



ORIGINAL ARTICLE

Health Policy

Turbulence in the system: Higher rates of left-without-being-seen emergency department visits and associations with increased risks of adverse patient outcomes since 2020

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Supervising Editor: Bernard Chang, MD, PhD

Funding information

Canadian Institutes of Health Research, Grant/Award Number: 241259

Abstract

Objective: To examine risks of severe adverse patient outcomes shortly after a left-without-being-seen emergency department (LWBS ED) visit since 2020.

Methods: In this retrospective study using linked administrative data, we examined temporal trends in monthly rates of ED and LWBS visits for adults in Ontario, Canada, 2014–2023. In patient-level analyses restricted to the first eligible LWBS ED visit, we used modified Poisson regression to compare the composite outcome of 7-day all-cause mortality or hospitalization following a LWBS ED visit for April 1, 2022–March 31, 2023 (recent period) to April 1, 2014–March 31, 2020 (baseline period), adjusted for age, sex, and Charlson comorbidity index.

Results: Despite fewer monthly ED visits since 2020, temporal trends revealed sustained increases in monthly LWBS rates. LWBS ED visits after April 1, 2020 exceeded the baseline period's single-month LWBS maximum of 4.0% in 15 out of 36 months.

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The composite outcome of 7-day all-cause mortality or hospitalization was 3.4% in the recent period versus 2.9% in the baseline period (adjusted risk ratio [aRR] 1.14, 95% confidence interval [CI] 1.11–1.18) and remained elevated at 30 days (6.2% vs. 5.8%, respectively; aRR 1.05, 95% CI 1.03–1.07), despite similar rates of post-ED outpatient visits (7-day recent and baseline: 38.9% and 39.7%, respectively, $p = 0.38$; 30-day: 59.4% and 59.7%, respectively, $p = 0.05$).

Conclusions: The rate of short-term mortality or hospitalization after a LWBS ED visit has recently increased, despite fewer ED visits/month and similar proportion of post-ED outpatient encounters. This concerning signal should prompt interventions to address system- and population-level causes.

KEYWORDS

all-cause mortality, emergency department, healthcare utilization, left-without-being-seen

1 | INTRODUCTION

1.1 | Background

Since the onset of the worst pandemic in a century in early 2020, health systems have grappled with unprecedented challenges.^{1,2} Acute issues such as acute and critical care capacity directly related to spread of the airborne virus SARS-CoV-2 were anticipated and have been well described,^{3,4} but potential longer-term effects in combination with other systems issues such as staffing shortages, surgical backlogs, and delayed medical care are not well understood.

Determinants of emergency department (ED) crowding and their associations with quality and patient safety have been studied extensively prior to the COVID-19 pandemic.^{5–7} Previous research conducted in Canadian EDs when the proportion of left-without-being-seen (LWBS) ED visits was relatively low (median 3.5%; interquartile range 2.5%–4.8%) found that longer ED wait times were associated with overall higher risk of death or hospitalization, but a LWBS ED visit itself was not associated with increased risk of poor health outcomes.⁶ Based in part on these findings, LWBS ED visits were considered undesirable events but not necessarily indicators of near misses or threats to patient safety.

1.2 | Importance

Since 2020, however, EDs in the United States, Canada, and other countries have experienced significant strain across multiple system levels, including worsening of pre-existing deficiencies in supplies of acute- and long-term care beds, nurse and physician staffing, combined with several years of delayed or unmet patient healthcare needs.⁸ Lay press raised further concerns regarding timing of ED and hospital closures, particularly in rural areas, and adverse patient outcomes.^{9–18} Formal examination of trends in LWBS ED adult visits and recent associations with outcomes, however, has not yet been conducted.

1.3 | Goals of this investigation

Therefore, we assessed trends in the proportion of monthly LWBS adult ED visits in Ontario, Canada for 2014–2023, and we conducted patient-level analyses to compare risks of 7-day and 30-day health all-cause mortality or hospitalization following a LWBS ED visit in the most recent fiscal year to a pre-pandemic baseline period. Healthcare utilization was also examined as a secondary outcome.

