

Patients who leave the emergency department without being seen by a physician: a control-matched study

Jose Monzon, PhD; Steven Marc Friedman, MD, MPH; Collin Clarke, BSc; Tamara Arenovich, MSc

ABSTRACT

Objective: To describe the socio-demographic characteristics and clinical outcomes of patients who leave the emergency department (ED) without being seen by a physician.

Methods: This 3-month prospective study was conducted at a downtown Toronto teaching hospital. Patients who left the ED without being seen (LWBS) were matched with controls based on registration time and triage level. Subjects and controls were interviewed by telephone within 1 week after leaving the ED.

Results: During the study period, 386 (3.57%) of 10 808 ED patients left without being seen. One-third of these had no fixed address or no telephone, and only 92 (23.8%) consented to a telephone interview. They cited excessive wait time as the most common reason for leaving the ED (in 36.7% of cases). Despite leaving the ED without being seen, they were no more likely than those in the control group to seek follow-up medical attention (70 % in both groups). Among those from both groups who did seek follow-up, the LWBS patients were more likely to do so the same day or the day after leaving the ED. The LWBS patients often lacked a regular physician (39.1% v. 21.7%; $p = 0.01$) and were more likely to attend an ED or urgent care clinic (34.8% v. 12.0%; $p < 0.001$). Controls were more likely to follow up with a family physician (37.0% v. 23.9%; $p = 0.06$). The LWBS and control groups did not differ in subjective health status at 48 hours after leaving the ED, nor in subsequent re-investigation in hospital.

Conclusions: Patients who leave the ED without being seen have different socio-demographic features, methods of accessing the health care system, affiliations and expectations than the general ED population. They are often socially disenfranchised, with limited access to traditional primary care. These patients are generally low acuity, but they are at risk of important and avoidable adverse outcomes.

Key words: emergency department leavers; emergency department acuity; emergency services; patient satisfaction; LWBS

RÉSUMÉ

Objectif : Décrire les caractéristiques sociodémographiques et les résultats cliniques de patients qui quittent le département d'urgence sans avoir été vus par un médecin.

Méthodes : Cette étude prospective d'une durée de trois mois fut menée dans un hôpital universitaire du centre-ville de Toronto. Les patients ayant quitté l'urgence sans avoir été vus furent appariés à des témoins en tenant compte de l'heure d'inscription et du niveau de triage assigné. Les

From the University Health Network, Toronto, Ont.

Received: July 23, 2004; final submission: Nov. 23, 2004; accepted: Dec. 7, 2004

This article has been peer reviewed.

Can J Emerg Med 2005;7(2):107-13

sujets et les témoins furent interrogés au téléphone dans la semaine suivant leur départ du département d'urgence.

Résultats : Au cours de la période d'étude, 386 (3,57 %) des 10 808 patients reçus à l'urgence quittèrent sans avoir été vus. Le tiers de ceux-ci n'avaient pas d'adresse fixe ni de numéro de téléphone et seulement 92 d'entre eux (23,8 %) consentirent à une entrevue téléphonique. La principale raison pour laquelle ces patients avaient quitté l'urgence était des délais d'attente prolongés (dans 36,7 % des cas). Bien qu'ils aient quitté l'urgence sans avoir été vus, ils n'étaient pas plus susceptibles que les patients du groupe témoin de demander des soins médicaux de suivi (70 % dans les deux groupes). Parmi ceux dans les deux groupes qui demandèrent des soins de suivi, les patients ayant quitté sans avoir été vus étaient plus susceptibles de le faire le jour même ou le jour après avoir quitté le département d'urgence. Dans bien des cas, les patients ayant quitté l'urgence sans avoir été vus n'avaient pas de médecin de famille attiré (39,1 % v 21,7 %; $p = 0,01$) et étaient plus susceptibles de visiter un département d'urgence ou une clinique de soins d'urgence (34,8 % v 12,0 %; $p < 0,001$). Les témoins étaient plus susceptibles de faire un suivi avec leur médecin de famille (37,0 % v 23,9 %; $p = 0,06$). Il n'y avait pas de différence entre les deux groupes quant à l'état de santé subjectif 48 heures après avoir quitté l'urgence, ni lors d'une nouvelle investigation subséquente à l'hôpital.

