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Research

Perceptions of Ontario health system leaders on single-entry models for managing the COVID-19 elective surgery backlog: an interpretive descriptive study

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Abstract

Background: The COVID-19 pandemic has exacerbated pre-existing challenges with respect to access to elective surgery across Canada, and a single-entry model (SEM) approach has been proposed as an equitable and efficient method to help manage the backlog. With Ontario's recent investment in centralized surgical wait-list management, we sought to understand the views of health system leaders on the role of SEMs in managing the elective surgery backlog.

Methods: We used the qualitative method of interpretive description to explore participant perspectives and identify practical strategies for policy-makers, administrators and clinical leaders. We conducted semistructured interviews with health system leaders from across Ontario on Zoom between March and June 2021. We used snowball and purposive sampling. Inclusion criteria included Ontario health care leaders, fluent in English or French, in positions relevant to managing the elective surgery backlog. Exclusion criteria were individuals who work outside Ontario, or do not hold relevant roles.

Results: Our interviews with 10 health system leaders — including hospital chief executive officers, surgeons, administrators and policy experts — resulted in 5 emergent domains: perceptions of the backlog, operationalizing and financing SEMs, barriers, facilitators, and equity and patient factors. All participants emphasized the need for clinical leaders to champion SEMs and the utility of SEMs in managing wait-lists for high-volume, low-acuity, low-complexity and low-variation surgeries.

Interpretation: Although SEMs are no panacea, the participants in our study stated that they believe SEMs can improve quality and reduce variability in wait times when SEMs are designed to address local needs and are implemented with buy-in from champions. Health care leaders should consider SEMs for improving surgical backlog management in their local jurisdictions.

COVID-19 has overwhelmed many health systems that were already having difficulty meeting public need before the pandemic.[1] One of the areas most affected in Canada has been the backlog in elective surgeries.[2] In Canada, "elective" refers to any surgery that is scheduled in advance. Although less time sensitive than emergency procedures, many elective surgeries are nevertheless essential to prevent or delay death or disability.[3,4] Before the pandemic, across Canada there were long elective surgery wait times, which were exacerbated as provincial governments instructed hospitals to pause elective procedures.[5] In Ontario, elective surgeries were paused between March and May 2020 and then again between April and May 2021, to preserve capacity for patients with COVID-19. By September 2021, this had affected more than 419 000 surgeries and 2.5 million diagnostic tests.[6,7]

Experts agree that addressing surgical backlogs is logistically complex and cannot be solved solely by spending more money.[8–10] A single-entry model (SEM) approach has been proposed as one equitable and efficient method for managing the backlog.[10–13] Also known as central intake models, SEMs are informed by queuing theory and are commonly employed in diverse industries.[11,12] They improve flow and distribution of patients through the health care system by placing patients in a queue to see the first available surgeon.[12]

Over the past decade, SEMs have been increasingly promoted in Canada.[12–14] In 2014, the Canadian Medical Association endorsed SEMs for improving wait times and referral management.[12–15] Most recently, Ontario's investment in centralized surgical wait-list management will enable the development of SEMs.[15] Although these funds have been allocated, it is unclear how they will be distributed to maximize impact and effectiveness. Few studies have evaluated SEMs in Canada, and most focus on nonsurgical procedures.[13,14,16] We currently lack

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an understanding of stakeholders' perceptions of SEMs and their potential funding structure. Without these perspectives, we risk investing financial and political capital into a framework that may fail before it begins. There is resistance to change in health care, and it is unclear how SEMs should be implemented and managed.[12,14] We therefore sought to evaluate the views of health system leaders on the role of SEMs in managing the elective surgery backlog.

Methods

Study design and setting

We used interpretive description to explore health care leaders' perceptions regarding SEMs' utility in managing the elective surgery backlog in Ontario. Ontario has a population of nearly 15 million people, with health care publicly funded by the Ontario Health Insurance Plan (OHIP) for covered individuals who meet a set of minimum requirements.[18] Services covered by OHIP include visits to doctors, hospital visits and stays, and eligible ophthalmic care services.[19] Laser eye surgery and cosmetic surgery are not covered by OHIP.[19] A qualitative approach allowed us to draw practical lessons informed by experts to generate actionable takeaways for policy-makers, administrators and clinical leaders as they develop or strengthen SEMs.[20] Our study was reported according to the Consolidated Criteria for Reporting Qualitative Research (COREQ).[21]

Participant recruitment

Using purposive and snowball sampling, we identified and invited health system leaders across Ontario to participate in semistructured interviews.[22] One of the authors (D.U.) served as an initial key informant, and we identified further participants by reviewing literature and contacting organizations.[5,10–14,16] We also used the professional networks of other research team members, reviewed the literature for authors of relevant papers on SEMs and contacted individuals at governmental organizations for recommendations on prospective interviewees. We employed a snowball sampling strategy with each interviewee to identify other potential study participants. Inclusion criteria included Ontario health care leaders who were fluent in English or French; hold or held clinical, managerial, administrative, public service or scholarly roles; and were likely to have experience in SEMs or surgical wait-list management. Eligible participants included hospital executives, surgeons, administrators, policy-makers and hospital executives. Exclusion criteria were individuals who work outside Ontario, or do not hold roles described by the inclusion criteria. One of the authors (J.S.) contacted participants via email in English or French to arrange interviews. Recruitment concluded when the researchers agreed that no new insights were being elicited.

