



Reducing the wait for surgical consultation – what works and what doesn't? – a review of selected countries in North America, Europe and Australasia

Fernanda N. I. Nagase¹, Tania Stafinski¹, Mary E. Brindle², Jonathan White³, Andrea Young¹, Sanjay Beesoon³, Susan Cleary¹, Devidas Menon^{1^}

¹School of Public Health, University of Alberta, Edmonton, Alberta, Canada; ²Surgery Strategic Clinical Network, Alberta Health Services and University of Calgary, Calgary, Canada; ³Department of Surgery, Alberta Health Services and University of Alberta, Edmonton, Canada

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Correspondence to: Devidas Menon, PhD. School of Public Health, University of Alberta, Health Technology and Policy Unit, 3-021 Research Transition Facility, Alberta T6G 2V2, Canada. Email: menon@ualberta.ca.

Abstract: Wait times for elective health services have been a policy challenge in health systems of most developed nations. Many countries have attempted to reduce wait times for surgery (including the wait to a surgical consultation and for surgery itself) by implementing innovative policies under limited resources. The purpose of this study was to present and discuss approaches implemented in several countries targeting wait times from referral to first appointment with a surgeon (wait time 1). This was part of a health evidence review to identify approaches used to reduce elective surgical wait times. Two sources of information, interviews and a scoping review were conducted to identify approaches targeting wait time 1. Interview participants were identified through several sources. Interview questions were semi-structured and open-ended, and responses were validated through participants being invited to review the accuracy and completeness of the information they provided. Interview data were analyzed by 2 researchers using deductive and inductive 'coding'. Search strategies for the scoping review were applied in multiple scientific databases, government, and health delivery organizations' webpages. Approaches identified through various sources were combined using a conceptual framework based on the main types of policy for improving wait times. A total of 19 interviews, 92 peer-reviewed articles, and 124 documents from the grey literature were included. Information spanned 13 countries and multiple specialities. Among 24 approaches identified, 18 targeted increasing supply, two aimed at reducing demand, and four impacted both supply and demand. 12 of them provided consistent positive or limited but promising evidence of effectiveness on wait time 1. Approaches reduced wait times by affecting the supply, demand, or both sides. Many had evidence relating to their effectiveness in improving wait times and other patient and provider-related outcomes. The 9 approaches with consistent evidence of effectiveness were: Central intake, Expanded role for non-physicians, Patient choice, Standardized referral forms, Specialist advice requests, Expanded role for family doctors, Process improvement methodology, Remote consultations, and Fast track programs.

Keywords: Elective surgery; time to consultation; scoping review; interviews; international comparison

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[^] ORCID: 0000-0002-4172-8634.

Introduction

Provision of timely access to elective surgical care remains a significant and complex problem for publicly funded healthcare systems. Despite heavy investments in the province of Alberta, Canada, the system has been unable to keep pace with demand due to aging population and growing rates of chronic diseases. The consequences of long wait times for elective surgeries can be serious—poor health outcomes, frustration and dissatisfaction among patients (1-3). The presence of surgical wait times has been a long-standing challenge in many Organisation for Economic Co-operation and Development (OECD) countries. Wait times are also a reflection of the functioning of the health system as a whole which can offer opportunity for policy changes to improve the appropriateness, responsiveness and efficiency in health service delivery and to make health systems more people centred. Specifically, in 2016, the times to see a specialist varied more than two-fold across 11 countries surveyed by the Commonwealth Fund. From over 60% of people waiting one month or more for a specialist appointment in Canada and Norway, compared with only around 25% of people in Switzerland, Germany and the Netherlands (4).

Previous reviews on strategies to reduce elective wait times have been limited in the number of studies included in the review, inadequate appraisal of the quality of evidence, with 3 having been published prior to 2013 (2,5,6) and one of them focussing on general elective care rather than on surgical care. Of the 2 more recent evidence syntheses, one was a description of provincial initiatives in Canada (7) and the other was a scoping review of approaches conducted to inform policies in Chile (8). While these two studies are reasonably current, they have limited relevance to the policy context in Alberta where there is currently a major review (or overhaul) of the overall system of access, quality, and safety of surgical care through the Alberta Surgical initiative. This current paper (and the companion paper) is based on a comprehensive scoping review and interviews with stakeholders across Canada and the world. This study was commissioned by Alberta's Ministry of Health and Alberta Health Services (the province-wide health delivery organization) to answer the overarching research question: *“what approaches have been used in Canada and internationally to improve access to surgical care and what have been the impact of these different policies?”*.

Patients wait for surgical consultation and care at all stages of their journey, from the first development of

symptoms to the final visit with the surgeon. As patients' journeys through the healthcare system can be complex, we focused on one specific waiting period, the time from the referral of the patient to a specialist (“wait time 1”) (9,10). This paper reports on the approaches identified in the literature targeting wait time 1.

Methods

The study comprised (I) interviews and (II) a scoping review.

Interviews

Interview participants were identified through surgeons, websites of health authorities, ministries of health, and relevant surgical associations, the published literature, personal contacts in the international health technology assessment community and recommendations from interview participants. Participant recruitment continued until thematic saturation of information was reached. To encourage participation, interviewees were re-assured of absolutely confidentiality of the process. Ethics approval was not required as this was part of a quality improvement project.

Key informants were identified across Canada and publicly funded health care systems in 13 countries that outranked Canada on performance measures related to access to selected procedures [Australia, Denmark, France, Germany, Israel, Italy, Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States (Medicare/Medicaid)] (11,12). These measures include mean and median wait times for cataract surgery and hip and knee replacements, as well as responses to the following yes/no survey questions: *“waited two months or longer for specialist appointment”* and *“waited four months or longer for elective/non-emergency surgery”*.

Telephone interviews were conducted with one researcher leading the interview while one to two researchers recording detailed notes. Questions were semi-structured, open-ended and asked about the implementation of approaches used to improve access to scheduled surgeries (see supplemental materials for more details: <https://cdn.amegroups.com/static/public/jhmhp-21-95-1.pdf>). Responses were validated through participants invited to review the accuracy and completeness of the information they provided.

Two researchers analyzed data using deductive and inductive ‘coding’ (the process of identifying concepts

or themes describing different passages of text and finding relationships between them) (13). The interview questions provided the framework for the analysis, and included 4 broad categories: (I) description of the approach; (II) enablers of implementation; (III) barriers to implementation; and (IV) lessons learned.

Scoping review

A scoping review was conducted using the methodology outlined in internationally accepted guidelines (14). The initial search was performed in November 2018 and updated in October 2020.

Identifying relevant studies

Search strategies were developed and tested through an iterative process by an experienced information specialist. The MEDLINE strategy was peer-reviewed by another senior information specialist prior to execution using the Peer Review of Electronic Search Strategies (PRESS) Checklist (15). The OVID platform was used to search Ovid MEDLINE®, including Epub Ahead of Print and In-Process & Other Non-Indexed Citations, and Embase. The Cochrane Library on Wiley, CINAHL and EconLit on EBSCO, and Web of Science were also searched. Strategies utilized a combination of controlled vocabulary (e.g., “Waiting Lists”, “Surgical Procedures, Operative”, “Efficiency, Organizational”) and keywords (e.g., “delay”, “surgery”, “policy initiative”). Vocabulary and syntax were adjusted across databases. No language restrictions were applied in the search strategy, but when possible, animal-only studies and opinion pieces were excluded.

An extensive grey literature search was performed using the Google search engine. The first 100 hits were reviewed for the following phrases: “surgical wait times”, “wait times for surgery”, “surgical wait lists”, “wait lists for surgery”, “surgical queues”, “queues for surgery”, “operation wait times”, “wait times for operations”, “procedure wait times”, and “wait times for procedures”. Additional searches were performed on the websites of ministries of health, health authorities, and hospitals in Canada and 13 countries; for these latter, additional Google searches were performed combining the name of the country with each of the 10 phrases listed above. Four researchers conducted the grey literature searches which included commissioned reports and policy papers; news/press releases; webpages; and operational/procedural material from health delivery organizations.