2 | METHODS

2.1 | Study design and setting

All adult ED visits in Ontario between April 1, 2023, and March 31, 2023, were identified using the Canadian Institute for Health Information's (CIHI's) National Ambulatory Care Reporting System, and demographic, clinical, and vital status datasets were then linked deterministically using unique encoded identifiers and analyzed at ICES (formerly the Institute for Clinical Evaluative Sciences).¹⁹ Use of data in this project were authorized under section 45 of Ontario's Personal Health Information Protection Act; separate research ethics board approval was not required, and the study was conducted in accordance with the Declaration of Helsinki. We assessed trends in ED visits using visit-level data, while the retrospective cohort comparing recent versus baseline risks of adverse health outcomes and healthcare utilization was conducted using individual-level data. Variable definitions and source database details are described in Table S1.²⁰

2.2 | Inclusion criteria

We included all adult patients (aged 18–105 years) with an LWBS ED visits for Ontario adults and non-missing age or sex who had a valid healthcare card number (Figure S1). Those with missing age, sex, or

The Bottom Line

Anecdotal reports raised concerns regarding post-2020 trends in rates of left-without-being-seen (LWBS) emergency department (ED) visits and the potential associated adverse events. In this analysis of adult ED visits in Ontario, Canada, during 2014–2023, we found sustained increases in LWBS visit rates after 2020, despite fewer overall ED visits. Monthly LWBS ED visits exceeded 4% in 15 out of 36 months after 2020. LWBS cases exhibited 14% higher risk of 7-day death or hospitalization and 5% increased risk of 30-day death or hospitalization.

people without a valid healthcare card or who were non-residents (e.g., visitors, international students; 0.2%–0.5% of adult LWBS ED visits, with no time trends) were excluded due to an inability to link across data sources to identify outcomes. ED visits for patients transferred from special facilities (e.g., correctional center, a mental health hospital, another acute care hospital) were excluded because a LWBS ED visit for these patients would have likely reflected either a data entry error or a decision to leave made by someone other than the patient.

We defined LWBS ED visits by CIHI ED dispositions codes 61 (“leave post registration”) or 63 (“leave after triage”). A chief complaint is recorded by the triage nurse for all ED visits using a national standard list of 161 complaints (18 major categories) known as the Canadian Emergency Department Information System (CEDIS).²¹ The index date was the date of the first LWBS ED visit.

2.3 | Exposure

Time was the primary exposure. We used both descriptive and analytic approaches. All ED visits from all patients were included in the description of time trends between April 1, 2014, and March 31, 2023. For the statistical models comparing outcomes in the 72-month pre-pandemic baseline period (April 1, 2014–March 31, 2020) and the 12-month recent time period (April 1, 2022–March 31, 2023), we included only the first LWBS ED visit for people who had more than one during the accrual period because of expected differences in risk and patterns of healthcare use for subsequent LWBS ED visits.²² The recent period was the first fiscal year in Ontario without implementation of new, system levels changes directly related to the COVID-19 pandemic, and therefore most reflective of the “new normal.” Taking a conservative approach, adjusted analyses did not include April 1, 2020–March 31, 2022 (36 months), which corresponded with the onset of temporary pandemic-related healthcare system disruptions, public health protections, and Ontario ED closures occurring for the first time in more than 15 years (see Table S2; full details available on the Canadian Institute for Health Information Canadian COVID-19 Intervention Timeline website).^{13,23,24}

2.4 | Outcomes

Descriptive time trends reported monthly ED visits and rates of LWBS ED visits. For adjusted comparisons of recent versus baseline periods, the primary outcome was a composite of all-cause mortality or hospitalization within 7 days of the first LWBS ED visit, chosen a priori because it suggests that a hospital-based intervention was likely appropriate at the time of the index ED visit.²⁵ Secondary outcomes included 7-day mortality and hospitalization as separate outcomes, as well as any outpatient encounter or return ED visit that did not result in hospitalization within 7 or 30 days of the index LWBS ED visit. Outpatient encounters included any visit with a family physician or specialist, including those conducted in person and virtually by phone or video.