Data collection

Our team collaboratively developed interview questions from a literature review, as well as consultation and piloting with content experts (D.U., O.B. and an out-of-province surgeon-administrator; see Appendix 1, available at www.cmajopen.ca/content/10/3/E789/suppl/DC1).[1–16,23] Semistructured interviews were conducted by 2 of the authors (J.S. [male] and C.A. [female]) from March to June 2021. Interviewers had no previous relationship with participants. Interviews were conducted via Zoom,[24] and audiorecorded and transcribed using the Otter.ai transcription tool.[25] Zoom is compliant with the *Health Insurance Portability and Accountability Act* and the interviewers used an institutional Zoom account with robust safety and privacy features.[26] We invited participants to review their transcripts to ensure accuracy and add amendments. All participants were satisfied with the content of their interview and no changes were made to the transcripts.

Data analysis

We analyzed data via deductive and inductive approaches.[27] We developed a preliminary coding framework a priori based on literature reviews and pre-interview consultation with content experts (D.U., O.B. and an out-of-province surgeon-administrator). We coded transcripts using NVivo. We established validity (trustworthiness and credibility) through investigator and theoretical triangulation:[28] Two researchers (C.A., B.L.) independently analyzed data, then compared findings to create a final coding framework and generate key themes. Data collection concluded when we achieved saturation in terms of depth, breadth and consistency of themes.[29]

The authors represent trainees, clinicians and surgeons in senior leadership roles. We approached our study with a recognition of our experiences during the elective surgery ramp-down. Our successes, challenges, likes and dislikes navigating these circumstances influenced our desire to understand how key leaders perceive SEMs. We undertook this work by remaining critical, yet cautiously optimistic, about SEM's potential to address the challenges presented by the surgical backlog.

Ethics approval

This project was approved by the University of Toronto Research Ethics Board.

Results

Participant details are provided in Table 1. Details include breakdown by primary role, retirement status, physical location, years of experience and previous experience with SEMs. We contacted 13 individuals, including 3 through snowball sampling, of whom 10 agreed to be interviewed: 8 individually and 2 jointly (all in English), each lasting 40–80 minutes. We identified 5 thematic domains from our interview data (coding tree in Appendix 2, available at www.cmajopen.ca/content/10/3/E789/suppl/DC1). These were perceptions of the backlog, operationalizing and financing SEMs, facilitators, barriers, and equity and patient factors. We also identified several subdomains within some of our thematic domains. The relationship between the thematic domains and these 10 subdomains is presented in Figure 1, and steps suggested by the participants for SEM implementation are presented in Figure 2. Representative quotations for each domain and subdomain are provided in Table 2.

Table 1: Participant demographics

Participant	Primary role(s)	Professional setting (Toronto, other or both)	No. of years of experience (> 30, 20–30, < 20 yr)	Working or retired	Previous, current or no experience with SEMs	Academic or nonacademic hospital affiliation (for those affiliated with a hospital)
P1	Surgeon, administrator	Toronto	20–30	Working	Current	Nonacademic
P2	Surgeon, administrator	Both	> 30	Retired	Previous	Academic
P3	Policy	Both	< 20	Working	Current	NA
P4	Hospital executive	Other	< 20	Working	None	Nonacademic
P5	Surgeon	Other	> 30	Retired	Previous	Academic
P6	Policy	Both	20–30	Working	Current	NA
P7	Policy	Both	< 20	Working	Current	NA
P8	Surgeon, policy-maker	Toronto	> 30	Working	None	Academic
P9	Hospital executive	Toronto	20–30	Working	Previous, current	Academic
P10	Surgeon, administrator	Toronto	> 30	Retired	None	Academic

Note: NA = not applicable, SEM = single-entry model.

