Correspondence

Nursing driven approaches to improving emergency department discharge

Emergency departments (EDs) are critiqued for wait times, delayed or inadequate pain management, and poor communication [1-3]. ED volumes are projected to increase, likely exacerbating these issues [4,5]. Systems are increasingly relying on EDs to provide not only high-quality clinical care, but also to promote the patient experience [1,6-8]. The overlap between efficiency, quality of care and patient satisfaction is significant [3,7,9].

EDs are evaluated on multiple time-based metrics including but not limited to: time to first provider, disposition, and total length of stay [10]. Time to critical actions in specific disease states are important; door to balloon for acute myocardial infarction [11], bundle completion in sepsis [12,13], and thrombolysis in stroke [14-16]. EDs find themselves attempting to prioritize lifesaving care, throughput, and patient satisfaction all at once.

Reporting the rate of patients who leave without treatment (LWOT) is mandated and publicly available [17]. LWOT is a key target for interventions seeking to improve efficiency and the patient experience. Novel approaches are needed and must be trialed. Our objective was to evaluate the impact of innovative nursing driven approaches upon LWOT.

This pilot was conducted within an urban, academic Level 1 Trauma Center with over 48,000 annual visits and approved by the University Institutional Review Board. The objective was to reduce LWOT by testing rapid-cycle nursing driven interventions. We began with concept mapping, flow diagrams and contextual inquiry with staff and patients. Time awaiting discharge, defined as the time from discharge order to departure, was identified as a primary area of opportunity. We hypothesized that by reducing the time awaiting discharge, we would subsequently lower rates of LWOT.

There were two primary interventions. The first was the distribution of a digital nursing scorecard (Fig. 1) and the second was the dedicated role of a discharge nurse within a discharge waiting room. The scorecard was designed with nursing input and implemented in collaboration with staff. Emphasis was made to ensure that the scorecard was nonpunitive and individualized. The scorecard was designed to leverage individual and internal competition and provide transparent, real-time data.

The discharge waiting room was staffed by a dedicated nurse during high volume weekday hours (2 pm–10 pm). The role was two-fold. This dedicated nurse was able to assist with in room discharge and to oversee the care for patients within a separate space. Patients eligible for the discharge waiting room included patients completing medications or intravenous fluids, awaiting arrival of a medication, or awaiting transportation.

The baseline mean time awaiting discharge was 30 min (SD 101 min) and mean rate of LWOT proportion was 8.9% (SD 1.9). Mean time awaiting discharge decreased to 20.5 min (32% reduction, $p < 0.05$) with implementation of the scorecard. LWOT proportion

increased from 8.9 to 9.3% which was not statistically significant (Figs. 2 & 3). Counterbalancing metrics were unchanged.

The discharge waiting room was implemented over four-weeks. The discharge nurse was used for 70% of discharges (n = 249). The discharge waiting room was rarely used 5% (n = 13). There was a 5.5 min mean decrease in time awaiting discharge and a decrease of 13 min from arrival to ED rooming. Rates of LWOT decreased from 11.2% to 10%. When accounting for the entire day, we found decreases in time from arrival to room (−7 min), time awaiting discharge (−4 min), but an increase in LWOT (+1%). When compared to seasonal volume, we found improvements in time to room placement and time awaiting discharge (Fig. 4). We analyzed data from the Hospital Consumer Assessment of Healthcare Providers and Systems (Fig. 5).

The use of a single site raises the question of generalizability and warrants further study. Despite this, we believe the methodology utilized to develop and implement the intervention is likely to have broader applicability. Behavior change is complex and the success of these interventions may have been due to unknown variables or factors. Although we attempted to account for unintended consequences by incorporating operational counterbalancing measures, we acknowledge that the effect of the scorecards on the mentality of nursing staff is important, but was not explored.

This intervention illustrates novel, nursing-drive approaches to induce change. The simplicity of the scorecard allowed individuals to understand their relative position, change from prior, and the amount of change needed to move rank. Data driven feedback and piloting changes in staffing can be powerful tools to create impact. Although change management in the ED remains a challenge,

PPMC ED Discharge Scorecard | Dec. 16-29, 2017

Platinum performance

Average Time to Discharge*
2.74 minutes
-11.59 min. change from last month

Personal Ranking
1 out of 78
0 min. to move up one spot
Last scorecard rank 19

ED discharge average **17.95 minutes** | Goal **10 min**
*Time from discharge instructions being printed to the patient leaving the ED.