2.5 | Analysis

Descriptive temporal trends computed monthly number of ED visits and the proportion of LWBS ED visits from April 1, 2014, to March 31, 2023. These are presented as line graphs.

In adjusted analyses comparing recent versus baseline periods, we reported characteristics of patients at their first LWBS ED visit for the baseline period of April 1, 2014–March 31, 2020, and for the recent period of April 1, 2022–March 31, 2023, with corresponding standardized differences, where a standardized difference <0.1 was interpreted as lack of difference between the two time periods. To compare the risks of 7-day and 30-day adverse events for people with a LWBS ED visit in the recent period compared to the baseline period, we used modified Poisson regression to compute unadjusted and adjusted risk ratios (aRR) and 95% confidence intervals (CIs). Multivariable analyses were adjusted for age, sex, and Charlson comorbidity index derived from hospitalizations in the 5 years prior to the index ED visit. A priori, we intentionally did not adjust for factors that were part of the causal pathway, such as patient acuity on ED arrival or ED characteristics such as staffing or crowding.

3 | RESULTS

3.1 | Time trends: monthly rates of total and LWBS ED visits

During the baseline period, the highest ED visits/month was 445,735 and the highest rate of LWBS/month was 4.0% (17,665/445,735). During the recent period, highest ED visits/month was 438,740 and the highest rate of LWBS/month was 5.7% (23,415/413,423). Monthly proportion of LWBS ED visits (purple line, left axis) and monthly number of ED visits (blue line, right axis) for April 1, 2014–March 31, 2023, are shown in Figure 1. Prior to 2020, there were clear seasonal variations and overall trends in monthly total ED visits and LWBS rates, with oscillation around a relatively narrow value range. Since 2020, however, variability in both monthly ED visits and LWBS rates was considerably wider and lacked return to previous seasonal patterns or overall trends.