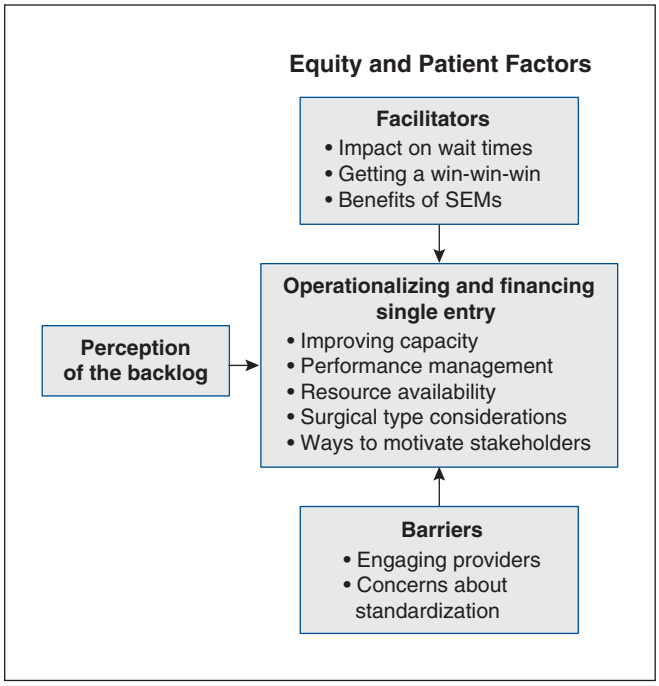

Figure 1: Suggested steps to successful single-entry model (SEM) implementation. Relationship between domains. Equity and patient factors were described as an overarching theme that influences how the backlog is perceived and might be managed. Described facilitators and barriers inform how SEMs can be operationalized.

Overall, participants had a positive global impression of SEMs. They acknowledged conceivable improvements in wait times for patients, added system-level efficiencies, enhanced patient equity and benefits of a shared-care model (including reduced costs) with the implementation of SEMs.

Perceptions of the backlog

There was consensus among participants that Ontario's model of elective surgical care in the context of the pandemic contributed to the surgical backlog. One participant mentioned an "after-the-earthquake effect," in which patients flood the system when it opens up. Participants agreed that Ontario's model of elective surgical care delivery before the pandemic contributed to current problems: There is no "cushion" against these disruptions; the system was unable to cope with a major stress. Funding models whereby certain procedures, such as cataracts or arthroplasties, are incentivized over others were cited as a contributing factor, as well as a shortage of nurses.

Facilitators to implementing SEMs

Impact on wait times

All participants agreed that implementing SEMs would improve wait times overall and increase efficiencies across the board. One participant who designed an SEM and trialled it in Toronto said that wait times went down dramatically. The number of patient visits not resulting in surgery also decreased. However, participants acknowledged that SEMs are no panacea to fundamental issues with the health system. All participants believed that health care leaders should respond urgently to the pandemic's disruptions and not let a crisis pass them by.

Getting a win-win-win

Single-entry models could succeed if they present a "win-win-win" for patients, family physicians and surgeons. Existing funding models for surgery promote competition and the need to acquire patients and market share, rather than the equitable dispersion of patients that might occur in SEMs.

