McMaster University | HEALTH FORUM

Rapid Evidence Profile #45

(22 December 2022)

Question

What is known from evidence and from experiences in other jurisdictions about how to effectively and efficiently improve wait times for scheduled (elective) surgical services?

What we found

To address the question, we identified evidence, as well as experiences from five countries (Australia, Denmark, Ireland, New Zealand, and the U.K.) 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 adaptd from a rapid evidence profile completed earlier this year on increasing out-of-hospital capacity for elective surgeries. 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

- Changes to how elective surgeries are financed
  - Adjusting what organizations can be commissioned to provide elective surgeries (or services required before or after)
    - Public private partnerships
  - Adjusting funding to organizations
    - Targeted payments/penalities
  - Adjusting provider remuneration
    - Targeted payments/penalities
- Changes to how elective surgeries are delivered (or to the services needed before or after)
  - Adjusting referral requirements for the surgery
  - Adjusting who is prioritized for the surgery and how this prioritization is determined
  - Adjusting by whom the surgery (or the services needed before or after) is provided
  - Adjusting where the surgery (or the services needed before or after) is provided
    - Within hospital but in different room types
    - Outside of hospital
  - Adjusting when the surgery (or the services needed before or after) is provided

Box 1: Our approach

We identified evidence addressing the question by searching: 1) Health Systems Evidence, and 2) PubMed. All searches were conducted on 16 December 2022. The search strategies used are included in Appendix 1. We identified experiences from five countries (Australia, Denmark, Ireland, New Zealand, and U.K.) 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 and for highly relevant reviews as well as a rapid evidence profile conducted earlier this year that focused on increasing out-of-hospital surgical capacity.

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.

This rapid evidence profile was prepared in the equivalent of three days of a 'full-court press' by all involved staff.

- Adjusting with what supports the surgery (or the services needed before or after) is provided
  - Patient education
  - ICT
  - Quality monitoring and improvement systems
  - Safety monitoring and improvement systems

We identified 19 evidence documents relevant to the question, of which we deemed 18 to be highly relevant. The highly relevant evidence documents are:

- six evidence syntheses
- 12 primary studies.

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

We did not identify any studies that addressed changes to how elective surgeries are financed, however many of the evidence syntheses and studies identified examine changes that require additional funding to implement, namely those that include changes to where or when the elective surgery is being delivered.

All of the highly relevant evidence documents related to changes to how elective surgeries are delivered. Two evidence syntheses and one simulation study identified improvements to the referral process that may reduce wait times, including standardizing the referral process and pre-booking dates (or using open access/direct booking) at the time of the referral, rather than booking from waitlists. However, in contrast, one study reporting on the experience of a hospital in New York City suggests that re-prioritizing patients based on resource intensity classifications may allow for some elective surgeries to continue even when hospitals are overwhelmed with other conditions (e.g., COVID-19 or othe respiratory infections). In addition, two evidence syntheses assessed single-entry models and direct patient referral systems where patients are assigned to the next available surgeon, and found that wait times were significantly reduced and were generally acceptable to patients.

One primary study found that changes to staff working on elective surgeries can help to reduce wait times by, for example, reorganizing staff from a fixed to flexible allocation; training of three additional healthcare assistants to act as circulating nurses (instead of scrub nurses); and delegating assistant functions to other contractors such as cleaning staff.

The majority of the evidence documents related to adjusting where and when elective surgery is provided. These include:

- screening patients to deliver select low-complexity elective surgeries using out-of-hospital facilities
- setting up hospital annexes devoted to resolving low-complexity surgeries
- developing surgical hub-and-spoke models where resources are shared and coordinated among surgical centres with existing partnerships

- adding a preoperative clinic visit immediately before cataract surgeries
- extending surgical schedules to allow for weekend surgeries.