Document selection

To be eligible for inclusion, the document was in English or French and described a strategy, method, system, policy or intervention directly intended to reduce elective surgical wait times. Documents on innovations targeting any point in the clinical pathway that could indirectly affect wait times were also included. Documents were excluded if they described approaches to reduce wait times for emergency (non-elective) surgeries.

Two researchers independently screened the titles and abstracts and assessed relevant citations using the eligibility criteria. Researchers met to compare results and determine the final list of documents through discussions and consultations with a third party in case of disagreements.

Data extraction

A minimum of two researchers independently extracted information on each document using a standardized pre-tested form. Any discrepancies were resolved through discussion.

Two researchers analysed extracted data using a pragmatic qualitative research approach. Thematic and constant comparative analyses were used to identify key themes around approaches and gaps in improving access to surgical care (13).

A deliberative discussion of the findings from the review was conducted with members of an Expert Advisory Group, comprising of surgical experts, senior administrative staff and policy makers in Alberta.

Synthesis and quality appraisal of findings from the interviews and scoping review

Approaches identified through interviews and scoping review were combined using a conceptual framework based on the main types of policy levers for improving wait times: (I) increasing supply, affecting outflows—the rate at which patients are removed from the list by receiving treatment (supply side strategies); (II) reducing demand, affecting inflows to the waiting list (demand side strategies); and (III) both—strategies that affect both supply and demand.

Since information on approaches originated from a broad range of sources, it was not possible to appraise their quality using traditional systematic review methods designed for clinical or epidemiological studies. Instead, a best-evidence synthesis was deemed a more suitable approach, based on previous research on wait times by Kreindler (2). For each approach, the collective set of information was

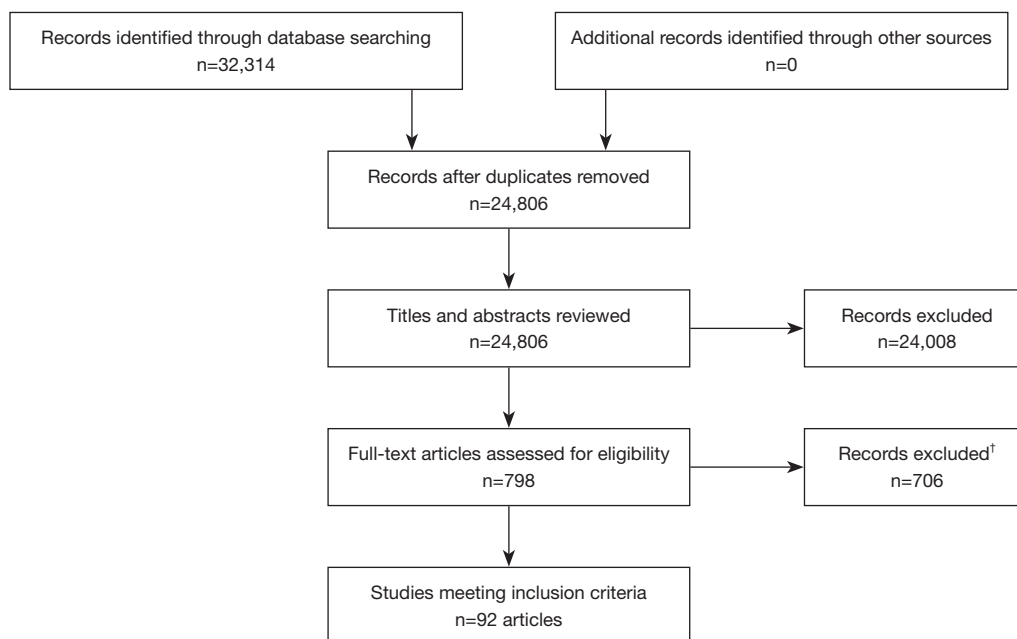


Figure 1 PRISMA diagram of study selection. †, reasons for exclusion of studies: not available in English or French; patients not receiving elective surgery or a diagnostic procedure related to expected elective surgery; no approach to improve access/reducing wait times described; or study not applicable to referral time. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

assessed against three criteria: (I) amount of evidence, (II) consistency of evidence, and (III) certainty of evidence. The third criterion relates to the fact that, in practice, multiple approaches are often adopted simultaneously, making it difficult to determine which one had the greatest impact on wait times. Six ‘strength of evidence’ categories were created: (I) consistent positive evidence of effectiveness; (II) consistent negative evidence of effectiveness; (III) limited but promising evidence of effectiveness; (IV) mixed evidence of effectiveness; (V) not possible to determine—implemented alongside other approaches and (VI) not possible to determine—no information on impact found. Approaches with at least three sources of information that presented the same findings in terms of their impact on wait times were classified as ‘consistent positive evidence of effectiveness or ineffectiveness’ (2).

Results

Forty interviews were conducted with participants from Australia, Canada, Denmark, Germany, Israel, New Zealand, Norway, the Netherlands, Sweden and the UK. Attempts to contact participants from Italy, Switzerland and the United States were unsuccessful. Nineteen of the

40 interviews discussed interventions targeting wait times 1 and were included in this study.

The search for peer-reviewed literature identified 24,806 discrete citations, of which 92 articles met the inclusion criteria (Figure 1). A total of 124 relevant documents were located through the grey literature searches (Table 1). In total, the study identified 24 approaches targeting wait time 1, of which 18 were supply side strategies (targeted at health professionals and organizations) aiming to increase capacity and efficiency, 2 demand side strategies (targeted at patients) intended to reduce demand; 4 affected both supply and demand (Table 2). The supplemental materials (<https://cdn.amegroups.com/static/public/jhmhp-21-95-1.pdf>) provide further information regarding examples, descriptions, and impact of individual approaches.

Central intake

Central intake refers to a single point-of-entry to receive, triage referrals and arrange for service provision. The approach may prevent multiple referrals for a single patient to different specialists. Pooled waiting lists and processes for screening out non-surgical candidates before specialist consultation are commonly part of central intake

Table 1 Overall characteristics of included documents

Characteristics	Publications, n [%]
Total	235 [100]
Source of information	
Peer reviewed studies	92 [39]
Grey literature	124 [53]
Interview	19 [8]
Country	
Australia	26 [11]
Canada	104 [44]
Denmark	2 [1]
Ireland	5 [2]
Israel	1 [0]
Netherlands	1 [0]
New Zealand	7 [3]
Norway	3 [1]
Spain	1 [0]
Sweden	5 [2]
Switzerland	1 [0]
United Kingdom	65 [28]
United States	10 [4]
Multiple	4 [2]
Specialty area	
Cardiothoracic	7 [3]
Dermatology	1 [0]
ENT	4 [2]
General surgery	12 [5]
Oncology	24 [10]
Ophthalmology	5 [2]
Orthopedic/neurosurgery	58 [25]
Pediatric	2 [1]
Urology	1 [0]
Various	119 [51]
Not reported	2 [1]

ENT, ears, nose, and throat.

processes. Pooled waiting lists allow patients to be seen by the ‘first available’ surgeon for a consultation, improving the distribution and flow of patients. At screening clinics, a

healthcare provider assesses whether or not patients meet the criteria for a consultation, allowing surgeons to allocate their time to other priority services. Patients who are not surgical candidates are referred back to their family doctor, with a care plan. Central intake programs often incorporate standardized referral forms, priority criteria to triage patients, data management systems for ongoing collection and monitoring of data, and standardized care pathways.

According to sources from Canada and the UK, central intake with pooled waiting lists and screening processes effectively reduced referral wait times (16-19), and in some cases, wait times for surgery (20). It also decreased inappropriate referrals as some patients did not require surgical consultation (21).

Overall, central intake with pooled waiting lists and no screening process were also positive. Multiple sources reported improved wait times for consultation (22-24), diagnosis (25), surgery (26,27), as well as reduced variability in waiting times across surgeons.

Many Canadian interviewees reported that central intake positively impacted wait time 1 and reduced duplicate referrals. However, one interviewee cautioned that if demand is higher than capacity, central intake can only ensure no patient is waiting longer than anyone else. Funding, buy-in from surgeons, and mandatory adoption were factors mentioned for central intake to succeed.

Expanded role for family doctors

Expanded role for physicians describes situations in which family doctors perform tasks normally reserved for specialists, including providing direct access to surgical wait lists, and performing non-complex surgery. These roles may require additional training; however, this was not consistently described.