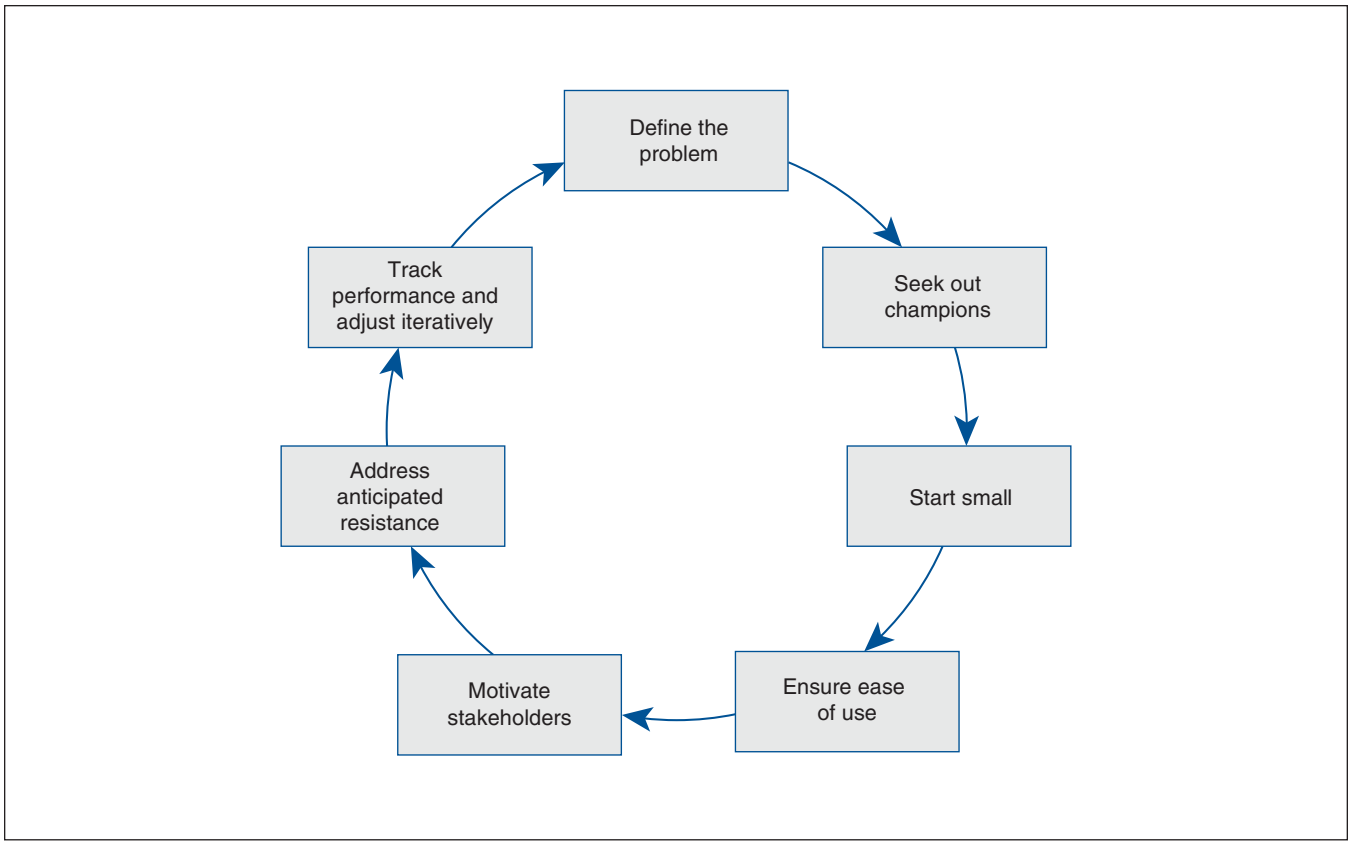

Figure 2: Steps suggested by participants for successful implementation of a single-entry model.

Most participants believed that piloting SEMs and scaling up is key to ensuring success and assuaging skeptics. Stakeholder engagement is also crucial to SEM sustainability, which may include patient choice to opt in.

Benefits of SEMs

Participants spoke about team-based care as vital to SEMs. The benefits of shared-care SEMs ranged from patient outcomes to tangible benefits to surgeons' lifestyles. All participants agreed that SEMs would make elective surgical care more efficient and also decrease the indirect costs of care by lowering costs associated with patients not being in pain, as an example. Participants also agreed that SEMs would be most effective when complemented by other strategies.

Barriers to implementing SEMs

Engaging providers

Participants agreed that surgeons' concerns are the largest barrier to implementing SEMs. Long wait-lists were perceived as a source of pride for surgeons, and to give that up would be a "blow to their ego." Many participants mentioned that maintaining long wait-lists provides surgeons with financial security. Convincing referring physicians to adopt SEMs was seen as another barrier: It might prove difficult to ask family physicians to disregard their personal connections and history of referrals.

Concerns about standardization

Participants cited the lack of a standard model or definition for SEMs as a barrier to adoption. Hospitals and surgeon groups operate in silos, so metrics must be developed to ensure surgeons provide consistent quality. This change management and cultural shift would require tremendous leadership. The current system, in which hospitals advocate and compete for surgeries, makes it difficult for stakeholders to collaborate.

Operationalizing and financing SEMs

Improving capacity

Participants felt that improving capacity is necessary to shorten wait times. One participant noted that the current system does not easily adjust to larger volumes. Although all participants agreed that there is a place for SEMs, many argued that SEMs would work only with capacity adjustments. Suggested adjustments included designating centres for outpatient surgery, providing hospitals with premium and one-time funding to open operating rooms (ORs) on evenings and weekends, and investing in diagnostics to enable a higher volume of surgeries. Surgical smoothing — or deliberately scheduling elective surgeries to decrease variability in case volumes — was discussed as another strategy for running ORs more efficiently. One participant (a surgeon-administrator) mentioned appropriateness: Will an operation necessarily improve patients' functioning and quality of life?

