surgical backlog
	• The appeal claim in the *Cambie Surgeries Corporation v. British Columbia (Attorney General)* case was recently dismissed by the Court of Appeal for British Columbia
	  ○ This case centers around the right of patients to pay out-of-pocket or obtain private insurance for medically necessary care for which they would face long wait times in the public system
	• A 2015 CADTH environmental scan identifies that a range of surgeries are performed in out-of-hospital settings in BC; however, endoscopy and extended stay procedures are not performed out-of-hospital

Alberta	• In *Budget 2022*, a total of $133 million has been allocated for the Alberta Surgical Initiative Capital Program – an initiative that looks to increase surgical capacity and ensure patients have surgeries within clinically recommended timeframes
	  ○ A key driver in achieving the program's target of decreasing wait times by 2023 is the utilization of Chartered Surgical Facilities
	  ○ Alberta Health Services currently has contracts in place to provide publicly funded, out-of-hospital surgeries in chartered surgical facilities in the following specialties: ophthalmology, orthopedics, dermatology, ear, nose and throat (ENT), oral and maxillofacial surgery, gynecology, and non-cosmetic plastic surgery (though, a primary focus is in ophthalmology and orthopedics)
	  ○ 96% of cataract procedures in Calgary were conducted in non-hospital surgical facilities
	  ○ To provide services, chartered surgical facilities must be accredited by the College of Physicians and Surgeons of Alberta, have a signed contractual agreement with the Alberta Health Services, and approval and chartered surgical facilities designation by the Minister
	  ○ Alberta Health Services has 51 contracts over 42 chartered surgical facilities, and perform nearly 40,000 surgeries per year; the goal is to have them perform 90,000 surgeries per year by 2023
	• During the COVID-19 pandemic, Alberta was able to minimize the number of delayed surgeries compared to neighbouring provinces through the use of its chartered surgical facilities (e.g., the province was able to maintain approximately 93% of the total number of surgeries between April 2020 and March 2021 as compared to the same period of the previous year)
	• To help with the surgical backlog from COVID-19, Alberta Health Services signed new orthopedic contracts and renewed existing ones with many current chartered surgical facilities providers, including:
	  ○ Ophthalmology to 31 December 2021;
	  ○ ENT to 31 March 2022;
	  ○ Plastic Surgery to 31 March 2022; and
	  ○ Dermatology to 31 March 2022
	• On 13 April 2021, a Request for Proposal call for increased ophthalmology chartered surgical facilities was released by the Alberta Health Services
	  ○ As of 1 April 2022, contracts with two additional chartered surgical facilities were made and these will help to provide 20,000 ophthalmology procedures in Calgary and 10,000 cataract surgeries in Edmonton
	  ○ As of July 2020, the Health Care Protection Act and Health Care Protection Regulation was renamed to be the Health Facilities Act and Health Facilities Regulation, with amendments made to the Health Facilities Act to incorporate the operation of surgical services in chartered surgical facilities

Saskatchewan	• The College of Physicians and Surgeons of Saskatchewan governs non-hospital treatment facilities and generally requires these facilities to seek approval from the College
	  ○ College bylaws stipulate accepted procedures for non-hospital treatment facilities, and each approved facility is limited to performing the set of procedures for which it has been approved
	  ○ Approval of a facility is dependent of meeting the standards and guidelines for non-hospital surgical facilities defined by the College of Physicians and Surgeons of Alberta (Saskatchewan has adopted these guidelines with few modifications)

	• Facilities that seek to perform publicly funded procedures are required to obtain a Health Facilities License from the Government of Saskatchewan
	• The Government of Saskatchewan's 9 December 2021 plan for eliminating the COVID surgical backlog includes mention of expanding surgical capacity at publicly funded private clinics
	  ○ This plan mentions that existing partnerships with private surgical providers will be expanded to include more types of surgeries
	  ○ The plan also mentions that additional third-party surgical providers will be sought out for day procedures, overnight inpatient surgeries, and post-operative care
	• The Government of Saskatchewan is reportedly issuing a formal request for a private company to build an out-of-hospital site to increase operating room and bed capacity for in-patient joint replacements as well as a variety of day surgery procedures
	  ○ The same article also mentions that the Ministry of Health is exploring contracting an out-of-province surgery clinic to take on patients on the province's hip and knee surgery waitlist
	• A 2015 CADTH environmental scan identifies that a range of surgeries are performed in out-of-hospital settings in Saskatchewan; however, the following surgical categories are not supported in out-of-hospital settings
	  ○ Dentistry
	  ○ Ear, nose, throat
	  ○ Neurosurgery
	  ○ Podiatric
	  ○ Vascular

Manitoba	• As of 23 February 2022, there are nine accredited Non-Hospital Medical and Surgical Facilities (NHMSFs) in the province, of which seven are fully accredited and two hold a temporary accreditation status through the College of Physicians and Surgeons of Manitoba
	• A 2015 environmental scan on non-hospital surgical interventions conducted by CADTH revealed that NHMSFs currently engage in surgical procedures in the following specialties: dentistry, endoscopy, ear, nose and throat, ophthalmology, orthopedics, and plastics
	• The Government of Manitoba formed the Diagnostic and Surgical Recovery Task Force in December 2021 to address services affected by the COVID-19 pandemic
	  ○ On 19 January 2022, it was announced that contracts have been signed with local providers to increase the number of gynecology, spine, and diagnostic procedures
	  ○ Over $8.8 million have been invested in agreements with public and private service providers to help support surgical capacity – this has resulted in an additional 9,000 procedures being completed
	  ○ Alongside requests for supply arrangement (which help to increase surgical capacity), the province has had pre-existing agreements with Western Surgery Centre and Maples Surgical Centre

