
Abstract

Implementation of a RFID Tracking System to Capture Trauma Attending Arrival Times in the Emergency Department

Nicholas Faoro, RN, MSN; Meghan McDonald, RN, MSN; Heather Lyu, MD; Lorraine Fenelon, MD; Patricia Lydon, RN, MSN; Kevin Kreitzman, RN, MSN; Michael Fraai; Ali Salim, MD; Adam Landman, MD

Brigham and Women's Hospital, Boston, MA, United States

Corresponding Author:

Nicholas Faoro, RN, MSN

Brigham and Women's Hospital

75 Francis St.

Boston, MA,

United States

Phone: 1 7325500

Email: nfaoro@bwh.harvard.edu

Abstract

Background: Critically injured patients arriving to the Emergency Department (ED) require activation of the trauma team. Patient acuity determines the level of team activation required. For the highest level of acuity, the American College of Surgeons (ACS) Committee on Trauma (COT) mandates that an Attending Trauma Surgeon be present in the ED within fifteen minutes of patient arrival in at least 80% of encounters. Poor compliance with EMR documentation of attending trauma surgeon arrival times to the ED placed Level 1 Trauma Center verification at risk for a major academic medical center. We developed an objective, automated system for documenting trauma team arrival times, utilizing Radio Frequency Identification (RFID) beacons in the ED.

Objective: Developing and testing a sustainable, objective system for measuring trauma team compliance with ACS activation requirements in the ED of a Level 1 Trauma Center.

Methods: Our team developed and trialed a system using RFID beacons as a means to triangulate badges worn by trauma faculty when responding to team activations in the ED. Revisions were made to pre-existing RFID hospital infrastructure used for equipment tracking purposes. The on-call trauma attending surgeons were asked to wear a RFID badge affixed to their hospital staff ID lanyard during our pilot study. The system captured and recorded the net time between team activation and trauma attending surgeon arrival to the ED. As a comparison, we also continued the historical practice of relying on ED nursing staff documentation in the EHR.

Results: Results were captured over a 4-month span. During that period, 57 ED patients required the highest level of team activation. Due to pilot logistics (a limited number of RFID badges prevented all attending surgeons from wearing badges at all times), Trauma faculty was wearing a RFID badge during 46 of 57 activations. There was no RFID data recorded on the other 11 activations (11 for no badge worn, 0 due to system malfunction). Trauma attending arrival was in compliance of the 15-minute window 45 out of the 46 instances (97.8% compliance rate). Of the 11 activations not recorded via RFID, 8 were documented as in compliance, and 3 were noncompliant in the EHR (1 arrival >15 minutes, 2 missing any EHR documentation; 72.7% compliance rate). Out of all 57 activations, 5 lacked EHR documentation. Within that subset, the RFID system documented compliance in 4 cases. One activation lacked EHR and RFID documentation.

Conclusions: Triangulating trauma faculty location in the ED using RFID beacons is a cost-effective, sustainable system for monitoring arrival time compliance with ACS requirements. An automated system such as our RFID program ensures that our trauma faculty meets ACS regulatory standards for a Level 1 Trauma Center. The system allows ED nursing staff to eliminate an EHR documentation step during critical initial moments in the ED. Internal review of our pilot has justified a full-scale roll-out of our RFID program to trauma faculty.

(*iproc 2017;3(1):e31*) doi:[10.2196/iproc.8469](https://doi.org/10.2196/iproc.8469)

KEYWORDS

emergency department; RFID; trauma; american college of surgeons

Multimedia Appendix 1

Full poster.

[\[PDF File \(Adobe PDF File\), 764KB - iproc_v3i1e31_app1.pdf\]](#)

Edited by T Hale; This is a non-peer-reviewed article submitted 13.07.17; accepted 24.08.17; published 22. 09.17

Please cite as:

Faoro N, McDonald M, Lyu H, Fenelon L, Lydon P, Kreitzman K, Fraai M, Salim A, Landman A

Implementation of a RFID Tracking System to Capture Trauma Attending Arrival Times in the Emergency Department

iproc 2017;3(1):e31

URL: <http://www.iproc.org/2017/1/e31/>

doi: [10.2196/iproc.8469](https://doi.org/10.2196/iproc.8469)

PMID:

©Nicholas Faoro, Meghan McDonald, Heather Lyu, Lorraine Fenelon, Patricia Lydon, Kevin Kreitzman, Michael Fraai, Ali Salim, Adam Landman. Originally published in Iproceedings (<http://www.iproc.org>), 22.09.2017. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in Iproceedings, is properly cited. The complete bibliographic information, a link to the original publication on <http://www.iproc.org/>, as well as this copyright and license information must be included.