Acute medicine targets: when should the clock start and 7-day consultant impact?

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Summary

Background: Early consultant review has been shown to improve outcomes in patients presenting to the Acute Medical Unit (AMU). The Society for Acute Medicine (SAM) clinical quality indicators use the time of arrival on the AMU for target rather than arrival in the Emergency Department (ED) although this is where most acute medical patients present.

Aim: To determine the effect of a 7-day Consultant Acute Physician model on patient waiting times and assess the impact of starting the clock for medical patients at time of ED arrival.

Design: We performed an audit at a University Hospital AMU in the North West of England.

Methods: Data were collected prospectively for 15 consecutive days in May–June 2013 for all patients presenting to the AMU at University Hospital of South Manchester and were repeated for the same time period in 2014 following the introduction of a new Consultant working model.

Results: Four hundred and five patients were admitted to the AMU in the 2013 cohort compared to 456 in the 2014 cohort. There was a significant improvement in the median waiting time for Consultant review from AMU admission to 5 h 53 min from 8 h 15 min (P < 0.001). The compliance with the SAM quality indicator for Consultant review improved from 88.7 to 93.7% (P = 0.022).

Conclusion: A 7-day Acute Physician working model is improving performance with regards to patient waiting times. We suggest that starting the clock for acute medical patients in the ED is a better measure of performance than on arrival to the AMU.

Introduction

Early Consultant review has been shown to improve outcomes in patients presenting to the Acute Medical Unit (AMU).1–3 The Society for Acute Medicine (SAM) clinical quality indicators state that the time to see a competent decision maker or a Consultant is calculated from the time the patient arrives on the AMU. This starting point does not consider the time from arrival in the Emergency Department (ED), which is where the majority of acutely ill medical patients present.

A 7-day working is a key tenet in the philosophy of Acute Medicine. University Hospital of South Manchester (UHSM), a tertiary hospital in the North West of England, introduced a new ‘medical model’ of Consultant working commencing in

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August 2013 with Acute Physician cover on the AMU between 0700 and 2200 7 days a week. We examined the effect of the new model on the time patients on the AMU waited for Consultant review and considered when the clock should start ticking for this cohort of patients.

**Methods**

UHSM is a major acute teaching hospital in the North West of England. It has around 950 beds with numerous tertiary services including Cardiology and Respiratory. The AMU at UHSM has 56 beds incorporating a 20-bed short stay unit. The unit has 10 telemetry monitored beds and can provide non-invasive ventilation. Between 2013 and 2014 the AMU did not change significantly in terms of junior doctor and nursing cover. The new Consultant working model is shown in Table 1. Between 2013 and 2014 we also ran an ambulatory care unit which was additional to the resources allocated in the new model. During the study period a local district general hospital was downgraded to an urgent care centre.

Data were collected prospectively by a dedicated data collector (S.L.) for 15 consecutive days in May–June 2013 for all patients presenting to the AMU at UHSM and were repeated for the same time period in 2014. The patient’s age, sex, reason for admission, referral source, time of hospital admission, time of assessment by ED doctor and time and location of both RMO (Resident Medical Officer—doctor in training) assessment and Consultant (fully trained specialist) review were collected using a standard proforma.

SAM quality indicators state that all patients should be seen by a competent decision maker
(RMO) within 4 h and by a Consultant within 14 h of arrival on the AMU and 8 h for patients arriving between 0800 and 1800.

Based on this data, the following time differences were calculated and correlated to SAM clinical quality indicators:

- Hospital admission to RMO assessment
- AMU admission to RMO assessment
- Hospital admission to Consultant assessment
- AMU admission to Consultant assessment.

The primary outcome was compliance with the quality indicator for time to Consultant review on the AMU. In addition we assessed the effect of starting the clock at the time of hospital arrival vs. time of arrival on the AMU and the time to see an RMO.

The Mann Whitney U-test was used to assess the effectiveness of the model in reducing time to Consultant review and RMO assessment. The Fisher’s exact test was used to assess performance against the SAM quality indicators. A Kruskal–Wallis test was performed to analyse whether time of admission was significant in predicting waiting times.

**Results**

Four hundred and five patients were admitted to the AMU in the 2013 cohort compared to 456 in the 2014 cohort (Table 2). The median age was 72(16–101) years in 2013 and 73(16–98) years in 2014. 202(49.9%) of the patients in 2013 and 218(48.0%) were male. 78.5% of the referrals to AMU were from the ED in 2013 and 77.8% in 2014. There were no significant differences between the demographics of the two cohorts and the source of referral.

There was a significant improvement in the waiting time for Consultant review taken from both hospital and AMU admission following introduction of the new model. The median time from hospital admission improved from 11 h 12 min to 9 h 34 min \((P=0.025)\) and 8 h 15 min to 5 h 53 min \((P<0.001)\) for AMU admission.

Figure 1 shows the improvement in compliance with the SAM quality indicator for Consultant review. The patients seen within target improved from 88.7% to 93.7% \((P=0.022)\). However, if the target was taken from the time of hospital admission although there was an increase in patients being seen within target it was not significant \((P=0.12)\).

Figure 2 shows a comparison between the time of admission and wait for Consultant review. Patients arriving at hospital between 1500 and 2100 are more likely to have prolonged waits for Consultant review \((P<0.001)\).

There was a significant increase in the number of patients seen by a Consultant Acute Physician in the ED from 4.9 to 11.8% \((P<0.001)\).

