Variation in emergency department visits for conditions that may be treated in alternative primary care settings

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ABSTRACT

The purpose of this report is to examine Ontario's geographic variation in emergency department (ED) visits for conditions that may be treated in alternative primary care settings. We studied all visits to Ontario EDs in 2002/03 and calculated county-specific age-standardized rates. Overall in Ontario, there were 3174 ED visits per 100 000 population aged 1–74 for conditions that could be treated in alternate primary care settings, but rates varied widely across counties. They were higher in rural counties with rates up to 7-fold higher than the provincial average. Urban counties had lower rates, some were less than one-third of the provincial average. Further research is needed to determine the relationship between ED utilization and primary care capacity.

Key words: emergency department; utilization; geographic variation; primary care

RÉSUMÉ

Le présent rapport a pour objectif d'examiner la variation géographique en Ontario quant aux visites au département d'urgence (DU) pour des affections qui pourraient être traitées dans d'autres lieux de soins primaires. Nous avons étudié toutes les visites aux DU des hôpitaux ontariens en 2002–2003 et calculé les taux standardisés pour l'âge spécifiques à chaque comté. Dans l'ensemble de l'Ontario, il y eut 3 174 visites aux DU par 100 000 habitants âgés entre un et 74 ans pour des affections qui auraient pu être traitées dans d'autres lieux de soins primaires, mais les taux variaient grandement d'un comté à un autre. Ils étaient plus élevés dans les comtés ruraux, dans certains cas jusqu'à sept fois plus élevés que la moyenne provinciale. Les comtés urbains avaient des taux plus faibles, certains correspondant à moins du tiers de la moyenne provinciale. Des recherches plus poussées s'imposent afin de déterminer la relation entre l'utilisation des DU et la disponibilité d'autres lieux de soins primaires.

Introduction

Emergency departments (EDs) are a key access point to the health care system. Although rates of ED utilization may reflect health status, they may also be related to the availability, accessibility and integration of primary health care resources in a community.[1] Access to primary care is related to acute hospital admissions for some ambulatory care sen-

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sitive conditions,[2] and it is possible that the degree of primary care access may be related to the number of ED visits for conditions that could be treated in primary care settings.

As part of a provincial health system monitoring initiative, Ontario's District Health Councils have developed several indicators to help understand access, equity and integration issues.[3] One of these indicators specifically addresses the number of ED visits related to sentinel non-urgent conditions (SNCs) that could be treated in primary care settings. The SNC indicator is designed to be specific rather than sensitive, hence does not capture all such conditions; however, it is proposed as a marker for ED visits that could be managed elsewhere.

Our objectives were to study and describe the geographic variation in Ontario ED visits, using the SNC indicator to estimate the proportion of visits that could potentially be treated in primary care settings.

Methods

Reason for emergency department visit

In Ontario, diagnoses or conditions representing the most clinically significant reason for the ED visit are assigned by the health care provider at the end of the ED visit. For patients who leave without being seen, the most significant reason for the visit is based on the patient's presenting complaint. If multiple conditions are identified during an ED visit, the diagnosis or condition responsible for the greatest resource use is selected as the most clinically significant reason for the ED visit. These data are gathered at the hospital level and reported to the National Ambulatory Care Reporting System (NACRS) of the Canadian Institute for Health Information (CIHI).[4]

Sentinel non-urgent condition indicator

For any given region, the SNC indicator is calculated using the population aged 1 to 74 years as the denominator and the total number of ED visits for otitis media, cystitis, conjunctivitis and upper respiratory infections (common cold, acute or chronic sinusitis and tonsillitis, acute pharyngitis, laryngitis or tracheitis, and other upper respiratory infections) as the numerator. Emergency department visits are excluded from the numerator for patients <1 year or >74 years of age, for those admitted to hospital at the index visit, and for those with a *Canadian Emergency Department Triage and Acuity Scale* (CTAS) level of I (Resuscitation), II (Emergent) or III (Urgent),[5] all of which may require more complex assessment or aggressive treatment. More indicator details can be found in the Ontario District Health Council's report.[3]

Data analysis

We obtained ED visit data from CIHI's NACRS for Ontario residents presenting to 175 Ontario EDs between Apr. 1, 2002, and Mar. 31, 2003. Age-standardized rates per 100 000 population were calculated by patient county of residence, irrespective of where the patient received care. Statistics Canada 2002 population estimates were used to calculate population denominators.