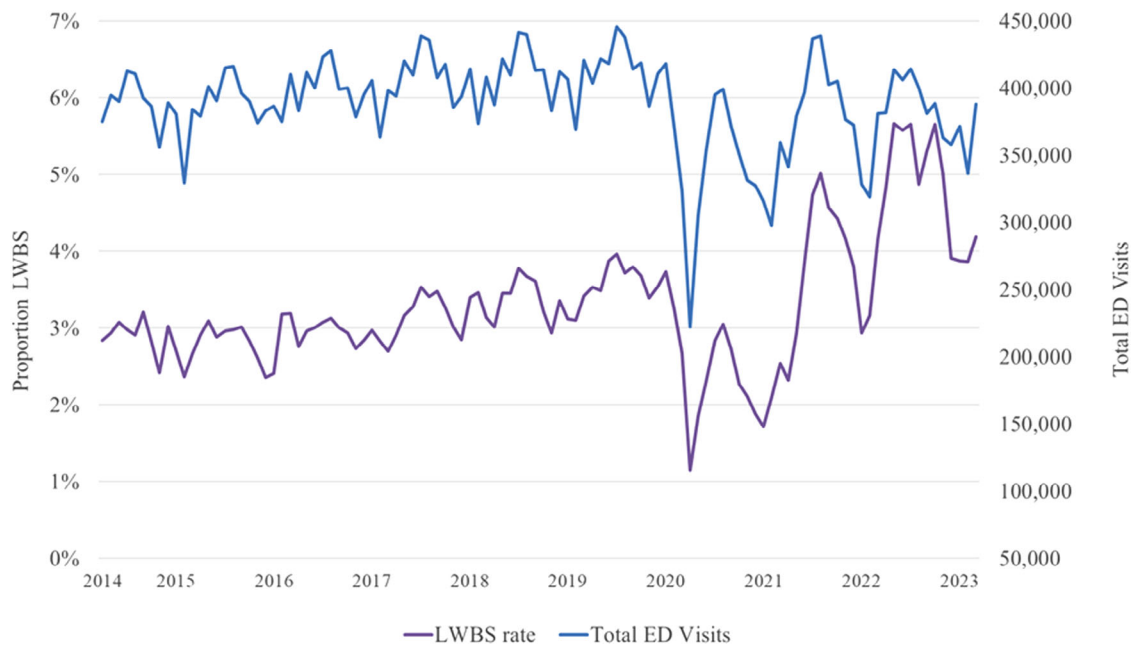


FIGURE 1 Monthly proportion of left-without-being-seen (LWBS) emergency department (ED) visits (left axis) and total ED visits (right axis) (April 1, 2014–March 31, 2023).

Despite fewer monthly ED visits, monthly rates of LWBS ED visits after April 1, 2020, exceeded the single baseline LWBS maximum in 15 out of 36 months; between April 1, 2022 and March 31, 2023, the single baseline LWBS maximum was exceeded for 9 out of 12 months. Prior to April 1, 2020, highest number of monthly ED visits was 445,735 and the highest monthly rate of LWBS was 4.0%, both in July 2019. In the baseline period, monthly rates of LWBS and total ED visits were gradually increasing. For the 36 months from April 1, 2020, to March 31, 2023, the highest number of monthly ED visits of 438,740 occurred in August 2021, while the highest monthly rate of LWBS of 5.7% occurred in May 2022 (a 42.9% increase compared to the baseline period overall). After April 1, 2020, monthly ED visits and proportion LWBS varied widely.

3.2 | Comparisons of recent versus baseline periods

Table 1 reports characteristics for patients with their first LWBS ED visit during the 72-month baseline period and the 12-month recent period (see Figure S1 for study flow). Patient characteristics were similar across age, sex, neighborhood level income quartile, history of being unhoused, rurality, Charlson comorbidity, as well as day, time, and mode of arrival. Median age was 40 (Q1–Q3 27–57) years for the baseline period, and 42 (Q1–Q3 28–60) years in the recent period (standardized difference 0.06). The proportion of LWBS visits categorized as emergent on the Canadian Triage and Acuity Scale (CTAS) was higher during the recent period (12.9% recent vs. 9.2% baseline, standardized difference 0.12), and fewer visits were categorized as semi-urgent (22.6% recent vs. 31.9% baseline, standardized difference 0.21), suggesting

higher acuity of illness among those who LWBS in the recent period. Characteristics for patients with a first LWBS ED visit between April 1, 2020, and March 31, 2022, and excluded from statistical models are reported in Table S3.

3.3 | Main results

Composite and component 7-day and 30-day outcomes, including the number of deaths, hospitalizations, ED visits, or outpatient clinic encounters, are reported in Table 2. Seven-day all-cause mortality or hospitalization was 3.4% in the recent period and 2.9% in the baseline period. Adjusted risk of all-cause mortality or hospitalization within 7 days of a LWBS ED visit was approximately 14% higher in the recent period compared to the baseline period (aRR 1.14, 95% CI 1.11–1.18; Table 2), and remained elevated at 30 days (6.2% vs. 5.8%, respectively, $p < 0.001$; aRR 1.05, 95% CI 1.03–1.07), despite similar rates of post-ED outpatient visits (7-day recent and baseline: 38.9% and 39.7%, respectively, $p = 0.38$; 30-day: 59.4% and 59.7%, respectively, $p = 0.05$).

During the baseline period, there was a mean of 4.9 deaths/month within 7 days of a LWBS ED, and 9.0 deaths/month during the recent period. During the baseline period, there was a mean 20.7 deaths/month within 30 days of a LWBS ED visit, and 33.1 deaths/month during the recent period. The aRRs for 7-day and 30-day mortality were 1.46 (95% CI 1.18–1.81) and 1.24 (95% CI 1.11–1.38), respectively. The aRRs for a return ED visit within 7 and 30 days were slightly lower in the recent period compared to the baseline. Of outpatient encounters within 30 days, 43.8% occurred virtually (by phone or video) in the recent period, compared to 3.3% during the baseline period ($p < 0.001$).