Ontario	• On 23 June 2021, the Ontario Government announced a $30 million Surgical Innovation Fund, which will help to support surgical capacity across the province – a portion of this is dedicated to utilizing existing spaces to provide additional operating room output

	• On 28 July 2021, the Ontario Government issued a news release, which revealed an investment of up to $24 million to help support community alternatives to surgical care in hospitals
	  ○ This investment will help support low-risk, publicly funded surgical and diagnostic services in new and existing independent health facilities
	• While independent health facilities were introduced in Ontario over 30 years ago, it is reported that this model of care has not been able to sustain the evolving needs of the province's patients (the vast majority of these facilities are licensed for diagnostic services as opposed to surgical procedures)
	• Kensington Health is currently an existing care facility that has been providing surgical procedures, such as colonoscopies and cataract surgeries for patients
	  ○ Under the request of the Ministry of Health, this facility performed an additional 500 procedures to help decrease the existing surgical backlog facing the province due to the COVID-19 pandemic
	• On 16 February 2022, the Ontario Medical Association (OMA) released a comprehensive report highlighting their proposal for Integrated Ambulatory Centres, a new model of care which aims to increase surgical and procedural service capacity
	  ○ Integrated Ambulatory Centres would provide a wide array of low-complexity surgeries and procedures in many specialties, including orthopedics, gynecology, urology, plastics, otolaryngology, and ophthalmology
	  ○ They would work closely with local hospitals and operate in parallel to out-of-hospital premises and independent health facilities; a future goal is to have them integrated in Ontario Health Teams to streamline health care experiences for Ontarians
	  ○ Appropriate measures would be in place to ensure credentialling of physicians, funding alignment, and quality oversight
	  ○ Surgeries and procedures at these locations are publicly funded, embedded in transparent reporting processes, and will comply with the Canada Health Act
	  ○ The proposal mentions a three-stage approach over the course of the next five to eight years, with stage one focusing on increasing surgical capacity in existing structures in the short-term, stage two focusing on constructing new infrastructure for a regional approach, and stage three focusing on full system integration, scaling of the model, and refining the transition for patients
	  ○ Potential long-term benefits of this new model of care include shorter wait times for patients, reduced burnout and better collaboration among health professionals, and increased capacity for hospitals

Quebec	• The Collège des Médecins du Québec published guidelines in 2011 regarding procedures and interventions in out-of-hospital settings; the guidelines acknowledge the role of these facilities in boosting system capacity
	  ○ The guidelines define different categories of medical and surgical procedures and patient risk profiles, and proposes limits on the types of procedures that can safely be performed in out-of-hospital settings
	  ○ The guidelines pay special attention to managing emergency situations in out-of-hospital settings
	  ○ Other topics addressed in the guidelines include: patient follow-up, infection prevention, record keeping, consent, management of biomedical waste, protection of health workers, tissue samples, registries, care guidelines and algorithms, security measures, and human and material resources
	• A 2015 CADTH environmental scan identifies that the following categories of surgeries are performed in out-of-hospital settings in Quebec:

	○ Ear, nose, throat ○ General surgery ○ Gynecologic ○ Ophthalmologic ○ Orthopaedic ○ Vascular
New Brunswick	• A 2015 environmental scan conducted by CADTH noted that non-hospital surgical facilities in New Brunswick routinely engage in dermatology, gynecology, ophthalmology, orthopedics, plastics, urology, and vascular procedures ○ It was further reported that additional surgical procedures are under consideration at these sites, such as pacemaker insertions, hysteroscopy, and bronchoscopy
Nova Scotia	• A 2015 CADTH environmental scan identifies that dental and orthopaedic procedures are performed in out-of-hospital settings in Nova Scotia • In December 2021, the province of Nova Scotia began a trial to move some less-complex pediatric surgical cases from the major pediatric hospital in Halifax (IWK Health Centre) to a private surgical clinic (Scotia Surgery) to help with wait times ○ The surgeons and anesthesiologists employed for these procedures are coming from IWK Health Centre, while the nurses are Scotia Surgery staff
Prince Edward Island	• A nurse practitioner-led Orthopedic Intervention Clinic was opened in 2018 to provide faster pre-surgical and non-surgical orthopedic care ○ The nurse practitioner running the clinic collaborates with the island's six orthopedic surgeons to determine the suitability of surgical intervention and provide non-operative treatments
Newfoundland and Labrador	• In 2020, the Department of Health and Community services released their policy for cataract surgeries in Non-Hospital Designated Facilities ○ The primary aim of these sites is to decrease wait times and improve patient access to surgical procedures in the province ○ In order for these facilities to perform cataract surgeries, they must satisfy all of the outlined requirements and receive statutory approval as a "designated facility" from the Lieutenant-Governor in Council under the Medical Care and Hospital Insurance Act ○ Requirements for sites wishing to receive a "designated facility" status include accreditation by Accreditation Canada within 24 months of receiving approval and maintaining good standing afterwards, successfully passing an external facility verification to confirm that the site meets health industry standards, having an ophthalmologist who is in good standing with the college of Physicians and Surgeons of Newfoundland and Labrador, and liability insurance
Yukon	• No information identified
Northwest Territories	• On 4 November 2020, the Health and Social Services Authority issued a news release which discussed alternate surgical service pathways that are being explored in the province, including: ○ Collaborating with provincial partners to conduct surgical procedures in Alberta ○ Performing surgeries at various other sites within the territory (primarily Inuvik)
Nunavut	• No information identified

