

Health Care Utilization After a Visit to a Within-Group Family Physician vs a Walk-In Clinic Physician

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ABSTRACT

PURPOSE Primary care access is a key health system metric, but little research has compared models to provide primary care access when one's regular physician is not available. We compared health system use after a visit with a patient's own family physician group (ie, within-group physician who was not the patient's primary physician) vs a visit with a walk-in clinic physician who was not part of the patient's family physician group.

METHODS We conducted a population-based, retrospective cohort study using administrative data from Ontario, Canada, including all individuals formally enrolled with a family physician, from April 1, 2019 to March 31, 2020. We compared those visiting within-group physicians to those visiting walk-in clinic physicians using propensity score matching to account for differences in patient characteristics. The primary outcome was any emergency department visit within 7 days of the initial visit.

RESULTS Matched patients who visited a within-group physician (N = 506,033) were 10% less likely to visit an emergency department in the 7 days after the initial visit compared to patients who saw a walk-in clinic physician (N = 506,033; 20,117 [4.0%] vs 22,320 [4.4%]; risk difference [RD] 0.4%; 95% CI 0.4-0.5; relative risk [RR] 0.90; 95% CI, 0.89-0.92). Restricting to visits occurring on weekends, the observed association was stronger (7,964 [3.7%] vs 10,055 [4.7%]; RD 1.0%; 95% CI 0.9-1.1; RR 0.79; 95% CI, 0.77-0.82). Those accessing after-hours within-group physician visits were more likely to have ≥ 1 additional virtual or in-person within-group physician visit within 7 days (virtual RR 1.86, in-person RR 1.87).

CONCLUSIONS Compared to visiting a walk-in clinic physician, seeing a within-group physician after hours might decrease downstream emergency department visits. This finding could be explained by better continuity of care and can inform primary care service models and the policies that support them.

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INTRODUCTION

Balancing timely access with care continuity remains an important challenge in primary care. Although 90% of the population in Ontario, Canada's most populous province, report having a family physician or primary care provider,¹ less than one-half are able to make a same- or next-day appointment.² Walk-in clinics provide episodic care without an appointment and are available to all patients, whether they are attached to a primary care physician or not.³⁻⁶ Attached patients sometimes visit walk-in clinics when their perceived need for care falls outside regular office hours such as during evenings or weekends,⁷ if they have poor same-day or next-day appointment access with their regular physician,⁸ or if they perceive the walk-in clinic to be more easily accessible.^{3,9-11} An estimated 30% of Ontarians visit a walk-in clinic each year.¹²

Continuity of care is associated with greater patient satisfaction, better health outcomes, and decreased subsequent health care utilization and costs.^{7,13-15} Informational continuity exists if information about the patient, including their previous health care use, is available at the point of care.¹⁶ Management continuity captures "the extent to which services delivered by different providers are timely and complementary such that care is experienced as connected and coherent."¹⁷ Walk-in clinics can decrease care continuity.^{4,18,19} In addition to introducing a new physician, there is no expectation of an ongoing relationship between the patient and the walk-in clinic physician, who typically does not have access to patients' existing health records, nor is the walk-in clinic record shared with patients' usual family physicians.

Conflicts of interest: authors report none.

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In an attempt to offer an alternative that ensures access while preserving informational and management continuity, some health care funders have introduced requirements and incentives for after-hours coverage within each group of primary care physicians.^{20,21} Our aim was to compare 2 alternatives for rapid access when a patient's own physician is not available. We hypothesized that compared to visits with a walk-in clinic physician, after-hours visits with a within-group physician would be associated with lower subsequent usage of the emergency department (ED).

METHODS

Setting

This population-based, retrospective cohort study used administrative claims data from Ontario, a province with 14.5 million residents and approximately 14,000 practicing family physicians in 2019.²² Ontario provides permanent residents with universal health coverage of medically necessary physician and hospital services, without copayments or deductibles, and it does not restrict patients' choice of physician. The single payer is the Ontario government.

Most (81%) Ontarians are linked to a family physician who has signed on to their care via a patient enrollment model.²³ Patient enrollment models are group practices with blended remuneration including capitation and fee-for-service payments.²⁴ Primary care group practices are staffed primarily by family physicians who refer patients to specialists outside the practice as needed. In 2004, the Ontario government introduced after-hours premiums and minimum after-hours time requirements for physicians who practiced in patient enrollment models.²⁵⁻²⁷ Physicians in primarily capitation-based groups (>40% of physicians)²⁸ of ≥ 3 physicians were required to provide at least one 3-hour block of evening or weekend coverage per week.^{20,21} The number of required after-hours blocks differed by group size and group type. In addition, physicians received an access incentive, which was decreased if enrolled patients visited outside physicians (eg, at a walk-in clinic).^{29,30} In Ontario, walk-in clinics are typically unaffiliated with primary care clinics, and patients can choose to visit any walk-in clinic without an appointment at no cost to them.

Data Sources

Datasets were linked using unique encoded identifiers and analyzed at ICES, an independent nonprofit research institute whose legal status under Ontario's health information privacy law allows it to collect and analyze health care and demographic data, without consent, for health system evaluation and improvement. A description of the ICES databases we used in this study can be found in [Supplemental Table 1](#).

We acquired data from the College of Physicians and Surgeons of Ontario (CPSO) annual license renewal survey³¹ via a data-sharing agreement. Using physicians' self-reported practice settings and hours worked in each setting per week,

the CPSO provided variables indicating whether a walk-in clinic or episodic care clinic outside of a hospital was a setting in which a physician worked the majority of the time.¹⁹ These questions were mandatory and therefore were not missing for any physician.