TABLE 1 Baseline characteristics, baseline versus recent period.

	Baseline period (April 1, 2014–March 31, 2020) (N = 653,598)	Recent period (April 1, 2022–March 31, 2023) (N = 131,318)	Std diff ^a
Median age (years) (Q1, Q3)	40 (27, 57)	41 (28, 60)	0.062
Female sex, n (%)	342,901 (52.5%)	68,249 (52.0%)	0.010
Rural residence, n (%)	113,626 (17.4%)	20,636 (15.7%)	0.045
Neighborhood income quintile, n (%)			
1 (lowest income)	181,230 (27.7%)	41,710 (26.5%)	0.050
2	137,942 (21.1%)	33,522 (25.8%)	0.004
3	121,347 (18.6%)	27,487 (19.4%)	0.020
4	109,686 (16.8%)	22,948 (17.5%)	0.018
5 (highest income)	100,455 (15.4%)	21,352 (16.3%)	0.024
Missing	2938 (0.4%)	574 (0.4%)	0.002
Charlson comorbidity, n (%)			
No admission	457,729 (70.0%)	96,786 (73.7%)	0.082
0–1	156,814 (24.0%)	26,889 (20.5%)	0.085
≥2	39,055 (6.0%)	7643 (5.8%)	0.007
History of being unhoused, n (%)	14,972 (2.3%)	3964 (3.0%)	0.045
Time of arrival, n (%)			
Day (8:00–15:59)	243,935 (37.3%)	48,953 (37.3%)	0.001
Evening (16:00–23:59)	306,780 (46.9%)	61,330 (46.7%)	0.005
Night (24:00–7:59)	102,883 (15.7%)	21,035 (16.0%)	0.008
Day of the week, n (%)			
Weekday (Monday to Friday)	495,575 (75.8%)	100,635 (76.6%)	0.019
Weekend (Saturday to Sunday)	158,023 (24.2%)	30,683 (23.4%)	0.019
Arrival by ambulance, n (%)	69,282 (10.6%)	15,713 (12.0%)	0.043
CTAS, n (%)			
Resuscitation (highest acuity)	116 (0.0%)	23 (0.0%)	<0.001
Emergent	60,307 (9.2%)	16,963 (12.9%)	0.118
Urgent	301,693 (46.2%)	63,848 (48.6%)	0.049
Less urgent	208,678 (31.9%)	29,733 (22.6%)	0.210
Non urgent (lowest acuity)	51,626 (7.9%)	12,893 (9.8%)	0.068
Left prior to triage	27,093 (4.1%)	6849 (5.2%)	0.051
Unknown	4085 (0.6%)	872 (0.6%)	0.017
CEDIS codes category			
Cardiovascular	59,569 (9.1%)	14,280 (10.9%)	0.059
Ear, nose, throat	51,956 (7.9%)	10,795 (8.2%)	0.010
Environmental	1000 (0.2%)	221 (0.2%)	0.004
Gastrointestinal	78,095 (11.9%)	15,754 (12.0%)	0.001
Genitourinary	19,500 (3.0%)	4266 (3.2%)	0.015
Mental health	24,590 (3.8%)	4497 (3.4%)	0.018
Neurologic	49,648 (7.6%)	10,122 (7.7%)	0.004
Obstetrics-gynecology	12,808 (2.0%)	2627 (2.0%)	0.003
Ophthalmology	18,872 (2.9%)	3916 (3.0%)	0.006
Orthopedic	91,700 (14.0%)	17,728 (13.5%)	0.015
Respiratory	48,657 (7.4%)	10,847 (8.3%)	0.03

(Continues)

TABLE 1 (Continued)