Results

During the 1-year study period, our data showed a total of 5 002 735 ED visits by Ontario residents at Ontario hospitals. Of these, 358 018 (7.2% of all ED visits) were eligible SNCs, as defined above. Data from one ED was missing.

Figure 1 demonstrates county-specific variation in age-standardized rates for ED visits with SNCs. Table 1 displays each county's age-standardized rate and its comparative rate ratio, defined as the ratio of the county-specific rate over the provincial rate. This Table also shows, by county, the population aged 1–74 years, population density, and the percentage of population living in urban areas, defined as a minimum population of 1000 and a population density of at least 400 people per square kilometre.[2]

York Regional Municipality had the lowest county-specific rate of SNC visits, at 895 per 100 000 population, or less than one-third of the overall Ontario rate (comparative rate ratio = 0.3). Sudbury Regional Municipality, Peel Regional Municipality, Toronto and Ottawa–Carleton Regional Municipality also had very low rates (less than 0.5 of the Ontario average). Timiskaming District had the highest county-specific rate at 22 455 visits per 100 000 population, more than 7 times the Ontario rate (comparative rate ratio = 7.1). Other counties with substantially higher than average rates included Haliburton County, Manitoulin District, Lanark County, Bruce County, Algoma District, Cochrane District and Renfrew County.

The SNC indicator demonstrates much greater geographic variation than total ED visits: comparative rate ratios range from 0.3 to 7.1 for the indicator and from 0.6 (York Regional Municipality) to 3.8 (Manitoulin District) for total ED visits.

Discussion

These data show substantial variability in the use of EDs for non-urgent conditions that could potentially be managed in primary care settings. We cannot determine the appropriate rate or range of ED utilization for SNCs, but it seems likely that substantially higher rates may reflect re-

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duced primary care accessibility. For example, less populated and more remote communities often have limited access to primary care alternatives, including family or general physicians, nurse practitioners, walk-in clinics and urgent care centres.[1] Substantially higher ED utilization rates were observed in rural Northern Ontario counties that have