Study Population

The study population included all Ontario residents who were formally enrolled with a family physician as of April 2019,³² and had ≥ 1 family physician encounter from April 1, 2019 to March 31, 2020 (see [Supplemental Figure 1](#) for study population flow chart).

Exposure

The principal exposure was assessed at the first eligible visit (index visit) during the study period and consisted of the type of family physician office encounter. The exposure groups were defined as follows.

Visit With a Within-Group Physician

We included all office encounters with physicians who belonged to the same group as the patient's enrolling physician (but not with the patient's own family physician) within the study period. In this group, we restricted time of visit to after hours or weekends—times when acute care might be more likely and more similar to care provided at a walk-in clinic (see [Supplemental Table 2](#) for visit type definitions).

Visit With a Walk-In Clinic Physician

We identified all office encounters with walk-in clinic physicians using a definition of walk-in clinic physician that we have applied previously.^{7,19,33} Because our aim was to compare 2 alternatives for care when a patient's own physician was not available, we excluded encounters between patients and their own enrolling physician. Visits could be at any time including after hours and weekends. Because physicians often work in multiple settings, if a walk-in clinic physician encounter also met criteria for a within-group physician visit, the visit was classified as the latter.

Outcomes

The primary outcome was any ED visit within 7 days of the index visit (including the day of the index visit). Secondary outcomes included time to ED visit (up to 30 days); low-acuity ED visit (Canadian Triage and Acuity Scale level 4 or 5) within 7 days; ED visit within 30 days; virtual or in-person visit with any physician, the patient's own physician, or a physician from the patient's group within 7 days (excluding the day of the index visit); and the number of all family physician visits within 30 days.

Other Variables

Other patient demographic and health care utilization characteristics included calendar year quarter; patient age and sex; neighborhood income quintile; recent health insurance

registrant status (a proxy for recent immigration); rurality (as measured by the Rurality Index for Ontario)³⁴; count of family physician visits in previous 2 years; count of ED visits in the previous year; patient enrollment model type; size of enrolling physician's group; distance from patient's residence to enrolling physician's practice; diagnosis of an upper respiratory tract infection at index visit; and whether the index visit occurred on a weekend day (operational definitions in [Supplemental Table 3](#)). We used The Johns Hopkins ACG System (version 10) to derive counts of comorbidities based on Aggregated Diagnosis Groups and prior health care utilization based on Resource Utilization Bands.³⁵ Missing data are reported in the supplemental data tables.

Statistical Analysis

We described the cohort using mean (SD), median (interquartile range), and count/frequency. We compared visit characteristics between exposure groups using standardized mean differences (SMDs) such that differences >10% (SMD 0.1) were considered potentially meaningful.³⁶

To ensure comparability between patients having visits with a within-group physician and those having visits with a walk-in clinic physician, we derived a logistic regression–based propensity score.³⁷ Variables in the propensity score model included all those listed in “Other Variables,” with the exception of rurality. Index visit diagnosis was categorized as any of the top 20 diagnoses or as “other.” We included missing values for income quintile in the regression model as their own level. Restricted cubic splines were used to model the association between the log-odds of visiting a walk-in clinic physician and the following continuous variables: age, count of own family physician visits in previous 2 years, count of ED visits in the past year, distance from patients' residence to own physicians' practice address, and size of own physicians' group.³⁸ Individuals from both groups were then matched 1:1 based on the logit of the propensity score within a caliper distance of 0.2 of the SD of the logit of the propensity score.³⁹ We also hard matched on the following key variables: age group (0-17 years, 18-64 years, ≥65 years) and rurality (Rurality Index for Ontario score; 3 categories: 0-9 large urban, 10-40 small urban, >40 rural).

For binary outcomes, we reported relative risk (RR) and risk difference (RD) with 95% CI, estimated using methods that accounted for the matched sample.^{40,41} For the time to ED visit outcome, we reported the hazard ratio using a Cox proportional hazards model robust variance estimator to account for clustering within matched pairs.⁴² We conducted all analyses using SAS statistical software (version 9.4; SAS Institute).

Subgroup and Sensitivity Analyses

For age and rurality subgroups, we reported the RR of having an ED visit within 7 days of the index visit. To further compare outcomes after visits that were most likely to be acute in nature, we conducted a subgroup analysis with weekend-only

visits. For both groups, we restricted the subanalysis to visits that occurred on a Saturday or Sunday. In the propensity score model for this subgroup analysis, whether the visit was on a weekend was not included, and patients were only hard matched on rurality.

Ethics Approval

This study was approved by the Women's College Hospital Research Ethics Board (REB 2020-0095-E) with a waiver of patient consent.

RESULTS

Patient Characteristics

Of the 1,701,381 individuals in the cohort, we identified 607,166 (35.7%) whose index visit was with a within-group physician after hours or on a weekend and 1,094,215 (64.3%) whose index visit was with a walk-in clinic physician they were not enrolled with. Compared to patients who had a visit with a walk-in clinic physician, patients who saw a within-group physician were older (mean [SD] = 40.7 [23.4] years vs 38.3 [20.7] years; SMD 0.11) and less likely to live in a large urban area (74.7% vs 88.5%; SMD 0.36) ([Supplemental Table 4](#)). Patients who saw a within-group physician had more own family physician visits in the prior 2 years (mean [SD] = 5.2 [5.7] vs 4.5 [5.6]; SMD 0.13) despite having similar prior health care utilization and numbers of comorbidities (Aggregated Diagnosis Groups).