Waddell K, Moat KA, , DeMaio P, Alam SA, Sharma K, Bhuiya A, Bain T, Wilson MG, Lavis JN. Rapid evidence profile #33: What is known from the evidence about optimizing out-of-hospital surgical capacity to reduce waitlists? Hamilton: McMaster Health Forum, 10 August 2022.

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Appendix 1: Methodological details

We use a standard protocol for preparing rapid evidence profiles (REP) to ensure that our approach to identifying research evidence as well as experiences from Canadian provinces and territories are as systematic and transparent as possible in the time we were given to prepare the profile.

Identifying research evidence

For this REP, we searched our continually updated inventory of best evidence syntheses and guide to key COVID-19 evidence sources for:

1) guidelines (defined as providing recommendations or other normative statements derived from an explicit process for evidence synthesis);
2) full systematic reviews;
3) rapid reviews;
4) protocols for reviews or rapid reviews that are underway;
5) titles/questions for reviews that are being planned; and
6) single studies (when no guidelines, systematic reviews or rapid reviews are identified).

We also searched Health Systems Evidence using (surgery OR surgical) AND (wait*list OR wait*time OR capacity) in the open search.

Each source for these documents is assigned to one team member who conducts hand searches (when a source contains a smaller number of documents) or keyword searches to identify potentially relevant documents. A final inclusion assessment is performed both by the person who did the initial screening and the lead author of the rapid evidence profile, with disagreements resolved by consensus or with the input of a third reviewer on the team. The team uses a dedicated virtual channel to discuss and iteratively refine inclusion/exclusion criteria throughout the process, which provides a running list of considerations that all members can consult during the first stages of assessment.

During this process we include published, pre-print and grey literature. We do not exclude documents based on the language of a document. However, we are not able to extract key findings from documents that are written in languages other than Chinese, English, French or Spanish. We provide any documents that do not have content available in these languages in an appendix containing documents excluded at the final stages of reviewing.

Identifying experiences from Canadian provinces and territories

For each REP we search several sources to identify experiences. This includes government-response trackers that document national responses to the pandemic, as well as relevant government and ministry websites. For example, we search websites from relevant federal and provincial governments, ministries and agencies (e.g., Public Health Agency of Canada).

While we do not exclude countries based on language, where information is not available through the government-response trackers, we are unable to extract information about countries that do not use English, Chinese, French or Spanish as an official language.

Assessing relevance and quality of evidence

We assess the relevance of each included evidence document as being of high, moderate or low relevance to the question. We then use a colour gradient to reflect high (darkest blue) to low (lightest blue) relevance.

Two reviewers independently appraised the quality of the guidelines we identified as being highly relevant using AGREE II. We used three domains in the tool (stakeholder involvement, rigour of development and editorial independence) and classified guidelines as high quality if they were scored as 60% or higher across each of these domains.

Two reviewers independently appraise the methodological quality of systematic reviews and rapid reviews that are deemed to be highly relevant. Disagreements are resolved by consensus with a third reviewer if needed. AMSTAR rates overall methodological quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. High-quality reviews are those with scores of eight or higher out of a possible 11, medium-quality reviews are those with scores between four and seven, and low-quality reviews are those with scores less than four. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to health-system arrangements or to economic and social responses to COVID-19. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered 'high scores.' A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8.

Preparing the profile

Each included document is hyperlinked to its original source to facilitate easy retrieval. For all included guidelines, systematic reviews, rapid reviews and single studies (when included), we prepare a small number of bullet points that provide a brief summary of the key findings, which are used to summarize key messages in the text. Protocols and titles/questions have their titles hyperlinked given that findings are not yet available. We then draft a brief summary that highlights the total number of different types of highly relevant documents identified (organized by document), as well as their key findings, date of last search (or date last updated or published), and methodological quality.

