

# Prioritizing specialized children's surgery in Canada during the COVID-19 pandemic

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■ Cite as: *CMAJ* 2020. doi: 10.1503/cmaj.201577; early-released September 1, 2020

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**O**n Mar. 11, 2020, the World Health Organization declared coronavirus disease 2019 (COVID-19) a global pandemic, and our provincial and territorial governments began preparing hospitals for an expected surge of COVID-19-related hospital and intensive care unit admissions. This included cancellation of elective surgeries; by the end of March, Canadian hospitals were cancelling surgeries at an estimated rate of 33 000 per week.<sup>1</sup> How have hospitals' surgery cancellation policies affected subspecialty children's surgery in Canada and how should we deal with the backlog?

Subspecialty-trained pediatric surgeons, anesthesiologists, pediatricians, pediatric nurses and other health care professionals, supported by child-focused infrastructure, provide surgical care in 15 children's hospitals in Canada. Children's hospitals are referral centres for tertiary and quaternary surgery, including surgery for congenital heart disease, brain and solid organ tumours, scoliosis, hearing and vision preservation, and surgery in children with complex medical conditions. Cardiac and solid organ transplant surgery is regionalized to eastern and western Canada. Children aged up to 17 years account for about 5% of inpatient surgical procedures, according to data from the Canadian Institute for Health Information.<sup>2</sup> About half of these surgeries — which include appendectomy, hernia repair, ear tubes, and tonsillectomy and adenoidectomy — are performed in older, generally healthy children outside of children's hospitals by surgeons who primarily treat adults, and are not the prime focus of this article.

Surgery in children has traditionally been overlooked in Canada.<sup>3</sup> Scheduled (elective) children's surgery is informed by national-consensus wait-time targets (ranging from < 24 h to < 12 mo), which allows for robust performance measurement and reporting on completed surgeries.<sup>4</sup> Data from 2018 showed that only 65% of elective surgeries in Canadian children's hospitals were completed "within window," suggesting insufficient national capacity even before the pandemic.<sup>5</sup>

Canada's early COVID-19 surge planning considered the potential for diverting adult patients to children's hospitals. This was not needed, except for 3 adults with COVID-19 treated at pediatric

## KEY POINTS

- Children requiring elective, specialized surgery in Canada are treated by subspecialized surgical teams in 1 of 15 children's hospitals but, like adults, are required to wait for their surgery.
- As part of an overall health system response to the coronavirus disease 2019 (COVID-19) pandemic, children's hospitals in Canada — like adult hospitals — cancelled elective surgeries and immediately prioritized urgent surgeries and developed policies and protocols to reduce the risk of transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) among patients and staff.
- As hospitals restore elective surgical services, the backlog of children waiting requires a prioritization and implementation framework for surgery that reflects the unique needs of children compared with adults and supports access for families who are already disadvantaged by social and economic inequality.

facilities in Quebec, 2 of whom required mechanical ventilation (Prasad Puligandla, Department of Pediatric Surgery, The Montreal Children's Hospital, McGill University Health Centre, Montréal, Que.: personal communication, 2020). Care of these adults did not interrupt service delivery for children and had no negative effects on the hospital's health care workforce. However, although emergency (unscheduled) pediatric surgery was uninterrupted during the pandemic, scheduled surgery was restricted to urgent procedures from the week of Mar. 16, 2020, until late May or early June, depending on the province. This resulted in a precipitous decline in pediatric surgical volumes across Canada. Urgent surgical priorities for children included cancer and cardiac surgery, and within a few weeks, solid organ transplant surgery; procedures with short wait-time targets; and surgery for symptomatic patients and those requiring developmentally timed surgery for which delay impairs functional outcome (e.g., spinal fusion for scoliosis). Although nearly 9000 emergency and urgent surgeries were completed in Canadian children's hospitals between mid-March and June, there were an estimated 7600 surgery postponements with an additional estimated 4000 children

not wait-listed owing to reduced access to consultation (Helene Flageole, McMaster Children's Hospital and Pediatric Surgical Chiefs of Canada, Hamilton, Ont.: personal communication, 2020).