Evidence on expanded roles for family doctors came primarily from the literature. Only one interviewee from Canada commented on family doctors performing surgeries in rural hospitals, but no impact information was reported. In New Zealand, family doctors ‘with special interests’ have been trained to perform certain general surgeries which reduced wait times for patients (28).

Six peer-reviewed studies reported on hospitals allowing family doctors direct access to wait lists in Australia (endoscopy) (29), Ireland [minor outpatient surgeries; ears, nose, and throat (ENT) procedures] (30,31), and England (carpal tunnel decompression; hernia repair) (32-34). Across these studies, direct access to wait lists led to reduced

Table 2 Characteristics of approaches targeting wait time 1

Approach, source of information	Categories	Type	Strength of evidence
Central intake, n=63 [27%]	With pooled waiting lists and screening processes	Supply	Consistent positive evidence of effectiveness
	With pooled waiting lists and no screening processes		
	Without a pooled waiting lists		
Expanded role for family doctors, n=10 [4%]	Direct access to surgical list	Supply	Consistent positive evidence of effectiveness
	Family doctor-led surgery		
Expanded role for non-physicians, n=43 [18%]	Triage and patient assessment	Supply	Consistent positive evidence of effectiveness
	Non-physician-led procedure		
	Direct access to surgical list		
	Post-discharge follow-ups		
Fast track programs, n=7 [3%]	Not applicable	Supply	Consistent positive evidence of effectiveness
Patient choice, n=32 [14%]	Consultation date	Supply	Consistent positive evidence of effectiveness
	Hospital		
	Surgeon		
Process improvement methodology, n=8 [3%]	Quality improvement approaches, e.g., LEAN	Supply	Consistent positive evidence of effectiveness
Remote consultations, n=8 [3%]	Not applicable	Supply	Consistent positive evidence of effectiveness
Specialist advice requests, n=16 [7%]	Electronic [online] system	Supply	Consistent positive evidence of effectiveness
	Dedicated telephone line		
Standardized referral forms, n=31 [13%]	Not applicable	Supply	Consistent positive evidence of effectiveness
Targeted funding, n=10 [4%]	Human resources	Supply	Limited but promising evidence of effectiveness
	Scheduling		
Shared appointment for specialist consultations, n=2 [1%]	Not applicable	Supply	Limited but promising evidence of effectiveness
Standardized treatment pathways, n=13 [6%]	Not applicable	Supply	Limited but promising evidence of effectiveness
Wait time targets, n=31 [13%]	Legally binding wait time targets or guarantees enforced through positive and negative incentives	Demand and supply	Mixed evidence of effectiveness
	Legally binding wait time targets or guarantees and mandatory offer of alternative provider enforced through negative or positive incentives		
	Legally binding wait time targets or guarantees and mandatory offer of alternative provider		
	Non-legally binding wait time targets or guarantees and offer of alternative provider		
	Non-legally binding wait time targets or guarantees		

Table 2 [continued]

Table 2 [continued]

Approach source of information	Categories	Type	Strength of evidence
Non-financial provider incentives, n=2 [1%]	Not applicable	Supply	Not possible to determine—implemented alongside other approaches
Ongoing monitoring, analysis, and reporting of wait times and other outcomes data, n=15 [6%]	Not applicable	Demand and supply	Not possible to determine—implemented alongside other approaches
Regular validation of wait lists, n=2 [1%]	Not applicable	Demand	Not possible to determine—implemented alongside other approaches
Web-based specialist directories, n=7 [3%]	Not applicable	Demand	Not possible to determine—implemented alongside other approaches
Appointment reminders for consultation, n=3 [1%]	Call Text and voice messaging	Supply	Not possible to determine—no information on impact found
Cancellation lists, n=1 [0%]	Not applicable	Supply	Not possible to determine—no information on impact found
No-show policies, n=2 [1%]	Not applicable	Supply	Not possible to determine—no information on impact found
Operations research/resource planning tools, n=3 [1%]	Not applicable	Demand and supply	Not possible to determine—no information on impact found
Organizational incentives, n=5 [2%]	Pay for performance Non-financial incentives Negative financial incentives	Supply	Not possible to determine—no information on impact found
Post-discharge follow-up by phone, n=4 [2%]	Not applicable	Supply	Not possible to determine—no information on impact found
Public reporting of wait times, n=7 [3%]	Not applicable	Demand and supply	Not possible to determine—no information on impact found

wait times (29-34). One study also found better access to endoscopy services in rural areas after implementation of the approach (29).

Expanded role for non-physicians

Nurses, physiotherapists, podiatrists, speech pathologists, audiologists, sonographers, optometrists and orthoptists are involved in managing elective surgery patients. Their roles include: performing triage, conducting procedures, providing direct access, and conducting post-discharge follow-ups.

Across documents, non-physicians performing triage improved wait time 1 (35-43), in some cases, it also

improved wait time 2 (28,44,45). Other outcomes reported were a reduction of surgical referrals (28,35,38,39,41,43-53) and high patient satisfaction (43,46,50,52,54,55). These improvements did not depend on the type of health care professional providing the service.

Three studies examined the impact of sonographers and nurses trained to perform biopsies and surgery for carpal tunnel syndrome. All reported a reduction in wait times from referral to procedure (56-58). One study reported that patients preferred to have their biopsies performed on the day of consultation by nurses rather than return for a subsequent appointment with the surgeon (57). However, one study noted considerable criticism from patients and surgeons over the approach (58).

There were 3 examples in which physiotherapists (59,60) and optometrists (46) directly referred patients to a surgical wait list, but no impact on wait times was reported.

Three studies described postoperative care by non-physicians in an orthopedic program in Australia (48), a cardiovascular program (61) and an otolaryngology clinic in the US (62). These studies concluded that surgeon capacity for new consultations increased (48,61,62). Other sources reported that follow-up by non-physicians reduced wait times for consultations and thus increased capacity for surgeons to see new patients (36,62).

Fast-track programs

Fast-track programs help patients with suspected cancer move more quickly from referral to diagnosis and treatment by implementing preferential pathways for referral to surgeons. Four studies described programs from Denmark (63) and the UK (64-66). Three examined the implementation of fast-track programs based on 14-day wait time guarantees from referral to first specialist consultation in the UK. Across studies, fast track programs reduced wait times from referral to treatment, referral to first consultation (65) and referral to diagnosis (63,66). In one study, it was noted that the program increased referrals for 'urgent cases', leading to increased wait times for 'routine' patients (64).

One interview described a fast-track thoracic program in Alberta, Canada in which patients were automatically referred to a surgeon when a spot was detected on the CT scan. The program was successful in reducing wait time 1 and ensuring patients were not falling through the cracks. However, it led to an unnecessary increase in number of CT scans requiring surgeons review.

Patient choice

Patient choice refers to options given to patients related to their choice of surgeon, hospital and consultation date. The first two options aim to reduce wait times by more evenly distributing wait lists and allowing patients to see the first available surgeon or attend the hospital with the shortest wait times. In some cases, patients, alongside their family doctors, are able to access online resources with information on wait times and other quality indicators to assist patients with their decisions. Choice of consultation date aims to reduce cancellations or no-shows.

Peer-reviewed studies of patient choice of surgeon

reported reduced wait times from referral to consultation in Canada (23) and from referral to surgery in the UK (67). However, in the UK, there were other initiatives in place, such as enforcement of wait time targets, which would have contributed to this change. One study found that given the option, most patients would choose the first available surgeon rather than a specific surgeon (23). A number of non-peer-reviewed sources also reported shorter wait times despite increase in referrals; but since other changes were implemented at the same time, these reductions were likely due to the cumulative effect of all changes (17,24,68,69). Three interviews described providing the patient choice of first available surgeon in orthopedic programs across Canada. Two reported benefits from the program with one stating greater impact once it became mandatory. Finally, in a New Zealand region, where patients could select a convenient time for a clinic visit, rates fell for no-shows, wait times and cancellations (28).

Process improvement methodology

Process improvement methodology refers to a set of methods that focus on improving quality and efficiency of health care services.