Appendix 2: Key findings from evidence documents that address the question, organized by document type and sorted by relevance to the question

Type of document	Relevance to question	Key findings	Recency or status
Guidelines	•	•	

Full systematic reviews	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings
	  ○ Expanding the list of procedures provided out of hospital
	  ▪ Pre-operative
	  ▪ Post-operative
	• Introducing or changing delivery arrangements to support optimizing
		• One systematic review found that the use of telemedicine to provide pre-operative care for surgeries resulted in fewer cancelled surgeries and its use for post-operative monitoring showed significant economic efficiencies
		• The review noted a relative dearth of evidence to inform the review and no outcomes reported on the effects on wait-times by shifting pre-operative and post-operative care
		Source
			Search last conducted in 2019

	• Commission new out-of-hospital settings to provide surgical procedures
	• Identify changes needed to optimize the surgical procedures suited to out-of-hospital settings
	  ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures
	  ○ Identifying the appropriate model to bundle surgical procedures in out-of-hospital settings
	  ▪ Many services by a number of specialties across a wide variety of clinical domains
		• A scoping review on interventions to reduce waiting times for elective surgeries included setting up hospital annexes that were devoted exclusively to resolving low-complexity surgeries
		• This approach was combined with dedicating operating rooms for emergency or semi-emergency surgeries to ensure that elective surgeries can continue unhindered
		• This intervention was found to reduce waiting times for patients needing the prioritized surgeries, but only to the extent that additional funds were allocated to support it
		Source (AMSTAR rating 6/10)
			Published April 2019

Rapid reviews	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Post-operative procedures	• Enhanced recovery after surgery, which involves standardising care to improve outcomes and expedite recovery, has been shown to reduce length of stay without compromising morbidity across numerous surgery types • Surgery types for which systematic reviews found enhanced recovery after surgery reduced the length of hospital stay, include:	Published July 2020

		○ pancreatic and breast surgery ○ knee and hip surgery ○ bladder surgery ○ liver surgery ○ gastroesophageal and colorectal Source	
Protocols for reviews that are already underway		• None identified	
Titles and questions for reviews being planned		• None identified	
Single studies	• Identifying settings to optimize out-of-hospital surgical procedures ○ Leveraging existing out-of-hospital settings already providing surgical procedures • Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity ▪ Optimizing prioritization, care pathways, and continuity of care ▪ Optimizing the health workforce for out-of-hospital procedures ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)	• The study described the development and use of a surgical hub and spoke model in South West London to ensure surgeries were able to continue throughout the pandemic in facilities largely free from viral infections • Prioritization was determined based on three levels, with level one being urgent surgeries needed within 24-72 hours, level two being elective surgery with the expectation of a cure, and level three being elective surgery that can be delayed for 10-12 weeks with minimal predicted negative outcomes • Prioritization was completed by local clinical prioritization groups, which are removed from a single specialty, and can make objective decisions for the prioritization of patients within each hub • Patients in levels two and three formed the core group of the hub and spoke model • As COVID-19 was making its way through hospitals, sites were determined to either be hot (ongoing COVID-19 infection) or cold (where surgical services could be delivered) • Resources were shared and coordinated between the sites through a pandemic response team to allow for surgical services to continue	Published September 2021

		• Telemedicine innovations were used for pre-surgery assessments replacing the traditional outpatient model of consultation and also supported the rapid virtual consultations with additional health workers, where necessary Source	

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
	  ▪ Optimizing prioritization, care pathways, and continuity of care
		• The study examines a data-driven scheduling strategy aimed at increasing the efficiency of surgical inpatient units
		• The model used an operating room block schedule on the unit's bed occupancy and resulted in a significant rearrangement of surgical blocks
		• The study highlighted the need to have strong leadership to implement the approach and to sustain new scheduling practice, citing significant professional feedback
		Source
			Published December 2016

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
	  ▪ Optimizing prioritization, care pathways, and continuity of care
		• A simulation compared two models of appointment booking – pre booking compared to booking from a wait list – and found a 20% increase in the likelihood that patients had their operation for medium-priority procedures after pre-booking surgery dates
		Source
			Published May 2008

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	  ○ Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings
		• The primary study examined the use of a pilot weekend surgical program in an Ontario hospital in efforts to try to reduce the surgical backlog for scheduled surgeries
		• The pilot program prioritized low-acuity, short surgical procedures with the longest wait times as defined by the provincial out-of-window status
			Published March 2022

	○ Confirming (or adjusting, if necessary) the types of patient eligible for out-of-hospital procedures • Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity ▪ Optimizing prioritization, care pathways, and continuity of care ▪ Optimizing the health workforce for out-of-hospital procedures	• Volunteer calls were put out to anesthesiologists, nurses, operating room attendants, admission clerks, and equipment processing personal to support the weekend surgical lists and resources were used from the three months of additional funding provided by the Ministry of Health • The study found that the surgical times and turnovers were quicker than comparable lists during the week and many surgical lists finished well before the planned end-of-day allowing the team to leave early and improving team moral • The catchment area for surgeries was spread across the entire province, however weekend surgeries were not found to be an access barriers to patients who lived up to 8 hours away • The pilot identified additional improvements that could be implemented to support a reduction in the surgical backlog, these include: ○ fixed care teams using a designated anesthesiologist, surgeon, OR nursing and support staff ○ the incentive of the shift ending once surgical list was complete ○ performing day-case surgery on the weekends would allow for increased access to more medically complex surgical cases during the weekday ○ if provided with more human resources, it is possible to leverage empty operating room complexes and unused inpatient capacity on the weekend Source	
	• Identifying settings to optimize out-of-hospital surgical procedures ○ Leveraging existing out-of-hospital settings already providing surgical procedures	• The literature review aimed to describe ways to improve the value of outpatient surgical care at hospital outpatient departments and ASCs • The authors reported three ways to improve the value, including the use of decision aids and clinical decision support, surgical coaching, shifting	Published 1 September 2016

		surgeries from hospitals to high-volume, multi-speciality ASCs, and standardizing processes in ACSs from referral to recovery Source	
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)	• The pre-post intervention study focused on the implementation of a nurse-patient preoperative call log, where preoperative nurses would call patients and/or guardians to review health history and instructions of the surgery • The study reported that surgery cancellation rates decreased from 16.8% to 8.8% within three months of implementation Source	Published April 2017
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)	• The study examined an algorithm that supports the selection of 61 outpatient candidates for total shoulder arthroplasty at an ASC • The algorithm stratified patients according to age and cardiopulmonary comorbidities and produced a low rate of perioperative complications and zero hospital admissions Source	Published January 2019