Table 2 also shows the data for times to RMO assessment. There was an improvement in the time

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**Table 2** Demographic data, times and place to RMO and consultant review and compliance with SAM quality indicator

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (Median)</td>
<td>72</td>
<td>73</td>
<td>0.74</td>
</tr>
<tr>
<td>Male</td>
<td>202/405 (49.9%)</td>
<td>218/454 (48.0%)</td>
<td>0.63</td>
</tr>
<tr>
<td>ED referral</td>
<td>318/405 (78.5%)</td>
<td>353/454 (77.8%)</td>
<td>0.80</td>
</tr>
<tr>
<td><strong>Time to Consultant review – Median (IQR) hours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From hospital admission</td>
<td>11:12 (6:37, 15:11)</td>
<td>9:34 (6:03, 14:16)</td>
<td>0.025</td>
</tr>
<tr>
<td>From AMU admission</td>
<td>8:15 (3:43, 11:55)</td>
<td>5:53 (2:41, 9:40)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Consultant target time – Median (IQR)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From hospital admission</td>
<td>204/320 (63.7%)</td>
<td>262/377 (69.5%)</td>
<td>0.12</td>
</tr>
<tr>
<td>From AMU admission</td>
<td>291/328 (88.7%)</td>
<td>357/381 (93.7%)</td>
<td>0.022</td>
</tr>
<tr>
<td><strong>Consultant assessment location</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMU</td>
<td>312/328 (95.1%)</td>
<td>336/381 (88.2%)</td>
<td>0.001</td>
</tr>
<tr>
<td>ED</td>
<td>16/328 (4.9%)</td>
<td>45/381 (11.8%)</td>
<td></td>
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<tr>
<td><strong>Time to RMO assessment—median (IQR) hours</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From hospital admission</td>
<td>3:41 (2:25, 5:39)</td>
<td>3:51 (2:45, 5:29)</td>
<td>0.65</td>
</tr>
<tr>
<td>From AMU admission</td>
<td>1:50 (0:46, 3:04)</td>
<td>1:08 (0:29, 2:17)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>RMO target time—median (IQR)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From hospital admission</td>
<td>201/371 (54.2%)</td>
<td>222/434 (51.2%)</td>
<td>0.40</td>
</tr>
<tr>
<td>From AMU admission</td>
<td>346/379 (91.3%)</td>
<td>427/438 (97.5%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>RMO assessment location</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMU</td>
<td>222/379 (58.6%)</td>
<td>195/438 (44.5%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ED</td>
<td>159/379 (41.4%)</td>
<td>243/438 (55.5%)</td>
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</table>

**Acute medicine targets**
to RMO assessment from AMU admission ($P \leq 0.001$) and in compliance with the SAM quality indicator ($P \leq 0.001$). There was a small increase in waiting times from hospital admission but these were not statistically significant. There was a significant increase in the number of patients seen by an RMO in the ED ($P < 0.001$).

**Discussion**

Our hospital recently introduced a new 7-day working model across medical specialties including Acute Physician cover on the AMU between 0700 and 2200 every day. This study shows this is effective in significantly reducing waiting times of medical patients for Consultant review. This is a key measure of early decision making, quality of care and the way to enhance safety of service. Furthermore, there was improvement in times to see a junior doctor suggesting that Consultant cover of the acute take has a significant supervisory contribution and assists in improving junior doctor performance.

The benefits shown in Consultant working may be underestimated in this study as a result of the
downgrading of a local district general hospital, which may have contributed to the increased admissions in 2014. Furthermore, in 2014 we had developed an ambulatory care unit and many of the less acutely unwell patients bypassed the acute take and were not included in this study.

We are presenting data from a limited time period in a single centre. Natural experiments like ours with a large sample size are useful in evaluating service change. To our knowledge literature measuring the impact of the changes in the Future Hospital report is limited. Our study seems to support the 7-day service model.

A continuous Consultant presence on the AMU is associated with reduced mortality and reduced length of hospital stay. Thus early Consultant review of patients is an important quality indicator. A 7-day working and an increase in the number of Acute Physicians have been important drivers in achieving this outcome. However, compliance with standards around timings for junior doctor and Consultant review on AMUs nationally is highly variable.

This study shows the vulnerability of patients presenting to the hospital in the early evening for prolonged Consultant review. This reflects a cohort that is the most likely to arrive on the AMU outside of the extended Consultant working day. Further work is needed to develop Consultant working models that protect and incorporate this group.

SAM quality indicators are written so that the clock begins when the patient arrives on the AMU. However, the patient journey for the majority of acutely ill medical patients starts in the ED. Therefore, the time lapse between hospital admission and assessments is a more pertinent indicator of performance. It is likely to provide a more comprehensive view of quality and if achieved have further beneficial impacts on outcome measures. Hence, we suggest that starting the clock when the patient arrives in hospital—i.e.—at the ED—will provide a more robust assessment of acute medical care.

Direct admission to an AMU is an aspiration for all acutely unwell medical patients but is currently limited by flow. These data support ED in-reach by Acute Physicians until this ideal can be achieved. Future work could focus on the evaluation of this model with regards to cost effectiveness, morbidity and mortality outcomes, length of stay and patient satisfaction.

Conclusion

A 7-day Acute Physician working model is improving performance with regards to patient waiting times to see a Consultant Physician. Further work is required to focus on patients presenting at times of the day associated with prolonged waits. We suggest that starting the clock for acute medical patients in the ED is a better measure of performance than on arrival to the AMU.

Conflict of interest: None declared.

References