Patients who visited a within-group physician more often belonged to team-based models of primary care compared to those who saw a walk-in clinic physician (35.3% vs 16.5%; SMD 0.44). Within-group patients were more often enrolled with physicians who belonged to smaller physician groups (mean [SD] = 43 [69] physicians vs 64 [109] physicians; SMD 0.24) and lived an average 10 km closer to their enrolling physician's practice (mean [SD] = 10.6 (31.0) km vs 20.6 (57.3) km; SMD 0.22).

A total of 83% of patients who saw a within-group physician were matched. After matching, there were 506,033 patients in each group. There were no differences in measured characteristics exceeding 10% (SMD 0.1), with the exception of visits on a weekend (34.1% vs 28.1%; SMD 0.13) ([Table 1](#)). The top 20 visit diagnoses are listed in [Supplemental Table 5](#).

Outcomes

Within 7 days of the index visit, patients who saw a within-group physician after hours or on weekends were 10% less likely to visit an ED than those who saw a walk-in clinic physician (RD 0.4 [95% CI, 0.4-0.5]; RR 0.90 [95% CI, 0.89-0.92]) ([Table 2](#)). They also had a decreased hazard of ED visit (hazard ratio 0.94 [95% CI, 0.93-0.95]), with early separation of time-to-event curves, suggesting that much of the difference in risk was front loaded (see [Supplemental Figure 2a](#) for Kaplan-Meier curves).

Patients who had a visit with a within-group physician were more likely to have either an in-person or virtual visit with their own family physician or a within-group physician within 7 days of the index visit compared to after a walk-in clinic visit, although RDs were small.

The decrease in 7-day ED visits after an encounter with a within-group physician was driven by individuals who lived in large urban areas (RR 0.86 [95% CI, 0.84-0.88]) and children/adolescents (aged <18 years; RR 0.87 [95% CI, 0.83-0.91]) (Supplemental Table 6). In contrast, those who lived in rural areas and saw a within-group physician had an increased likelihood of an ED visit in the next week (RR 1.26 [95% CI, 1.13-1.41]).

Weekend-Only Visits

Of the 545,352 individuals in the weekend-only visit cohort, 279,119 (51.2%) had an index visit with a within-group physician, and 266,233 (48.8%) had an index visit with a walk-in clinic physician. Group differences in characteristics were similar to the overall cohort analysis (Supplemental Table 7).

After matching, there were 213,190 patients in each group—76% of the patients who saw a within-group physician were matched (Supplemental Table 8). The groups were well matched including the top 20 visit diagnoses (Supplemental Table 9). Outcomes after the index visit were similar to those for the main analysis, with the exception that differences were larger (Supplemental Table 10). Compared to patients who

Table 1. Characteristics of Patients in Matched Cohort (April 1, 2019-March 31, 2020)

Characteristic	Patients With a Visit to a Walk-in Clinic Physician They Were Not Enrolled With, at Any Time N = 506,033	Patients With a Visit to a Within-Group Physician They Were Not Enrolled With, After Hours or on a Weekend N = 506,033	Standardized Mean Difference
Quarter of index encounter, No. (%)			
Q1 (Apr-Jun 2019)	171,387 (33.9)	168,119 (33.2)	0.01
Q2 (Jul-Sep 2019)	127,581 (25.2)	127,390 (25.2)	0
Q3 (Oct-Dec 2019)	122,780 (24.3)	125,126 (24.7)	0.01
Q4 (Jan-Mar 2020)	84,285 (16.7)	85,398 (16.9)	0.01
Age, y			
Mean (SD)	39.3 (22.5)	40.1 (22.3)	0.04
Median (IQR)	39 (21-57)	41 (22-57)	NA
Age, y, No. (%)			
≤18	107,547 (21.3)	106,694 (21.1)	0
19-29	79,525 (15.7)	65,073 (12.9)	0.08
30-44	103,886 (20.5)	109,801 (21.7)	0.03
45-64	139,851 (27.6)	149,241 (29.5)	0.04
65-74	43,762 (8.6)	44,238 (8.7)	0
≥75	31,462 (6.2)	30,986 (6.1)	0
Age category, y, No. (%)			
0-17	100,534 (19.9)	100,534 (19.9)	0
18-64	330,275 (65.3)	330,275 (65.3)	0
≥65	75,224 (14.9)	75,224 (14.9)	0
Sex, No. (%)			
Female	297,679 (58.8)	301,383 (59.6)	0.02
Male	208,354 (41.2)	204,650 (40.4)	0.02
Neighborhood income quintile, No. (%)			
1 (Lowest)	82,654 (16.3)	83,936 (16.6)	0.01
2	96,531 (19.1)	98,158 (19.4)	0.01
3	106,162 (21.0)	106,812 (21.1)	0
4	111,666 (22.1)	109,107 (21.6)	0.01
5 (Highest)	109,020 (21.5)	108,020 (21.3)	0.01
OHIP registrant within past 10 years, No. (%)	40,719 (8.0)	43,868 (8.7)	0.02

continues

IQR = interquartile range; NA = not applicable; OHIP = Ontario Health Insurance Plan.

Note. Not listed: Top 20 diagnoses (Supplemental Table 5).

had an index visit with a walk-in clinic physician, those who had a visit with a within-group physician were 21% less likely to have an ED visit within the following 7 days (RD, 1.0% [95% CI, 0.9-1.1]; RR, 0.79 [95% CI, 0.77-0.82]) ([Supplemental Figure 2b](#)). Those who had a visit with a within-group physician were more likely to have an in-person or virtual visit with their enrolling physician or group within 7 days.