In addition, we identified several supports that can be used to optimize elective surgeries, including:
- pre-operative and post-operative calls and text messages reminding of instructions
- triggers in electronic records for improved detection, measurement and tracing of adverse events
- machine learning and booking algorithms which can optimize resource use by better accounting for individual surgeons' time and use of resources as well as post-operative recovery.

Key findings from the jurisdictional scan

The jurisdictional scan of experiences in Australia, Denmark, Ireland, and the United Kingdom highlighted that long wait-times for elective procedures are a global issue following the COVID-19 pandemic, and that many contries are examining innovative approaches to reducing the backlog. Some of these approaches include:
- increased funding to public hospitals to invest in reducing elective-surgery backlogs (Australia; Denmark; Ireland; U.K.)
- sub-contracting surgeries to the private sector (domestically or internationally) (Australia; Denmark)
- implementing maximum waiting-time policies with associated incentives (Denmark; U.K.)
- creating new elective-only hospitals (Ireland)
- re-prioritizing patients in the most need using tools such as advanced algorithms and additional tools that take into consideration additional aspects of postponing surgery such as quality of life (Australia)
- creating regional collaborations with centralized wait-time list management (Denmark; Ireland; U.K.)
- out-patient follow-up appointments in ambulatory settings (U.K.)
- establishing or enhancing centralized waiting-time dashboards to enable transparency and patient choice (Denmark; U.K.).

Approaches to reducing waitlists for elective surgeries in Canadian provinces and territories include:
- increased funding to enhance surgical capacity (Alberta; Ontario; Quebec; New Brunswick)
- expanding services provided in out-of-hospital facilities (Alberta; Saskatchewan; Manitoba; Ontario; Quebec; Nova Scotia)
- sub-contracting surgeries to out-of-province clinics (Manitoba)
- purchasing mobile MRI and CT units to support diagnostic backlog (Manitoba)
- increasing access to specialist care via e-consultation (New Brunswick)
- piloting a single-entry model for waitlist management (Ontario; New Brunswick; Nova Scotia)
- adjusting how patients are priorized for elective surgery (Quebec)
- dedicating specific operating rooms to elective procedures (Manitoba)
- developing surgical programs that are responsible for coordination and care of patients' full surgical journey (British Columbia)
- expanding operating hours to provide weekend and evening surgeries (New Brunswick; Nova Scotia)
- establishing a centralized wait-time dashboard or website to inform patients (British Columbia; Manitoba; Ontario)
- performing regular reviews and audits of surgical care provided (British Columbia).

Table 1: Key findings from highly relevant evidence documents on how to effectively and efficiently improve wait times for scheduled (elective) surgical services

Area of focus		Summary of key findings
Changes to how elective surgeries are financed	• Adjusting what organizations can be commissioned to provide elective surgeries (or services required before or after)	No evidence documents identified
	• Adjusting funding to organizations	No evidence documents identified
	• Adjusting provider remuneration	No evidence documents identified
Changes to how elective surgeries are delivered (or to the services needed before or after)	• Adjusting referral requirements for the surgery	• A simulation compared two models of appointment booking – pre-booking compared to booking from a waitlist – and found a 20% increase in the likelihood that patients had their operation for medium-priority procedures after pre-booking surgery dates
	• Adusting who is prioritized for the surgery and how this prioritization is determined	• One recent high-quality synthesis found that implementing single-entry models, re-prioritizing patient-use questionaires, and using open access or direct booking referral processes reduced wait times (AMSTAR rating 8/10) • One recent high-quality synthesis found that single-entry models decreased wait times and were generally acceptable for patients, and there was a willingness to see the next-available surgeon (AMSTAR rating 8/10) • One recent primary study found the use of a priorization tool that included both surgeon and patient-driven criteria did not significantly reduce wait times, but provided an explicit process which was beneficial when communicating wait times to patients • One recent primary study examined the development of a resource intensity classification which allowed for matching between surgeries that could be completed with the available resources
	• Adjusting by whom the surgery (or the services needed before or after) is provided	• One primary study found that reorganizing staff from a fixed to flexible allocation and composition, training of three healthcare assistants to act as circulating nurses (instead of scrub nurses), and delegating assistant functions to the cleaning contractor reduced wait times for non-high-priority cases
	• Adjusting where the surgery (or the services needed before or after) is provided	• One recent medium-quality synthesis (AMSTAR 6/10) found that setting up hospital annexes devoted exclusively to resolving low-complexity surgeries reduced waiting times, but only when additional funds were allocated to support its operation