Fig. 1. Scorecards delivered to nursing staff electronically displaying time to discharge, current and prior rank. Cards also display duration of data and overall department goals.
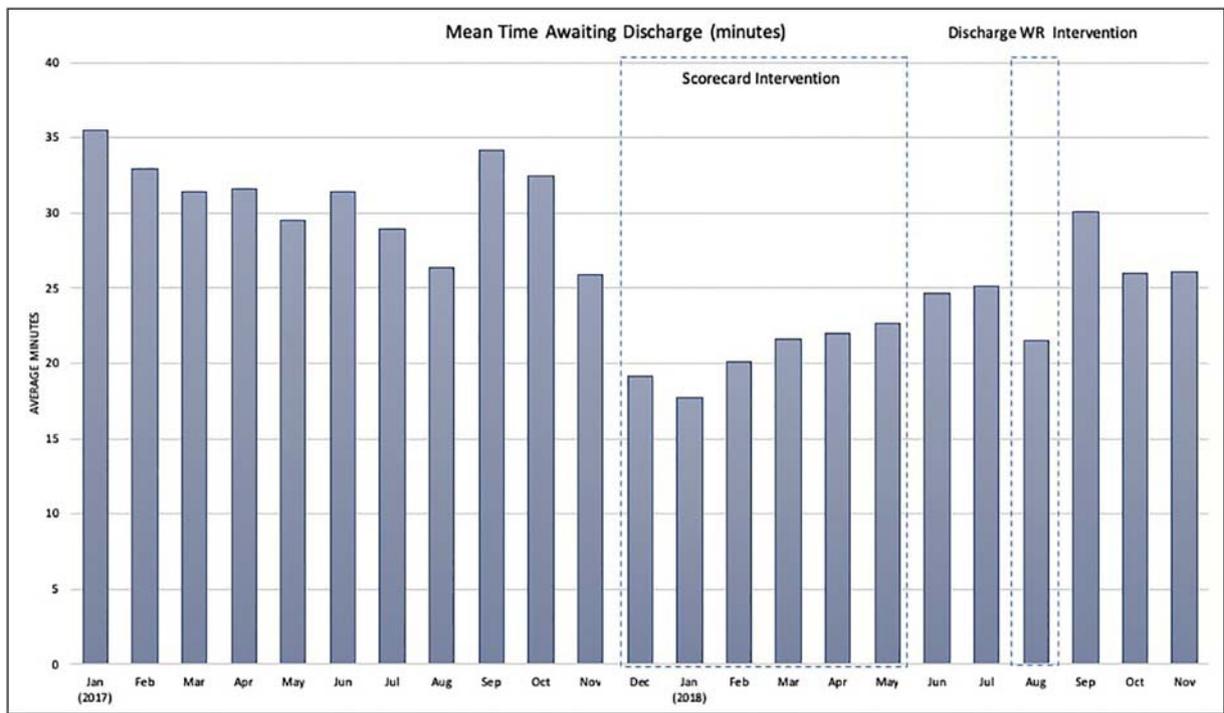
Fig. 2. Mean time awaiting discharge (minutes) over pre-pilot testing and displaying during scorecard and discharge waiting room (WR) interventions.

operational and patient centered outcomes may be achieved when interventions are designed and driven by front line providers. This study provides early evidence that application of innovative approaches driven by nursing may be able to induce change within