DISCUSSION

In this population-based matched cohort study, we found that patients with a family physician who saw a colleague from their family physician's group after hours were 10% less likely (0.4% lower absolute risk) to visit an ED within 7 days compared to those who saw a walk-in clinic physician. This small difference in risk was front loaded in the first few

Table 1. Characteristics of Patients in Matched Cohort (April 1, 2019-March 31, 2020) (continued)

Characteristic	Patients With a Visit to a Walk-in Clinic Physician They Were Not Enrolled With, at Any Time N = 506,033	Patients With a Visit to a Within-Group Physician They Were Not Enrolled With, After Hours or on a Weekend N = 506,033	Standardized Mean Difference
Rurality of residence, No. (%)			
Large urban	422,668 (83.5)	422,668 (83.5)	0
Small urban	71,655 (14.2)	71,655 (14.2)	0
Rural	11,710 (2.3)	11,710 (2.3)	0
Resource Utilization Band, No. (%)			
Low	122,803 (24.3)	116,880 (23.1)	0.03
Moderate	275,502 (54.4)	277,830 (54.9)	0.01
High	107,728 (21.3)	111,323 (22.0)	0.02
Count of own family physician visits in previous 2 years			
Mean (SD)	4.9 (5.5)	5.1 (5.7)	0.04
Median (IQR)	3 (1-7)	4 (1-7)	NA
Own family physician visits in previous 2 years, No. (%)			
< 2	146,993 (29.0)	136,114 (26.9)	0.05
2-5	197,212 (39.0)	199,120 (39.3)	0.01
6-9	89,538 (17.7)	94,555 (18.7)	0.03
≥10	72,290 (14.3)	76,244 (15.1)	0.02
Emergency department visits in previous year			
Mean (SD)	0.5 (1.3)	0.5 (1.3)	0.01
Median (IQR)	0 (0-1)	0 (0-1)	NA
Patient enrollment model, No. (%)			
Capitation	193,577 (38.3)	197,858 (39.1)	0.02
Enhanced fee for service	171,432 (33.9)	164,943 (32.6)	0.03
Team based	139,313 (27.5)	142,079 (28.1)	0.01
Other group	1,711 (0.3)	1,153 (0.2)	0.02
Size of enrolling physician's group, No. (%)			
Mean (SD)	46.2 (78.6)	45.0 (74.5)	0.02
Median (IQR)	21 (11-42)	21 (11-40)	NA
Weekend visit, No. (%)	142,413 (28.1)	172,618 (34.1)	0.13
Distance from patient's residence to enrolling physician's practice location, km			
Mean (SD)	14.0 (35.7)	11.3 (33.2)	0.08
Median (IQR)	6 (3-13)	5 (2-11)	NA
< 2.8 km, No. (%)	119,435 (23.6)	133,581 (26.4)	0.07
2.8-6.4 km, No. (%)	119,723 (23.7)	133,294 (26.3)	0.06
6.5-14.8 km, No. (%)	128,165 (25.3)	124,853 (24.7)	0.02
≥14.9 km, No. (%)	138,710 (27.4)	114,305 (22.6)	0.11

IQR = interquartile range; NA = not applicable; OHIP = Ontario Health Insurance Plan.

Note. Not listed: Top 20 diagnoses ([Supplemental Table 5](#)).

days after the initial visit and was driven by those who lived in large urban areas. Compared to patients who had a visit with a walk-in clinic physician, those who saw a within-group physician were also more likely to have a visit with their regular family physician or a within-group physician in the following 7 days.

This study builds on a body of literature linking access to high-continuity, after-hours primary care with decreased use of ED visits.^{26,43-46} The mechanism behind our present findings is uncertain—fewer ED visits could be the result of more appropriate care, greater access to one’s own primary care clinic, or improved patient satisfaction owing to greater informational or management continuity. In addition to timely access and continuity, patients’ trust and physicians’ confidence in the advice, treatment, or follow-up plan could also be contributing factors.

A 2005 Ontario-based study found walk-in clinic visits to have a greater rate of 3-day health reutilization for minor illnesses compared to a family physician office visit, with an effect that might have been mediated by differences in patient

satisfaction.⁴⁷ In the United States, visits to walk-in clinics (ie, retail clinics unaffiliated with longitudinal primary care) for low-acuity conditions were associated with increased health care utilization and costs.⁴⁸ Opening more walk-in clinics in an area was also not found to decrease the rate of low-acuity ED visits.⁴⁹ In a recent study of virtual family physician visits, we found that within-group virtual visits were also followed by fewer trips to the ED than virtual visits with an outside physician,⁵⁰ suggesting that care continuity might be valuable for decreasing repeat utilization for both virtual and in-person care.