		• One recent primary study described the development of surgical hubs, where resources are shared and coordinated within multiple hospitals in a region to ensure surgical procedures can still be undertaken for a centralized waitlist of patients while contending with COVID-19 ○ Surgeries were prioritized by local clinical-prioritization groups (multi-disciplinary temas of professionals) in an effort to remove decisions from a specific specialty and instead allocate decisions to hospitals within the 'spoke' based on the level of COVID-19 and anticipated capacity • One recent primary study recommended that when out-patient elective surgeries are being provided in ambulatory centres, the screening of patients for appropriateness of outpatient surgery include considerations of co-morbidities, obesity and high-body mass index, obstructive sleep apnea, and risk of hospital admission based on historic data
	• Adjusting when surgery (or the services needed before or after) is provided	• One recent medium-quality synthesis found that putting in place a preoperative clinic visit immediately before cataract surgeries resulted in reduced cancellations • 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 ensure health professionals are not placed under additional pressures
	• Adjusting with what supports the surgery (or the services needed before or after) is provided	• One recent low-quality synthesis (AMSTAR 1/10) found that enhanced recovery after surgery, which includes standardizing care, has been shown to reduce lengths of stay without compromising morbidity • One recent medium-quality synthesis (AMSTAR 7/10) found that the use of telemedicine to provide pre-operative care for surgeries resulted in fewer cancelled surgeries • 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 hospitalization

		• One primary study found that implementing a machine learning algorithm improved the accuracy, pre-surgical resource use, and patient wait time, without increasing surgeon wait time between cases • 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 • 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 share information with patients and remind them about pre-operative and post-operative care

Table 2: Experiences in other countries on how to effectively and efficiently improve wait times for scheduled (elective) surgical services

Country	Summary of experiences

Australia	• Macquarie University released a report in 2020 entitled *Reducing Surgical Wait List Times in Australia* that provides three long-term strategies to address surgical waitlist times in Australia post-COVID-19:
	  ○ streamlining processes and the patient journey by auditing the current patient waitlist and prioritizing those most in need, enhancing pre-operative and post-operative patient care, postponing surgeries for high-risk patients when ethically feasible, sub-contracting surgeries to the private sector, and increasing capacity in terms of additional clinics and clinician workload
	  ○ improving waitlist management by pooling waitlists, using advanced methods to prioritize patients (e.g., education programs for general practitioners, a triage referral system for allied health professionals), and implementing alternative models of care
	  ○ reducing low-value, high-cost care by making the system more transparent and accountable through the implementation of guidelines across the public and private sectors and central monitoring systems.
	• In its Public Hospital Report Card 2022, the Australian Medical Association (AMA) suggested that both the Commonwealth and the state and territory governments need to increase their annual public-hospital funding to cover increased hospital costs and the volume of hospital services available for elective surgeries
	  ○ The AMA has the position that the Commonwealth should increase its annual funding from 45% to 50% and the states and territories should reinvest the 5% into public hospitals
	  ○ The AMA also suggests that the Commonwealth's annual growth cap of 6.5% per annum be removed
	• 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
	  ○ The volume of public-hospital elective-surgery admission was down by 10% in 2019-20 compared to 2018-19; non-elective surgery declined the most (18.4% in 2018-19 compared to 2019-20)

