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Follow-Up Behavior of Patients Who Leave Without Being Seen from a Hybrid Point of Service Collection Emergency Department

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ABSTRACT

Introduction: This study aims to assess follow-up behaviors of patients who leave without being seen (LWBS) from a hybrid point of service (POS) collection model Emergency Department (ED).

Methods: A cross-sectional survey was administered to patients who LWBS from a hybrid POS collection model ED, one-week post-ED visit, at an academic tertiary care medical center in Lebanon, between June 2016 and May 2017.

Results: LWBS patients were found to be young, males, and present with conditions of lower urgency and presenting mainly with a musculoskeletal chief complaint. Majority (66.8%) left because of third party payer denial of visit coverage followed by cost of visit (12.6%) and wait times (12.6%). A greater percentage of those who LWBS due to financial reasons were male (64.1% vs 33.3%, $p < 0.001$) and waited less (23.4 min vs 30.8 min, $p = 0.08$) compared to those who left for non-financial reasons. The majority of LWBS patients sought medical care within the week after leaving the ED (78.4%), primarily at ambulatory clinics (89.9%) with few at emergency departments (10.1%). Few required admission to hospital (4.2%) and no mortalities were reported. A greater percentage of those who left because of financial barriers, felt the same/better after leaving the ED (82.1% vs 66.7%, $p = 0.03$), sought care at alternate sites (82.1% vs 66.7%, $p = 0.03$), primarily ambulatory clinics (94.1%, $p = 0.003$), with fewer requiring admission to the hospital within one week (1.4% vs 13.3%, $p = 0.003$). Irrespective of the reason for LWBS, all patients who sought care at an ambulatory clinic, did so at a different institution (100.0%).

Conclusion: While the majority of patients who left without being seen from a hybrid POS collection ED left for financial reasons, a high percentage sought care at ambulatory clinics after leaving the ED. Larger-scale studies are needed to adequately assess the outcomes of those patients, especially in areas with limited access to primary care ambulatory services.

Keywords: leave without being seen, clinical outcomes, point-of-service collection model, and emergency department

INTRODUCTION

As Emergency Departments (EDs) grapple with overcrowding on the one hand, and escalating costs

related to uncompensated care on the other, some hospitals have shifted to upfront point of service collection (POS) on medically screened low-acuity patients who may be cared for at lower-cost settings. A major concern of adopting POS collection model is its impact on left without being seen (LWBS) rates, an indicator considered to reflect the quality and safety of ED processes.¹

Even though National Quality Forum in the US has endorsed the use of LWBS rates as a quality metric, studies looking at the outcome implications of LWBS patients are conflicted.² While some studies have reported excess mortality rates among LWBS patients

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within 2 to 7 days and one-week hospitalization rates as high as 11%, others have found no differences in mortality or hospitalization rates.³⁻⁵ These discrepant outcomes of LWBS patients could reflect variations in the causes of LWBS occurrence and the risk level of these LWBS patients in different settings. It could also reflect access to care within the health sector at large and whether patients who LWBS from EDs are able to be seen by physicians in other ambulatory settings.⁴

While the data on outcomes of LWBS is conflicted, repeat studies have demonstrated the adverse quality and safety implications of overcrowded EDs. Overcrowding has been shown to lead in delays in multiple critical processes that impact patient outcomes, from door to antibiotic time in septic patients to door balloon times in acute coronary syndrome.^{6,7} Studies have also reported higher risk of adverse events with longer ED length of stay and higher mortality in critically ill ED patients who board in the ED.⁸

Even though ED overcrowding is primarily impacted by hospital throughput, reducing overutilization of EDs from low-acuity patients that can be cared for in lower cost settings can help relieve some of the burden on EDs. The safety of using hybrid POS collection model to address this challenge has not been established. As a first step to understanding the implications of hybrid POS collection EDs on the care of patients, this study aims to explore the health care access behavior of patients who LWBS from a hybrid POS collection ED as well as their one-week outcomes.