	Baseline period (April 1, 2014–March 31, 2020) (N = 653,598)	Recent period (April 1, 2022–March 31, 2023) (N = 131,318)	Std diff ^a
Skin	73,652 (11.3%)	15,180 (11.6%)	0.009
Substance misuse	13,982 (2.1%)	2737 (2.1%)	0.004
Trauma	2250 (0.3%)	515 (0.4%)	0.008
General and minor	65,196 (10.0%)	13,136 (10.0%)	0.001
Left prior to triage	8450 (1.3%)	3036 (2.3%)	0.077
Unknown	33,673 (5.2%)	1661 (1.3%)	0.222
%LWBS, mean (SD)	3.1% (0.4%)	4.9% (0.7%)	<i>p</i> < 0.001*
%LWBS, median (Q1–Q3)	3.1% (2.9%–3.4%)	4.9% (4.1%–5.6%)	<i>p</i> < 0.001**

Abbreviations: %LWBS, proportion of left-without-being-seen ED visits/month; CEDIS, Canadian Emergency Department Information System; CTAS, Canadian Triage and Acuity Scale; IQR, interquartile range;

^aStandardized mean difference as a measure of balance between study groups, where >0.10 is considered to be unbalanced.

*By two-sample t-test.

**By Wilcoxon rank-sum test.

TABLE 2 Seven-day and 30-day outcomes following index left-without-being-seen (LWBS) emergency department (ED) visit, adjusted risk ratio (aRR) is comparing the recent period compared to baseline.

	Baseline period (April 1, 2014–March 31, 2020) (N = 653,598)	Recent period (April 1, 2022–March 31, 2023) (N = 131,318)	Risk ratio [95% CI]	Adjusted risk ratio [95% CI] ^a
7-Day outcomes				
Death or hospitalization	19,114 (2.9%)	4399 (3.4%)	1.15 [1.11, 1.18]	1.14 [1.11, 1.18]
Death	352 (0.05%)	110 (0.08%)	1.56 [1.26, 1.93]	1.46 [1.18, 1.81]
Hospitalization	18,923 (2.9%)	4347 (3.3%)	1.14 [1.11, 1.18]	1.14 [1.11, 1.18]
Return ED visit	140,985 (21.6%)	27,309 (20.8%)	0.96 [0.95, 0.98]	0.97 [0.96, 0.98]
Outpatient clinic visit	253,138 (38.7%)	51,031 (38.9%)	1.00 [1.00, 1.01]	1.00 [0.99, 1.01]
30-Day outcomes				
Death or hospitalization	38,131 (5.8%)	8102 (6.2%)	1.06 [1.03, 1.08]	1.05 [1.03, 1.07]
Death	1492 (0.23%)	397 (0.30%)	1.32 [1.19, 1.48]	1.24 [1.11, 1.38]
Hospitalization	37,611 (5.8%)	7960 (6.1%)	1.05 [1.03, 1.08]	1.05 [1.02, 1.07]
Return ED visit	186,578 (28.6%)	34,729 (26.5%)	0.93 [0.92, 0.94]	0.93 [0.92, 0.94]
Outpatient clinic visit	390,051 (59.7%)	77,980 (59.4%)	1.00 [0.99, 1.00]	0.99 [0.99, 1.00]

Abbreviations: CI, confidence interval; ED, emergency department.

^aAdjusted for age, sex, Charlson comorbidity index (0–1 versus ≥2, missing).

4 | LIMITATIONS

We cannot draw conclusions regarding direct causes of increased risk of severe short-term adverse health outcomes after a LWBS ED visit in this observational study. Residual confounding is possible; the Charlson comorbidity index is based on hospital diagnosis codes and does not account for conditions managed solely on an outpatient basis. Information regarding ED staffing was not available; while ED and hospital staffing were prioritized during the study period,²⁶ future work should explore potential roles that potential system-level factors such as ED staffing, nursing shortages, or transitions of care may have played in risk of short-term adverse outcomes after a LWBS ED visit. Cause of