Denmark	• Additional funding was invested into the healthcare system in Denmark to help reduce wait times for elective surgeries
	  ○ The introduction of a maximum waiting-time policy resulted in large improvements in cataract, knee and hip-replacement surgery wait times
	  ○ The maximum waiting time was reduced from two months to one month, and was coupled with 'patient's choice of provider'; in cases where the hospitals can foresee that this guarantee will not be met, the patient has the option of choosing a public or private facility of their choice to receive treatment
	  ○ The establishment of a centralized waiting time data system has further enabled transparency and expanded patient choice
	• To reduce surgical wait times during the COVID-19 pandemic, many short- and mid-term policy changes were made in Denmark, including:
	  ○ purchashing private capacity (abroad)
	  ○ adopting new information systems to centralize the management of waiting lists
	  ○ reallocating patients through hospitals and/or regional collaborations
	  ○ utilizing digital solutions (e.g., digital first models)
	  ○ implementing fee-for-service payments.

Ireland	• As of 2022, the Ministry of Health has announced a new Waiting List Action Plan, focussing on 45 actions across four key areas: delivering capacity, reforming scheduled care, enabling scheduled care reform, and addressing community care access & waiting lists
	  ○ A total of 350 million euros is being allocated to reduce scheduled care waiting lists, and by the end of 2022, waiting lists are estimated to decrease by 18% as a result of this investment
	  ○ The focus of the plan remains on 15 high-volume inpatient procedures so that every person who has been waiting for over six months who is deemed clinically ready can receive an offer of treatment
	  ○ Implementation of this plan will be governed by a Waiting List Task Force, meeting regularly to oversee progress
	  ○ Some of the initiatives listed in this plan include the planning of new electives-only hospitals, reformation of eligibility policies, implementation of regional health areas, and strategic workforce planning

United Kingdom	• The NHS indicated that the maximum waiting time for non-urgent referrals is 18 weeks, and two weeks for suspected cancer, and individuals can use the My Planned Care website to compare waiting times at different hospitals
	  ○ If the hospital cancels the operation last minute, they are required to provide a binding date within 28 days or individuals are encouraged to complain to their local integrated care board (ICB)
	• The NHS released its 2022-23 priorities and operational planning guide, where they aim to significantly deliver more elective care to reduce long wait times
	  ○ The NHS aims to deliver 10% more elective care by 2022-23, and 30% more elective activity by 2024-25 than before the pandemic
	  ○ They aim to eliminate waits of over 104 weeks by July 2022, eliminate waits of over 78 weeks by April 2023, and eliminate 52-week waits by March 2025
	  ○ Approaches to reduce wait-times include personalized outpatient follow-up appointments, more streamlined diagnostic pathways, effective discharge, referral optimization, patient-initiated follow-up, increased bed capacity and equipment for recovery, and new surgical hubs
	  ○ Specific to cancer waiting-time standards, they aim to improve diagnostic and treatment capacity, and work with partners such as the Cancer Alliances to develop an implementation plan to improve performance, timely presentation of care pathway, and targeted case finding and surveillance
	• 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:
	  ○ 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.
	  ○ prioritizing 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.
	  ○ 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 British pounds in capital for new beds, equipment, and technology

	• As of 6 April 2022, the first ever Health and Social Care Levy in the U.K. 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 36 million British pounds sterling will be accumulated over the next three years to invest in the health and social-care system

Table 3: Experiences in Canada on how to effectively and efficiently improve wait times for scheduled (elective) surgical services