METHODS

Study Design and Population

The study uses a cross-sectional phone survey administered over one year (June 1st, 2016 to May 31st, 2017), to patients who left the ED before being seen by a physician from a hybrid POS collection ED, one-week post ED presentation. The study was conducted at the ED of an academic tertiary care medical center in Lebanon seeing around 57,000 patients yearly. The ED adopts a hybrid “point of service” model that requires patients with an Emergency Severity Index (ESI) 4, 5 as well as some ESI 3 who fit low risk criteria to be financially cleared for an upfront facility and

professional fee post medical screening. Financial clearance includes collection of an upfront facility and professional fee charge by patients who pay out of pocket and, for patients with third party payers, upfront securing of insurance approval for the visit. Patients with high and intermediate acuity are fully assessed and stabilized before financial clearance, with charity care funds available to those with no alternative coverage options.

Study Protocol

LWBS cases are those patients who check in to the ED and leave before seeing a physician. All LWBS patients who presented during the study period were followed-up by a phone call 8 days after their visit to the ED and were asked whether they agree to partake in a ten-minute survey concerning their recent visit to the ED. Patients were contacted within a short period of time to make sure patients still remember details of their visit as well as allow them enough time to seek alternative healthcare means. Those who did not respond after 6 phone calls were excluded.

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Institutional Review Board (IRB) of which the hospital is affiliated to under protocol number [ER.EH.04]. Informed consent was obtained from participants in verbal form prior administering the survey. Only those who agreed to partake had their charts reviewed and were asked to complete the questionnaire. Participants were ensured that their participation was purely voluntary, and that their responses are anonymous and confidential.

Measures

To construct the questionnaire, a review of existing literature examining LWBS patients was done.⁹⁻¹¹ An English preliminary version of the questionnaire was then developed, customized to our institutional setting, and reviewed by the director of the Emergency Medicine Department, the Director of Clinical Operations at the Emergency Department, and a statistician. Two versions of the questionnaire were developed and pre-tested

(English and Arabic). The English version was translated to Arabic and then back-translated to English, and a comparison between both drafts was done for consistency. Patients were given the option to choose which version they would like to complete based on their preferences.

Socio-demographic characteristics, as well as the clinical and administrative characteristics were extracted from patients' charts. "Compensable status" refers to patients who had some form of insurance coverage. The International Classification of Primary Care (ICP-2) was used to categorize chief complaints. A standardized phone survey was used to pull information regarding number of ED visits in the past year, mode of arrival, and referral source. Patients were also asked to estimate the wait time before leaving without being seen, the reasons for leaving, and were asked about their clinical outcomes post leaving (sought care after leaving, re-admitted to the hospital, mortality status) and where they sought care after leaving.

Data Analysis

The Statistical Package for Social Sciences (SPSS), version 24.0 was used for data management, cleaning, and analyses. Descriptive statistics were summarized by presenting the frequencies and percentages for categorical variables and mean and standard deviation (SD) for continuous variables. A bivariate analysis was done to examine the factors associated with leaving without being seen due to financial and non-financial reasons. Chi square, Fisher test or T test were used when appropriate. $P < 0.05$ was considered statistically significant.

RESULTS

During the study period, a total of 56,537 patients presented to the ED out of which 985 LWBS.

Of these, 692 patients were out of reach (no response after 6 phone calls, missing phone number from chart) and 160 patients declined invites to participate. A total of 190 LWBS cases were included in the final analysis. The main reason reported by patients for leaving without being seen was denial of visit coverage by third party payer, followed by cost of visit and long waiting times (66.8%, 12.6% and 12.6%, respectively).