Table 2 (part 1 of 2): Representative quotations for domains and subdomains

Domain	Subdomains	Representative quotations
Perceptions of the problem	–	"… in our Canadian health care system, there is no cushion. So there is never, you know when something bad happens, there was never a way to sort of make up for things and really what happened was, the cushion for the ICUs became the nursing care, really, and I think really that what's been most short of in this. You know, we have the surgeons, we have the anesthetist, we don't have the nurses, and we don't have the porters and things. So, you know, when we got short of staff in the ICU, they needed more nurses to go up and work in the ICU…. Then they had to take nurses from, from the OR to work up on medical floors" (P1)
Barriers to implementing SEM	Concerns about standardization	"I would pick a type of surgery that, you know, is, as I was saying before is quite standardized, and that everybody performing it would have a good experience. You know a good amount of experiences, because you, you know, it's, it's not going to work if say, for example, you know one surgeon, hardly does that operation when people are concerned about sending their, their patients to that person that they're competent so I think it needs to be something that everybody feels that there's a sort of a relatively equal amount of competence in" (P1) "So I like the idea, but it's a tiny piece of the whole story. I mean, you can't do surgery, big surgery, if there's no ICU bed available or if you can't do the case. So you're gonna have a single entry, but can't do the case so it won't end up making a difference. There's a lot to this and I don't want to discourage you, but the concept of everybody waiting for one doctor, unless it is a very specialized process. You don't want any old Joe doing an aortic arch replacement, you want someone who really knows what they're doing. There are procedures where you want one or two people" (P2) "Having a standardized framework across the board will be helpful. One, one barrier to that will be every hospital has totally different … Given the independence of individual hospitals in the province, compared to other jurisdictions, every hospital might have their own policies that they're empowered to make on their own … So having a central policy when it comes to surgeries, and SEM will likely be challenging given how the hospital system currently operates. So there would be need for some type of change management involved" (P3)
	Managing personalities	"Well, I don't think people see, like, the average surgeon, understands the benefits. So we would actually really have to craft the messaging clearly around how does this benefit patients, how does this benefit you and how does it benefit [our organization], and really understand the downsides of those SEMs. And to really tackle those barriers head on, whatever they may be, I think many surgeons have this misconception that it will, they'll lose income, or lose patients out of it" (P7)
Facilitators to implementing SEM	Benefits of SEM	"So we have what are called rapid access clinics in each LHIN, where family physicians refer to one place, and then assess the patient. I think it's regarding lower back pain they're first assessed by advanced practice physio, and then if they are deemed eligible for surgery then they're referred to the first available surgeon. So that's, that's kind of a good example of a successful SEM because, not only is it triaging folks to the most available surgeon, but it's also identifying before they get to the surgeon, whether they actually need surgery or not. Because surgeons get a lot of inappropriate referrals, and a lot of people don't need surgery and you settle down into an alternative pathway of conservative management" (P6)
	Getting a win-win-win	"I think if you really want something to work well, it's great to have a win-win-win. Right, so, you know, if the win can be, say, for patients, they get their surgery faster, for family physicians it's easy, very easy to make that referral so that for their offices there's less hassle that way and their patients are happier. There's a win for them. And then for surgeons. If the win can be, you know, that it will kind of make your life easier, because you're not struggling to find, find OR time for somebody who's a little bit more urgent or something like that — you see what I mean. So, like, I think you can make an argument that for a single entry that there, there is an argument that there is a win-win-win there. And I think if that happens then it'll be successful. If it's not a win-win-win — like, if it's a lose for somebody — it's probably gonna fall apart" (P1)
	Impact on wait times	"So will it flatten the disparity of wait-list from surgeon to surgeon? Absolutely. From hospital to hospital? Possibly. From region to region? Somewhat. But will it be the panacea for wait-lists? Absolutely not" (P8) "It has helped the patients dramatically, there's no question about it. You know, people don't wait nearly as long as they used to. And there's much better data around how long you're waiting, depending on where you live, so on. And we have things like the first available surgeon program so that if there's two of us working in the hospital, my waiting list is a year and the guy next door's waiting list is three months, the patient's given the option of seeing the three-month guy" (P5)

Table 2 (part 2 of 2): Representative quotations for domains and subdomains

Domain	Subdomains	Representative quotations
Operationalizing and financing a SEM	Improving capacity	"Another initiative that we've been working on is surgical smoothing to increase efficiency and throughput for operating rooms, so we're enabling better scheduling systems for individual hospitals in order to maximize all scheduled surgeries to ensure there's no time that's lost. We're also leveraging public hospital and private clinic partnerships, or community clinic partnerships. And a number of hospitals have essentially put together their own independent partnerships with clinics in their regions. So I know, for instance, one hospital has a partnership with a cataract clinic, and that hospital now oversees all operations of that clinic and it's essentially extra OR time, extra labour, and they have that partnership that the ministry doesn't oversee" (P3)
	Performance management	"Obviously, you really want to know about qualitative data like patient acceptance and quality of care in the eyes of the patient and in the eyes of the caregivers. You know, those are pretty straightforward things that you could measure and would be pretty profound in their ability to set the stage for the future. That's the sort of thing that's going to change attitudes if it could be shown for the government that yes, we can do more and more efficiently for hospitals, that yes, we can do these on an outpatient basis and we can still look after our patients with COVID-19 and the other disasters that come in. For the surgeon, that yes, I'm still busy and I'm still getting paid. And for the patients, that yep, I'm still happy about this" (P10)
	Resource availability	"So there was a fair amount of resistance to this initially because it was an additional administrative burden for their secretaries. So we worked fairly hard to try and streamline this, to make it less onerous for them… and I didn't have anything to do with this, obviously, I don't know anything about computers. But my colleague had hired a computer genius who set up this whole program. And so what we did was we set up a program so that there was a single-entry for the surgeon's secretary … And we had to get hospitals to buy in to this to say to the attendings, 'If you don't have patient entered into the data system, you can't book the surgery'" (P5) "… Also leveraging hospital partnerships and incentivizing for more hospital-to-hospital transfers and transfers of volumes. The hospital system has historically been very siloed… Hospitals are independent corporations, they manage their own surgeries and the system has historically been very siloed" (P3)
	Surgical type considerations	"I think you want to prioritize things for single-entry that are high volume, low acuity" (P6) "But for commodity surgeries like cataracts, knee replacements, hip replacements, coronary artery surgery, the ones you crank out, then I agree with you it would be great and we'd push hard for that in [our field]" (P2)
	Ways to motivate stakeholders	"I think you need physician leaders to champion it. It would be great to have patients as well, but I think you need physician leadership with physician leaders … I think if you had some, you know, people that would, you know, say that this is a good model, I think you could also talk about it in negotiations, I know that the government's in negotiations with the OMA right now — wouldn't that be an interesting thing to put forward from a policy perspective?" (P4)
Patient factors and equity		"The second thing was that they realize that there was a lot of patients being seen in doctors offices that didn't have to be seen, because they didn't really need a hip or knee placement. Okay. So the family doctor would send somebody to me, and they'd say, well, maybe you need your knee operated on, I'll send you to see the orthopedic surgeon. So months later, they would see the orthopedic surgeon, right, because he had this huge waiting list. The ortho would spend five minutes with the guy and say, 'Oh, you don't need a knee replacement. Okay, you don't need a knee operation'" (P5) "But you wouldn't know where that person sits socioeconomically ... So I actually think it provides a degree of level set, that it's not cherry picking, you're wealthy, I like you, you're white, you're going to be problem free, and I'll take you. And in this case, you gotta take everyone. An eye is an eye is an eye. And I mean, that's the truth of it. I'm not suggesting surgeons do that now or are malicious or deliberate about doing it. But as we know, through this pandemic, with all the other social issues that have come into play, there is a, there's a bias. There's a bias and this allows individuals from marginalized communities to get world-class eye care. Why should they be denied or cherry-picked? They shouldn't. They should be given equal access … [The focus is] on the eye and the individual, not the colour of their skin, their background and how much money they have or don't have. That's irrelevant when it comes to cataract surgery. It may become relevant when there are specialty lenses that are required, medically necessary, that are not covered by OHIP, that patients do not have to pay. I am quite proud of what we've done" (P9)