Eight sources described the use of LEAN, a set of methods and operating philosophies that aims to eliminate waste in every process through an ongoing system of improvement. They originated from Canada (70-74), the UK (75) and the US (76). One study reported improvements in wait times to surgery, consultation numbers, and numbers of no-shows (76). Other quality improvement approaches, described in grey literature, were also used in Alberta, Canada. Overall, they positively impacted wait times (70-74). No interviewees commented on this approach.

Remote consultations

Remote consultations, or virtual care, allow patients in rural and remote locations to "visit" their specialists using telehealth services. Considerations for implementing such an approach include: identifying appropriate patients, educating patients about their options, and having staff in place when examination is necessary. One Canadian study compared access to specialists between rural patients accessing a specialist via telehealth, rural patients seeing a specialist in-person, and urban patients seeing a specialist in-person. Urban patients had significantly shorter wait times 1. However, no statistically significant differences

were found in the number of appointments kept, waits for surgery, and waits for follow-up between the three groups. The study reported that waits for patients to access telehealth services improved over time as it became integrated into routine practice (77). Similarly, two studies from the US in ENT and dermatology found that remote consultations led to decreased wait times for consultation (78) and treatment (79). Both studies reported reductions in patient travel and associated costs (78,79). Unpublished documents from Canada also consistently reported reductions in travel for rural and remote patients (80–82) with one also reporting improvements in wait times (81). Impact of remote consultations on wait times was not described during interviews, but one participant commented on the difficulties of conducting physical examinations using telehealth.

Specialist advice requests

Specialist advice requests allow family doctors to request advice from a specialist who responds immediately or within a short time window, typically hours or days. These consultations aim to decrease referrals of patients who can be adequately managed in primary care. Specialty advice may be over a dedicated phone line or through a web-based portal. The latter's advantage over telephone is its capability to instantly send diagnostic test results and digital images for specialists to review. In some jurisdictions, advice requests have been integrated into standardized referral forms. Specialists may respond with recommendations or suggest a face-to-face consultation.

Examples of implementation were found in Canada (83–93), New Zealand (28), and the UK (43,94). Across publications, there was consistent evidence for decreased wait times to see a specialist (28,85,87), for treatment (94), unnecessary referrals (83–85,90,92), system-level cost savings (85,87,90), avoided patient travel, and high physician satisfaction (94). One Canadian costing study reported cost savings from a societal perspective over one year (84,93). One Canadian interviewee described pilot program on specialty advice to provide specialist access in remote areas. No further information was provided.

Standardized referral forms

Standardized referral forms provide common referral templates for specialist consultation or diagnostic testing. The approach aims to streamline the referral process and

reduce the number of inappropriate referrals as well as duplication of diagnostic tests. Standardized referral forms may be paper or electronic-based.

This approach was implemented in many countries, alongside other wait time initiatives, including standardized care pathways and central intake. Across the peer-reviewed studies that examined new referral protocols alone, there was consistent evidence for reductions in waiting times for treatment, as well as for diagnosis and biopsy (94–98). In one study standardized referral forms alongside wait time guarantees decreased mean waiting times to consultation, diagnostic testing and surgery (99). Another study reported an increase in appropriate referrals to spine surgery after standardized referral forms along with central intake and screening clinics were instituted (100). Sources from the grey literature found that standardized forms were useful in determining if a consultation or test was indeed required (43,72,86,101–103). Reductions in the time taken to vet referrals and provide patients with appointments were also reported (43).

According to interviews, standardized referral forms have been implemented in some Canadian provinces. While one participant indicated positive results with the approach, two participants described issues with widespread implementation due to lack of buy-in from specialists and establishment of a preferred electronic system.

Targeted funding

Targeted funding is provided to reduce wait time 1 through hiring specialists and increasing work hours. Some examples include studies describing the hiring of a new urologist in Australia (104), orthopedic surgeons in Canada (105) and the UK (106). Other examples from Australia recounted government investing to expand outpatient services (107,108). Two sources reported that targeted funding had a positive impact on wait time 1 (108,109). One interviewee from Israel also described reductions in wait times after giving extra payment to specialists to see patients after hours.

Shared appointment for specialist consultations

Shared medical appointments involve multiple patients attending a consultation together to improve access without increasing costs. Appointments may begin with educational sessions followed by individual assessments. Patients are encouraged to ask questions and must sign a confidentiality

agreement. Two studies were based in the US (110,111). In one, patients participated in shared appointments following bariatric surgery, and 96% of patients were satisfied with this arrangement (110). In the second study, patients with hand pain attended shared appointments at a clinic offering non-surgical and surgical treatments for hand disorders. This study indicated that having group visits for more specific conditions such as carpal tunnel syndrome allowed groups to be more focused, education to be streamlined, and enhanced mutual support among patients (111). Evidence was limited with both studies reporting decrease in wait time 1 (110,111). No interviews described the approach.

Standardized treatment pathways

A standardized treatment pathway is a multidisciplinary management tool designed for a specific population with a predictable clinical course. It aims to reduce wait time 1 by streamlining the referral process and reducing the number of inappropriate referrals. Examples describing standardized treatment pathways were identified in Canada (20,100,112,113), Norway (114), New Zealand and England (115) in different specialties including orthopedics and cardiothoracic surgery. One program in Canada reported the approach reduced wait time 1 (20,69,116), and improved patient satisfaction (20,69). No interviews described the approach.

Wait time targets

Wait time target or guarantee policies ensure patients receive surgery within an agreed-to timeframe. These policies may change over time and vary within and across jurisdictions. These policies may cover wait times 2 or the whole patient journey from referral to treatment. They may or may not be legally binding. Evidence on wait time targets came from the scoping review and no interviews described the approach.

Legally binding wait time targets enforced through incentives covering wait times from referral to treatment were introduced in England between 2000 and 2008, and Sweden in 2010. Evidence on the impact of policy on wait time 1 was limited. One study from England reported the mean wait time 1 dropped significantly from 14 to 12 days (117). Four documents reported positive impacts on wait times from referral to treatment, but no measures on wait time 1 alone were provided (117-120). Further, one qualitative study reported criticism of the policy

from healthcare professionals in England, with claims of mis-prioritization and undermining of professional autonomy (121).

Non-legally binding wait time targets from referral to treatment with an offer of an alternative provider were instituted in the past but is no longer in place in Sweden, Denmark and Scotland. The effects of the policy on wait time 1 were limited. Two sources found a reduction in wait time 1 (5,122), but one source reported that 30% of patients were waiting more than three months to see a specialist in the third year after implementation (5). Evidence on the impact of the policy on overall wait times was mixed. While there was a reduction in wait times in Scotland, further analysis indicated gaming and decrease in waits for low priority groups at the expense of high priority groups (5,109,122-129).

Non-financial provider incentives

In Alberta, Canada, orthopedic surgeons received 'score cards' comparing their performance to established benchmarks on key performance indicators including wait times from referral to surgery. While one study reported reduction on wait times for surgery, the scorecard initiative was part of a new integrated care pathway for hip and knee replacements (130). No specific impact on wait time 1 was reported and no interviewed participants described the approach.

Ongoing monitoring, analysis, and reporting of wait times and other outcome data

Health institutions, governments, and other organizations have ongoing collection and monitoring wait times, quality, and safety data to support quality improvement, equity, and transparency. These are usually context-specific and use a variety of technical platforms. Wait time data have been regularly reviewed at the governmental level (103,107, 131-133), hospital level (132), and by individual surgeons through dashboards (132) to ensure patients are treated in a timely manner.

According to interviews, ongoing monitoring is a key tool to improve the whole patient journey from the first visit to the family doctor to discharge. The approach has been used to identify sources of delays, develop benchmarks and measure the system's performance. The effect of its impact on wait time 1 is unclear as the approach is usually not used alone and cannot be easily disentangled from other

initiatives. Despite limited information on the impact of these processes on wait-time related measures, there was consistent evidence that ongoing monitoring, analysis, and reporting are essential for addressing wait times.