Table 1 presents the demographic and clinical characteristics of patients who left without being seen. The majority of LWBS patients were male (56.8%), single (58.5%) and had completed at least a university degree (65.6%) and were relatively young (mean age, 32.1 years). The majority of LWBS ED visits were triaged with an ESI 3 "intermediate acuity" (66.0%) and 79.4 % of all LWBS patients had some form of insurance coverage. LWBS patients mainly presented to the ED with a musculoskeletal/skin chief complaint (41.2%). There was no statistically significant difference between those who LWBS for financial vs non-financial reasons except for gender, with a higher percentage of LWBS for financial reason being male (64.1% vs 33.3%, $p < 0.001$). Table 2 describes the event characteristics of patients who left without being seen due to financial and non-financial reasons. The average reported waiting room time for all patients who LWBS was 25.1 ± 23.2 . While there was no statistically significant difference in event characteristics between those who LWBS for financial vs non-financial reasons, those who left for financial reasons had clinically significant shorter wait times (23.4 ± 22.1 min vs. 30.8 ± 25.7 min, $p = 0.08$). Table 3 presents the follow-up and the clinical outcomes of patients who LWBS due to financial and non-financial reasons. There was no difference in reported health status after leaving the ED between the two groups, with the majority reporting feeling the same or better (83.7%). The majority (78.4%) of all LWBS sought care after leaving; out of which 72.1% sought care immediately after their ED visit. A greater percentage of those who LWBS due to financial reasons sought care after leaving than those who left for non-financial reasons (82.1% vs 66.7%, $p = 0.03$). While the majority of those who LWBS for financial and non-financial reasons sought care at ambulatory clinic sites (94.1% vs. 73.3%, $p = 0.003$), a greater percentage of those who LWBS for non-financial reason represented to an ED (26.7% vs 5.9%, $p = 0.003$). Irrespective of the reason for LWBS, all patients who sought care at an ambulatory clinic, did so at a different institution (100.0%). A greater percentage of those who LWBS for non-financial reasons required inpatient admission within one week of ED visit compared to those who left for financial reason (13.3% vs 1.4%, $p = 0.003$), with no mortalities in either group at one week.

Table 1 Demographic and clinical characteristics of patients who left without being seen

	All n (%) N=190	Left due to non- financial reasons n (%) N=45	Left due to financial reasons n (%) N=145	p-value
Gender				
Male	108 (56.8)	15 (33.3)	93 (64.1)	<0.001
Female	82 (43.2)	30 (66.7)	52 (35.9)	
Age, mean (±SD)	32.1 ± 16.2	31.5 ± 17.2	32.3 ± 15.9	0.79
<18	23 (12.1)	5 (11.1)	18 (12.4)	0.19
18-34	90 (47.4)	26 (57.8)	64 (44.1)	
35-54	57 (30.0)	8 (17.8)	49 (33.8)	
≥55	20 (10.5)	6 (13.3)	14 (9.7)	
Marital status				
Single	110 (58.5)	27 (60.0)	83 (58.0)	0.82
Married	78 (41.5)	18 (40.0)	60 (42.0)	
Education				
Lower than undergraduate	63 (34.4)	12 (26.7)	51 (37.0)	0.21
Undergraduate and higher	120 (65.6)	33 (73.3)	87 (63.0)	
Triage days per time				
Day	79 (42.2)	20 (45.5)	59 (41.3)	0.62
Evening or Night	108 (57.8)	24 (54.5)	84 (58.7)	
Chief complaint				
General	25 (13.4)	8 (18.6)	17 (11.8)	0.81
Neurological	13 (7.0)	3 (7.0)	10 (6.9)	
Gastrointestinal	18 (9.6)	5 (11.6)	13 (9.0)	
Cardiovascular/Respiratory	23 (12.3)	4 (9.3)	19 (13.2)	
Eye/ear	28 (15.0)	6 (14.0)	22 (15.3)	
Musculoskeletal/skin	77 (41.2)	16 (37.2)	61 (42.4)	
Urological/Gynecological	2 (1.1)	1 (2.3)	1 (0.7)	
Others	1 (0.5)	0	1 (0.7)	
ESI				
High acuity (ESI 1,2)	1 (0.5)	1 (2.3)	0	0.21
Intermediate acuity (ESI 3)	124 (66.0)	27 (61.4)	97 (67.4)	
Low acuity (ESI 4,5)	63 (33.5)	16 (36.4)	47 (32.6)	
Financial coverage				
Compensable	150 (79.4)	33 (73.3)	117 (80.7)	0.29
Non-compensable	40 (21.1%)	12 (26.7)	28 (19.3)	

Valid percentages were used.

