Effect of a fast track service on Emergency Department performance and patient flow

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Emergency Department

- > 65,000 patients pa
- 25% paediatric
- 25% admission rate

Triage distribution

- Cat 1: 0.6%
- Cat 2: 7.6%
- Cat 3: 26.8%
- Cat 4: 48.9%
- Cat 5: 16.1%
The research problem

**Increased service demands**

- *increasing total presentations*
- *increasing Category 4 & 5 patients*
- *patient flow limited by physical space*
- *ED overcrowding*
- *frustration - staff & patients*

![Graph](image.png)

- **Total ED presentations**
- **ATS Category 4 and 5**
ED fast-track

- operates from 1000 - 0200 to match peak presentations
- aimed at
  - patients with specific non-urgent complaints
  - expected to be discharged from the ED
  - expected ED stay of less than 60 minutes
  - not requiring trolley care or IV analgesia / fluids
- patients suitable for fast-track identified by triage nurse
- fast-track staffing
  - senior emergency nurse with advanced practice skills
  - senior ED Registrar or Nurse Practitioner
ED fast-track

Fast-track criteria

- Cellulitis, localised / insect bites
- Epistaxis – asymptomatic, not on warfarin
- Foreign body
- Minor eye complaints
- POP issues - check, removal reapplication
- Review - outside ED review clinic time
- Single distal limb injuries
- Superficial abscesses
- Wounds and lacerations / minor burns/ dressings
- Suture removal
Aims & Method

Aim
• to evaluate the effect of a fast track service on ED performance & patient flow

Design
• case control design

Sample
• cases
  • randomly selected from patients triaged to ED fast-track from January to March 2007
• controls
  • selected from patients who presented to ED from July to November 2006 (prior implementation of ED fast-track)
  • matched to cases by age, gender and ED discharge diagnosis
Aims & Method

Controls (n = 822)  
(June-Nov 06)

Fast track implemented  
Dec 06

Cases (n = 1296)  
(Jan - Mar 07)

822 pairs matched by:
- age
- gender
- ATS category
- ED discharge Dx
Results: Case profiles (n = 1296)

- patients per day
  - Mdn = 20 (range 4 - 33)

- demographics
  - 66% males (n = 855)
  - average age = 30.12 years (SD = 19.34)
  - 3.5% required interpreter (n = 46)
  - 98% arrived by private car (n = 1265)

- 93.1% discharged from ED (n = 1206)

- ED LOS for discharged patients
  - M = 130.4 mins (SD = 80)
  - Mdn = 116 mins (IQR = 75 - 162)
Results: Case-control comparison (n=822 pairs)

Waiting times

- ATS 3 (n = 18)
- ATS 4 (n = 540)
- ATS 5 (n = 264)

Controls (non-FT) vs. Cases (FT)
Results: Case-control comparison (n=822 pairs)

ED length of stay

<table>
<thead>
<tr>
<th>Discharged</th>
<th>Controls (non-FT)</th>
<th>Cases (FT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>132 mins</td>
<td>(n = 750)</td>
<td>p &lt; 0.001</td>
</tr>
<tr>
<td>116 mins</td>
<td>(n = 761)</td>
<td></td>
</tr>
<tr>
<td>313.5 mins</td>
<td>(n = 72)</td>
<td>p = 0.869</td>
</tr>
<tr>
<td>309 mins</td>
<td>(n = 61)</td>
<td></td>
</tr>
</tbody>
</table>
Results: Case-control comparison (n=822 pairs)

ED length of stay

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<th>Controls (non-FT)</th>
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<tbody>
<tr>
<td>&lt; 1 hr</td>
<td>14%</td>
<td>14%</td>
</tr>
<tr>
<td>&lt; 2 hrs</td>
<td>44% p = 0.001</td>
<td>53%</td>
</tr>
<tr>
<td>&lt; 4 hrs</td>
<td>84% p &lt; 0.001</td>
<td>92%</td>
</tr>
</tbody>
</table>

Discharge < 1 hr
Discharge < 2 hrs
Discharge < 4 hrs

Controls (non-FT) Cases (FT)
Results: Other ED patients

**ED length of stay** (excluding FT patients)

<table>
<thead>
<tr>
<th></th>
<th>Pre FT (July-Nov 2006)</th>
<th>Post-FT (Jan-Mar 2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discharged</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>157 mins</td>
<td>(n = 16827)</td>
<td>(n = 9233)</td>
</tr>
<tr>
<td><strong>Admitted</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>349 mins</td>
<td>(n = 9818)</td>
<td>(n = 5368)</td>
</tr>
</tbody>
</table>

Discharged

- Pre FT: 157 mins (n = 16827)
- Post-FT: 168 mins (n = 9233)

**p < 0.001**

Admitted

- Pre FT: 349 mins (n = 9818)
- Post-FT: 294 mins (n = 5368)

**p < 0.001**
Results: Specific elements of Tx

- wrist fractures (ICD-10 code S628) was most common ED discharge diagnosis
  - 113 pairs of patients ($n = 226$)
- subanalysis conducted to examine specific elements of ED treatment
  - analgesia
  - imaging
Results: Specific elements of Tx

**Analgesia** (wrist fractures n = 113 pairs)

- Not ordered: Controls (non-FT) 62% vs. Cases (FT) 58% (p = 0.031)
- Given in ED: Controls (non-FT) 37% vs. Cases (FT) 64% (p = 0.020)
- Given enroute: Controls (non-FT) 33% vs. Cases (FT) 67%
- Declined: Controls (non-FT) 78% vs. Cases (FT) 21%
Results: Specific elements of Tx

Time to analgesia (wrist fractures n = 113 pairs)

ATS 4
- Controls (non-FT): 4 mins (n = 16)
- Cases (FT): 0 mins (n = 23)

ATS 5
- Controls (non-FT): 162 mins (n = 53)
- Cases (FT): 67 mins (n = 11)
Results: Specific elements of Tx

**X-ray** (wrist fractures n = 113 pairs)

- **Not ordered**: 65% (n = 9) for controls, 35% (n = 5) for cases.
- **XR @ TNH**: 44% (n = 52) for controls, 56% (n = 65) for cases.
- **XR @ LMO**: 53% (n = 36) for controls, 48% (n = 33) for cases.

Controls (non-FT) | Cases (FT)
Results: Specific elements of Tx

Time to x-ray (wrist fractures n = 113 pairs)

- All patients: 136 mins (n = 49), 100 mins (n = 63), p = 0.014
- ATS 4: 115 mins (n = 32), 99 mins (n = 37), p = 0.014
- ATS 5: 169 mins (n = 16), 103 mins (n = 26), p = 0.013

Controls (non-FT)  Cases (FT)
Conclusions

ED fast-track

- did not change waiting times
- decreased median ED LOS for non admitted patients by 16 minutes
  - over average of 14 patients / day, a 16 minute reduction in ED LOS per patient \( \rightarrow \) 3 hours and 44 minutes saved per day
- increased number of patients discharged < 2 hours and < 4 hours
- did not adversely change ED LOS for other ED patients
- increased administration of analgesia
- decreased time to x-ray, particular ATS Cat 5
Acknowledgments

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