Regular validation of wait lists

Validation is the active process of comprehensive review of all patients on the list who still require a specialist consultation. Patients are removed from the list if a consultation is no longer required. Validations are unnecessary when waiting times are short. According to non-peer-reviewed Australian sources, a team approach was used to validate outpatient waiting lists (134,135) and it contributed to decrease wait times to specialist for renal issues when implemented alongside other wait time management approaches (135). No interviews described this approach.

Web-based specialist directories

Web-based specialist directories are online resources with real-time information about specialists, their areas of expertise, eligibility requirements, and in some cases, wait times. They aim to improve patient experience and reduce wait times by streamlining the referral process. Evidence on the effectiveness of this approach was limited. One Canadian source reported reduced wait times after introducing directories alongside other interventions as part of a province-wide wait times initiative (136,137). One interviewee reported their catalog depended on specialists self-updating their data, which was challenging to manage and ultimately not successful.

Appointment reminders for consultation

Appointment reminders are notifications sent in advance via call or text to remind patients about upcoming appointments. Evidence from the scoping review demonstrated appointment reminders to have a positive impact on no-show appointments in the UK.

Cancellation lists

Cancellation lists allow patients willing to have a consultation on short-notice place their name on a list to be called when a spot becomes available. One example was identified in an interview from Canada, in which some

surgeons had a list of patients who could be contacted to receive a consultation in case another patient cancelled. No information on impact of approach on wait times was found.

No-show policies

No-show policies discourage patients from missing their appointments with insufficient notice for the slot to be filled by another patient. Depending on the jurisdiction, patients may be required to get a new referral or returned to the start of the queue. Exceptions may be made for extraordinary circumstances. While this approach has been applied in Canada and in the UK, no information on its impact was found in the literature and during interviews.

Operations research/resource planning tools

Methods for addressing issues related to surgical wait times include the use of mathematical models. Three studies developed models to assess the impact of interventions on wait times 1 and 2. One study employed an analytical model to compare wait time target policies in Norway and Scotland (125). The remaining two used simulations to explore different interventions without actually applying them (138,139). One model was subsequently used to make decisions around additional investments in infrastructure and staff, and/or revise eligibility criteria for surgery (139). The impact of these models on wait time 1 was not reported. However, interviewees from most jurisdictions mentioned using hospital operations management tools for capacity analysis and resource planning. These tools have their origins in operations research, a discipline that uses mathematical modelling and information technology to develop decision support systems. Participants spoke positively about their experiences using these tools, citing them as essential for understanding and addressing delays.

Organizational incentives

Some jurisdictions have implemented organization-level incentives to increase productivity. These incentives can be grouped into financial (pay for performance), non-financial and negative financial incentives.

Norway and Sweden implemented pay-for-performance schemes in which health authorities were rewarded if wait time targets from referral to surgery were met. One document found that the number of patients waiting for

more than three months to see a specialist declined in Sweden after implementation.

England introduced non-financial incentives through the 'balanced score card' initiative in 2000, where hospitals received rewards (greater autonomy) or sanctions (dismissal of managers) depending on their quality star ratings. One study reported a decline in the number of patients waiting longer than six months from referral to treatment after the implementation of star ratings alongside other wait time initiatives (129). No measure on the impact on wait time 1 alone was found.

One study examined financial disincentives implemented alongside wait time targets in England in 2011. While family doctors, oncologists and surgeons were positive about the targets in general, they expressed some concern that they took a 'one-size fits all' approach, put providers under considerable pressure and over-rode patient and provider choice (65).

Organization incentives were not described during interviews.

Post-discharge follow-up by phone

Follow-ups after surgery are conducted over telephone to reduce unnecessary outpatient follow-up and increase the number of surgical consultation slots of new referrals. In one study, patients were sent a standardized outpatient text message enquiring about their progress two weeks post-discharge from scheduled surgery. Depending on their response, patients were referred to their family physician or returned to the next scheduled outpatient clinic. Patients were also able to call the surgical team directly if they had medical queries. The study found a high level of satisfaction among patients who completed the survey and 74% of outpatient visits were avoided, though no impact on wait times or capacity for new consultations were measured (140). One interviewee from Alberta, Canada reported on follow-ups by phone in some clinics, but this was not standard practice across the province.

Public reporting of wait times

In many jurisdictions, wait times are made publicly available online. Providing this information may reduce wait times and equalize wait lists between specialists by allowing patients and their physicians to make referral decisions based on which specialist has the shortest waits. There

was relatively little information on the effect on; this included including some Canadian provinces, Denmark, the Netherlands, and the UK. No evidence on the effect of public reporting on wait time 1 was found. However, evidence from Denmark suggested patients were not necessarily using this information to make their decisions (6). No interviews described an approach.

In summary, this review identified nine approaches with consistent positive evidence of effectiveness, listed in order of the number of publications which were reviewed:

- (I) Central intake (63);
- (II) Expanded role for non-physicians (43);
- (III) Patient choice (32);
- (IV) Standardized referral forms (31);
- (V) Specialist advice requests (16);
- (VI) Expanded role for family doctors (10);
- (VII) Process improvement methodology (8);
- (VIII) Remote consultations (8);
- (IX) Fast track programs (7).

There were a further three approaches identified as having more limited but promising evidence of effectiveness:

- (I) Standardized treatment pathways (13);
- (II) Targeted funding (10);
- (III) Shared appointment for specialist consultations (2).

None of the other strategies evaluated had consistent evidence of benefit.

Discussion

It is clear that wait times for elective surgeries is a major public policy issue in many countries. Long wait times beyond what is clinically recommended are linked to adverse clinical outcomes, major inefficiencies in health care delivery and dissatisfaction for patients and families. Although not always explicitly stated in the documents and consultations in this review, the major driver to find innovative and practical solutions to long wait times was healthcare budgets.

This review identified twelve approaches that effectively reduced the wait time from first referral from a family physician to consultation with a surgeon. As these approaches only target part of the patient journey, strategies to improve wait time 2 must also be employed concurrently. Integrating multiple strategies will likely be required to address such an intractable problem.

These interventions were implemented through distinct policy streams in discrete populations with variable evaluation metrics. Thus, it is important that the findings of

the different studies be interpreted with caution and that no blanket assumption should be made that if an intervention is effective in one jurisdiction it will automatically work in another one. Rather, it is imperative that policy leaders test the effectiveness of an intervention in their health authority to ensure results are replicable before adopting and adapting a given policy option to address the issue of long wait times for elective surgeries.

In this paper, a traditional approach was not done to assess the quality of individual sources of information on effectiveness, since both interviews and printed material were used, with various study designs reported in the sources. Thus, a best-evidence approach was taken, to determine how consistent the evidence of effectiveness was across all sources of information on a particular intervention (e.g., standardized referral forms). The effectiveness of an intervention ranged from “consistent positive evidence of effectiveness” across sources through “limited but promising evidence of effectiveness” to “not possible to determine”. This allowed for statements to be made on the aggregate set of information relating to the effectiveness of each of the 24 interventions reported in this paper.

Limitations

Our study has other limitations worth mentioning. First, we intended for the interviews and scoping review to be broad and comprehensive. While the search strategy extended to multiple study databases and websites, we did not perform specific search strategies on individual approaches. Also, the intention was to identify strategies used in different jurisdictions to reduce elective surgical wait times and provide general information on their success in achieving their goals. The study was not designed to analyze the magnitude of effectiveness on wait time measures and compare which intervention was the most effective within a specific context. Thus, the assessment of effectiveness needs to be interpreted with caution, because of the range of types of information included. Second, the quality assessment of the body of evidence depended on the amount of evidence. Bias is likely present in approaches with fewer publications of similar findings. Third, evidence from peer-reviewed studies and unpublished sources had the same weight in the quality appraisal. Any future review of this subject will need to address these limitations.

Most countries with publicly funded healthcare systems struggle to provide their citizens with timely access to surgical consultation and care.

Conclusions

This study identified nine distinct strategies with consistent positive evidence of effectiveness in reducing the wait time for surgical consultation and three further strategies with more limited but promising evidence of effectiveness. The approaches reviewed reduced referral times by affecting supply, demand, or both. Policy-makers interested in reducing wait times for elective surgeries should consider them as part of an initiative that also incorporates approaches targeting wait time 2.