Conclusions : Les patients qui quittent le département d'urgence sans avoir été vus présentent des différences par rapport à la clientèle générale de l'urgence du point des caractéristiques sociodémographiques, des moyens d'accéder au système de soins de santé, de leurs affiliations et de leurs attentes. Ces patients sont souvent marginalisés socialement et ont un accès limité aux soins primaires traditionnels. La gravité des symptômes de ces patients est généralement faible, mais ceux-ci sont tout de même exposés à des résultats défavorables et évitables.

Introduction

The delivery of expedient medical care to emergency department (ED) patients has become increasingly difficult in a setting of ED overcrowding, limited inpatient bed availability, an aging and higher acuity patient population, deficiencies in primary care access, and financial cutbacks.¹⁻³ Patient dissatisfaction with ED service delivery may be reflected by increasing numbers of patients who leave without being seen (LWBS) by a physician.⁴ In previous studies up to 15% of ED patients left before receiving any medical attention from a doctor.^{4,5} Most of these patients had non-emergent problems;⁵⁻⁷ however, some were in need of urgent medical evaluation and many had little other access to health care.⁴

Previous studies suggest that higher volumes of patients in the ED and increasing numbers of admitted patients being held in the ED are associated with higher LWBS rates, and that better physician staffing is associated with lower LWBS rates.⁸ The common denominator in most studies appears to be increased waiting times.^{8,9}

LWBS patients may have distinct social, economic and demographic characteristics.¹⁰⁻¹² In the United States, payer status is predictive: individuals with insurance coverage are less likely to leave without being seen, as are children and their guardians.^{13,14} Conversely, patients lacking a significant partner, and those with psychological conditions or addiction problems are more likely to leave without being

seen.^{12,14} Weissberg and colleagues postulated that LWBS patients may have a "disruption in the usual patterns of interaction with society at large." Some patients may have impaired ability to maintain interpersonal relationships, which manifests itself in irregular patterns of attendance in the ED.¹² Our objective was to characterize the LWBS population, to identify social and demographic factors associated with leaving without seeing a physician, and to describe key clinical outcomes in this group.

Methods

Setting

This prospective case-control study was conducted from Jan. 1 to Apr. 9, 2003, at the Toronto Western Hospital (TWH), an urban quaternary care teaching centre in downtown Toronto, Canada. The Toronto Western ED treats approximately 40 000 patients annually, and TWH serves as a neurosurgical, orthopedic and plastic surgery referral centre, as well as offering community hospital services to a middle- and lower-income, multi-ethnic, and immigrant population. In accordance with the Canada Health Act and provincial policy, the hospital provides ED care to all Canadians, including refugees and claimants.

Patients

Patients who left without being seen were identified by chart review. Identification of all eligible patients was en-

sured by asking ED physicians and nurses to segregate charts of LWBS patients into a labelled bin, then having an ED clerk locate any additional LWBS charts not captured by the ED staff. Our LWBS rates based on chart segregation closely approximated those recorded in the hospital database.

Matched controls were accrued by pairing each LWBS patient with a patient in the same triage level who registered during the same 2-hour time period. Triage status was designated according to the 5-level *Canadian Emergency Department Triage and Acuity Scale* (CTAS),¹⁵ but CTAS Levels IV and V (Less Urgent and Non Urgent) were regarded as equivalent for matching purposes. If there was more than one potential control who met the time and triage score criteria, the one who registered closest in time to the LWBS patient became the designated control.