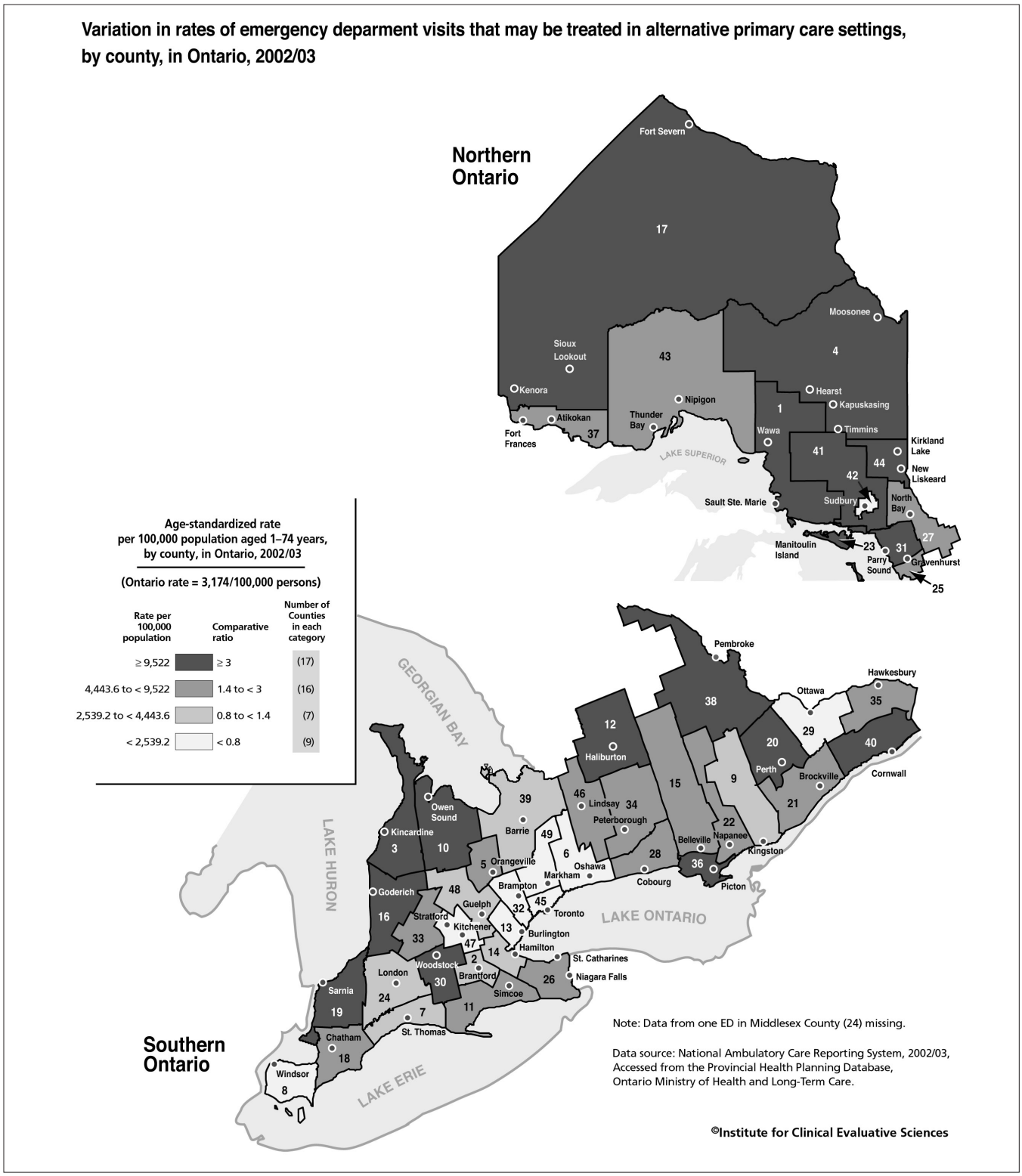

Fig. 1. County-specific variation in age-standardized rates for emergency department visits with sentinel non-urgent conditions.

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Table 1. County-specific emergency department visit rates for sentinel non-urgent conditions that could be treated in primary care settings (per 100 000 population aged 1–74 years 2002/03)

