

Emergency Department and Patient Flow Current Awareness Bulletin

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Title: An Innovative Model to Predict Pediatric Emergency Department Return Visits.

Citation: Pediatric emergency care; Mar 2019; vol. 35 (no. 3); p. 231-236

Author(s): Bergese, Ilaria; Frigerio, Simona; Clari, Marco; Castagno, Emanuele; De Clemente, Antonietta; Ponticelli, Elena; Scavino, Enrica; Berchiolla, Paola

Objectives: Return visit (RV) to the emergency department (ED) is considered a benchmarking clinical indicator for health care quality. The purpose of this study was to develop a predictive model for early readmission risk in pediatric EDs comparing the performances of 2 learning machine algorithms.

Methods: A retrospective study based on all children younger than 15 years spontaneously returning within 120 hours after discharge was conducted in an Italian university children's hospital between October 2012 and April 2013. Two predictive models, artificial neural network (ANN) and classification tree (CT), were used. Accuracy, specificity, and sensitivity were assessed.

Results: A total of 28,341 patient records were evaluated. Among them, 626 patients returned to the ED within 120 hours after their initial visit. Comparing ANN and CT, our analysis has shown that CT is the best model to predict RVs. The CT model showed an overall accuracy of 81%, slightly lower than the one achieved by the ANN (91.3%), but CT outperformed ANN with regard to sensitivity (79.8% vs 6.9%, respectively). The specificity was similar for the 2 models (CT, 97% vs ANN, 98.3%). In addition, the time of arrival and discharge along with the priority code assigned in triage, age, and diagnosis play a pivotal role to identify patients at high risk of RVs.

Conclusions: These models provide a promising predictive tool for supporting the ED staff in preventing unnecessary RVs.

Title: Evaluation of a Practice Improvement Protocol for Patient Transfer From the Emergency Department to the Surgical Intensive Care Unit After a Level I Trauma Activation

Citation: Journal of Emergency Nursing; Mar 2019; vol. 45 (no. 2); p. 144

Background: ED boarding is a major issue in many hospitals. ED boarding occurs when there is insufficient hospital capacity to supply inpatient beds for admitted patients. ED boarding is not only a problem because of increased wait times for patients but also because it results in delays in administration of medication, higher rates of complications, and increased mortality.

Methods: In an attempt to improve patient flow and reduce time spent in the emergency department for patients requiring admission to the surgical intensive care unit (SICU), the emergency department, trauma service, and SICU collaborated on a guideline. The protocol developed focused on level I trauma-activated patients who were admitted directly from the emergency department to the SICU. We compared the transfer times before the protocol was initiated (January 1, 2016 to December 31, 2016) with the transfer times after initiation (January 1, 2017 to December 31, 2017) using a paired Students' t-test. Other outcome variables analyzed were hospital and intensive care unit (ICU) length of stay, mortality, complication rate, ventilator days, ventilator-free days, ICU-free days, and injury severity score (ISS).

Results: The average time to transfer for 2016 was 408.05 minutes (standard deviation 362.76) versus 142.73 minutes (standard deviation 101.90) for 2017. Emergency nurses

saved 265.32 minutes per patient, totaling 8,755.56 minutes saved overall. Total amount of nursing hours saved was 146 hours. This was significant at $P = 0.0015$. No other variables analyzed were significant.

Conclusion: We reduced the time to transfer from the emergency department to the SICU significantly by implementing a new protocol to expedite this transfer among level I trauma activations. Our protocol shows that a collaborative effort between the main emergency department and SICU can result in expedited care for injured and critically ill patients that not only increases care for the ill but also creates valuable space in a busy emergency department for better patient flow.

Title: Emergency department care for patients with mental health problems, a longitudinal registry study and a before and after intervention study.

Citation: International emergency nursing; Feb 2019

Author(s): Van Der Linden, M Christien; Balk, Ferdi J E; Van Der Hoeven, Bastiaan J H; Van Loon, Merel; De Voeght, Frans J; Van Der Linden, Naomi

Objective: To describe the numbers and length of stay (LOS) of patients with mental health (MH) problems at a Dutch emergency department (ED) and the effect of a psychiatric intervention team (PIT) on patient flow.

Methods: A longitudinal design was used to assess number of MH presentations and LOS during a 3-year period (2014-2016). In 2017, we introduced a PIT during ED peak hours, to reduce LOS for patients with MH problems. We evaluate the effects of the PIT on patients' LOS with an 18-month before and after intervention study (2017-2018).

Results: Total number of ED presentations increased with 4%. Total number of MH presentations increased with 23% from 2014 to 2016. LOS increased by 28 min (95 min vs. 123 min) for all presentations, while not changing for MH presentations (2014: 195 min, interquartile range (IQR) 120-293 and 2016: 190 min, IQR 116-296). In the before and after intervention study, number of MH presentations increased with 36% while LOS decreased with 46 min ($p < 0.001$).

Conclusions: The number of MH presentations increased over the three years while LOS remained similar. In the before and after intervention study, number of presentations increased even more while LOS decreased significantly. Specialist psychiatric input reduces ED LOS.

Title: A Systematic Review of Criteria-Led Patient Discharge.

Citation: Journal of Nursing Care Quality; Apr 2019; vol. 34 (no. 2); p. 121-126

Author(s): Lees-Deutsch, Liz; Robinson, Jane

Background: This article reports on a systematic review conducted to critique safety, quality, length of stay, and implementation factors regarding criteria-led discharge.