In primary care practice and systems, there is an ongoing tension between timely access and care continuity.⁵¹ Relationship continuity is associated with better health outcomes and decreased health care utilization and costs^{14,52-54} and is valued by patients.^{55,56} Yet, many patients might choose or feel forced to trade off continuity if they are unable to access timely care for an issue they perceive to be urgent. Convenience and distance from where patients reside are additional factors influencing patient choice.^{7,8,27} Family physicians

Table 2. Propensity Score–Matched Outcomes

Outcome	Patients With Visit to a Walk-In Clinic Physician They Were Not Enrolled With, at Any Time N = 506,033	Patients With a Visit to a Within-Group Physician They Were Not Enrolled With, After Hours or on a Weekend N = 506,033	Risk Difference, % (95% CI)	Relative Risk, (95% CI)
Emergency department visit within 7 days, No. (%)	22,320 (4.4)	20,117 (4.0)	0.4 (0.4 to 0.5)	0.90 (0.89 to 0.92)
Time to emergency department visit (d), up to 30 days				
Mean (SD)	7.8 (8.7)	8.3 (8.8)	NA	0.94 (0.93 to 0.95) ^a
Median (IQR)	4 (0 to 14)	4 (1 to 14)	NA	NA
Low-acuity emergency department visit within 7 days, No. (%)	5,644 (1.1)	5,323 (1.1)	0.06 (0.02 to 0.1)	0.94 (0.91 to 0.98)
Emergency department visit within 30 days, No. (%)	37,717 (7.5)	35,584 (7.0)	0.4 (0.3 to 0.5)	0.94 (0.93 to 0.96)
Virtual visit with any family physician within 7 days, No. (%)	1,143 (0.2)	1,047 (0.2)	0.02 (0 to 0.04)	0.92 (0.84 to 1.00)
Virtual visit with patient’s own enrolling physician within 7 days, No. (%)	293 (0.1)	393 (0.1)	0.02 (0.01 to 0.03)	1.34 (1.15 to 1.56)
Virtual visit with a physician within the patient’s own enrolling group within 7 days, No. (%)	321 (0.1)	598 (0.1)	0.05 (0.04 to 0.07)	1.86 (1.63 to 2.13)
In-person visit with any family physician within 7 days, No. (%)	66,878 (13.2)	66,908 (13.2)	0.01 (−0.1 to 0.1)	1.00 (0.99 to 1.01)
In-person visit with patient’s own enrolling physician within 7 days, No. (%)	26,326 (5.2)	35,860 (7.1)	1.9 (1.8 to 2.0)	1.36 (1.34 to 1.38)
In-person visit with a physician within the patient’s own enrolling group within 7 days, No. (%)	30,410 (6.0)	56,704 (11.2)	5.2 (5.1 to 5.3)	1.87 (1.84 to 1.89)
Count of all family physician visits (any) within 30 days				
Mean (SD)	0.5 (0.9)	0.5 (0.9)	NA	1.14 (1.14 to 1.16)
Median (IQR)	0 (0 to 1)	0 (0 to 1)	NA	NA

IQR = interquartile range; NA = not applicable.

^a Hazard ratio.

might strive to have more availability to be able to provide both continuity and timeliness, but it is not a requirement for primary care physicians to be available 24/7, and many physicians are choosing part-time work.⁵⁷ In this context, timely care within a group is likely a second-best alternative to timely care with one's own clinician. Findings from the present study support this approach.^{58,59} Many groups share electronic medical records, thus ensuring informational and management continuity for patients presenting out of hours. Yet, within-group after-hours care might be underutilized because many patients do not know these options exist. In a 2012-2019 population-based survey, approximately 60% of Ontarians were unaware that their family physician's clinic offered after-hours services.^{8,60} Improving awareness of after-hours offerings is essential to ensure that policies around coverage achieve their desired effect.

Limitations

There are several limitations to this study. First, our findings might not apply broadly to all settings. Indeed, we observed that the association between within-group visits and 7-day ED visits in rural and small urban settings was opposite to that found in large urban areas. This might be because EDs serve a different function in rural areas, with local family physicians also providing ED coverage, available to see their own patients in this setting. Since most walk-in clinics are located in large urban areas, our findings are relevant to the majority of walk-in clinics in Ontario. Second, it is possible that certain groups face barriers related to racism that we could not investigate in this study because our datasets do not have information on race. Third, we do not know with certainty that all within-group physicians had access to a shared electronic medical record, assuring informational continuity. Future research should confirm or refute whether and how continuity is a main driver of our findings, while also elucidating how certain practices can sustain accessible shared after-hours care. Relatedly, we did not seek to describe or compare the quality of care received in these different care settings. Fourth, owing to the nature of the data, we cannot know the reasons why patients went to the ED after their initial visit. In some cases, the physician might have recommended it.^{21,61} Indeed, it is important to consider that an increase in ED visits does not necessarily imply worse quality of care⁶² because these visits might have been warranted.^{21,61} An initial walk-in visit might also have averted an ED visit for patients who could not access their regular family physician in a timely manner. Fifth, the decision as to where to seek care might be influenced by patients' health care-seeking behavior, perceived urgency of their condition, and/or tolerance for waiting.⁶³ In other words, the patients more likely to seek access at a walk-in clinic might also be more likely to visit the ED for reasons beyond what is captured in health administrative data. As a result, there might be residual confounding between the type of index visit and the decision to visit the ED. Finally, the present study might not be generalizable to

settings in which patients must pay for outside-of-group visits or where walk-in clinics are integrated with longitudinal primary care, which is not the case in Ontario.

Conclusions

We found that compared to having a visit with a walk-in clinic physician, having an after-hours visit with a physician who belongs to one's own enrolling group was associated with a small decrease in the risk of an ED visit in the following week. More research is needed to understand the underlying reasons for our observation, particularly the role that informational or management continuity might play in mitigating health system use.