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings
	  ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures
	  ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)
		• The study examines the use of triggers within an electronic record to identify patients receiving orthopaedic surgery that are more likely to have an adverse event following a surgery (frequently requiring hospital admission) and as a result may not be ideal candidates for out-of-hospital procedures
		• The use of the trigger method was compared against a manual chart review (the current gold standard) and surgeon self-reporting
		• The study found the trigger methods to be more effective in detecting adverse events that surgical self reporting and found four triggers to be independently associated with adverse events, including:
		  ○ antibiotic prescription within 90 days of surgery
			Published January 2022

		○ emergency department visit within 90 days of surgery ○ bone, joint or blood culture within 90 days of surgery ○ repeat surgery within 90 days of initial surgery Source	
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures	• The study examines the differences in complexity between surgeries completed in large academic medical hospitals and outpatient ambulatory settings • The study found that freestanding and attached ambulatory settings had lower rates of surgical procedures that were considered to be physiologically complex • Recommendations for screening patients for appropriateness of outpatient surgery include: ○ screening for comorbidities ○ screening for obesity and high body-mass index ○ screening for obstructive sleep apnea ○ risk of hospital admission based on surgery type Source	Published February 2021
	• Identifying settings to optimize out-of-hospital surgical procedures ○ Leveraging existing out-of-hospital settings already providing surgical procedures • Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Expanding list of procedures provided out-of-hospitals ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures (i.e., no high-risk patients) ○ Adjusting the price, volume and quality criteria of procedures delivered out-of-hospitals	• The study examines the use of ambulatory surgical centres for spine surgeries, which are particularly costly to the health system • The study found that there has been an increase in the number of spinal surgeries undertaken in ambulatory centres as there is both a system and physician benefit to their provision outside of the hospital setting • In general, ambulatory procedures tend to be less expensive as remuneration rates are generally less and there is increased opportunity for physician productivity given the shorter turn-around time • Further, those who work within the ambulatory surgical centre tend to be more familiar with the	Published January 2020

		specifics of the procedures being delivered which helps to standardize care and optimize efficiency • However, as procedures begin to shift towards ambulatory care settings, the study recommends that policymakers carefully monitor data to ensure disincentives are not emerging to the provision of more complex surgeries in hospitals and that safety and quality metrics for both locations are optimally designed Source	
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)	• The study examined the use of short message service to improve perioperative follow up of outpatient surgeries • The study compares the use of short message service to telephone which was found to be inefficient and often unable to reach the patient • Short messaging was found to better reach the patient during the preoperative period and when supplementing phone calls was found to be an equal alterative to a solely phone-based system to monitor preoperative events Source	Published December 2020
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)	• The study examines the use of text messaging for outpatient surgery reminders in efforts to improve on the failure rate of telephone calls • The study found a reduction in the conversion to full-time hospitalization with the use of pre- and post-operative text message reminders • It was found that the use of text messages before surgery was an efficient tool to confirm information given during the usual pre-anesthesia consultation and were found to increase compliance with preoperative instructions, time of arrival, fasting rules and hygiene rules which in turn increased efficiency of operating procedures, led to fewer complications and to fewer cancellations of surgeries	Published September 2020

		Source	

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
	  ▪ Optimizing prioritization, care pathways, and continuity of care
		• The study examines the use of patient-optimizing enhanced recovery pathways to support additional patients to receive total knee and hip arthroplasty in ambulatory surgery centres
		• The enhanced recovery pathways encompassed the entire period from the initiation of nonsurgical care to the decision to undergo surgery and at-home recovery
		• Key elements of the pathway included patient engagement, creation of goals/expectations, the development of an individualized opioid-sparing multimodal pain control program as well as clear inclusion and exclusion criteria for entry into the pathway
		• An additional critical element was the inclusion of a JointCoach (however this role could be taken by a family member or caregiver) that would participate in the patient education and was there to support the patient
		• The pathway was found to maximize the number of patients able to successfully under go outpatient join replacement without risk of additional post-surgical complications
		Source
			Published December 2019

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
		• The cross-sectional survey compared the quality of outpatient surgery in an ambulatory surgery center (ASC) to a hospital-based facility (HBF) in the U.S.
		  ○ The types of procedures included ventilation tube insertion, dental rehabilitation, adenotonsillectomy and adenoidectomy
		• The ASC (i.e., pediatric medical facility consisting of a 24-hour pediatric emergency room, outpatient specialty clinics, imaging and laboratory services, and eight operating rooms) reported no unexpected safety events compared to nine events at the HBF (i.e., not-for-profit pediatric academic center)
			Published 9 September 2009