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Footnote

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References

1. Desmeules F, Dionne CE, Belzile E, et al. The burden of wait for knee replacement surgery: effects on pain, function and health-related quality of life at the time of surgery. *Rheumatology (Oxford)* 2010;49:945-54.
2. Kreindler SA. Policy strategies to reduce waits for elective care: a synthesis of international evidence. *Br Med Bull* 2010;95:7-32.
3. Oudhoff JP, Timmermans DR, Knol DL, et al. Waiting for elective general surgery: impact on health related quality of life and psychosocial consequences. *BMC Public Health* 2007;7:164.
4. OECD. *Waiting Times for Health Services*. Paris: OECD Publishing; 2020.
5. Siciliani L, Borowitz M, Moran V. *Waiting Time Policies in the Health Sector: What Works?* Paris, France: OECD Publishing; 2013.
6. Siciliani L, Hurst J. Tackling excessive waiting times for elective surgery: a comparative analysis of policies in 12 OECD countries. *Health Policy* 2005;72:201-15.
7. Wennberg EAB, Takata JL, Urbach DR. Elective surgery wait time reduction in Canada: A synthesis of provincial initiatives. *Healthc Manage Forum* 2020;33:111-9.
8. Bachelet VC, Goyenechea M, Carrasco VA. Policy strategies to reduce waiting times for elective surgery: A scoping review and evidence synthesis. *Int J Health Plann Manage* 2019;34:e995-e1015.
9. Alberta Health Services. *Leading access transformation: Path to care*. In: Services AH, editor. online. Alberta, Canada: Alberta Health Services; 2019.
10. Health Quality Ontario. *System Performance Ontario, Canada 2021*. Available online: <https://www.hqontario.ca/System-Performance/Wait-Times-for-Surgeries-and-Procedures>
11. OECD. *Health at a Glance 2017: OECD Indicators*. Paris, France: OECD Publishing; 2017.
12. Schneider EC, Sarnak DO, Squires D, Shah A, Doty MM. *Mirror, Mirror 2017: International Comparison Reflects Flaws and Opportunities for Better U.S. Health Care*. New York, United States: The Commonwealth Fund; 2017.
13. Savin-Baden MM, C. Howell. *Qualitative research : the essential guide to theory and practice*. Milton Park, Abingdon, Oxon: Routledge; 2013.
14. H Arksey, L. O'Malley. *Scoping studies: towards a methodological framework*. *Int J Soc Res Methodol* 2005;8:19-32.
15. McGowan J, Sampson M, Salzwedel DM, et al. *PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement*. *J Clin Epidemiol* 2016;75:40-6.
16. Government of Newfoundland and Labrador. *A strategy to reduce hip and knee joint replacement surgery wait times in Newfoundland and Labrador*. St. John's (NL), Canada: Government of Newfoundland and Labrador; 2012.
17. Nova Scotia Health Authority. *Business Plan 2014-15*. Nova Scotia, Canada: Nova Scotia Health and Wellness; 2014.
18. Alberta Bone & Joint Health Institute. *Hip and Knee Alberta, Canada: Alberta Bone & Joint Health Institute; 2019*. Available online: <https://albertaboneandjoint.com/projects/hip-and-knee/>
19. Nova Scotia Health Authority. *Hip and Knee Action Plan*. Nova Scotia, Canada: Nova Scotia Health Authority; 2018.
20. Alberta Bone & Joint Health Institute. *Alberta Hip and Knee Replacement Pilot Project: Scientific Evaluation Report*. Alberta, Canada; 2007.
21. Hattam P. The effectiveness of orthopaedic triage by extended scope physiotherapists. *Clinical Governance: An International Journal* 2004;9:244-52.
22. Bungard TJ, Smigorowsky MJ, Lalonde LD, et al. *Cardiac EASE (Ensuring Access and Speedy Evaluation)--design of a single point of entry and a multidisciplinary team to reduce waiting times in the Canadian health care system*. *Healthc Manage Forum* 2008 Autumn;21:35-40.
23. van den Heuvel B, Vair B, Porter G, et al. *Patient compliance with a group model of care: the hernia clinic*. *Can J Surg* 2012;55:259-63.
24. Bichel A, Erfle S, Wiebe V, et al. *Improving patient access to medical services: preventing the patient from being lost in translation*. *Healthc Q* 2009;13:61-8.
25. Common JL, Mariathas HH, Parsons K, et al. *Reducing Wait Time for Lung Cancer Diagnosis and Treatment: Impact of a Multidisciplinary, Centralized Referral Program*. *Can Assoc Radiol J* 2018;69:322-7.
26. Sunshine Coast Hospital and Health Service. *Annual Report 2013 - 2014*. Queensland, Australia: Queensland Government; 2014.
27. Sunshine Coast Hospital and Health Service. *Quality of Care Report 2014-2015*. Queensland, Australia: Queensland Government; 2015.
28. Ministry of Health. *Improving the System: Meeting the Challenge - Improving patient flow for electives*. Wellington, New Zealand: Ministry of Health; 2012.
29. Hughes-Anderson W, Rankin SL, House J, et al. *Open access endoscopy in rural and remote Western Australia:*

- does it work? ANZ J Surg 2002;72:699-703.
30. Flynn M, Walsh M, Hegarty I, et al. National Clinical Programme in Surgery GP Integrated Care ENT Education Programme. *Int J Integr Care* 2017;17:A180.
 31. Ali R, Lang E, Chukudubelu O, Walsh M. Efficacy of a direct booking system: A prospective cohort study. *Ambul Surg* 2010;16:28-33.
 32. Sri-Ram K, Irvine T, Ingham Clark CL. A Direct Booking Hernia Service - A shorter wait and a satisfied patient. *Ambul Surg* 2006;12:113-7.
 33. Shetty A, Manimaran N, Reece-Smith H. Direct access day-case hernia surgery: A logical option for reduction in waiting time. *Ambul Surg* 2004;11:41-3.
 34. Jarrett ME, Giddins GE. Direct access carpal tunnel surgery. *J Bone Joint Surg Br* 2003;85:869-70.
 35. Queensland Health. Allied Health Expanded Scope Strategy 2016-2021. Brisbane, Queensland: State of Queensland (Queensland Health); 2016.
 36. Queensland Health. Ministerial Taskforce on health practitioner expanded scope of practice: final report. Brisbane, Queensland: Queensland Government; 2014.
 37. Townsville Hospital and Health Service. Townsville Hospital and Health Service Annual Report 2014-2015. Queensland, Australia: Queensland Government; 2015.
 38. Kirkwood BJ, Pesudovs K, Latimer P, et al. The efficacy of a nurse-led preoperative cataract assessment and postoperative care clinic. *Med J Aust* 2006;184:278-81.
 39. Vancouver Coastal Health Authority. Rapid Access Spine Triage Program- Brenda and David McLean Integrated Spine Clinic- Blusson Spinal Cord Centre Vancouver (BC), Canada: Vancouver Coastal Health Authority; 2019. Available online: http://www.vch.ca/locations-services/result?res_id=1430
 40. Canadian Nurses Association. Registered Nurses: on the front lines of wait times - moving forward. Ottawa (ON), Canada; 2011.
 41. Haddow JB, Walshe M, Aggarwal D, et al. Improving the diagnostic stage of the suspected colorectal cancer pathway: A quality improvement project. *Healthc (Amst)* 2016;4:225-34.
 42. Hitchins CR, Lawn A, Whitehouse G, et al. The straight to test endoscopy service for suspected colorectal cancer: meeting national targets but are we meeting our patients' expectations? *Colorectal Dis* 2014;16:616-9.
 43. Scottish Government Health Directorates. Achieving the 18 weeks referral to treatment standard in orthopaedic services: task & finish group interim output report. Scotland, United Kingdom: Scottish Government Health Directorates; 2010.
 44. Aiken AB, Harrison MM, Atkinson M, et al. Easing the burden for joint replacement wait times: the role of the expanded practice physiotherapist. *Healthc Q* 2008;11:62-6.
 45. Aiken AB, Harrison MM, Hope J. Role of the advanced practice physiotherapist in decreasing surgical wait times. *Healthc Q* 2009;12:80-3.
 46. Scottish Executive. A guide to service improvement: measurement analysis techniques and solutions. Edinburgh, Scotland: Scottish Executive; 2005.
 47. Poder TG, Bellemare C, Bédard SK, et al. New design of care: Assessment of an interdisciplinary orthopaedic clinic with a pivot nurse in the province of Quebec. *Orthop Nurs* 2010;29:381-9.
 48. Stute M, Moretto N, Raymer M, et al. Process to establish 11 primary contact allied health pathways in a public health service. *Aust Health Rev* 2018;42:258-65.
 49. Leary A, Corrigan P. Redesign of thoracic surgical services within a cancer network-using an oncology focus to inform change. *Eur J Oncol Nurs* 2005;9:74-8.
 50. Pottle A. A nurse-led rapid access chest pain clinic-- experience from the first 3 years. *Eur J Cardiovasc Nurs* 2005;4:227-33.
 51. Stone MD, Norton S, Mendez JE, et al. Positive impact of a breast-health triaging system on breast-care access and physician satisfaction. *Am J Surg* 2007;194:482-7.
 52. Russell KW, Mone MC, Serpico VJ, et al. Optimal utilization of a breast care advanced practice clinician. *Am J Surg* 2014;208:1054-9; discussion 1058-9.
 53. Clinic cuts wait times for outpatients [press release]. South Australia, Australia: Government of South Australia; 2018.
 54. Sarro A, Rampersaud YR, Lewis S. Nurse practitioner-led surgical spine consultation clinic. *J Adv Nurs* 2010;66:2671-6.
 55. Musculoskeletal Medicine Clinical Advisory Group. Musculoskeletal Medicine Clinical Advisory Group - Response to Green Paper. Tasmania, Australia: Musculoskeletal Medicine Clinical Advisory Group; 2019.
 56. Ghai S, Lee SY, Bret PM, et al. Thyroid Biopsy Specialists: A Quality Initiative to Reduce Wait Times and Improve Adequacy Rates. *Radiology* 2015;276:894-9.
 57. Godsell G. A nurse-surgical post cuts waiting times and extends nurses' skills base. *Prof Nurse* 2004;19:453-5.
 58. Newey M, Clarke M, Green T, et al. Nurse-led management of carpal tunnel syndrome: an audit of outcomes and impact on waiting times. *Ann R Coll Surg Engl* 2006;88:399-401.

