Do Automatic Push Notifications Improve Patient Flow in the Emergency Department?
Analysis of an ED in a Large Medical Center in Israel

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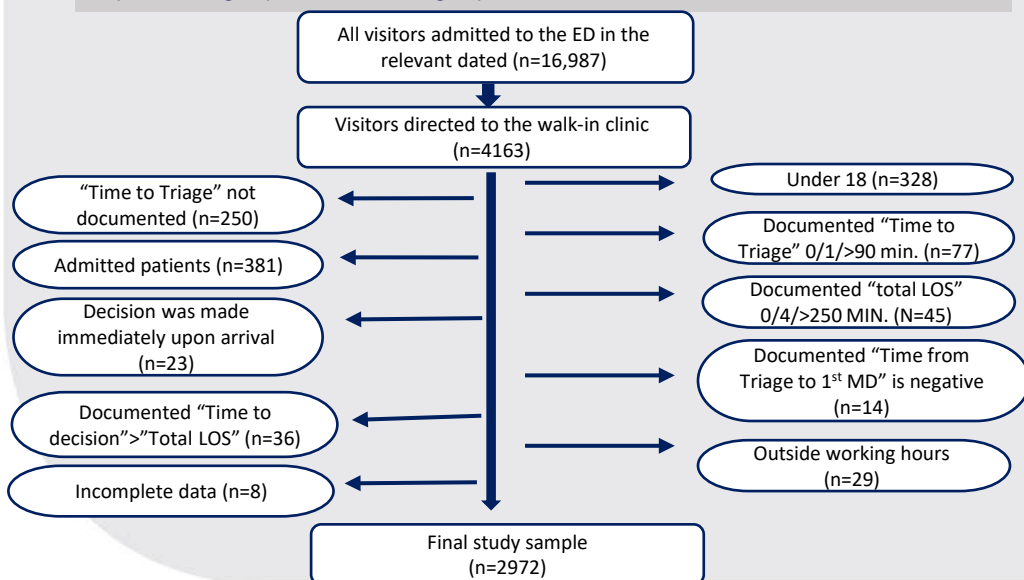
Introduction

Our research analyzed the use of an innovative platform to improve patient navigation in the ED, as well as provide updated information about their care. Our hope is that can improve ED efficiency and improve overall patient care.

Objective

The primary objective of our study was to determine whether the use of an automatic push notification system can shorten 'length of stay' (LOS) in the ED, improve patient flow, and decrease ED patient load.

Methods

This was a prospective cohort study utilizing data extrapolated from the electronic medical records of 2972 patients who visited the walk - in ED of a large-scale central hospital in Israel from January 17, 2021 to March 15, 2021. During this period, the automatic push text notification system was activated on a week-on week-off basis. We compared data from our experimental group with the control group.

All visitors admitted to the ED in the relevant dated (n=16,987)

Visitors directed to the walk-in clinic (n=4163)

- "Time to Triage" not documented (n=250)
- Admitted patients (n=381)
- Decision was made immediately upon arrival (n=23)
- Documented "Time to decision">"Total LOS" (n=36)
- Incomplete data (n=8)

- Under 18 (n=328)
- Documented "Time to Triage" 0/1/>90 min. (n=77)
- Documented "total LOS" 0/4/>250 MIN. (N=45)
- Documented "Time from Triage to 1st MD" is negative (n=14)
- Outside working hours (n=29)

Final study sample (n=2972)

Primary Outcome

Measured variable	Time measured
Total LOS	Arrival → discharge

Secondary Outcomes

Measured variable	Time measured
Time to triage	arrival → 1st encounter with triage nurse
Time to 1st MD	arrival → 1st encounter with a treating physician
Time from Triage to 1st MD	1st encounter with triage nurse → 1st encounter with treating physician
Time to decision	arrival → decision of discharge/admission

Results

The results of this study indicate that the use of an automatic push notification system had a minimal impact on specific parameters of ED patient flow. Apart from a few significant reductions of specific timed-intervals during patients' ED visit, the majority of results were not statistically significant.

Time-based performance indicators

Time intervals [min.]	SMS system mean, median, n		Mean difference [95% CI]	Significance [p]
	Off	On		
Time to triage	21.57, 17, 1505	20.06, 17, 1467	1.51	0.53
Time to 1st MD	65.56, 55, 1505	61.97, 56, 1467	3.59	0.004
Time from triage to 1st MD	44.02, 34, 1505	41.91, 34, 1467	2.11	0.095
Time to decision	173.64, 143, 1505	166.24, 143, 1467	7.4	0.299
Total LOS	204.54, 172, 1505	198.54, 173, 1467	6	0.482

Conclusion

This study concluded that the anticipated benefits of a push text notification system in the ED do not, at this stage, justify the system's additional cost in terms of reducing ED times. We recommend a follow-up study to further investigate other possible benefits such as improving patient satisfaction.

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