Note: ICU = intensive care unit, LHIN = Local Health Integration Network, OHIP = Ontario Health Insurance Plan, OMA = Ontario Medical Association, OR = operating room, SEM = single-entry model.

Performance management

Single-entry models require an iterative process of quality improvement in which patients, referring physicians and surgeons provide feedback on their experience with central intake forms and triage. Participants agreed that SEM performance should be measured with quantitative and qualitative data, including patient acceptance and quality of care.[12] Quantifiable measures mentioned by participants included case numbers, case efficiency and wait times.

Resource availability

Participants discussed resource availability with respect to 3 subtopics: administrative capacity, financing and personnel. One participant stated that training staff to adopt changes presented an administrative burden. Others expressed that a single booking system might alleviate the administrative burden for physicians and administrators. Participants proposed funding to incentivize more hospital-to-hospital transfers and transfers of volumes rather than hospitals acting as independent corporations. One participant characterized SEMs as shared-care models, which divide responsibilities and may include income-sharing practices.

Surgical type considerations

Participants agreed that high-volume, low-acuity and low-complexity, low-variation procedures or surgeries — including hernia repair or joint replacement — are most suitable for SEMs. Participants noted the unsuitability of SEMs for low-volume and complex procedures. The question of prioritization was also discussed — whether priority would be based on timestamp or urgency — and which parties are involved in making this determination. These decisions directly affect outcomes and timeliness of care received through SEMs.

Ways to motivate stakeholders

Most participants identified the role of champions in SEM implementation. One participant recommended formal consultations with groups such as the Ontario Hospital Association, the Ontario Medical Association and specialty groups to ensure widespread stakeholder support. Physician leadership is needed to champion SEMs, from someone who is a trusted and recognized senior opinion leader in their field. Participants emphasized consensus, saying surgeons would "buy in" if they saw evidence of benefit to surgeons and patients. Finally, one participant recommended carefully listening to and addressing critics, as their insights can prevent errors during implementation.

Equity and patient factors

Participants agreed that implementing SEMs would increase equity and access to care, given that SEMs triage patients based on objective criteria such as urgency and necessity. However, all participants acknowledged that SEMs are vulnerable to the biases of their developers. However, following the principles of pooled wait-lists, single point-of-entry and a fair and objective triage would be a step forward, according to many participants.

There was likewise an overwhelming sentiment that SEMs would increase equity among surgeons — particularly for young, female or racialized surgeons. SEMs could help reduce the inequitable distribution of referrals by reducing the influence of social ties.

Respondents expressed that successful SEM implementation is contingent upon the patient–family physician relationship. When family physicians imply that they are referring their patients to "the best surgeon," it increases fears that others are less competent. However, if family physicians endorse SEMs, it would increase patient trust and acceptance.

Finally, participants emphasized patient autonomy. Giving patients the freedom to decide whether to wait for a surgeon or receive timely care was considered important to the provision of patient-centred care.

Interpretation

In this study, we investigated stakeholder perspectives on SEMs' role in managing elective surgery backlogs. Domains included perceptions of the backlog, operationalizing and financing SEMs, facilitators, barriers, and equity and patient factors. All participants reiterated the transformative potential of SEMs and their utility in managing wait-lists for "commodity" procedures (using "commodity" in the economic sense, signifying a mass-produced unspecialized product): high-volume, low-acuity, low-complexity and low-variation surgeries. Although SEMs will not alleviate the backlog entirely, participants believed they would be a useful tool for managing it. Single-entry models would prove most beneficial if implemented in tandem with other strategies, especially to improve system capacity.