		• Overall, the authors concluded that the ASC generally exceeded the HBF in terms of performance Source	
	• Identifying settings to optimize out-of-hospital surgical procedures ○ Leveraging existing out-of-hospital settings already providing surgical procedures	• The retrospective study reviewed 92 records who underwent primary outpatient breast operations at ASC between January 2004 and December 2005 and compared age and recovery room times with 92 patients who underwent outpatient breast operations at the hospital • The authors reported that ASCs demonstrated shorter perioperative time intervals, operating room entry to incision, and overall time segments than outpatient services within the hospital Source	Published July 2010
	• Identifying settings to optimize out-of-hospital surgical procedures ○ Leveraging existing out-of-hospital settings already providing surgical procedures	• The retrospective study assessed the impact of ASCs on rates of hospital-based outpatient procedures and adverse events among 20% national sample of Medicare beneficiaries between 2001 and 2010 • Hospital-based outpatient surgery declined in response to the opening of an ASC without increasing mortality and admission • The authors concluded that their findings suggest that ASCs can safely achieve their intended effects of outpatient procedure redistribution Source	Published October 2015

	• Identifying settings to optimize out-of-hospital surgical procedures
	  ○ Leveraging existing out-of-hospital settings already providing surgical procedures
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings
	  ○ Expanding list of procedures provided out-of-hospitals
		• The study examines the use of ambulatory surgical centres associated with large academic medical centres to provide anterior cervical discectomy and fusion
		• The study found the procedure can be safely provided outside of a large academic medical centre at a reduced cost with equivalent postoperative outcomes
		• The use of ambulatory centres benefited the number of cases as more patients were able to be
			Published February 2021

	○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures (i.e., no high-risk patients)	seen due to shorter room turnover times, smaller and more efficient pre- and post-anesthesia units that are less burdened by complex surgeries • Further significant savings were realized from not requiring overnight observation of patients and allowed for increased bed capacity with the academic medical centre for critically ill patients • The study highlighted the importance of carefully selecting patients for whom ambulatory centres are safe to ensure adverse events do not result in hospitalizations Source	
	• Identifying settings to optimize out-of-hospital surgical procedures ○ Commission new out-of-hospital settings to provide surgical procedures	• One study examined the effects of a newly-opened physician-owned specialty orthopaedic hospital on the local general hospital, specifically on their levels of total hip arthroplasty and total knee arthroplasty • The study found that the volume of total hip arthroplasty and total knee arthroplasty maintained after the opening of the specialty hospital and found that there was no increase in the average complexity of the patients seen at the general hospital • The study was U.S. based and noted that as a result the patients receiving care at the two locations may be on different insurance plans, which may change the market analysis Source	Published May 2009
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Expanding list of procedures provided out-of-hospitals	• One study examined the cost differences of providing open carpal tunnel release in traditional hospital surgical room, an out-patient surgery centre or in a clinic using local anaesthesia • The study found that providing the procedure in a out-patient surgery centre was nearly two times as expensive as delivering it in the clinic and nearly seven times more expensive in the operating room as compared to the clinic	Published July 2019

		• Relatively few cases were included in the study but it highlights the need to consider all venues under which some procedures could safely be provided with quality Source	
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Expanding list of procedures provided out-of-hospitals	• The primary study compared the costs associated with patients receiving inpatient and outpatient awake craniotomy for the removal of brain tumours • Using a chart review the study found a significant reduction of costs for patients receiving out-patient surgery as compared to in-patient, largely as a result of reduced bed occupancy and allied health support • In addition, the rates of complications and 30-day readmissions were similar, demonstrating that for the right patients this may be a safe and feasible option Source	Published January 2019
	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Expanding list of procedures provided out-of-hospitals	• The study compared the cost of metacarpal fracture fixation in minor surgery versus a main operating room • A significant cost reduction was observed for procedures in minor surgery largely attributable to a reduction in needed nursing staff and supply costs Source	Published July 2019

	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing legislation and other regulatory arrangements that govern what out-of-hospital procedures can be provided, where they are provided, and who provides them
	  ▪ Organizational authority
		• This study aimed to understand how physician ownership of ambulatory surgery centers (ASCs) relates to ASC surgery utilization rates
		• Owners performed a greater proportion of their surgeries in ASCs than nonowners (39.6% versus 8.0%)
		• After controlling for patient differences, owners averaged 16.32 more cases annually than nonowners
		• Overall, physician ownership of ASCs increases their surgery use, possibly due to financial incentives of ownership
		Source
			Published August 2009

	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	• Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
	  ○ Optimizing the health workforce for out-of-hospital procedures
	  ▪ Pre-operative
	  ▪ Operative
	  ▪ Post-operative
		• This study examined the prevalence and occupational characteristics of physician assistants (PAs) and nurse practitioners (NPs) in outpatient surgical subspeciality clinics
		• PAs and NPs were involved in 5.9% of visits and 1.1% of visits involved patients being seen by them alone
		• PAs and NPs were more likely to be involved in pre- or postoperative visits, although the most common procedures carried out by PAs and NPs varied considerably by subspecialty
		• PAs and NPs may help optimize efficiency in outpatient ambulatory surgical care settings
		Source
			Published 2016