Province	Summary of experiences
British Columbia	• The Government of British Columbia offers a Surgery Wait Times website for scheduled surgical procedures, which is updated every two months (including waiting to see a surgeon, and waiting for surgery) based on type of procedure and specialist • Strategies include measuring and monitoring wait times, making operating rooms more efficient, developing surgical-services programs that are responsible for coordinating and/or providing all services for patients, developing a framework for surgery appropriateness, managing all surgeries and waitlists, performing regular reviews and audits, and extending enhanced recovery after surgery • The BC Surgical Patient Registry is a provincial system that collects data on patients booked for surgery and who had their surgeries in order to improve clinical outcomes for patients
Alberta	• On 7 September 2022, the Government of Alberta announced that it was seeking opportunities to expand surgical care in communities through requests for proposals for chartered surgical facilities in both the Central and South Zones o These changes will help to reduce wait times for surgery and improve access for Albertans to receive their procedures in the communities • 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 o A key driver in achieving the program's target of decreasing wait times by 2023 is the utilization of Chartered Surgical Facilities o 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) o 96% of cataract procedures in Calgary were conducted in non-hospital surgical facilities o To provide services, chartered surgical facilities must be accredited by the College of Physicians and Surgeons of Alberta, have a signed contractual agreement with Alberta Health Services, and approval and chartered surgical facilities designation by the minister o 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: o ophthalmology to 31 December 2021 o ENT to 31 March 2022

	○ plastic Surgery to 31 March 2022 ○ dermatology to 31 March 2022. • On 13 April 2021, a Request for Proposal call for increased ophthalmology chartered surgical facilities was released by 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 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 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
Manitoba	• Manitoba's Diagnostic and Surgical Recovery Task Force launched a dashboard website in October 2022 to track changes in surgical wait times and waitlist volumes associated with disruptions due to the COVID-19 pandemic • In Budget 2022, the Government of Manitoba committed to investing $110 million to address surgical and diagnostic waitlists, and in June 2022, the investment was expanded with an additional $50 million to support Health Sciences Centre Winnipeg in becoming a centre of surgical excellence, as well as invest in more immediate and long-term initiatives to reduce waitlists • In 2022, the Diagnostic and Surgical Recovery Task Force has assisted the province in: ○ expanding the orthopedic surgery program at Concordia Hospital to add a fifth operating room with an orthopedic surgeon, four inpatient beds, and anesthesia staff ○ utting new resources into the Spine Assessment Clinic to increase the number of assessments for patients experiencing back pain and waiting for treatment or a care plan ○ purchasing and installing a new mobile CT unit and two new mobile MRI units. • The Manitoba Government announced partnerships with three out-of-province clinics in August 2022 to help more patients access orthopedic surgeries while the province works to build long-term surgical capacity to address wait times at home • 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 has 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	• The Ontario Government announced funding for the implementation of an innovative, first-in-Ontario surgical waitlist HUB that will coordinate a real-time waitlist for patients in Eastern Ontario waiting for surgery, according to a press release on 25 November 2022 ○ In addition to the HUB software built by Novari Health, technology built by Ontario Health will also help to improve waitlist management throughout the province • 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 • 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 healthcare 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
Québec	• On 10 June 2021, the Ministry of Health and Social Services outlined its strategy to reduce surgical waitlist times within the province ○ Key actions include increasing surgical activity to 115% in October 2021, reducing waitlist numbers to below pre-pandemic levels by March 2023, and prioritizing the treatment of patients who have been on waitlists for over 12 months by March 2023