59. Skeffington R, McGurk J, McNally C, et al. Streamlining the patient journey in musculoskeletal medicine. *Int J Integr Care* 2017;17:A206.
60. Parfitt N, Smeatham A, Timperley J, et al. Direct listing for total hip replacement (THR) by primary care physiotherapists. *Clinical Governance: An International Journal* 2012;17:210-6.
61. Kwong T. Patient Access: Improving Wait Times in a Specialty Clinic. *Health Care Manag (Frederick)* 2016;35:72-9.
62. Paydarfar JA, Gosselin BJ, Tietz AM. Improving Access to Head and Neck Cancer Surgical Services through the Incorporation of Associate Providers. *Otolaryngol Head Neck Surg* 2016;155:723-8.
63. Sorensen JR, Johansen J, Gano L, et al. A "package solution" fast track program can reduce the diagnostic waiting time in head and neck cancer. *Eur Arch Otorhinolaryngol* 2014;271:1163-70.
64. Agaba AE, Bagul A, Adenugba JB, et al. Audit of patient's waiting time to see their family doctor prior to referral to a fast-access breast clinic in the era of a guaranteed 2-week wait. *Breast* 2002;11:430-3.
65. Redaniel MT, Ridd M, Martin RM, et al. Rapid diagnostic pathways for suspected colorectal cancer: views of primary and secondary care clinicians on challenges and their potential solutions. *BMJ Open* 2015;5:e008577.
66. Walsh S, Bruce C, Bennington S, et al. The fourteen-day rule and colorectal cancer. *Ann R Coll Surg Engl* 2002;84:386-8.
67. Gaynor M, Propper C, Seiler S. Free to Choose? Reform and Demand Response in the English National Health Service. 2012.
68. Island Health. Island Health Open Board Meeting Questions & Answers. Victoria (BC), Canada: Island Health; 2018.
69. Stevenson J. Albertans waiting less time for hip and knee surgery. Alberta, Canada: Alberta Health Services; 2014.
70. Improving the quality of surgical care across Alberta [press release]. Alberta: Alberta Health Services; 2018.
71. Alberta Health Services. Alberta Health Services Health Plan & Business Plan 2016-17. Alberta, Canada: Alberta Health Services Board; 2016.
72. Alberta Health Services. Alberta Health Services Annual Report 2012-2013. Alberta, Canada: Alberta Health Services Board; 2013.
73. Initiative helps Edmonton hip, knee clinic reduce wait times [press release]. Alberta, Canada: Alberta Health Services; 2013.
74. Grindle T. Efficiency initiative reduces wait times by half. Alberta: Alberta Health Services; 2013.
75. Kullar P, Harris F, Lloyd SK, et al. The use of Lean Thinking techniques in implementing the Department of Health, UK, 18-week waiting time directive for cochlear implantation. *Cochlear Implants Int* 2010;11:133-45.
76. Valsangkar NP, Eppstein AC, Lawson RA, et al. Effect of Lean Processes on Surgical Wait Times and Efficiency in a Tertiary Care Veterans Affairs Medical Center. *JAMA Surg* 2017;152:42-7.
77. Postuma R, Loewen L. Telepediatric surgery: capturing clinical outcomes. *J Pediatr Surg* 2005;40:813-8.
78. Kokesh J, Ferguson AS, Patricoski C. The Alaska experience using store-and-forward telemedicine for ENT care in Alaska. *Otolaryngol Clin North Am* 2011;44:1359-74, ix.
79. Lee S, Dana A, Newman J. Teledermatology as a Tool for Preoperative Consultation Before Mohs Micrographic Surgery Within the Veterans Health Administration. *Dermatol Surg* 2020;46:508-13.
80. eHealth Ontario Accomplishments [press release]. Ontario: Ministry of Health and Long-Term Care; 2010.
81. eHealth Saskatchewan. Telehealth Saskatchewan, Canada: Government of Saskatchewan; 2019. Available online: <https://www.ehealthsask.ca/services/telehealth>
82. Winnipeg Regional Health Authority. Winnipeg Regional Health Authority: About MBTelehealth Winnipeg (MB), Canada: Winnipeg Regional Health Authority; 2019. Available online: Website: <https://mbtelehealth.ca/about/>
83. eConsult Team. eConsult New Brunswick. New Brunswick, Canada; 2018.
84. Kohlert S, Murphy P, Tse D, et al. Improving access to otolaryngology-head and neck surgery expert advice through eConsultations. *Laryngoscope* 2018;128:350-5.
85. Specialist LINK. Specialist LINK: Connecting Doctors, Supporting Patients Calgary (AB), Canada: Specialist LINK; 2019. Available online: <https://www.specialistlink.ca/>
86. Alberta Health. eReferral Alberta, Canada: Government of Alberta; 2019. Available online: <http://www.albertanetcare.ca/learningcentre/eReferral.htm>
87. Electronic Consultative Access to Specialist Expertise. eCASE Vancouver (BC), Canada: eCASE; 2019. Available online: <http://www.raceconnect.ca/ecase/>
88. Wait Times Reduction Task Force. Wait Times Reduction Task Force: Final Report. Manitoba, Canada: Manitoba Health; 2017.
89. Canadian Foundation for Healthcare Improvement.