Purpose: Improving patient flow and timely bed capacity is a global issue. Criteria-led discharge enables accelerated patient discharge in accordance with patient selection.

Methods: A systematic review was conducted to identify literature on criteria-led discharge from 2007 to 2017. The quality of articles was appraised using a tool for disparate studies. Two reviewers extracted relevant data independently.

Results: Fifteen studies were identified that showed no increase in patient readmission or complication rates with criteria-led discharge, demonstrating patient safety. The quality of the patient discharge was unremarkable. None of the studies showed an increase in length of stay.

Conclusions: The safety, quality, and length of stay for patients discharged through criteria-led discharge are inextricably linked to the process adopted for its implementation.

Title: David Oliver: The stress of sending patients home

Citation: *BMJ* 2019; 365 doi: <https://doi.org/10.1136/bmj.l2094> (Published 16 May 2019) Cite this as: *BMJ* 2019;365:

“Look! It’s that’s bloody doctor who said he could go home.”

I heard those words directed at me in the local supermarket. I was shopping with my wife, and it was said in a threatening way, designed to be overheard, by what sounded like a middle aged man. The experience was unsettling. We left the shop, not looking up to see who’d said it, and to this day I don’t know.

I mentioned this story over dinner to some other senior hospital doctors, who all described similar experiences in hospital corridors or doorways, or in public places during their leisure time.

That same week NHS Digital released national figures, the first in five years, on rates of emergency readmission to hospital within 30 days.¹ This followed concerted lobbying from Healthwatch England, which said that transitions from hospital—and the communication processes and aftercare surrounding them—were a consistent concern for patients and families.²³ The 13.8% readmission rate in 2017-18 had risen less dramatically than I might have expected (from 12.5% in 2013-14), given our current bed pressures and patient demographic. The Nuffield Trust continued to publish its own analyses during those five years, showing similar numbers but remarking on rapid rises in patients readmitted within 24 hours or within seven days of leaving hospital.⁴

In my clinical day job and my policy and leadership work, I’ve encountered public perceptions that pressure on beds has led to patients being sent home too soon, and the Health Service Ombudsman has highlighted transition from hospital as a key area for complaints.⁵

There’s no clear link between the speed of discharge and readmission rates, nor any clear evidence that most readmissions are related to poorly planned or premature discharge.⁶ Better organised acute care and discharge planning can lead to reduced stays and more patients being diverted to ambulatory care or sent home within a day or two of acute attendance, with no increase in readmission or mortality.⁷

Hospital doctors don’t have control over the quality or responsiveness of community services once a patient has left. But it can certainly be a shock and a major stressor for patients’ families, or for paid care staff and community health services, to find themselves suddenly taking back the care of patients with complex needs who are still recovering from acute illness or injury and not yet back at the level they were.⁸

But what of the burden on hospital doctors? Yes, we work in multidisciplinary teams, but we generally carry the main responsibility for the decision to admit or discharge. And we’re usually the ones at the coroner’s inquest, or at the bereavement or complaint resolution meeting, or fielding the call from the patient advocacy and liaison team. It isn’t just complaints and unhappy families we fear, but the distress we experience ourselves in worrying or knowing that our decisions have led to preventable harm.

During my career, emergency admissions and the number of beds occupied by stranded patients waiting for stepdown care services have risen, while bed numbers have fallen and occupancy has exceeded 90%.⁹¹⁰ Key acute and elective waiting time performance has slipped.¹¹

Our response, in national NHS leadership and local clinical teams, has been a relentless focus on patient flow, early senior assessment, a “home first” approach, a push towards more “zero day admissions” and ambulatory care, and an imperative to minimise delays in going home for patients deemed medically fit to leave.¹²¹³¹⁴

Compared with when I started 30 years ago, we’re under far more pressure to weigh priorities around bed use and to manage competing risks. No hospital discharge is risk-free. We must balance the risk of harm from ongoing admission against the risk of going home; the wishes of patients (often very keen to leave) against those of their families (often less keen); and, crucially, the needs and wants of patients currently occupying scarce acute beds against those of others who may need them more.

Despite my lengthy experience, these issues probably cause me more sleepless nights than any other aspect of the job. I can’t be alone. So, how do fellow hospital doctors and clinical teams cope? How much support do they get from senior managers when things go wrong? It’s a conversation we need to have: please do post your responses.

Title: Choice of a Short-term Prediction Model for Patient Discharge Before Noon: A Walk-Through of ARIMA Model.

Citation: Health Care Manager; Apr 2019; vol. 38 (no. 2); p. 116-123

Author(s): Berrios-Montero, Rolando A.

Abstract: Hospital leaders encourage morning discharge of patients to boost patient flow. This work presents a detailed process of a building model for forecasting patient discharge before noon applying the Box- Jenkins methodology using weekly historic data. Accurately forecasting is of crucial importance to plan early discharge activities, influenced by the fluctuations in daily discharges process. The objective is to find an appropriate autoregressive integrated moving average (ARIMA) model for forecasting the rate of patients out by noon based on the lowest error in a statistical forecast by applying the mean absolute percentage error. The results obtained demonstrate that a nonseasonal ARIMA model classified as ARIMA (2,1,1) offers a good fit to actual discharge-before-noon data and proposes hospital leaders short-term prediction that could facilitate decision-making process, which is important in an uncertain health care system environment.

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