	○ Secured partnerships with private clinics are being leveraged to help increase surgical capacity within the health system ○ Key levers in accomplishing this include reviewing the waiting list, optimizing the use of operating rooms, increasing healthcare staff availability, funding additional financial and material resources, and monitoring the progress of surgeries
New Brunswick	• Stabilizing Health Care: An Urgent Call to Action is a new health plan within the province that outlines changes to the health system to address large wait times for elective surgeries, and includes: ○ a pilot project that provides primary-care providers the ability to make electronic referals to orthopedic specialists, and allows patients to select the next available specialist in their area or wait for a surgeon of their choice ○ increased access to specialist care via an integrated e-consultation system (e.g., eReferral Single Entry Model) ○ ensuring that no patient has to wait longer than 12 months for hip or knee replacement surgeries by 2023. • Horizon Health Network has committed to implementing many initiatives and policy changes to address the backlog of surgical procedures and long wait times throughout the health system ○ This entails redesigning delivery models to ensure healthcare services are provided at appropriate locations and times (i.e., looking beyond hospital facilities to provide care, and improving access and surgical appointment availabilities) ○ The network has adopted a High-Intensity Interval Theatre initiative, which seeks to increase orthopedic surgery capacity on weekends by performing an additional 96 procedures from November 2022 to February 2023 ○ The network is implementing an Enhanced Recovery After Surgery program to assist with patient recovery (e.g., improving patient engagement, early mobilization, and adopting a multimodal approach to pain control) following surgical procedures; this will improve capacity in the health system and help to reduce overall wait times ○ As of 12 December 2022, the Horizon's Upper River Valley Hospital has committed to performing an additional eight knee surgeries per week to help reduce wait times; the annual target is to complete 360 elective surgeries under this initiative ○ An investment of $550,000 in the New Joint Arthroplasty Project at the Dr. Everett Chalmers Regional Hospital and Oromocto Public Hospital will increase capacity by an additional 730 surgeries; this program is planned to launch in spring/summer 2023 ○ Sussex Health Centre will receive a two million dollar investment to expand existing operating rooms for multi-purpose uses (e.g., cataract and endoscopy surgeries), with renovation projected to begin in spring 2023
Nova Scotia	• To increase elective-surgery capacity during the COVID-19 pandemic, the day-surgery program in the Central Zone of the Nova Scotia Health Authority was expanded to provide 700 outpatient hip and knee replacements in 2021-22 ○ Additional measures (e.g., nursing and rehabilitation services) were implemented in such facilities to help support same-day discharging of patients • The Government of Nova Scotia has partnered with private clinics to reduce elective surgery wait times for over 500 pediatric patients at IWK Children's Hospital • The Government of Nova Scotia's strategic plan, Action for Health, indicates implementing innovate solutions to reduce surgical wait times, with key actions consisting of: ○ reducing waitlist times by successfully completing an additional 2,500 surgeries over the next year ○ establishing a centralized waitlist management system (currently in place in three hospitals, with further advancements to be made by 31 March 2022)

	○ central intake and pooling of specialist referrals (e.g., Single-Entry Model for electronic referals) ○ expanding operation-room hours and maximizing surgical capacity (e.g., utilizing the increased capacity at Dartmouth General Hospital and elevating the number of ophthalmology procedures at Halifax Surgical Vision Centre).
Prince Edward Island	• None identified
Newfoundland and Labrador	• None identified
Yukon	• None identified
Northwest Territories	• None identified
Nunavut	• None identified

Waddell K, Alam SA, Bhuiya A, Bain T, Wilson MG. Rapid evidence profile #45: What is known from evidence and from experiences in other jurisdictions about how to effectively and efficiently improve wait times for scheduled (elective) surgical services? Hamilton: McMaster Health Forum, 22 December 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 Health Systems Evidence and PubMed using: (surgery OR surgical) AND (wait time OR wait list OR backlog).

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. 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	• Changes to how elective surgeries are delivered ○ Adjusting with what supports the surgery is provided	• 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 (AMSTAR 7/10)	Search last conducted in 2019
	• Changes to how elective surgeries are delivered ○ Adjusting where the surgery (or the services needed before or after) is provided	• 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

	• Changes to how elective surgeries are delivered
	  ○ Adjusting with what supports the surgery (or the services needed before or after) is provided)
	  ▪ Patient education
		• The scoping review examined the effects of waiting for surgeries on patient mental health and patient-centred mitigation strategies that may be applied
		• The review included 51 studies, and patients and caregivers reported increases in anxiety, depression and poor quality of life, with a greater effect on women, new immigrants, those of younger age, and with lower socio-economic status
			Search last conducted 8 July 2020