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Key words: after hours; primary care; walk-in clinic; continuity of care; retail clinic; Canada

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Data-Sharing Statement: The dataset from this study is held securely in coded form at ICES. Whereas legal data-sharing agreements between ICES and data providers (eg, health care organizations and government) prohibit ICES from making the dataset publicly available, access may be granted to those who meet prespecified criteria for confidential access, at www.ices.on.ca/DAS (das@ices.on.ca). The full dataset creation plan and underlying analytic code are available from the authors on request, understanding that the computer programs might rely on coding templates or macros that are unique to ICES and are therefore either inaccessible or might require modification.

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Supplemental materials

References

- Health Quality Ontario. Having a family doctor or other primary care provider. Accessed Dec 14, 2023. <https://www.hqontario.ca/System-Performance/Primary-Care-Performance/Having-a-Primary-Care-Provider>
- Statistics Canada. Primary health care providers, 2019. Published Oct 22, 2020. Accessed Jan 13, 2023. <https://www150.statcan.gc.ca/n1/pub/82-625-x/2020001/article/00004-eng.htm>
- Bell NR, Szafran O. Use of walk-in clinics by family practice patients: Who is using this health care service? *Can Fam Physician*. 1992;38:507-513.
- Jones M. Walk-in primary medical care centres: lessons from Canada. *BMJ*. 2000;321(7266):928-931. [10.1136/bmj.321.7266.928](https://doi.org/10.1136/bmj.321.7266.928)
- Williams AP, Barnsley J, Vayda E, Kaczorowski J, Østbye T, Wenghofer E. Comparing the characteristics and attitudes of physicians in different primary care settings: the Ontario Walk-in Clinic Study. *Fam Pract*. 2002;19(6):647-657. [10.1093/fampra/19.6.647](https://doi.org/10.1093/fampra/19.6.647)
- Miller GB, Nantes S. Walk-in clinics and primary care: review of the literature. *Can Fam Physician*. 1989;35:2019-2022.
- Lapointe-Shaw L, Kiran T, Salahub C, et al. Walk-in clinic patient characteristics and utilization patterns in Ontario, Canada: a cross-sectional study. *CMAJ Open*. 2023;11(2):E345-E356. [10.9778/cmajo.20220095](https://doi.org/10.9778/cmajo.20220095)
- Rahman B, Costa AP, Gayowsky A, et al. The association between patients' timely access to their usual primary care physician and use of walk-in clinics in Ontario, Canada: a cross-sectional study. *CMAJ Open*. 2023;11(5):E847-E858. [10.9778/cmajo.20220231](https://doi.org/10.9778/cmajo.20220231)
- Rizos J, Anglin P, Grava-Gubins I, Lazar C. Walk-in clinics: implications for family practice. *CMAJ*. 1990;143(8):740-745.
- Ssendikaddiwa J, Lavergne R. Access to primary care and internet searches for walk-in clinics and emergency departments in Canada: observational study using Google trends and population health survey data. *JMIR Public Health Surveill*. 2019;5(4):e13130. [10.2196/13130](https://doi.org/10.2196/13130)
- Brown JB, Sangster LM, Ostbye T, Barnsley JM, Mathews M, Ogilvie G. Walk-in clinics: patient expectations and family physician availability. *Fam Pract*. 2002;19(2):202-206. [10.1093/fampra/19.2.202](https://doi.org/10.1093/fampra/19.2.202)
- Health Quality Ontario. Measuring up 2018. A yearly report of how Ontario's health system is performing. Accessed Jan 5, 2021. <https://www.hqontario.ca/Portals/0/Documents/pr/measuring-up-2018-en.pdf>
- Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. *BMJ*. 2003;327(7425):1219-1221. [10.1136/bmj.327.7425.1219](https://doi.org/10.1136/bmj.327.7425.1219)
- Barker I, Steventon A, Deeny SR. Association between continuity of care in general practice and hospital admissions for ambulatory care sensitive conditions: cross sectional study of routinely collected, person level data. *BMJ*. 2017;356:j84. [10.1136/bmj.j84](https://doi.org/10.1136/bmj.j84)
- Salisbury C, Munro J. Walk-in centres in primary care: a review of the international literature. *Br J Gen Pract*. 2003;53(486):53-59.
- Agarwal G, Crooks VA. The nature of informational continuity of care in general practice. *Br J Gen Pract*. 2008;58(556):e17-e24. [10.3399/bjgp08X342624](https://doi.org/10.3399/bjgp08X342624)