- Collected Medicine Collaborative Participating Teams. Canada; 2018.
90. Labrador-Grenfell Health. Annual Performance Report 2010–2011. Happy Valley–Goose Bay (NL), Canada: Labrador-Grenfell Health; 2011.
 91. Government of Prince Edward Island. An integrated health system review in PEI - a call to action: a plan for change. Prince Edward Island, Canada: Government of Prince Edward Island; 2008.
 92. Government of New Brunswick. Electronic consultation (eConsult) 'Proof of Concept': Increasing access for family physicians to specialist care in New Brunswick New Brunswick, Canada; 2018.
 93. Liddy C, Drosinis P, Deri Armstrong C, et al. What are the cost savings associated with providing access to specialist care through the Champlain BASE eConsult service? A costing evaluation. *BMJ Open* 2016;6:e010920.
 94. Tadros A, Murdoch R, Stevenson JH. Digital image referral for suspected skin malignancy--a pilot study of 300 patients. *J Plast Reconstr Aesthet Surg* 2009;62:1048-53.
 95. Stainkey LA, Seidl IA, Johnson AJ, et al. The challenge of long waiting lists: how we implemented a GP referral system for non-urgent specialist' appointments at an Australian public hospital. *BMC Health Serv Res* 2010;10:303.
 96. Doerr CR, Graves SE, Mercer GE, et al. Implementation of a quality care management system for patients with arthritis of the hip and knee. *Aust Health Rev* 2013;37:88-92.
 97. John SK, George S, Howell RD, et al. Validation of the lower gastrointestinal electronic referral protocol. *Br J Surg* 2008;95:506-14.
 98. Inglis T, Armour P, Inglis G, et al. Rationing of hip and knee referrals in the public hospital: the true unmet need. *N Z Med J* 2017;130:39-48.
 99. Tandon S, Machin D, Jones TM, et al. How we do it: head and neck cancer waiting times. *Clin Otolaryngol* 2005;30:279-82.
 100. Wilgenbusch CS, Wu AS, Fourney DR. Triage of spine surgery referrals through a multidisciplinary care pathway: a value-based comparison with conventional referral processes. *Spine (Phila Pa 1976)* 2014;39:S129-35.
 101. Calgary Zone News - January 2014 [press release]. Alberta: Alberta Health Services; 2014.
 102. Alberta Bone & Joint Health Institute. Continuous Improvement Reporting Calgary (AB), Canada: Alberta Bone & Joint Health Institute; 2019. Available online: <https://albertaboneandjoint.com/services/continuous-improvement-reporting/>
 103. Alberta Health Services. Wait Time Measurement, Management, and Reporting of Scheduled Health Services Procedure Manual. Alberta: Alberta Health Services; 2013.
 104. Briggs RJ, Smith KM, Dejager EM, et al. The active management of surgical waiting lists: a urological surgery case study. *Aust Health Rev* 2011;35:399-403.
 105. Alberta Health Services. Alberta Health Services Performance Report Q2 2011/12 Alberta, Canada: Alberta Health Services; 2011.
 106. Department of Health. Elective care plan: transformation and reform of elective care services - progress report. Belfast, United Kingdom: Department of Health; 2018.
 107. Department for Health and Ageing. Department for Health and Ageing Annual Report 2012-13. Adelaide, SA: Department for Health and Ageing, Government of South Australia; 2013.
 108. Queensland Health. Specialist Outpatient Strategy: Improving the Patient Journey by 2020. Queensland, Australia: Queensland Health; 2016.
 109. Scottish Executive. Fair to All, Personal to Each: The next steps for NHS Scotland. Edinburgh, Scotland: Scottish Executive; 2004.
 110. Kaidar-Person O, Swartz EW, Lefkowitz M, et al. Shared medical appointments: new concept for high-volume follow-up for bariatric patients. *Surg Obes Relat Dis* 2006;2:509-12.
 111. Patel YM, Kaufman S, Fuller DA. Musculoskeletal hand pain group visits: An adaptive health care model. *Journal of Clinical Outcomes Management* 2017;24:71-6.
 112. Government of Saskatchewan. Saskatchewan Surgical Initiative: Patient Pathways Saskatchewan, Canada: Government of Saskatchewan; 2019. Available online: <http://www.sasksurgery.ca/sksi/patientpathways.html>
 113. Hamilton Niagara Haldimand Brant LHIN 2016/2017 QIP Snapshot Report. Available online: <https://hqontario.ca/Portals/0/documents/qi/qip/hn-lhin-report-en.pdf>
 114. Hovlid E, Bukve O, Haug K, et al. A new pathway for elective surgery to reduce cancellation rates. *BMC Health Serv Res* 2012;12:154.
 115. Imison C, Naylor C. Referral Management: Lessons for Success. London, United Kingdom: The King's Fund; 2010.
 116. Alberta Bone & Joint Health Institute. Alberta Bone & Joint Health Institute Calgary (AB), Canada 2019. Available online: <https://albertaboneandjoint.com/>
 117. Robinson D, Bell CM, Møller H, et al. Effect of the UK government's 2-week target on waiting times in women

- with breast cancer in southeast England. *Br J Cancer* 2003;89:492-6.
118. Bevan G, Hood C. Have targets improved performance in the English NHS? *BMJ* 2006;332:419-22.
 119. Propper C, Sutton M, Whitnall C, et al. Did 'targets and terror' reduce waiting times in England for hospital care? *B.E. Journal of Economic Analysis and Policy* 2008;8:5.
 120. Scandinavian Obesity Surgery Registry. SOReg 2016: Norway-Sweden first joint report. 2017.
 121. Mannion R, Davies H, Marshall M. Impact of star performance ratings in English acute hospital trusts. *J Health Serv Res Policy* 2005;10:18-24.
 122. Audit Scotland. Tackling waiting times in the NHS in Scotland. Edinburgh, Scotland; 2006.
 123. Bowers J. Waiting list behaviour and the consequences for NHS targets. *Journal of the Operational Research Society* 2010;61:246-54.
 124. Scottish Executive. Delivering for Health. Edinburgh, Scotland: Scottish Executive; 2005.
 125. Januleviciute J, Askildsen JE, Kaarboe O, et al. The impact of different prioritisation policies on waiting times: case studies of Norway and Scotland. *Soc Sci Med* 2013;97:1-6.
 126. Kirkwood G, Pollock AM. Patient choice and private provision decreased public provision and increased inequalities in Scotland: a case study of elective hip arthroplasty. *J Public Health (Oxf)* 2017;39:593-600.
 127. Kirkwood G, Pollock AM, Howie C, et al. NHS Scotland reduces the postcode lottery for hip arthroplasty: an ecological study of the impact of waiting time initiatives. *J R Soc Med* 2014;107:237-45.
 128. Nikolova S, Sinko A, Sutton M. Do maximum waiting times guarantees change clinical priorities for elective treatment? Evidence from Scotland. *J Health Econ* 2015;41:72-88.
 129. Propper C, Wilson D, Burgess S. Extending choice in English health care: The implications of the economic evidence. *J Soc Policy* 2006;35:537-57.
 130. Werle J, Dobbeltsteyn L, Feasel AL, et al. A study of the effectiveness of performance-focused methodology for improved outcomes in Alberta public healthcare. *Health Manage Forum* 2010;23:169-74.
 131. Health SaAL. Understanding wait times Manitoba, Canada: Manitoba Health; 2019. Available online: <https://www.gov.mb.ca/health/waittime/why.html>
 132. Dick D. Take a look at Alberta before fretting over hospital wait times. *The Globe And Mail*; 2018.
 133. Irish J. The Ontario Wait Times Story: Improving Access and Improving Quality of Care: Cancer Care Ontario; 2013.
 134. Southern Adelaide Local Health Network. Southern Adelaide Local Health Network Annual Report 2013-14. South Australia, Australia: Government of South Australia; 2014.
 135. South Australia Health. Outpatient Waiting List Review. South Australia, Australia: Government of South Australia; 2018.
 136. Saskatchewan Ministry of Health. Sooner, Safer, Smarter: Year One Report. Regina (SK), Canada: Saskatchewan Ministry of Health; 2011.
 137. Saskatchewan Ministry of Health. Sooner, Safer, Smarter: A plan to transform the surgical patient experience. Regina (SK), Canada: Saskatchewan Ministry of Health; 2010.
 138. Abásolo I, Barber P, González López-Valcárcel B, et al. Real waiting times for surgery. Proposal for an improved system for their management. *Gac Sanit* 2014;28:215-21.
 139. Tako AA, Kotiadis K, Vasilakis C, et al. Improving patient waiting times: a simulation study of an obesity care service. *BMJ Qual Saf* 2014;23:373-81.
 140. Corrigan MA, McHugh SM, Murphy RK, et al. Improving surgical outpatient efficiency through mobile phone text messaging. *Surg Innov* 2011;18:354-7.

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