Escalation of Care After Admission Within 24 Hours

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Introduction

Appropriate disposition for patients in the emergency department (ED) remain a challenge for emergency medicine physicians when determining the level of care for patients requiring admission to the floors versus ICU. For the patients who are not obviously critically ill, proper risk stratification and triage in the ED is an important task that is becoming increasingly more difficult in an era of declining number of ICU beds but with increasing utilization.[1] Patients who are upgraded from the floors to the ICU have an increased mortality rate when compared with patients who are admitted directly to the ICU from the ED.[2-3] In addition, clinical deterioration on the floors is an independent predictor of mortality.[4]

Objectives

1. Identify high risk patients in the ED who require hospital admission and may need higher levels of care.
2. Identify patterns or diagnoses in the ED that predispose patient care to escalations after admission.

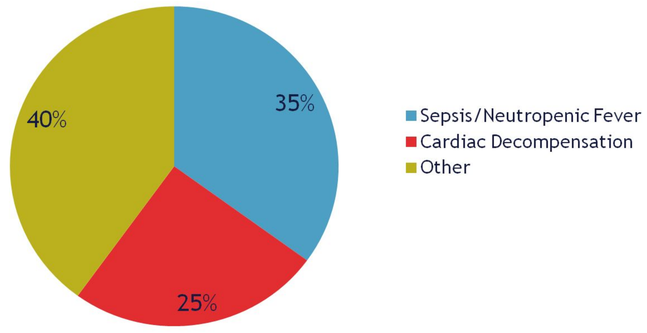
Methods

An initial pool of 492 cases was gathered by querying EPIC to identify upgrade orders from general floors or telemetry to ICU taking place from 4/1/2017 – 10/31/2018. From this pool, cases were then selected for upgrades in level of care occurring within 24 hours of admission at Thomas Jefferson University Hospital (TJUH). Cases transfered to the operating room or to another hospital were excluded. This method identified 39 cases for further chart review performed manually. After the chart review, 19 cases were removed due to the query algorithm incorrectly identifying inappropriate cases. The remaining 20 cases were appropriate for inclusion in this study and underwent chart review.

Results

Table 1. Demographics, Presenting Vital Signs, Comorbidities	
Age, yr (mean)	61
Age ≥ 65 yr (%)	55%
Sex (% male)	55%
Hypertension (%)	60%
Diabetes (%)	25%
Coronary artery disease (%)	15%
Stroke (%)	0%
End stage renal disease on HD (%)	15%
Congestive Heart Failure (%)	25%
Active malignancy (%)	30%
Systolic BP (mean), mmHg	137
Diastolic BP (mean), mmHg	76
SBP <100 (%), mmHg	15%
Heart rate (mean)	97
Heart rate >90 (%)	65%
WBC >12x10^3 (%)	30%
Lactate >2.0 (%)	15%*
Creatinine >1.4 (%)	45%
Antibiotics started in the ED (%)	45%
Discussion with ICU in ED (%)	15%
* Initial lactate not ordered in the ED N=9	

Figure 1. Causes of Upgrades in Level of Care



- Mean time to upgrade: **14 hours, 3 minutes**
- Median time to upgrade: **13 hours, 44 minutes**

Preliminary Conclusions

Elderly patients and those who presented with HR>90 were observed to have more frequent upgrades in level of care. Septic shock was the most common cause of upgrade in level of care, although most patients did not initially present to the ED with hypotension. The most common admitting diagnosis was shortness of breath followed by sepsis, then pyelonephritis and NSTEMI. The most common comorbidity among these patients was hypertension followed by active malignancy, then diabetes and congestive heart failure.

Limitations

The primary limitation of this study was the small sample size. Another limitation was that the cases were all at TJUH, a quaternary university teaching hospital. The results of this study may not apply to other hospital settings such as community hospitals. Furthermore, this study only included upgrades in level of care occurring within 24 hours of admission.

Next Steps

From the results of the preliminary findings, two things need attention. The first is to determine the current baseline rate of upgrades in the level of care occurring at TJUH. To accomplish this, the sample size needs to be dramatically increased by querying cases in EPIC over a longer period of time. Secondly, considering that sepsis was the most common cause of upgrades in the level of care, implementing provider "huddles" for patients with the diagnosis of sepsis prior to final disposition from the ED may aid in the early identification of patients who will need ICU level of care. We also recommend integrating qSOFA scores into EPIC for patients with a sepsis "flag".

References

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