Data collection

Demographic information was abstracted from the patient's medical record, and patients were contacted by telephone to complete a standardized interview addressing patient perceptions and outcomes. At least 3 contact attempts were made, commencing within 1 week of discharge and continuing for up to 3 months. A scripted questionnaire was administered in standardized fashion by one investigator (J.M.).

Data analysis

Standard descriptive statistics including means and standard deviations were calculated as appropriate. We determined, with the use of *t* tests, the statistical significance of observed differences in interval outcome variables, and Fisher's exact test was used to evaluate observed differences in categorical outcomes. Verbal informed consent was obtained from all study participants or their legal guardian, and this study was approved by the hospital research ethics review board.

Results

During the study period, 10 808 patients registered in the ED and 386 (3.6%) left without being seen. Of these, 124 (32.1%) had no fixed address or no telephone to enable follow-up, 7 (1.8%) refused telephone follow-up, 4 (1%) could not provide informed consent because of a language barrier, and 3 (0.8%) could not recall attending the ED. Telephone contact attempts were often unsuccessful in this group, and most patients failed to return messages left by the researcher. In total, 101 LWBS patients (26.2%) were reached by telephone and consented to study participation.

Of these, 92 (23.8% of all LWBS patients) were successfully matched with a control.

Patient descriptors

Table 1 shows that LWBS patients were similar to controls when compared by gender, expressed need for translator, marital status, provincial health care insurance coverage, and payer status, but more often reported English as their first language (96.6% v. 89.5%; $p = 0.06$). These patients were younger than controls (36.2 ± 1.6 yr v. 40.7 ± 2.0 yr), but age differences were not statistically significant. LWBS patients were much more likely to have no valid telephone number (32.1% v. 5.5%; $p < 0.0001$) and no family physician (39.1% v. 21.8%; $p = 0.01$). No high acuity (CTAS Levels I or II) patients left without being seen; hence LWBS patients were found exclusively in the lower

Table 1. Findings from the telephone follow-up interviews with 92 patients who left the emergency department without being seen (LWBS) and with the control group

Factor	Group, no. of patients (and %)*		Significance
	LWBS	Control	
Age	36.2 ± 1.6	40.7 ± 2.0	$p = 0.08$
Gender			
Male	46 (50.0)	48 (52.2)	$p = 0.77$
Female	46 (50.0)	44 (47.8)	
First language			
English	86 (96.6)	77 (89.5)	$p = 0.06$
Other	3 (3.4)	9 (10.5)	
Translator required			
Yes	2 (2.2)	7 (7.6)	$p = 0.17$
No	90 (97.8)	85 (92.4)	
Marital status			
Married	29 (34.1)	36 (40.0)	$p = 0.68$
Divorced	6 (7.1)	7 (7.8)	
Single	50 (58.8)	47 (52.2)	
Payment status			
OHIP	87 (95.6)	84 (91.3)	$p = 0.24$
Other	4 (4.4)	8 (8.7)	
Family physician			
Yes	56 (60.9)	72 (78.3)	$p = 0.01$
No	36 (39.1)	20 (21.7)	
CTAS level			
III	44 (48.4)	44 (47.8)	$p = 0.44$
IV	39 (42.9)	44 (47.8)	
V	8 (8.8)	4 (4.3)	

CTAS = Canadian Emergency Department Triage and Acuity Scale; OHIP = Ontario Hospital Insurance Plan

*Unless otherwise specified.

†Grouped as follows for the purpose of analysis: Married & common-law; Divorced, separated & widowed; Single

triage categories, with 48%, 43% and 9% in Levels III, IV and V, respectively.

Telephone interview data (Table 2)

Survey question responses showed that self-referral accounted for approximately half of all ED visits, and family

members, friends and health providers prompted a significant minority of encounters. Telehealth referrals were more common in the LWBS group (9.8% v. 2.2%) but between-group differences were not statistically significant.

