Variable impact of COVID-19 on urgent intervention in Ontario

C. de Mestral1,2,3*, D. Gomez2,3, C. Sue-Chue-Lam3, F. Dossa3, J. Nantais3, A. N. Simpson2,4, D. Urbach2,3, P. C. Austin2, A. S. Wilton2 and N. N. Baxter2,5

1Division of Vascular Surgery, St Michael’s Hospital, Unity Health Toronto, Toronto, Ontario, Canada,
2ICES, Toronto, Ontario, Canada
3Department of Surgery, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada
4Department of Obstetrics and Gynecology, University of Toronto, Toronto, Ontario, Canada
5Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Victoria, Australia

Dear Editor

The first wave of COVID-19 required restricted scheduled surgical, endoscopic, endovascular, and image-guided procedures1–3. At the same time, Canadians avoided the emergency department in an unprecedented manner4. Management algorithms for some acute diseases may also have shifted towards less invasive interventions (for example, non-operative treatment of appendicitis) because of concerns about resource allocation, COVID-19 transmission, and procedural risk among patients infected with the virus5. These factors and the potential for COVID-19 disease-related organ damage (such as microvascular complications) may have led to a rise in urgent intervention needs after the early decrease in the initial pandemic phase. This study aimed to define temporal trends in urgent invasive procedure rates during the first wave using a population-based time series analysis of administrative health data sets.

Weekly rates of urgent surgical, endoscopic, endovascular, and image-guided procedures among hospitalized patients were determined from 1 January 2020 to 1 September 2020. The start of the pandemic period (11 March 2020) was defined by the death of the first patient with COVID-19 disease in Ontario. The date chosen for the end of the first wave was 1 September 2020. A procedure rate ratio for each week was calculated relative to the corresponding time in 2019. The relative change in weekly procedure rates was considered for all procedures and by body system, based on the Canadian Institute for Health Information Classification of Health intervention codes.

A total of 10,129 fewer urgent procedures were performed in 2020. The weekly rate of urgent procedures fell below historical levels for 12 weeks, starting 11–17 March 2020 (rate ratio (RR) 0.87, 95 per cent c.i. 0.84 to 0.91) until 27 May to 2 June 2020 (RR 0.93, 0.89 to 0.98) (Fig. 1d). The nadir in urgent procedure rates occurred in the week of 1 April 2020 (RR 0.65, 0.62 to 0.68). No subsequent rebound rise above historical levels was observed. A reduction in urgent procedure rates occurred in all body systems; however, the duration, nadir, and absolute case volume of the reduction varied (Fig. 1b–i and Table S1). For example, urgent respiratory and nervous system procedure rates were affected differently: decreased for 13 weeks (nadir RR 0.59) and 4 weeks (nadir RR 0.75) respectively.

Efforts to prioritize only the most essential hospital services may have brought about reductions in unscheduled as well as scheduled procedures. In fact, the reduction in urgent procedures in Ontario aligned relatively closely with a Ministry of Health-mandated slow-down in scheduled surgical procedures (15 March to 19 May 2020). In addition, a reduction in emergency department presentations likely contributed to a reduced need for urgent hospital-based procedures. Fortunately, there was no spike in urgent procedures above historical levels (overall or by body system), but the volume of urgent interventions for complications of COVID-19 or adverse consequences of delayed non-COVID care have yet to be defined. Ongoing disease-specific research is needed to understand the consequences of emergency department avoidance, hospital care restrictions, and societal disparities in access to urgent care.

Funding

This study was supported by the Ontario Health Data Platform (OHDP), a Province of Ontario initiative to support Ontario’s ongoing response to COVID-19 and its related impacts. This study was also supported by ICES, which is funded by an annual grant from the Ontario Ministry of Health and the Ministry of Long-Term Care, and a CIHR foundation grant (148470; N.N.B). P.C.A. is supported by a Mid-Career Investigator Award from the Heart and Stroke Foundation. C.d.M. is the recipient of an Ontario Early Researcher Award. The opinions, results, and conclusions reported in this paper are those of the authors and are independent of the funding and data sources. No endorsement by the
OHDP, its partners, or the Province of Ontario is intended or should be inferred.

Disclosure. The authors declare no conflict of interest.

Supplementary material
Supplementary material is available at BJS online.

References
1. Soreide K, Hallet J, Matthews JB, Schnitzbauer AA, Line PD, Lai PBS et al. Immediate and long-term impact of the COVID-19 pandemic on delivery of surgical services. Br J Surg 2020;107:1250–1261
2. Gomez D, Dossa F, Sue-Chue-Lam C, Wilton AS, de Mestral C, Urbach D et al. Impact of COVID-19 on the provision of surgical services in Ontario, Canada: population-based analysis. Br J Surg 2021;108:e15–e17
3. Leung S, Al-Omran M, Greco E, Qadura M, Wheatcroft M, Mamdani M et al. Monitoring the evolving impact of COVID-19 on institutional surgical services: imperative for quality improvement platforms. Br J Surg 2021;108:e7–e8
4. Canadian Institute for Health Information. How COVID-19 Affected Emergency Departments. https://www.cihi.ca/en/covid-19-resources/impact-of-covid-19-on-canadas-health-care-systems/how-covid-19-affected (accessed 15 February 2021)
5. De Simone B, Chouillard E, Di Saverio S, Pagani L, Sartelli M, Biffi WL et al. Emergency surgery during the COVID-19 pandemic: what you need to know for practice. Ann R Coll Surg Engl 2020;102:323–332

Fig. 1 Weekly urgent procedure rate ratios for 1 January to 1 September in 2020 relative to corresponding dates in 2019, overall and by body system
a All urgent procedures, b nervous system, c cardiovascular, d abdominal cavity, e musculoskeletal, f orocraniofacial, g respiratory, h genitourinary, and i skin and subcutaneous tissues. Rate ratios are shown with 95 per cent confidence intervals. Periods of COVID-related reduction in rate ratio below 1.0 are highlighted in red.