the clinical operation of an urban, academic ED. The time has come for health systems to embrace nontraditional methodologies and pilots in attempt to deliver patient centered and efficient emergency care.
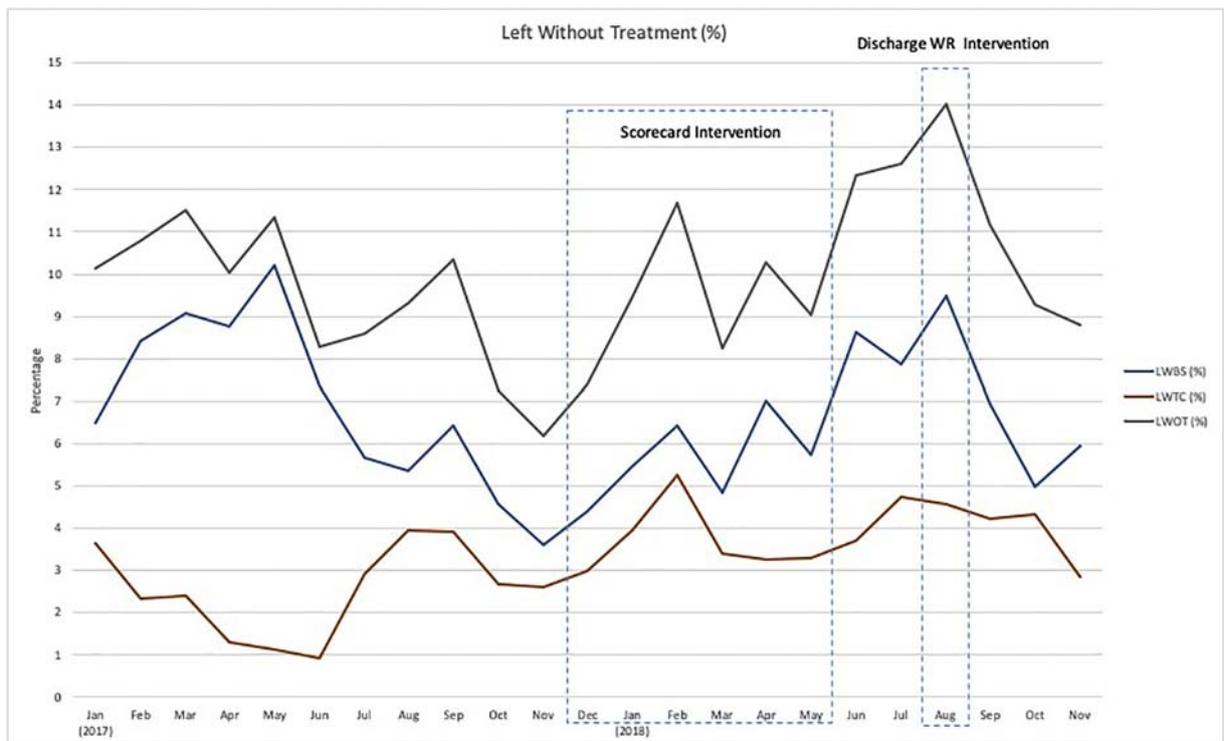

Fig. 3. Percentage of patients left without being seen (LWBS), left without treatment completed (LWTC) as well as combined left without treatment (LWOT) over time and during intervention periods.

AVERAGE ARRIVAL TO ROOM
2PM – 10PM

AVERAGE PRINT TO DEPART
2PM – 10PM

Fig. 4. Mean time spent from arrival to placement in ED room during discharge WR intervention (2p-10p) and time change for time awaiting discharge between order printed and patient departure. Prior year and month shown here for comparison.

7AM – 3PM SHIFT

3PM – 11PM SHIFT

11PM – 7AM SHIFT

CLOSEST TO INTERVENTION

Fig. 5. Trends in patient satisfaction scores from Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey and likelihood to recommend during intervention as compared with year and month prior. Data from HCAHPS reported on 3p-11p is compared closest to intervention time period of discharge waiting room (2p-10p).

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Fig. 1 shows physician self-rated preparation for OUD care. While physicians felt prepared for some aspects of care, a minority felt prepared to determine the level of care for patients with OUD (39%), connect patients to outpatient treatment (29%) or initiate buprenorphine (27%). Levels of preparation did not differ significantly by X-waiver status, with the exception of initiating buprenorphine treatment (56% of waiver trained physicians vs 20% of non-waiver trained, p = 0.002). Preparation also did not differ by level of training.

