Effect of an Independent-capacity Protocol on Overcrowding in an Urban Emergency Department


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- Overcrowding is one of the most significant problems
- Patient dissatisfaction
- Compromise standards of care
- Potentially increases mortality

Input Throughput Output Model

Input
- Building walk-in clinics
- Strengthening primary care systems

Throughput
- New triage systems
- Novel technologies
- Quality assurance programs

Output
- Expanded the scope of the ED
- Build new capacities outside the ED

- Expanding the capacity for admitted patients is one of the major challenges in dealing with overcrowding
- NOT need to be limited to the admitting hospital
  ➔ surrounding community hospitals
New Strategy

• The independent-capacity protocol (ICP)
• Without requiring additional hospital resources

METHODS

Study Design

• Before-and-after trial since 2006/07/01 ~ 2008/06/30
• the Seoul National University Hospital

Study Setting and Population

• Urban, tertiary care ED with 45,000 annual visits
• 54 treating beds, 30-bed emergency ward
• 20-bed emergency ICU
• The ICP was introduced on 2007/07/01

Study Protocol

• Major cause of overcrowding is OUTPUT -- Asplin et al.
• Augmented the potential output to include other community hospitals
• Gave EPs more responsibility and authority over patient disposition

The emergency ward limited its holding period < 48 hours
• the EP, associated specialists, transfer coordinators → determine patient disposition
General principles

- Urgent surgical patients
- Required medical care with special equipment
- Unstable vital signs
- Against patient’s will

Measurements

- The national ED information system
- Age, sex, diagnosis, treatment, discharge, admission, in-hospital mortality
- ED length of stay (LOS), the number of admissions to inpatient wards, and the mortality rate

Data Analysis

- chi-square test and the Student’s t-test
- the Mann-Whitney U-test for LOS

RESULTS

Main Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n=80)</th>
<th>Study (n=80)</th>
<th>Difference (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital stay, days</td>
<td>12.0 (10.0)</td>
<td>11.2 (10.0)</td>
<td>0.8 (p = 0.05)</td>
</tr>
<tr>
<td>Length of stay in ICU</td>
<td>7.0 (5.0)</td>
<td>6.9 (5.0)</td>
<td>0.1 (p = 0.05)</td>
</tr>
<tr>
<td>Hospital mortality rate</td>
<td>2.0%</td>
<td>2.5%</td>
<td>0.5% (p = 0.05)</td>
</tr>
</tbody>
</table>

*Note: p-value represents statistical significance at the 0.05 level.
DISCUSSION

• How to use community level resources more safely (EMT)
• Use their resources more efficiently

LIMITATIONS

• LOS as the primary outcome (a key throughput factor)
• Few data on the outcome of transferred patients
• No information on patient satisfaction
• 1/5 of patients refused to be transferred

CONCLUSION

• ICP significant reduction in ED LOS without increasing the usage of inpatient beds or increasing hospital mortality
• Other Countries?

Diagnostic and prognostic utility of troponin estimation in patients presenting with syncope: a prospective cohort study

Matthew J Reed, David E Newby, Andrew J Coull, et al.
doi: 10.1136/emj.2008.068635

INTRODUCTION AND AIMS

• All cases of syncope → 10% cardiac causes (<2% by AMI)
• 1971 WHO diagnosis of AMI:
  1. typical history
  2. characteristic ECG changes
  3. raised cardiac enzymes
• 2007, Troponin was added

• Troponin in ER in order to rule out AMI
• If NO chest pain?
• Risk stratification of patients with syncope
• Cardiac syncope → 1-year mortality between 10–30%
• Troponin VS serious outcome or all-cause death after syncope
METHODOLOGY

• Age ≥ 16
• Syncope: a transient LOC with an inability to maintain postural tone followed by spontaneous recovery without any intervention
• Exclude:
  - excessive alcohol consumption
  - had a good history of seizure
  - a prolonged (>15 min) postictal phase

TROPONIN MEASUREMENT

• 12 h after admission with syncope
• Discharged Patient: 12 hr~7 days (Troponin HL: 24Hrs, 12 hr~7 days if myocardial necrosis)

ENDPOINT MEASURES

• admission AMI
• the combination of serious outcome (excluding admission AMI)
• all-cause death
• both at 1 month after ED presentation

RESULT

Table 2 Contingency table of serious outcome (excluding acute myocardial infarction) and all-cause death and troponin I value (n=201)

<table>
<thead>
<tr>
<th>Serious outcome (excluding acute myocardial infarction) or all-cause death?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Troponin I ≥ 0.2 μg/L</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>251</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>258</td>
</tr>
</tbody>
</table>

*Eight patients lost to follow-up therefore, n = 201 rather than 209.
DISCUSSION

- AMI is an infrequent (1.4%) cause
- Troponin I provides little additional benefit in AMI-caused
- Negative troponin may safely discharged early after admission
- No symptoms, ECG change AMI-caused extremely low
- Troponin in no role in r/o AMI

STUDY LIMITATIONS

- Measure in all patients in order to get full case ascertainment and a more robust prediction of risk
- Incorporation bias may exclude AMI

CONCLUSIONS

- NOT use to r/o AMI-caused
- Troponin I may predict 1-month serious outcome or all-cause death in patients presenting with syncope to the ED.

Thank you!