Based on perceived waiting times, LWBS patients waited 2.5 hr before leaving and controls waited 2.7 hr be-

Table 2. Scripted telephone questionnaire administered by investigator to both the study (n = 92) and control (n = 92) groups

Interview question	Group, no. of patients (and %)*	
	LWBS	Control
1. Did anyone help you decide to come to the ED?		
No, I decided myself	47 (51.1)	44 (47.8)
Yes, a family member/employer/friend	24 (26.1)	30 (32.6)
Yes, a health care provider/doctor/clinic	9 (9.8)	11 (12.0)
Yes, Telehealth	9 (9.8)	2 (2.17)
Other	3 (3.3)	5 (5.43)
2. LWBS Group:		
<i>How long did you wait before leaving without being seen by a doctor?</i>		
Mean no. of hours (and SD)	2.48 (1.73)	N/A
Control Group:		
<i>How long did you wait before you were seen by a doctor?</i>		
Mean no. of hours (and SD)	N/A	2.68 (1.82)
3. How long should someone with your condition have to wait in the ED before being seen by a doctor?		
Estimated wait, mean no. of hours (and SD)	1.40 (1.12)	1.20 (1.04)
4. What was your main reason for leaving?		
Waited too long	36 (35.6)	
Too ill to wait any longer	13 (12.9)	
Started to feel better	15 (14.9)	
Other responsibilities (e.g., children, work)	7 (6.9)	
Unhappy with hospital staff	6 (5.9)	N/A
Decided that problem could wait	7 (6.9)	
Other	12 (13.3)	
No answer	2 (2.0)	
5. What is the main thing you would change in the ED?		
No change	0 (0.0)	2 (2.0)
Shorter waiting times	44 (48.9)	50 (54.4)
More comfortable environment (e.g., bigger ED, safer, more chairs, magazines)	8 (8.9)	8 (8.7)
Knowing an estimated waiting time	21 (23.3)	13 (14.1)
Friendlier staff	6 (6.7)	4 (4.4)
Other	11 (12.2)	13 (14.1)
No answer	2 (2.2)	2 (2.2)
6. How did you feel two days after leaving the ED?		
Worse	18 (19.8)	8 (8.7)
Same	22 (24.2)	27 (29.3)
Better	51 (56.0)	57 (62.0)

ED = emergency department; LWBS = leave without being seen; SD = standard deviation
 Note: No observed differences between groups achieved statistical significance.

fore seeing a physician. These times were longer than the patients' mean expected waiting times, which were 1.4 ± 1.1 hr in the LWBS group and 1.2 ± 1.0 hr for controls. Table 2 shows that most LWBS patients left because they waited too long, because they started to feel better, or because they felt too ill to wait. When asked what they would change about the ED, both groups cited reductions in waiting times as the most important recommendation, although many suggested enhancements to the ED environment, the provision of waiting time estimates, and friendlier staff. Of note, similar suggestions came from both patient groups.

Two days after the ED visit, most patients in both groups felt better and one-quarter felt the same. LWBS patients were twice as likely to feel worse (19.8% v. 8.7%), though this trend was not significant. Approximately 70% of control and LWBS patients followed up with a health care professional, but LWBS patients were more likely to attend an ED or urgent care clinic (34.8% v. 12.0%; $p < 0.001$) and controls were more likely to follow up with a family physician (37.0% v. 23.9%; $p = 0.06$). Pairwise comparisons revealed that LWBS patients were more likely to see another physician on the same day ($p = 0.02$) or the day after ($p < 0.001$) leaving the ED. LWBS patients tended to follow up sooner with another health care provider after leaving the ED than did the controls. Within 48 hours of the index ED visit, 13.3% of LWBS patients and 16.7% of controls required ED re-investigation (defined as a stay of at least 12 hours or overnight) ($p = 0.72$).