Table 2 Event characteristics for patients who left without being seen due to financial and non-financial reasons

	All n (%) N=190	Left due to non-financial reasons, n (%) N=45	Left due to financial rea- sons, n (%) N=145	p-value
Transport				
Ambulance	6 (3.2)	2 (4.4)	4 (2.8)	0.63
EMS	4 (66.7)	1 (50.0)	3 (75.0)	1
Others	2 (33.3)	1 (50.0)	1 (25.0)	
Self	184 (96.8)	43 (95.6)	141 (97.2)	0.63
Private car	154 (83.7)	36 (83.7)	118 (83.7)	0.99
Walking	30 (16.3)	7 (16.3)	23 (16.3)	
Proximity to ED				
1	64 (33.7)	17 (37.8)	47 (32.4)	0.45
2	66 (34.7)	16 (35.6)	50 (34.5)	
3	34 (17.9)	4 (8.9)	30 (20.7)	
4	7 (3.7)	2 (4.4)	5 (3.4)	
5	19 (10.0)	6 (13.3)	13 (9.0)	
Referral source				
Self-referred	147 (77.4)	35 (77.8)	112 (77.2)	0.94
Other than self	43 (22.6)	10 (22.2)	33 (22.8)	
Wait time before leaving - mean (±SD)	25.1 ± 23.2	30.8 ± 25.7	23.4 ± 22.1	0.08
≤10	78 (46.2)	15 (37.5)	63 (48.8)	0.29
11-20	25 (14.8)	5 (12.5)	20 (15.5)	
21-30	26 (15.4)	5 (12.5)	21 (16.3)	
31-40	4 (2.4)	2 (5.0)	2 (1.6)	
41-50	7 (4.1)	3 (7.5)	4 (3.1)	
51-60	21 (12.4)	8 (20.0)	13 (10.1)	
≥61	8 (4.7)	2 (5.0)	6 (4.7)	

Valid percentages were used.

DISCUSSION

This study is the first to assess follow-up behavior of LWBS patients from a hybrid POS collection model ED. LWBS patients were found to be young, male, present with conditions of medium to low acuity and to present mainly with a musculoskeletal chief complaint. The majority left because of third party payer denial of visit coverage followed by cost of visit and wait times. Most LWBS patients sought medical care within one week after leaving the ED (78.4%), primarily at ambulatory clinics and less so at emergency departments at other institutions. The

majority sought care at outside institutions. Compared to patients who left for non-financial reasons, a greater percentage of patients who left for financial reasons sought care at alternate sites, did so at ambulatory care clinics, with fewer requiring admission to the hospital within one week than those who left for non-financial reasons. There were no reported mortalities in either group.

The existing literature is rich with studies examining the predictors of LWBS and our findings confirm prior findings on characteristics of LWBS patients who tend to be young, male, and present mainly with lower

urgency complaints.^{3,12} Contrary to other studies that report long wait times as the main driver of LWBS, in our setting, where 46.2% of patients who LWBS did so within 10 min, financial coverage issues were the main driver of LWBS with insurance denial of visit being the primary reason. While this finding is expected in a setting with hybrid POS collection model, high acuity patients were not affected since, as described above, financial clearance prior to full evaluation is required only for patients who are deemed to fit low-acuity criteria after medical screening. In fact, most patients went on to seek care at ambulatory clinics, with few returning to an ED within the week, especially in those who left for financial reasons. Seeking lower cost alternative site of care for low acuity condition might be one observed impact of hybrid PO collection

system when applied to low acuity conditions.

Previous studies have shown that the majority of LWBS patients proceeded to seek care elsewhere immediately after leaving the ED (72.1%).³ Distinctive in our study however, is the high percentage of follow ups at ambulatory clinics (89.9%), with few patients (10.1%) re-presenting to an ED. This is contrary to findings of Li et al in the United States that found that around one quarter of LWBS re-present to the ED within 7 days (24.8%) with 59.6% re-presenting to the ED within 24 hours and only few patients seeking care at outpatients clinics (7.8%).¹³ Another study in Australia reported higher rates of follow up at outpatient clinics 56.9% with 12.7% revisiting EDs.¹⁴ These variations could be a reflection of the ease of access to outpatients clinics in different health care