County	Rate: Age-standardized	Comparative rate ratio*	Population aged 1–74	%Urban (2001)	Population density†
49 York Regional Municipality	895	0.3	769 197	93.2	414
42 Sudbury Regional Municipality	907	0.3	149 823	88.7	46
32 Peel Regional Municipality	953	0.3	1 035 305	96.6	796
45 Toronto	1 091	0.3	2 426 111	100.0	3 939
29 Ottawa–Carleton	1 351	0.4	765 191	92.0	279
6 Durham Regional Municipality	1 880	0.6	509 454	88.9	201
47 Waterloo Regional Municipality	2 004	0.6	434 951	93.3	320
13 Halton Regional Municipality	2 399	0.8	377 357	93.8	388
8 Essex County	2 527	0.8	369 149	84.4	203
24 Middlesex County‡	2 660	0.8	395 774	88.9	122
14 Hamilton-Wentworth	2 972	0.9	475 274	92.7	439
2 Brant County	3 074	1.0	120 722	84.9	108
7 Elgin County	3 249	1.0	78 988	62.9	43
9 Frontenac County	3 350	1.1	134 751	73.2	38
48 Wellington County	3 970	1.3	183 980	76.6	71
39 Simcoe County	4 245	1.3	374 516	71.0	78
15 Hastings County	4 817	1.5	122 742	58.1	21
33 Perth County	5 137	1.6	70 486	64.8	33
5 Dufferin County	5 203	1.6	50 859	65.1	34
26 Niagara Regional Municipality	5 221	1.6	390 562	87.6	220
35 Prescott–Russell United Counties	5 611	1.8	75 916	48.0	38
21 Leeds / Grenville United Counties	6 107	1.9	92 554	39.5	29
28 Northumberland County	6 222	2.0	74 189	52.5	41
25 Muskoka District Municipality	6 585	2.1	50 976	39.3	14
11 Haldimand–Norfolk	6 820	2.1	101 040	45.0	36
27 Nipissing District	6 873	2.2	80 062	70.9	5
18 Kent County	7 049	2.2	102 137	67.3	44
46 Victoria County	7 233	2.3	65 746	34.4	23
43 Thunder Bay District	7 335	2.3	144 547	77.2	2
34 Peterborough County	7 356	2.3	119 543	65.8	33
22 Lennox and Addington County	8 827	2.8	38 093	36.5	14
37 Rainy River District	9 302	2.9	20 771	53.5	1
17 Kenora District	10 057	3.2	62 964	39.5	0
19 Lambton County	10 207	3.2	121 877	72.3	42
41 Sudbury District	10 420	3.3	22 542	31.7	1
30 Oxford County	10 813	3.4	94 959	65.4	49
16 Huron County	11 104	3.5	56 354	39.6	18
36 Prince Edward County	11 609	3.7	23 690	26.1	24
40 Stormont Dundas and Glengarry United Counties	11 613	3.7	106 317	54.2	33
31 Parry Sound District	12 483	3.9	38 021	24.6	4
10 Grey County	12 522	3.9	84 898	46.7	20
38 Renfrew County	13 279	4.2	90 768	51.9	13
4 Cochrane District	13 309	4.2	82 528	72.4	1
1 Algoma District	13 759	4.3	113 579	74.2	2
3 Bruce County	14 021	4.4	61 457	47.4	15
20 Lanark County	15 448	4.9	60 542	48.0	21
23 Manitoulin District	17 667	5.6	11 887	23.0	3
12 Haliburton County	21 184	6.7	14 341	0.0	4
44 Timiskaming District	22 455	7.1	32 200	59.5	3
Overall ONTARIO data	**3 174**	**1.0**	**11 279 690**	**84.7**	**13**

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low population density, and substantially lower rates were observed in urban counties with higher population density. Accordingly, Sudbury Regional Municipality, an urban area with Northern Ontario's highest population density, had a considerably lower ED utilization rate than the province as a whole. Other reasons for the variability seen include differences in patients' knowledge of local care availability, different patient perceptions about appropriate ED use, or true differences in the prevalence of the sentinel conditions studied.

Limited access to primary care may contribute to excessive or inappropriate ED utilization; however, strategies to divert non-urgent patients from the ED may not improve care quality or reduce overall costs, and they do not necessarily address larger system problems (e.g., better access to primary care, specialty physicians and nurse practitioners).[6] Furthermore, it is possible that attempts to divert patients from the ED could lead to inappropriate and potentially harmful refusal of care.[7]

Limitations

Administrative database studies are limited by the level of clinical detail available in the data abstracts. Therefore, some visits counted in our indicator could have reflected patients who needed ED-based care; others not counted might have been treated elsewhere. However, the level of misclassification should be similar across counties, therefore our comparisons remain valid. Other limitations include the analysis of only a single year's data and a lack of information on availability of primary care in the study communities.

Conclusion

Geographic variation in ED utilization is substantial; however, further research is required to determine how well this indicator reflects system integration and available primary care capacity. Future research could explore regional differences in primary care availability, health status, and other potential drivers of ED utilization.

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