Discussion

Enhanced understanding of the demographic and social characteristics of LWBS patients, their reasons for leaving, and their subsequent outcomes is a logical step toward improving ED care. Studies from other North American institutions report LWBS rates ranging from less than 1% to 15%.^{4,5,13,16,17} Our ED's LWBS rate, reflected in this study, is approximately 4.0%.

LWBS patients comprise a subgroup of ED patients who are socially disenfranchised and at high risk for loss to follow-up. They often lack stable housing and, in this study, were almost 6 times as likely to have no valid telephone number. In addition, they were less likely to have a family physician and more likely to attend other EDs or urgent care clinics after leaving the ED. These findings may reflect barriers to primary health care, including a limited ability to receive telephone messages, or accommodate scheduled appointments, or travel to a doctor's office, and sometimes also the inability to furnish a valid health insurance card. They may also reflect LWBS patient percep-

tions that EDs and clinics are more receptive to them than traditional office-based environments. For individuals who lack a regular source of health care, access to health services is often difficult and, in many cases, the ED may be the most practical care option, even when their problem is non-urgent.

Wait time and satisfaction

In this study, the top 3 reasons cited by the LWBS group for leaving were that the wait was too long, that they felt too sick to wait, or that they were beginning to feel better. Previous studies have reported similar findings.^{5,8,10,18} A prior Canadian study found that most LWBS patients who leave dissatisfied do so within 2 hours of ED registration.¹⁷ Reductions in waiting time reportedly decrease the incidence of ED patients who leave without being seen,¹⁰ but perceived wait times may be more important than actual wait times.

Satisfaction has been defined as a function of the magnitude and direction of the difference between perceived service and expected service.¹⁶ Thompson and coworkers report that perceptions regarding waiting times and severity of illness, information delivery, and expressive quality predict patient satisfaction, and actual waiting times do not.^{16,19} Patients are likely to be least satisfied when waiting times exceed expectations, relatively satisfied when waiting times are relatively matched with expectations, and highly satisfied when waits are shorter than expected. Boudreaux and associates noted that "emergent" patients in their ED were more satisfied than "urgent" and "routine" patients; the greater satisfaction was related not solely to the fact that emergency patients were seen quicker, but that they perceived their throughput times more favourably than other patients, especially their wait for physician evaluation.²⁰

We focused on perceived waiting times because actual times are not accurately recorded in our department. We found that perceived and expected waiting times were not significantly different in the LWBS versus control populations. If waiting time satisfaction can be expressed by the relationship between perceived waiting time versus expected waiting time (i.e., the ratio of expected:perceived), these "satisfaction ratios" were similar for LWBS patients and for matched controls who waited to see a physician (0.76 ± 0.85 for LWBS v. 0.54 ± 0.48 for controls).

(Satisfaction tests were based on natural logarithms [ln] of Satisfaction in order to meet distributional assumptions of the *t* test. Not all interview subjects were able to provide a quantitative estimate of how long they waited or expected to wait. Satisfaction was calculated using a sample size of 83 that captured all LWBS patients and matched

controls who were able to provide quantitative estimates of both perceived and expected waiting time.)

Outcomes

LWBS patients demonstrated a nonsignificant trend toward feeling worse 48 hours after leaving the ED relative to controls; however, these subjective impressions did not translate into observed differences in health provider follow-up or admission rates. In this study, LWBS patients reported 48-hour ED re-investigation rates of 13.3%. (We did not track actual rates of admission to inpatient services. Prior US studies^{5–7,13} report hospital admission rates of 1.7%–8.2%.)

LWBS patients are at risk of more than just dissatisfaction. Baker and colleagues⁴ described these risks in a 1991 publication, commenting that:

Long waiting times for non-emergent ambulatory patients result in a system of ‘rationing by queuing,’ in which the scarce resources of the emergency department are distributed on the basis of how long people are willing to wait to see a physician. Unfortunately, patients do not accurately assess the severity of their symptoms or their need for immediate medical attention, and the failure of seriously ill patients to wait for treatment places them at risk for adverse outcomes.