		• Six of the 51 studies evaluated educational strategies to develop coping skills • Complex education strategies which included combinations of individual and group therapy alongside information from pamphlets was not found to consistently reduce anxiety or depression, and was found to not be feasible outside of funded research • Three strategies were suggested, including having healthcare professionals acknowledge the effect of waiting on their mental health, expressing empathy, acknowledging hearing and understanding concerns, validating concerns by noting they are normal or common, and offering strategies to manage emotions or referring individuals to helpful information or services Source (AMSTAR 5/9)	

	• Changes to how elective surgeries are delivered (or to the services needed before or after)
	  ○ Adjusting referral requirements for the surgery
	  ○ Adjusting who is prioritized for the surgery and how this prioritization is determined
		• The review included nine studies that examined whether different referral mechanisms improved timely access to elective care and increased the number of consultations of surgical patients in clinics
		• The review found that each of the following changes to referral approaches reduced wait times:
		  ○ putting in place a pre-operative clinic visit immediately before cataract surgery
		  ○ implementing single-entry models to the next-available surgeon
		  ○ re-prioritizing patients using a three-item questions (3iQ) prior to consultation with a spine surgeon
		  ○ standardizing referral templates for cataract surgeries to improve the referral pathway
		  ○ using open access or direct booking referral processes.
		Source (AMSTAR rating 8/10)
			Search last conducted January 2020

	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined	• The review examined the scope of use and influence of single-entry models on access and patient centredness	

		• The review included 11 studies, the majority of which found that they reduced patient waiting times, however there was a lack of uniformity and consistency in reporting across the included studies • Three studies found that wait times decreased for those who had been waiting longest and increased slightly for less urgent cases • Three studies suggested that the number of patient referrals increased allowing for expanded patient throughput • Very few studies examine patient acceptability, but those that did found that patient satisfaction was generally high and there was a willingness to see the next-available surgeon Source (AMSTAR 8/10)	

Rapid reviews	• Changes to how elective surgeries are delivered
	  ○ Adjusting where the surgery (or the services needed before or after) is provided
		• Enhanced recovery after surgery, which involves standardizing 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:
		  ○ pancreatic and breast surgery
		  ○ knee and hip surgery
		  ○ bladder surgery
		  ○ liver surgery
		  ○ gastroesophageal and colorectal.
		Source (AMSTAR rating 1/10)
			Published July 2020

Protocols for reviews that are already underway			
Titles and questions for reviews being planned			
Single studies	• Changes to how elective surgeries are delivered	• The study described the development and use of a surgical hub-and-spoke model in South West London	Published September 2021

	○ Adjusting who is prioritized and how priorization is determined ○ Adjusting where the surgery is provided ○ Adjusting with what supports the surgery is provided	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 • 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	
	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined ○ Adjusting with what supports the surgery is provided ▪ ICT	• 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	Published December 2016

		new scheduling practice, citing significant professional feedback Source	
	• Changes to how elective surgeries are delivered ○ Adjusting referral requirements for surgery	• 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

	• Changes to how elective surgeries are delivered
	  ○ Adjusting by whom the surgery is provided
	  ○ Adjusting when the surgery is provided
		• 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
		• Volunteer calls were put out to anesthesiologists, nurses, operating room attendants, admission clerks, and equipment-processing personnel 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 eight hours away
		• The pilot identified additional improvements that could be implemented to support a reduction in the surgical backlog, including:
		  ○ fixed care teams using a designated anesthesiologist, surgeon, OR nursing and support staff
			Published March 2022

		○ 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	
	• Changes to how elective surgeries are delivered ○ Adjusting where the surgery is provided ▪ Out-of-hospital	• 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 post-operative outcomes • The use of ambulatory centres benefited the number of cases as more patients were able to be 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	Published February 2021
	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined ○ Adjusting wehre the surgery is provided ▪ Out-of-hospital	• The study examines the use of triggers within an electronic record to identify patients receiving orthopedic surgery who are more likely to have an adverse event following a surgery (frequently	Published January 2022