Ontario's July 2021 surgical recovery plan explicitly included central intake, which our findings can inform how to operationalize. Milakovic and colleagues found that SEM implementation was reliably associated with a decrease in wait times for initial outpatient visit to a specialist.[13] The reduction in wait times was even more pronounced for surgeries and other high-priority referrals.[13] While previous studies have found that SEMs decrease wait times and wait-list length,[11,12,14,16] new evidence is available which demonstrates potential benefits of SEMs beyond surgery and in relation to implementation strategies, as well as for patient and provider satisfaction.[13,30]

Most studies investigating SEMs have had largely similar conclusions to the domains explored by our study participants. Lopatina and colleagues conducted a symposium on Canadian SEMs and found that there are multiple interpretations on how SEMs should be designed.[12] Their interview participants highlighted how SEMs are similar in that they have a single point of entry, but that the way in which patients transit through a system varies beyond the common intake point. A question that arose in our interviews was how the quality appropriateness of referrals would be affected by SEM implementation; an American study evaluating a centralized rheumatology referral and triage program found that the appropriateness of referrals improved post-SEM introduction.[31] However, it has also been reported that referring doctors' sense of ownership over their patients may suffer when

referring into a centralized system.[11,13] Although our study participants did not identify this concern, it should surely be accounted for when implementing SEMs.

Implementing SEMs will require support from champions and appropriate incentives for stakeholders. Despite consensus that SEMs can help manage the backlog, there remains concern about SEMs' potential consequences for surgeon–patient relationships, surgeon autonomy and surgeons' financial security.[10] Referring physicians overwhelmingly prefer SEMs,[32] and patients prefer the next available provider if it means more timely access,[11] yet surgeons remain hesitant. To overcome this discrepancy, our findings highlight how buy-in from senior leaders and surgeons is essential to implementing SEMs.

The literature on SEMs contains few Canadian examples.[10–14,16] Further, SEMs were originally developed and studied in western Canada.[14,16] Some of our participants were involved in designing and implementing SEMs studied by other researchers.[11,13]

Limitations

Our study has several limitations. As is common for qualitative research, we have a small sample size. Our sample was also pre-eminently Toronto based, with significant experience in SEMs or wait-list management broadly. Although our participants spoke with authority given their experience and content expertise, we received less data directly from younger and more rural surgeons who would be directly affected by the implementation of an SEM in their jurisdiction. Given the small number of SEMs that have been developed in Ontario, the pool of local content experts was not large. However, we achieved thematic saturation with this number of participants. Moreover, any potential selection bias of participants was mitigated by a robust sampling framework to source participants with diverse experiences relating to SEMs, health administration and wait-list management.

We acknowledge our own biases as well in study design and analysis. Our participants and researchers are based in Ontario, and as such our findings should be considered in light of the province's unique cultural and political context. Further research should incorporate the perspectives of patients and referring physicians.

Conclusion

Although SEMs are not a panacea, our study participants believe they can improve quality and reduce variability in wait times when designed to address local needs, and implemented with buy-in from champions. Single-entry models are one strategy that can be used to manage the elective surgery backlog in Canada. Given the unique opportunity to implement transformational changes as we enter the postpandemic world, clinical leaders and policy-makers should consider SEMs for improving the management of surgical backlogs in their local jurisdictions.

Our results can inform future studies and guide policymakers and stakeholders as they design and implement SEMs. Future research should evaluate how SEMs function in practice, furthering the data generated from this exploratory study. Other strategies to manage surgical backlogs should also be evaluated. Finally, further research should incorporate the perspectives of patients and referring physicians.