- Haggerty JL, Burge F, Pineault R, et al. Management continuity from the patient perspective: comparison of primary healthcare evaluation instruments. *Healthc Policy*. 2011;7(Spec Issue):139-153.
- Szafran O, Bell NR. Use of walk-in clinics by rural and urban patients. *Can Fam Physician*. 2000;46(1):114-119.
- Lapointe-Shaw L, Salahub C, Austin PC, et al. Characteristics of walk-in clinic physicians and patients in Ontario, Canada: cross-sectional study. *Can Fam Physician*. 2024;70(10):e156-e168. [10.46747/cfp.7010e156](https://doi.org/10.46747/cfp.7010e156)
- Ontario Ministry of Health and Long-Term Care. Primary Health Care. Questions and answers. After hours service requirements update. Corresponding Bulletin Reference 11007. Published Jan 2011; Accessed Apr 4, 2024. https://wayback.archive-it.org/16312/20220506082044/https://health.gov.on.ca/en/pro/programs/ohip/bulletins/11000/bul11007_2.pdf
- Kiran T, Moineddin R, Kopp A, Frymire E, Glazier RH. Emergency department use and enrollment in a medical home providing after-hours care. *Ann Fam Med*. 2018;16(5):419-427. [10.1370/afm.2291](https://doi.org/10.1370/afm.2291)
- College of Physicians and Surgeons of Ontario (CPSO). Annual Report 2019. Accessed Jun 7, 2023. <https://viewer.joomag.com/annual-report-2019/0540650001597960535>
- Jaakkimainen L, Bayoumi I, Glazier RH, et al. Development and validation of an algorithm using health administrative data to define patient attachment to primary care providers. *J Health Organ Manag*. 2021;733-743. [10.1108/JHOM-05-2020-0171](https://doi.org/10.1108/JHOM-05-2020-0171)
- Ontario Ministry of Health. Primary care payment models in Ontario. Accessed Apr 3, 2024. <https://www.ontario.ca/page/primary-care-payment-models-ontario>
- Devlin RA, Kpelitse KA, Li L, Mehta N, Sarma S. After-hours incentives and emergency department visits: evidence from Ontario. *Canadian Public Policy*. 2020;46(2):253-263. [10.3138/cpp.2019-046](https://doi.org/10.3138/cpp.2019-046)
- Hong M, Thind A, Zaric GS, Sarma S. Emergency department use following incentives to provide after-hours primary care: a retrospective cohort study. *CMAJ*. 2021;193(3):E85-E93. [10.1503/cmaj.200277](https://doi.org/10.1503/cmaj.200277)
- Howard M, Goertzen J, Kaczorowski J, et al. Emergency department and walk-in clinic use in models of primary care practice with different after-hours accessibility in Ontario. *Healthc Policy*. 2008;4(1):73-88.
- Lapointe-Shaw L, Salahub C, Bird C, et al. Characteristics and health care use of patients attending virtual walk-in clinics in Ontario, Canada: cross-sectional analysis. *J Med Internet Res*. 2023;25:e40267. [10.2196/40267](https://doi.org/10.2196/40267)
- Glazier RH, Green ME, Frymire E, et al. Do incentive payments reward the wrong providers? A study of primary care reform in Ontario, Canada. *Health Aff (Millwood)*. 2019;38(4):624-632. [10.1377/hlthaff.2018.05272](https://doi.org/10.1377/hlthaff.2018.05272)
- Ontario Ministry of Health and Long-Term Care. 2016 Annual Report; Follow-up on VFM Section 3.1.1. Chapter 1, Section 1.11. Physician billing. pp. 169-184. https://www.auditor.on.ca/en/content/annualreports/arreports/en18/v2_11en18.pdf
- College of Physicians and Surgeons of Ontario (CPSO). Annual registration renewal. Accessed Mar 2, 2023. <https://www.cpso.on.ca/Physicians/Your-Practice/Registration-Renewals-and-Incorporation/Annual-Membership-Renewal>
- ICES Data Dictionary. Accessed May 23, 2023. <https://datadictionary.ices.on.ca/Applications/DataDictionary/Library.aspx?Library=PCPOP>
- Lofters A, Salahub C, Austin PC, et al. Up-to-date on cancer screening among Ontario patients seen by walk-in clinic physicians: a retrospective cohort study. *Prev Med*. 2023;172:107537. [10.1016/j.ypmed.2023.107537](https://doi.org/10.1016/j.ypmed.2023.107537)
- Kralj B. *Measuring Rurality - RIO2008_BASIC: Methodology and Results*. Published Feb 2, 2009. Accessed November 22, 2023. <https://www.oma.org/siteassets/oma/media/pagetree/about-oma/expert--advice/2008rio-fulltechnicalpaper.pdf>
- Johns Hopkins Medicine. Johns Hopkins ACG System. Accessed Oct 26, 2021. <https://www.hopkinsacg.org>
- Austin PC. Using the standardized difference to compare the prevalence of a binary variable between two groups in observational research. *Commun Stat Simul Comput*. 2009;38(6):1228-1234. [10.1080/03610910902859574](https://doi.org/10.1080/03610910902859574)