Table 3 Follow-up and clinical outcomes of left without being seen patients

	ALL n (%) N=190	Left due to non-financial reasons n (%) N=45	Left due to financial reasons n (%) N=145	p-value
Health status after leaving ED				
Worse	31 (16.3)	7 (15.6)	24 (16.6)	0.87
Better/same	159 (83.7)	38 (84.4)	121 (83.4)	
Sought care after leaving, (Yes)	149 (78.4)	30 (66.7)	119 (82.1)	.03
When did you seek care after leaving?				
Immediately after ED visit	106 (72.1)	21 (72.4)	85 (72.0)	0.97
Within days of ED visit	41 (27.9)	8 (27.6)	33 (28)	
Where did you seek care?				
Ambulatory Clinic	134 (89.9)	22 (73.3)	112 (94.1)	0.003
At our institution	0 (0)			
Different Institution	134 (100.0)	22 (100.0)	112 (100.0)	
Re-presented to ED				
Our ED	15 (10.1)	8 (26.7)	7 (5.9)	0.003
ED of another institution	2 (13.3)	1 (12.5)	1 (14.3)	1
	13 (86.7)	7 (87.5)	6 (85.7)	
Outcome after 1 week				
Admitted to hospital	8 (4.2)	6 (13.3)	2 (1.4)	0.003
Mortality status, (dead)	0 (0.0)			

Valid percentages were used.

systems and setting.

When examining the clinical outcomes of LWBS patients in our study, one-week admission rates were overall low (4.2%), and no deaths were reported. While one week admission rate is lower than what has been reported in the literature, those who left for non-financial reasons had significantly higher one week admission rates than those who left for financial reasons (13.3% vs 1.4%).⁸ This likely reflects the lower medical acuity of the latter group of patients. Although there was no statistically significant difference in ESI between those who left for financial reasons compared to non-financial reasons, the medical screening process for POS collection in our setting relies on assessments beyond ESI that also factors variables such as age and chief complaint in deciding on medical acuity of the patient. In our study where wait times were low for LWBS compared to other studies, no patients who left because of financial reasons had a high ESI, and only one patient who left for non-financial reason had a high acuity ESI (1). Furthermore, although some studies have reported a higher risk of death for patients who LWBS, this was not the case in our study where no mortalities were found at one week follow up.³ This highlights the importance of implementing clear workflows that prioritize medical screening and minimize the impact of POS collection systems on patients who may be presenting with life threatening or high acuity emergencies.

Another aspect of health care system utilization is impact of LWBS on referral of patients out of the primary institution initially visited. In this study all patients who sought care at an ambulatory clinic, did so at other institutions and only 13.3% of patients who returned to an ED came back to the same ED. This raises the issue of an unintended consequence of POS collection model EDs which may ultimately refer patients out of the institution for future care. From a revenue standpoint, the potential loss of revenue from poor ED collections would have to be weighed against the potential loss of revenue from patients inadvertently referred out of the institution in a hybrid POS collection model.

Results of this study reveal that a hybrid POS collection model can be safe when applied selectively to low acuity patients, however larger-scale studies

are needed to assess the impact of leaving the ED before being seen by a physician in settings where timely access to ambulatory services may be limited. Moreover, hospitals need to assess the risk/benefit of referring patients out of their institution and its impact on revenue. Periodic tracking of this population can be a useful part of the continuous quality improvement process in the ED.

Results of this study should be considered in light of its limitations. This was a single center study so generalizability to other settings is limited, especially ones where timely access to ambulatory clinic care is more restrictive. Furthermore, our inability to follow-up on all LWBS cases because of lack of reachability may miss some important outcomes. Our ED however is the largest in our catchment area and since most of our ED patients come from our immediate surrounding area, mortalities are usually redirected by EMS to the same ED.

CONCLUSION

While the majority of patients who left without being seen from a hybrid POS collection ED left for financial reasons, a high percentage sought care at ambulatory clinics after leaving the ED, with few requiring admission to the hospital within one week and no reported mortalities. Most LWBS sought care at outside institutions. Larger-scale studies are needed to adequately assess the outcomes of those patients, especially in areas with limited access to primary care ambulatory services.

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Conflict of Interest: The authors declare no conflict of interest.

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