References

1. Blumenthal D, Fowler EJ, Abrams M, et al. COVID-19 — implications for the health care system. *N Engl J Med* 2020;383:1483-8.
2. Diaz A, Sarac BA, Schoenbrunner AR, et al. Elective surgery in the time of COVID-19. *Am J Surg* 2020;219:900-2.
3. Kaltenmeier C, Shen C, Medich DS, et al. Time to surgery and colon cancer survival in the United States. *Ann Surg* 2021;274:1025-31.
4. Merkow RP, Bilimoria KY, Tomlinson JS, et al. Postoperative complications reduce adjuvant chemotherapy use in resectable pancreatic cancer. *Ann Surg* 2014; 260:372-7.
5. Urbach DR. Improving access to health services in Canada. *Healthc Manage Forum* 2018;31:256-60.
6. Wang J, Vahid S, Eberg M, et al. Clearing the surgical backlog caused by COVID-19 in Ontario: a time series modelling study. *CMAJ* 2020;192:E1347-56.
7. Devakos T, Gordon M, Gurnham M, et al. Ministry of Health: Spending Plan Review [blog]. Available: https://www.fao-on.org/en/Blog/Publications/2021-health-estimates (accessed 2021 Aug. 9). Toronto: Financial Accountability Office of Ontario; 2021 May 10.
8. Waiting time policies in the health sector: What works? Paris (France): Organisation for Economic Co-operation and Development; 2013. Available: https://www.oecd-ilibrary.org/social-issues-migration-health/waiting-times-for-elective-surgery-what-works_9789264179080-en (accessed 2021 Apr. 28).
9. International profiles of health care systems, 2014. New York: The Commonwealth Fund; 2015. Available: https://www.commonwealthfund.org/publications/fund-reports/2015/jan/international-profiles-health-care-systems-2014-australia-canada (accessed 2021 Apr. 28).
10. Urbach DR, Martin D. Confronting the COVID-19 surgery crisis: time for transformational change. *CMAJ* 2020;192:E585-6.
11. Damani Z, Conner-Spady B, Nash T, et al. What is the influence of single-entry models on access to elective surgical procedures? A systematic review. *BMJ Open* 2017;7:e012225. doi: 10.1136/bmjopen-2016-012225.
12. Lopatina E, Damani Z, Bohm E, et al. Single-entry models (SEMs) for scheduled services: towards a roadmap for the implementation of recommended practices. *Health Policy* 2017;121:963-70.
13. Milakovic M, Corrado AM, Tadrous M, et al. Effects of a single-entry intake system on access to outpatient visits to specialist physicians and allied health professionals: a systematic review. *CMAJ Open* 2021;9:E413-23.
14. Damani Z, Mackean G, Bohm E, et al. The use of a policy dialogue to facilitate evidence-informed policy development for improved access to care: the case of the Winnipeg Central Intake Service (WCIS). *Health Res Policy Syst* 2016;14:78. doi: 10.1186/s12961-016-0149-5.
15. Six steps to an effective central intake program. Ottawa: Canadian Medical Association; 2014. Available: https://www.cma.ca/Assets/assets-library/document/en/advocacy/Six-steps-central-intake-2014.pdf (accessed 2021 Apr. 28)
16. Novak K, Van Zanten SV, Pendharkar SR. Improving access in gastroenterology: the single point of entry model for referrals. *Can J Gastroenterol* 2013;27:633-5.
17. Apply for OHIP and get a health card. Toronto: Ontario Ministry of Health. Available: https://www.ontario.ca/page/apply-ohip-and-get-health-card (accessed 2022 Apr. 20).
18. What OHIP covers. Toronto: Ontario Ministry of Health; 2022. Available: https://www.ontario.ca/page/what-ohip-covers (accessed 2022 Apr. 20).
19. Thorne S, Kirkham SR, Macdonald-Emes J. Interpretive description: a noncategorical qualitative alternative for developing nursing knowledge. *Res Nurs Health* 1997;20:169-77.
21. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;19:349-57.
22. Given LM, editor. *The SAGE encyclopedia of qualitative research methods*. Vol. 2. Thousand Oaks (CA): Sage Publications; 2008; Available: https://methods.sagepub.com/reference/sage-encyc-qualitative-research-methods (accessed 2020 Dec. 18).
23. Ontario ramping up efforts to reduce surgical wait times: additional funding will allow province to perform thousands more surgeries, procedures and diagnostic imaging hours [news release]. Toronto: Ontario Ministry of Health; 2021 June 28. Available: https://news.ontario.ca/en/release/1000613/ontario-ramping-up-efforts-to-reduce-surgical-wait-times?utm_source=sfmc&utm_medium=email&utm_campaign=OMA%20News%20July%2030%202021&utm_term=View%20the%20Ministry's%20news%20release&utm_id=141463&sfmc_id=7603219 (accessed 2021 Aug. 10).
24. Archibald MM, Ambagtsheer RC, Casey MG, et al. Using Zoom videoconferencing for qualitative data collection: perceptions and experiences of researchers and participants. *Int J Qual Methods* 2019;18:1-8. doi: 160940691987459.

25. About Otter. Mountain View (CA). Otter.ai. Available: https://otter.ai/about
26. Lobe B, Morgan D, Hoffman KA. Qualitative data collection in an era of social distancing. *Int J Qual Methods* 2020;19:1-8. doi: 160940692093787.
27. Auerbach C, Silverstein L. *Qualitative data: an introduction to coding and analysis*. New York: NYU Press; 2003.
28. Carter N, Bryant-Lukosius D, DiCenso A, et al. The use of triangulation in qualitative research. *Oncol Nurs Forum* 2014;41:545-7.
29. Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant* 2018; 52:1893-907. doi: 10.1007/s11135-017-0574-8.
30. 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.
31. Hazlewood GS, Barr SG, Lopatina E, et al. Improving appropriate access to care with central referral and triage in rheumatology. *Arthritis Care Res (Hoboken)* 2016;68:1547-53.
32. Ramchandani M, Mirza S, Sharma A, et al. Pooled cataract waiting lists: views of hospital consultants, general practitioners and patients. *J R Soc Med* 2002; 95:598-600.

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