37. Austin PC. An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behav Res.* 2011; 46(3):399-424. [10.1080/00273171.2011.568786](https://doi.org/10.1080/00273171.2011.568786)
38. Harrell FE Jr. *Regression Modeling Strategies: With Applications to Linear Models, Logistic and Ordinal Regression, and Survival Analysis.* 2nd ed. Springer; 2015.
39. Austin PC. Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. *Pharm Stat.* 2011;10(2):150-161. [10.1002/pst.433](https://doi.org/10.1002/pst.433)
40. Austin PC. Comparing paired vs non-paired statistical methods of analyses when making inferences about absolute risk reductions in propensity-score matched samples. *Stat Med.* 2011;30(11):1292-1301. [10.1002/sim.4200](https://doi.org/10.1002/sim.4200)
41. Austin PC. The performance of different propensity-score methods for estimating relative risks. *J Clin Epidemiol.* 2008;61(6):537-545. [10.1016/j.jclinepi.2007.07.011](https://doi.org/10.1016/j.jclinepi.2007.07.011)
42. Austin PC. The performance of different propensity score methods for estimating marginal hazard ratios. *Stat Med.* 2013;32(16):2837-2849. [10.1002/sim.5705](https://doi.org/10.1002/sim.5705)
43. Lippi Bruni M, Mammi I, Ugolini C. Does the extension of primary care practice opening hours reduce the use of emergency services? *J Health Econ.* 2016; 50:144-155. [10.1016/j.jhealeco.2016.09.011](https://doi.org/10.1016/j.jhealeco.2016.09.011)
44. Whittaker W, Anselmi L, Kristensen SR, et al. Associations between extending access to primary care and emergency department visits: a difference-in-differences analysis. *PLoS Med.* 2016;13(9):e1002113. [10.1371/journal.pmed.1002113](https://doi.org/10.1371/journal.pmed.1002113)
45. van Uden CJT, Crebolder HF. Does setting up out of hours primary care cooperatives outside a hospital reduce demand for emergency care? *Emerg Med J.* 2004;21(6):722-723. [10.1136/emj.2004.016071](https://doi.org/10.1136/emj.2004.016071)
46. McDonald T, Ronksley PE, Cook LL, et al. The impact of primary care clinic and family physician continuity on patient health outcomes: a retrospective analysis from Alberta, Canada. *Ann Fam Med.* 2024;22(3):223-229. [10.1370/afm.3107](https://doi.org/10.1370/afm.3107)
47. Campbell MK, Silver RW, Hoch JS, et al. Re-utilization outcomes and costs of minor acute illness treated at family physician offices, walk-in clinics, and emergency departments. *Can Fam Physician.* 2005;51(1):82-83.
48. Ashwood JS, Gaynor M, Setodji CM, Reid RO, Weber E, Mehrotra A. Retail clinic visits for low-acuity conditions increase utilization and spending. *Health Aff (Millwood).* 2016;35(3):449-455. [10.1377/hlthaff.2015.0995](https://doi.org/10.1377/hlthaff.2015.0995)
49. Martsolf G, Fingar KR, Coffey R, et al. Association between the opening of retail clinics and low-acuity emergency department visits. *Ann Emerg Med.* 2017;69(4):397-403.e5. [10.1016/j.annemergmed.2016.08.462](https://doi.org/10.1016/j.annemergmed.2016.08.462)
50. Lapointe-Shaw L, Salahub C, Austin PC, et al. Virtual visits with own family physician vs outside family physician and emergency department use. *JAMA Netw Open.* 2023;6(12):e2349452. [10.1001/jamanetworkopen.2023.49452](https://doi.org/10.1001/jamanetworkopen.2023.49452)
51. Hempel S, Stockdale S, Danz M, et al; RAND Corp. Access management in primary care: perspectives from an expert panel. Published Sep 5, 2018. Accessed Apr 4, 2024. https://www.rand.org/pubs/research_reports/RR2536.html
52. Bazemore A, Petterson S, Peterson LE, Bruno R, Chung Y, Phillips RL Jr. Higher primary care physician continuity is associated with lower costs and hospitalizations. *Ann Fam Med.* 2018;16(6):492-497. [10.1370/afm.2308](https://doi.org/10.1370/afm.2308)
53. Bazemore A, Merenstein Z, Handler L, Saultz JW. The impact of interpersonal continuity of primary care on health care costs and use: a critical review. *Ann Fam Med.* 2023;21(3):274-279. [10.1370/afm.2961](https://doi.org/10.1370/afm.2961)
54. Wensing M, Szecsenyi J, Laux G. Continuity in general practice and hospitalization patterns: an observational study. *BMC Fam Pract.* 2021;22(1):21. [10.1186/s12875-020-01361-0](https://doi.org/10.1186/s12875-020-01361-0)
55. Keresteci M, Kiran T; Healthy Debate. Give me a primary-care provider who understands me. Published Mar 28, 2023. Accessed Apr 4, 2024. <https://healthydebate.ca/2023/03/topic/primary-care-provider-understands-me>
56. OurCare - National survey data. Accessed Dec 14, 2023. <https://data.ourcare.ca/all-questions>
57. Bodenheimer T, Haq C, Lehmann W. Continuity and access in the era of part-time practice. *Ann Fam Med.* 2018;16(4):359-360. [10.1370/afm.2267](https://doi.org/10.1370/afm.2267)
58. Bayliss EA, Ellis JL, Shoup JA, Zeng C, McQuillan DB, Steiner JF. Effect of continuity of care on hospital utilization for seniors with multiple medical conditions in an integrated health care system. *Ann Fam Med.* 2015;13(2):123-129. [10.1370/afm.1739](https://doi.org/10.1370/afm.1739)
59. van Servellen G, Fongwa M, Mockus D'Errico E. Continuity of care and quality care outcomes for people experiencing chronic conditions: a literature review. *Nurs Health Sci.* 2006;8(3):185-195. [10.1111/j.1442-2018.2006.00278.x](https://doi.org/10.1111/j.1442-2018.2006.00278.x)
60. Ontario Ministry of Health. The health care experience survey. Accessed Apr 9, 2024. <https://www.ontario.ca/page/health-care-experience-survey>
61. Orkin AM. Is reducing ED visits an important outcome? [letter]. Published Nov 5, 2018. Accessed Jan 3, 2024. <https://www.annfamem.org/content/16/5/419/tab-e-letters#is-reducing-ed-visits-an-important-outcome>
62. Shojania KG. Are increases in emergency use and hospitalisation always a bad thing? Reflections on unintended consequences and apparent backfires. *BMJ Qual Saf.* 2019;28(9):687-692. [10.1136/bmjqs-2019-009406](https://doi.org/10.1136/bmjqs-2019-009406)
63. Redelmeier DA, Wang J, Thiruchelvam D. COVID vaccine hesitancy and risk of a traffic crash. *Am J Med.* 2023;136(2):153-162.e5. [10.1016/j.amjmed.2022.11.002](https://doi.org/10.1016/j.amjmed.2022.11.002)