	○ Adjusting with what supports the surgery is provided ▪ Safety monitoring and improvement systems	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 than surgical self reporting, and found four triggers to be independently associated with adverse events:: ○ antibiotic prescription within 90 days of surgery ○ 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	
	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined ○ Adjusting where the surgery is provided ▪ Outside of hospital	• 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
	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined	• Study examines the use of General Surgery Prioritization Tool which is a 0-100 point-based prioritization system that is inclusive of both surgeon and patient-derived criteria • Patient-derived criteria including asking them to assess the impact of their condition on their quality	Published August 2018

		of life across a variety of spheres including impact of life • Surgeons also include data such as frequency and duration of symptoms, likelihood and significance of deterioration, and expected benefit • The study found the tools to be as clinically reliable as traditional methods in the triage for elective general surgery, but did not significantly reduce wait times • However, authors noted that it did provide a more explicit process which may be beneficial in communication Source	

	• Changes to how elective surgeries are delivered
	  ○ Adjusting with what supports the surgery is provided
	  ▪ ICT
	  ▪ Quality monitoring and improvement systems
		• Study examines the real world-outcome of implementing a machine learning model to predict surgical-case duration
		• Machine learning which generated predictions for surgical-case duration that better improved the accuracy, pre-surgical resource use, and patient wait time, without increasing surgeon wait time between cases
		Source
			Published 01 April 2021

	• Changes to how elective surgeries are delivered
	  ○ Adjusting by whom the surgery (or the services needed before or after) is provided
	  ○ Adjusting where the surgery (or the services needed before or after) is provided
		• The study examines the use of a multidimensional intervention on wait times for elective surgery
		• The intervention includes the separation of the flow of day surgery from that of ordinary surgery, increasing available operating times by reorganizing the staff from a fixed to flexible allocation and composition, training of three healthcare assistants to act as circulating nurse instead of a scrub nurse, delegating assistant functions to staff of the cleaning contractor, and allocation of operating session flexibility in proportion to the waiting list
		• The study found that wait times for non-high-priority cases shortened significantly with the exception of urology
		Source
			Published 25 January 2022

	• Changes to how elective surgeries are delivered ○ Adjusting who is prioritized for the surgery and how this prioritization is determined	• The study provides an overview of an algorithm implemented at Columbia University Irving Medical Centre to organize and prioritize the long waiting list of surgical patients • The initial phase included triaging based on how long patients could safely wait, which allowed the divisions both to carefully track waiting patients as well as to work with the operating rooms to schedule the more urgent among them • A Resource Intensity Class system was developed which assigned a classification based on four categories: personnel/space; devices; expendables; and post-operative/recovery resources • The categorizing allowed for matching between surgeries that could be completed with the available resourcing • If the total number of proposed cases or the distribution of resource intensity exceeds the available resources on a given day, cases can be scheduled over a period of several days Source	
	• Changes to how elective surgeries are delivered (or to the services needed before or after) ○ Adjusting who is prioritized for the surgery and how this prioritization is determined	• The study examines the development of a matrix that maps wait times for nine interventions and 34 districts • Each combination in the matrix requires different determinants that require healthcare management to adopt diversified strategies • The variation is due to multiple elements but points to the need for two-step strategies first to understand the type of context, and second to analyze the impacts of elements such as resource productivity, resource availability, patients' preferences and care appropriateness Source	Published 11 June 2019

Appendix 3: Documents excluded at the final stages of reviewing

Type of document	Hyperlinked title
Guidelines	
Full systematic reviews	Infrastructure expansion for children's surgery: Models that are working
	Identifying and understanding the non-clinical impacts of delayed or cancelled surgery in order to inform prioritisation processes: A scoping review
Rapid reviews	
Protocols for reviews that are already underway	
Titles and questions for reviews being planned	
Single studies	https://pubmed.ncbi.nlm.nih.gov/31688436/
	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9481254/
	https://pubmed.ncbi.nlm.nih.gov/32930797/