Are hospital admissions reduced by Acute Medicine consultant telephone triage of medical referrals?

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Introduction
Previously published data suggests that Acute Medicine (AM) consultant presence on the Acute Medicine Unit (AMU) reduces length of stay, without negative impact on mortality or readmission rates, and reduces the number of inappropriate acute medical admissions.1 We hypothesised that the involvement of AM consultants in the triage of referrals to the acute medical take would reduce the number of acute hospital admissions.

The AMU at Ipswich Hospital is led by 6 full-time equivalent consultants. An AM consultant triages all referrals to the acute medical take on weekdays during working hours. During this time the consultant has no other scheduled clinical duties. Each consultant completes 2 referrals sessions per week. Outside of these hours, referrals are taken by a senior registered nurse (≥ band 6) based on the AMU, supported by the medical registrar on-call as necessary.

Methodology
We conducted a prospective cohort study to assess the impact of AM consultant telephone triage of referrals to the acute medical take on the number of acute hospital admissions as compared to a historical control cohort.

Data was collected between June 2011- May 2012. For each referral, data was recorded regarding referral source, outcome of referral and admission avoidance measures taken (when applicable). Throughout the study period an AM consultant triaged all referrals by telephone on weekdays between 09:00- 17:00. Outside of the hours of the consultant screening service, medical referrals were taken as described above.

The historical control cohort data was collected prospectively June 2010- May 2011. All referrals were taken by a senior registered nurse (≥band 6) based on the AMU, supported by the medical registrar on-call or AM consultant if necessary.

Results
The introduction of AM consultant referral triage was associated with a 21% reduction in acute medical admissions.

Between June 2011- May 2012 54% (4341 admissions) of all admissions occurred following referral 17:00- 09:00, outside of the operating hours of the consultant telephone triage service.

During the study period 5729 referrals were screened by an AM consultant at an average of 22.4 referrals per 8-hour day. In total 35.5% resulted in an outcome other than acute admission of the patient. Allowing for patients who were subsequently admitted <30 days, true admission avoidance was achieved for 28.5% of referrals (1638 patients). The median age of patients where admission was refused was 68.4 years (range 7 – 103 years).

![Breakdown of referral activity](chart1.png)

<table>
<thead>
<tr>
<th>Breakdown of referral activity</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of referrals by month June 2010- May 2011 vs June 2011- May 2012</td>
<td>5777</td>
<td>5917</td>
<td>5631</td>
<td>6045</td>
<td>6420</td>
<td>7895</td>
</tr>
<tr>
<td>June 2011- May 2012</td>
<td>5738</td>
<td>5738</td>
<td>5532</td>
<td>5762</td>
<td>5804</td>
<td>7480</td>
</tr>
<tr>
<td>Number of referrals to the Acute Medicine consultant triage service by source June 2011- May 2012</td>
<td>ED</td>
<td>GP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total referrals</td>
<td>221</td>
<td>589</td>
<td>210</td>
<td>191</td>
<td>167</td>
<td>211</td>
</tr>
<tr>
<td>Outpatient’s GP</td>
<td>201</td>
<td>561</td>
<td>180</td>
<td>170</td>
<td>154</td>
<td>200</td>
</tr>
<tr>
<td>Referral delivered admission</td>
<td>200</td>
<td>551</td>
<td>170</td>
<td>160</td>
<td>144</td>
<td>190</td>
</tr>
</tbody>
</table>

Overall GPs contributed 54.7% of all referrals, the Emergency Department (ED) accounted for 40.6%. Comparatively few referrals (4.7%) were received from other sources.

A GP referral was more likely to result in a decision not to admit than a referral by an ED doctor (43% of all referrals declined vs. 25.9%, p=0.0001).

Conclusions
Acute medicine consultant triage of referrals resulted in a 21% reduction in admissions to the medical take. There were no other changes in local community or hospital services during this time to otherwise account for this. The success of our telephone triage service is primarily due to the perception of the advice given as credible and authoritative.

The consultant triage service positively influenced referral-triage practice out of hours, with a 13.5% reduction in admissions (approx. 530 patients) during the same period (producing the combined reduction of 21% in total admissions observed during the study). It is unclear what contributed to this; whether consultant triage fostered a more aggressive culture of admission avoidance or raised the expected standard of referrals or whether the AM nurses gained greater confidence and experience.

The consultant service is cost-effective. The average length of stay for a medical inpatient during the study period was 6.9 days with a fixed bed cost of £144.50 per day (estimated). The savings accrued through the avoidance of 1638 admissions might be estimated in the order of £1.63 million during the twelve-month study period. Furthermore the reduction in acute admissions during the study returned our admissions rates to 2007-08 levels, allowing us to negotiate 100% tariff reimbursement for each admission.

The largest reduction in admissions during the study period was achieved in the GP referral group (42% of referrals not admitted). The likelihood of admission avoidance in the ED population was lower (20%) of referrals, notably because an initial refusal resulted in a same-day admission in 16% of cases. This is unsurprising; ED patients tend to be sicker and the "low hanging fruit" is likely to have already been picked.

The hours of the telephone triage service were extended until 19:00 in April 2013. Extending these further is unlikely to be cost-effective; after 19:00 the majority of referrals originate from the ED, at which time admission avoidance would be expected to be lower than usual considering the reduction in ancillary services. Based on our data an AM consultant might prevent an average of 3.6 admissions from the ED during these 16 hours.

The telephone triage service delivers additional benefits to the AMU, not captured by this study. The process of triage improves consultant acuity on the AMU shop-floor and consultants may defer referrals to the following day when appropriate to balance workload on busy shifts. The triage consultant also has the acumen, authority and continuity of service to initiate a range of initial investigations, specialist reviews or care pathways that could not feasibly be protocolized.

References