	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures • Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity ○ Optimizing prioritization, care pathways and continuity of care	• The study evaluated the impact of an optimal clinical pathway using more convincing and reassuring remarks from the surgeon in the preoperative consult • Success in outpatient surgery was significantly higher in the optimal clinical pathway group Source	Published April 2018

	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings
	  ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures
	  ○ Identifying the appropriate model to bundle surgical procedures in out-of-hospital settings
	  ▪ All secondary and tertiary care that can be provided safely without an overnight stay
	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing delivery arrangements
		• The commentary addresses the patient surgery backlog and urges for different ways to allocate surgical resources rather than the typical urgent procedures and elective (or scheduled) procedures
		• This argument describes how delaying scheduled procedures leads to a growing number of cases that ultimately become urgent and other cases that are not fatal but that lead to significantly compromised quality of life
		• The article argues to reframe the terms urgency and scheduled as a dynamic continuum of time-sensitive-care, allowing urgent cases that can wait until the end of their urgency window to do so and allow for predictable access to scheduled cases that
			Published August 2022

	▪ Optimizing prioritization, care pathways, and continuity of care ▪ Optimizing health workforce for our-of-hospital procedures ○ Optimizing the supports available for out-of-hospital procedures	account for factors beyond urgency (e.g., risks associated with prolonged delay) • Schedule changes can also be made to allow for increased capacity such as scheduling surgeries that require inpatient or intensive care when demands on hospital beds are predictably lower such as during the spring and summer or by implementing weekend surgical programs for low-acuity, high volume procedures • Novel surgical booking systems, such as centralized booking that encourages resource sharing, pre-booked scheduling at the time of consultation, have been shown to improve access with fewer cancellations, similarly machine learning algorithms can be used to optimize case booking and account for differences between surgeons • Developing ambulatory surgical centres that function within regional health care partnerships rather than as single siloed entities can effectively distribute surgeries by geography Source	
	• Leveraging existing out-of-hospital settings already providing surgical procedures • Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Confirming (or adjusting, if necessary) the types of patients eligible for out-of-hospital procedures • Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity ▪ Optimizing prioritization, care pathways and continuity of care	• One commentary suggests the use of a single-entry model to address the wait-time problem by creating a single queue that directs each patient to the next available provider based on their acuity and priority in the queue • Single studies have found that such approaches have reduced wait times for specialist care and elective surgery in cardiac care, joint replacement, transplantation, and cancer surgery • The commentary notes that single-entry models and team-based care are suitable only for common and standardized procedures where every surgeon can provide excellent care Source	Published May 2020

	• Identifying changes needed to optimize the surgical procedures suited to out-of-hospital settings ○ Expanding list of procedures provided out-of-hospitals	• The commentary compares the cost of hand surgery in an ambulatory surgery centre to a hospital operating room • The commentary found that providing hand surgery in an ambulatory setting cost 25 to 30% less than the same procedure in a hospital operating room • The commentary found that providing the surgery in an ambulatory centre also led to increased volume for the specific procedures as well as improved patient outcomes, as staff become more familiar with their routines Source	Published January 2018

	• Introducing or changing the health-system arrangements required to support optimizing out-of-hospital surgical procedures
	  ○ Introducing or changing legislation and other regulatory arrangements that govern what out-of-hospital procedures can be provided, where they are provided, and who provides them
	  ▪ Professional authority
	  ○ Introducing or changing financial arrangements to support optimizing out-of-hospital surgical capacity
	  ▪ Adjusting restrictions (or caps) in coverage/reimbursement rates for organizations, providers, and procedures
	  ○ Introducing or changing delivery arrangements to support optimizing out-of-hospital surgical capacity
	  ▪ Optimizing the health workforce for out-of-hospital procedures
	• Optimizing the supports available for out-of-hospital procedures (e.g., ICT, EHRs)
		• This letter to the editor provides six recommendations for optimizing the transition to conducting ophthalmic surgeries in outpatient settings
		• The recommendations include: 1) improving medical personnel training through an updated outpatient care-oriented training plan; 2) creating detailed clinical protocols to ensure consistency for practices, especially for complicated cases; 3) teaching rounds for complicated cases arranged by hospitals; 4) instituting a care navigator and other supports for patients both on- and off-site; 5) leveraging volunteers and social workers to provide affordable service for patients; and 6) updating insurance policies and providing financial stimulus for outpatient surgery to help facilitate the transition
		Source
			Published July 2017