Addressing this backlog will require additional scheduled surgical capacity (such as longer weekday and weekend slates and extra rooms) supported by additional human resources (nurses, anesthesiologists and surgeons), a commitment to workplace wellness, specialized equipment, drugs, diagnostic services (especially laboratory and radiology), and a sufficient supply of personal protective equipment. Pediatric nursing and anesthesiology shortages already exist in a number of provinces, making targeted physician recruitment and retention and hospital-based nurse training critical to the ramp-up. Priority should be given to surgeries postponed owing to COVID-19 and procedures with shorter wait-time targets, for which delays increase the risk of harm (e.g., infant hernia incarceration). Certain patients (e.g., those with scoliosis and epilepsy) experience disease progression at different rates and may need to jump the queue. Wait-list analytics should drive operating room allocation to specialties with long wait-lists, especially those with procedural wait times beyond Canada's national targets.

The pandemic has lengthened perioperative processes (which should be factored into case volume projections) and has reduced ambulatory clinic access. Addressing the surgical backlog assumes sufficient access for pre- and postoperative assessments as well as new referrals, many of which can likely be performed virtually. Ambulatory clinic redesign that reduces waiting, enables physical distancing, integrates screening and patient optimization, and uses virtual care for follow-up when appropriate can lead to a more patient-centred experience that should be sustained beyond the pandemic.

Although the COVID-19 burden among children initially seemed low, emerging evidence has suggested that one-third of children infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) were asymptomatic,<sup>6</sup> and the sensitivity of RNA polymerase chain reaction testing from swabs taken from children was less than 80%.<sup>7</sup> Given the perceived higher likelihood that an adult household member would transmit the virus than a child, children's hospitals restricted the number of adults accompanying children to hospital. Even hospitals that routinely encourage parental presence in the operating room during anesthesia induction allowed it only selectively, and this practice largely continues. However, special consideration for surgical access is required for families disadvantaged by geographic remoteness, economic instability and other disparities, for whom existing virtual and outreach clinics will need to continue or be expanded. Culturally sensitive engagement, including with Indigenous communities, will be essential.

In Canada, interprovincial mobility is necessary for patients to access cardiac or transplant surgery, as well as some spinal and minimally invasive surgeries that are not available in every province. This means that travel-associated public health risks must be mitigated and requires an ethical framework, currently in use in several provinces, for resolving conflicts in prioritizing children from different provinces. Children waiting for surgery in general hospitals may become lost in the large backlog of adult surgeries. We must engage our adult surgical colleagues in advocating for these children, and in finding solutions that could include bringing some to children's hospitals for surgery.

As Canada moves into a pandemic recovery phase, there is a danger that adult patients will be favoured by efforts to address the impact of disrupted access to surgery and to reduce the backlog of surgery. Children are not small adults and they are not less deserving. Children have unique surgical needs that require prioritization within our health systems.

## References

1. COVIDSurg Collaborative. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *Br J Surg* 2020 May 12 [Epub ahead of print]. doi: 10.1002/bjs.11746.
2. Table 4: Number, percentage\* and average acute length of stay for top 10 high-volume inpatient surgeries by province/territory, HMDB, 2017–2018 [table]. Ottawa: Canadian Institute for Health Information. Available: [www.cihi.ca/sites/default/files/document/dad-hmdb-childbirth-quick-stats-2017-2018-en.xlsx](http://www.cihi.ca/sites/default/files/document/dad-hmdb-childbirth-quick-stats-2017-2018-en.xlsx) (accessed 2020 May 17).
3. Blair GK. Children are waiting for care and answers. *CMAJ* 2008;179:983-4.
4. Wright JG, Menaker RJ; Canadian Paediatric Surgical Wait Times Study Group. Waiting for children's surgery in Canada: the Canadian Paediatric Surgical Wait Times Project. *CMAJ* 2011;183:E559-64.
5. Paediatric surgical wait times report. FY 2018. Canadian Paediatric Decision Support Network. Available: <https://ken.childrenshealthcarecanada.ca/xwiki/bin/view/Canadian+Paediatric+Decision+Support+Network+%28CPDSN%29> (accessed 2020 July 17).
6. Bai K, Liu W, Liu C, et al. Clinical analysis of 25 novel coronavirus infections in children. *Pediatr Infect Dis J* 2020;39:e100-3.
7. Yuan C, Zhu H, Yang Y, et al. Viral loads in throat and anal swabs in children infected with SARS-CoV-2. *Emerg Microbes Infect* 2020;9:1233-7.

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**Competing interests:** None declared.

This article has been peer reviewed.

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