Fig. 2 shows physician-rated barriers and facilitators to ordering buprenorphine in the ED. Many of the highest-rated concerns related to perceived patient factors, including patient social barriers, lack of patient interest in treatment, availability of referrals for substance use treatment, and patient preference for alternative treatments (e.g. non-medication based). Other highly rated barriers related to buprenorphine – comfort in counseling, ordering, or navigating regulatory barriers – differed significantly between those who had completed the waiver training and those who had not, with a mean rating 4.9 vs 6.3 (p = 0.030); 3.1 vs 6.4 (p = 0.001); and 3.4 vs 6.4, (p < 0.001), respectively. The highest rated facilitators for buprenorphine ordering related to longitudinal treatment, including access to ongoing treatment services after discharge and access to a care coordinator/social worker for patients with OUD. Other highly rated facilitators related to support for ED-based treatment, including

Barriers and facilitators for emergency department initiation of buprenorphine: A physician survey

Implementation of evidence-based pharmacotherapy for individuals with opioid use disorder (OUD) is a cornerstone of the response to the opioid crisis [1]. ED-initiated OUD treatment with buprenorphine has been shown to increase treatment engagement at 30 days [2], but this practice has not been widely adopted [3]. To better develop strategies for implementation, we sought to 1) describe ED physician preparedness to treat OUD and 2) rank physician-perceived barriers and facilitators of ED administration of buprenorphine and obtaining a Drug Addiction Treatment Act of 2000 waiver to prescribe buprenorphine (X-waiver).

To do this, we conducted a cross-sectional survey of physicians in two urban, academic EDs assessing two domains. First, we measured self-rated levels of preparation for various aspects of OUD treatment using a 5-point Likert scale. Second, we assessed barriers and facilitators to buprenorphine administration in the ED and obtaining and X-waiver. Barriers were based on those identified in prior literature from other settings [4-9]. Barriers and facilitators were rated individually on a continuous 10-point scale, with 1 indicating "not at all a barrier" and 10 indicating "the most significant barrier." We also collected demographic and other physician characteristics. The survey was administered via the REDCap version 8.9.0 secure web platform [10], and participants received a $10 incentive. Data were analyzed using descriptive statistics, and we compared responses by X-waiver status using chi-squared tests for categorical variables and the Mann-Whitney test for continuous variables (Stata, version 15.1; StataCorp, College Station, TX). The Institutional Review Board from The University of Pennsylvania approved this study.

84 participants completed the survey (response rate 78%). Participant characteristics are shown in Table 1. Participants were primarily male (62%), white (74%), and attending physicians (55%). Characteristics were similar for the 21% who had completed X-waiver training and those who had not. 39% of physicians reported they had ordered naloxone upon discharge from the ED in the past 3 months, and 33% had ordered buprenorphine in the past 3 months, either in the ED or at discharge.

Table 1
Participant characteristics.

	Number	X-waiver*	No X-waiver	p-Value**
Physician characterstics				
Age				
<30	24 (29%)	2	22	
30–39	35 (42%)	9	26	
40–49	15 (18%)	6	9	
50–59	7 (8%)	1	6	
Over 60	3 (4%)	0	3	p = 0.149
Sex				
Female	32 (38%)	5	27	
Male	52 (62%)	13	39	p = 0.309
Ethnicity				
Hispanic/Latino	4 (5%)	0	4	
Non-Hispanic/Latino	80 (95%)	18	62	p = 0.573
Race				
White	62 (74%)	13	49	
Black/African American	0 (0%)	0	0	
Asian	13 (15%)	4	9	
Other	9 (11%)	1	8	p = 0.561
Level of Training				
Intern	8 (10%)	0	8	
Resident	29 (35%)	4	25	
Attending	47 (56%)	14	33	p = 0.077
PGY5–9	18 (21%)			
PGY10–14	9 (11%)			
PGY15+	20 (24%)			
Percent Time in Clinical Care				
<20%	2 (2%)	1	2	
20–50%	10 (12%_	1	9	
51–75%	10 (12%_	3	7	
>75%	61 (73%)	13	48	p = 0.690
Close friend/family with SUD				
Yes	24 (29%)	6	18	p = 0.668
Practice characteristics				
X-waiver training completed				
Yes	18 (21%)	n/a	n/a	n/a
Ordered Naloxone in past 3 months				
Yes	39 (46%)	12	27	p = 0.052
Ordered Buprenorphine for a patient in past 3 months				
Yes	28 (33%)	8	20	p = 0.259

* Includes those with an X-waiver and those who had recently completed X-waiver training but had not yet obtained a waiver.

** p-value for comparison of X-waivered vs non X-waivered physicians done using chi^2 tests (p < 0.05).