Appendix 3: Documents excluded at the final stages of reviewing

Type of document	Hyperlinked title
Guidelines	
Full systematic reviews	
Rapid reviews	
Protocols for reviews that are already underway	
Titles and questions for reviews being planned	
Single studies	Risk factors for immediate failure of outpatient surgery in gynecologic surgery
	Machine Learning-Based Models Predicting Outpatient Surgery End Time and Recovery Room Discharge at an Ambulatory Surgery Center
	The Expanding Frontier of Outpatient Spine Surgery
	Outpatient versus inpatient superficial parotidectomy: clinical and pathological characteristics
	Implementation of Outpatient Minimally Invasive Lumbar Decompression at an Academic Medical Center without Ambulatory Surgery Centers: A Cost Analysis and Systematic Review
	Ambulatory Surgery vs Overnight Observation for Total Thyroidectomy: Cost Analysis and Outcomes
	Outpatient surgery of the first ray of the foot: post-operative pain monitoring at home
	Retrospective study in clinical governance and financing system impacts of the COVID-19 pandemic in the hand surgery and microsurgery HUB center
	Day-of-Surgery Video Calls and Phone Calls Increase Patient Satisfaction with Outpatient Surgery Experience: A Randomized Controlled Trial of Postoperative Communication Modalities
	Evaluating Care Partner Preferences for Seating in an Outpatient Surgery Waiting Area Using Virtual Reality
	Elective ENT surgery during the COVID-19 pandemic: Experience from a single UK centre
	Early outcomes and safety of outpatient (surgery center) vs inpatient based L5-S1 Anterior Lumbar Interbody Fusion
	Understanding the Costs Associated With Surgical Care Delivery in the Medicare Population
	Inflatable Penile Prosthesis Implantation in the Ambulatory Setting: A Systematic Review
	Preferential use of total intravenous anesthesia in ambulatory otolaryngology surgery during the COVID-19 pandemic
	A Multimodal Pain Management Regimen for Open Treatment of Distal Radius Fractures: A Randomized Blinded Study
	Improvement in Postoperative Pain Control and Length of Stay With Peripheral Nerve Block Prior to Distal Radius Repair
	[Breast cancer and outpatient surgery: State of play of the activity and assessment of patient satisfaction]
	Preferential use of total intravenous anesthesia in ambulatory otolaryngology surgery during the COVID-19 pandemic
	Automated Mobile Phone Messaging Utilizing a Cognitive Behavioral Intervention: A Pilot Investigation
	Cost Comparison of Surgically Treated Ankle Fractures Managed in an Inpatient Versus Outpatient Setting
	Outpatient anterior cervical discectomy: A French study and literature review

	Outpatient Shoulder Arthroplasty at an Ambulatory Surgery Center Using a Multimodal Pain Management Approach
	Inpatient Versus Outpatient Hip and Knee Arthroplasty: Which Has Higher Patient Satisfaction?
	Does the future of laparoscopic sleeve gastrectomy lie in the outpatient surgery center? A retrospective study of the safety of 3162 outpatient sleeve gastrectomies
	Effects of the Medicare Modernization Act on Spending for Outpatient Surgery
	Safety and Efficiency of Cervical Disc Arthroplasty in Ambulatory Surgery Centers vs. Hospital Settings
	Modelling and forecasting daily surgical case volume using time series analysis
	Utility of Mobile Apps for Video Conferencing to Follow Patients at Home After Outpatient Surgery
	Many US hospital-affiliated freestanding ambulatory surgery centers are located on hospital campuses, relevant to interpretation of studies involving ambulatory surgery
	The position of a written document in preoperative information for pediatric surgery: A randomized controlled trial on parental anxiety, knowledge, and satisfaction
	Measuring satisfaction and anesthesia related outcomes in a surgical day care centre: A three-year single-centre observational study
	Otto Aufranc Award: A Multicenter, Randomized Study of Outpatient versus Inpatient Total Hip Arthroplasty
	Challenges of pain control and the role of the ambulatory pain specialist in the outpatient surgery setting
	Ambulatory Surgery Centers and Their Intended Effects on Outpatient Surgery
	Prevalence and Predictive Factors of Chronic Postsurgical Pain and Poor Global Recovery 1 Year After Outpatient Surgery
	Assessing the reach of health reform to outpatient surgery with social network analysis
	Orthognathic surgery in the office setting
	Specialty-specific trends in the prevalence and distribution of outpatient surgery: implications for payment and delivery system reforms
	Emotional and informational needs of women experiencing outpatient surgery for breast cancer
	[Indicators of healthcare quality in day surgery (2010-2012)]
	Decentralization of care for adults with congenital heart disease in the United States: a geographic analysis of outpatient surgery
	Ambulatory surgery center and general hospital competition: entry decisions and strategic choices
	Office-based surgical and medical procedures: educational gaps
	Does procedure profitability impact whether an outpatient surgery is performed at an ambulatory surgery center or hospital?
	Outpatient tonsillectomy in children: a 7-year experience
	[Evaluation of urologic activity in ambulatory surgery: a single centre experience]
	Ambulatory Surgery Centers and Their Intended Effects on Outpatient Surgery
	Opening ambulatory surgery centers and stone surgery rates in health care markets
	Effect of physician ownership of specialty hospitals and ambulatory surgery centers on frequency of use of outpatient orthopedic surgery

	Nausea and vomiting after office-based anesthesia
	Is obesity a cause of surgical cancellation in outpatient surgery center?
	[Quality assurance and infection control in outpatient surgery]
	Ten years of outpatient abdominoplasties: safe and effective
	Abdominoplasty: a comparison of outpatient and inpatient procedures shows that it is a safe and effective procedure for outpatients in an office-based surgery clinic
	Patient safety in outpatient surgery: the viewpoint of the healthcare providers
	Outpatient Surgery and Patient Safety— The Patient's Voice
	Management of pain and nausea in outpatient surgery