death information was not available to generate hypotheses for future studies of potential causes. However, elevated risk of the relatively distal outcome of 30-day all-cause mortality suggests our findings raise concerns regarding patient safety and health system capacity, as it is difficult to attribute events occurring several weeks later solely to an ED visit. In order to link ED visits to vital status and healthcare utilization, we were only able to include individuals with valid healthcare numbers, so our findings may not generalize to people with only private insurance or no health insurance; our findings may not generalize to systems without universal access to healthcare. This study examined the first LWBS ED visit for people who had more than one LWBS ED visit, given important differences in sociodemographics and patterns of

healthcare use, or did it assess the type of post-ED encounters, or what role, if any, virtual care may play in our findings. Previous work has identified variation in the implementation and impact of virtual care,^{27–31} but changes to reimbursement and utilization of telemedicine and their associations with health outcomes warrant investigation in future work.³²

5 | DISCUSSION

Compared to 2014–2020, rates of monthly total and LWBS ED visits for adults were higher and remained elevated longer in Ontario EDs, exceeding the single-month pre-pandemic peak LWBS ED visit rate of 4% during 15 out of 36 months between 2020 and 2023 (42% of the time) and 9 out of 12 months (75% of the time) during the most recent period of 2022–2023. Patients with a LWBS ED visits during the recent period had a 14% higher risk of death or hospitalization within 7 days despite similar post-ED follow-up, this increased risk of death or hospitalization persisted through at least 30 days, although the magnitude declined to 5%. The patients in the recent LWBS group had a median age of 41 years, and 74% had no history of hospitalization in the prior 5 years. Pre-planned subgroup analysis examining risk of all-cause mortality was particularly notable, with 46% higher adjusted risk of death at 7 days and 24% higher adjusted risk at 30 days. Although some health systems may have historically viewed LWBS ED visits as relatively low risk to patient safety, our findings indicate that LWBS ED visits should not be considered benign events in the context of rising ED volumes, on-going hospital and EDs closures, inadequate acute- and long-term care bed supply, nurses and physicians shortages, and worsening access to primary care.^{33–40}

It is particularly notable that more LWBS ED visits occurred despite fewer monthly ED visits than pre-2020 levels.²⁴ Since April 1, 2020, we found the number of monthly ED visits was lower than pre-pandemic median monthly visits in 29 out of 36 (81%) months, and never exceeded the pre-pandemic maximum.

We did not find evidence of patients in the recent period seeking emergency care for lower acuity conditions; on the contrary, there were more emergent CTAS visits and fewer non-urgent CTAS visits in the recent period. Based on chief complaint codes, reasons for seeking ED care were similar between the two time periods, and although acuity was higher in the recent period, we did not find evidence that patients in the recent period were less healthy, as the proportions with no hospitalization within 5 years were similar and Charlson comorbidity scores were similar. Similar, relatively high rates of post-ED outpatient encounters across study periods suggests patients were not more likely to visit the ED as a potential alternative to outpatient medical care. However, increased risk of adverse outcomes persisting 30 days after the index ED visits suggests factors beyond an ED visit may be contributing to patient outcomes. Taken together, these findings suggest the health system may be unable to accommodate the same number of ED visits as before. Therefore, policies or interventions aimed at decreasing ED crowding by discouraging people from

going to the ED may cause harm if patients delay seeking emergency care.

Post-ED outpatient healthcare encounter were similar during study periods in terms of the proportion of people with one or more visits, with a small decrease of questionable clinical importance in the proportion of people with 30-day post-ED visits in the recent period (aRR 0.99, 95% CI 0.99–1.0, $p < 0.001$). Overall, nearly 40% of people had an outpatient visit within 7 days, and 60% within 30 days. Such high post-ED access to care may not be the case in the near future, with as many as 25% of Ontarians projected to be without a family physician by 2025 and projected future nursing staff shortages.^{32,33}