During telephone follow-up, we learned of one tragic outcome in our study: a female patient had presented to the ED with a psychosocial complaint, was triaged with a chief complaint of “bizarre behaviour,” was encouraged to stay by nursing staff but left without being seen and subsequently committed suicide.

Reducing LWBS rates

The LWBS rate is a recognized ED quality indicator.²¹ Fernandes and colleagues evaluated the impact of a quality improvement effort on ED throughput and LWBS rate, and implemented 5 “solutions” in the fast-track area of their ED that improved both these measures.¹⁰ Efforts to optimize ED efficiency may also enhance throughput and patient satisfaction; however, internal process changes may have limited impact in overcrowded EDs that are “grid-locked” by large numbers of admitted patients waiting for inpatient beds.^{8,22,23} Prior reviews have emphasized the need to decrease the number of low-acuity patients with prolonged waiting times.¹⁷

One of the most promising ways to decrease LWBS rates is to change patient perceptions of the waiting experience. The waiting environment can be enhanced by offering ample comfortable seating, access to television and telephone, and a child-friendly section. Comfort measures, including pain medication, ice and bandages may be provided prior to the physician assessment. Several authors have proposed informing and updating patients about esti-

mated waiting times.^{12,18,19,24} Emergency department staff should recognize that the socially disenfranchised may have different expectations and comfort levels in the ED environment, and may imagine or correctly perceive disrespect or bias on the part of health care personnel. Heightened attentiveness and compassion on the part of providers might be an efficient way to reduce the incidence of patients leaving without being seen.

Necessary improvements will address both the throughput time and the waiting experience for ED patients, with specific consideration for the socially disenfranchised. System-wide improvements could include efforts to redirect ambulatory patients to primary care settings. Institutional reform is needed to prioritize the care of the most vulnerable patients in a hospital’s catchment area. Rational legislation might both empower and mandate hospitals to meet guidelines set for time-to-patient assessment, such as those defined by CTAS. Interventions to improve health delivery to the LWBS population should address their expectations of ED service and improve their access to community primary care physicians.

Limitations

Because many LWBS patients did not have a fixed address or a valid telephone number, we successfully followed up a minority of eligible subjects. Previous investigators using real-time in-department surveys or more aggressive follow-up strategies have enrolled from 39%–76% of eligible patients.^{4,5,10,17,25} Our data may reflect a selected and higher functioning subset of the LWBS population, and these results may not be generalizable to the entire population of interest.

We selected controls based on similar acuity and time of presentation. Analysis of baseline characteristics showed no significant differences between the control and LWBS populations in terms of gender, marital status, health coverage status, or expressed need for translator; nonetheless, unmeasured parameters, such as attire, attitude and intoxication, may have evoked different responses from ED staff that led to different patient behaviours and perceptions about the ED visit.

We determined affiliation with family physician by abstracting hospital records. These records may not be up to date, and LWBS patients may have an identified physician but limited access to them for a variety of reasons. Telephone follow-up interviews often occurred weeks after the ED visit, introducing the potential for recall bias. The study was conducted in Canada, which is a single-payer, universal coverage health system. Our results might not be generalizable to diverse health systems. Finally, our survey

did not detect differences in rates of health provider follow-up and post-visit re-investigation rates; however, this does not rule out differences in other important outcomes (e.g., functional status, pain severity, quality of life).

Conclusions

Patients who leave the ED without being seen have different socio-demographic features, different methods of accessing the health care system, different affiliations and different expectations than the general ED population. They are often socially disenfranchised with limited access to traditional primary care. These patients are generally low acuity, but they are at risk of important and avoidable adverse outcomes.

Competing interests: None declared.

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Correspondence to: Dr. Steven Marc Friedman, 1F 502, Toronto Western Hospital, 399 Bathurst St., Toronto ON M5T 2S8; 416 603-5405, fax 416 923-3523, steven.friedman@uhn.on.ca