Our findings are difficult to compare to previous LWBS ED visit research due to difference in methods, study periods, and comparator groups, although they were in line with a single-center, pediatric ED study in the United States, which found a large and sustained increase in LWBS visits since July 2021.⁴¹ A benchmark of 2% LWBS visits has been recommended based on associated adverse impacts of ED crowding on quality, safety, and financial outcomes.⁴² We did not explore patient- or system-level factors associated with LWBS ED visits,^{43–45} or did we compare outcomes for patients with a LWBS visit against those who did not leave the ED.⁶ However, pre-pandemic monthly LWBS rates are similar to previous work in the same universal healthcare system in Ontario (2003–2007, 3.6% median annual LWBS ED visits)⁶ and in Alberta, which administers its own universal healthcare system (2010–2015, 3.4% median daily LWBS ED visits).⁴⁶ Variation in and across ED process metrics such as LWBS visits have been identified as a warning of widespread system strain, and the urgency of a 2017 call for interventions to reduce LWBS ED visits is bolstered by our findings. Despite differences in funding models, Ontario per capita ED use and distribution across measures of socioeconomic status are similar to those of New York state,⁴⁷ suggesting our findings may generalize to other health systems, including the United States.

LWBS ED visits reflect a confluence of system and patient factors, most of them outside the control of the ED.⁴⁸ As a marker of overall health of the healthcare system, LWBS ED visit rates should be monitored closely and reported transparently to healthcare workers and the public. In universal healthcare systems, such as those in Canadian provinces, Australia, Great Britain, many countries in Europe and Asia, and the Veterans Health Administration system in the United States, careful interpretation should inform system-level interventions to address ED input (e.g., access to family physicians, addressing outpatient care delays and backlogs), throughput (e.g., ED closures, ED nurse and physician shortages, and diagnostic turn-around-times), and output (e.g., inpatient ED boarding, acute- and long-term bed supply and nurse and physician shortages).

Our findings are an important signal of possible deterioration in overall quality of care within a large universal healthcare system, with the potential for severe consequences for patients. Recent LWBS ED visits in 2022–2023 were associated with higher risk of 7-day and 30-day all-cause death or hospitalization compared to a pre-pandemic baseline period, despite lower ED volumes and similar proportions of people with post-ED visit outpatient encounters. System-level

resources and interventions are urgently needed to prevent ED closures and address the inadequate supply of acute- and long-term care beds, nurse and physician shortages, barriers to family physician access, and backlogs due to delayed medical care.

ACKNOWLEDGMENTS

This study was supported by ICES, which is funded by an annual grant from the Ontario Ministry of Health (MOH) and the Ministry of Long-Term Care. This document used data adapted from the Statistics Canada Postal CodeOM Conversion File, which is based on data licensed from Canada Post Corporation, and/or data adapted from the Ontario Ministry of Health Postal Code Conversion File, which contains data copied under license from Canada Post Corporation and Statistics Canada. Parts of this material are based on data and/or information compiled and provided by the Ontario MOH and Canadian Institute for Health Information. The analyses, conclusions, opinions, and statements expressed herein are solely those of the authors and do not reflect those of the funding or data sources; no endorsement is intended or should be inferred. 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. The opinions, results, and conclusions reported in this paper are those of the authors and are independent from the funding sources. No endorsement by the OHDP, its partners, or the Province of Ontario is intended or should be inferred. AXYX holds the National New Investigator Award from the Heart & Stroke Foundation of Canada. MKK holds the Lillian Love Chair in Women's Health at the University Health Network. CM is supported by the Sunnybrook Research Institute, the Practice Plan of the Department of Emergency Services at Sunnybrook Health Sciences Centre and University of Toronto. This study was supported by the Canadian Institutes of Health Research (operating grant: Addressing the Wider Health Impacts of COVID-19 241259).

CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: McNaughton CD, Austin PC, Chu A, et al. Turbulence in the system: Higher rates of left-without-being-seen emergency department visits and associations with increased risks of adverse patient outcomes since 2020. *JACEP Open*. 2024;5:e13299. <https://doi.org/10.1002/emp2.13299>

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