INTEGRATED CARE

Medical referrals: introducing a GP-priority clerking shift to ensure equitable patient care

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ABSTRACT

The Society of Acute Medicine (SAM) guidelines indicate that all medical patients should be assessed within 4 hours of referral. Our initial audit cycle revealed that in our institution, significantly less patients referred via their GP were seen within recommended time, when compared with patients referred via the Emergency Department (ED). We undertook a targeted educational intervention, improved the communication process for referrals and modified the senior house officer (SHO) clerking rota, and re-audited the service to determine the effect of these changes. Subsequently, the proportion of GP-referred patients reviewed within recommended time significantly improved for both initial clerking (from 60% to 95.5%, p=0.011) and consultant review (from 50% to 90.5%, p=0.009), with no detrimental effect on waiting times for ED-referred patients. This is likely to be clinically important, impacting on best practice and patient safety.

KEYWORDS: Referral times, initial clerking, consultant review, quality improvement project

Introduction

The Society of Acute Medicine (SAM) guidelines indicate that all medical patients should be assessed within 4 hours of referral by a 'competent clinical decision maker' – defined as a doctor confident in clinical assessment, interpreting investigations and initiating prompt, safe and effective management.[1,2] This is equivalent to the Emergency Department (ED) 4-hour targets.[3] Quality indicators from the Royal College of Physicians recommend that medical patients should have a consultant review within 14 hours of referral, and preferably within 8 hours if referred between 8am and 6pm.[2] In 2015, an SAM benchmarking audit of 66 acute medical units (AMUs) revealed 81% of patients are seen by a competent decision maker within 4 hours and 73% by a consultant within the recommended time;[4] this was consistent with previous published data.[5–7]

After prioritising clinically urgent cases, remaining patients should be assessed in chronological order, regardless of referral source (primarily GP and ED). However, in our institution, anecdotal evidence suggested that referral source independently affected time taken for assessment, with GP-referred patients appearing to wait longer than ED-referred patients. There was no local data to confirm or refute this concern and, to our knowledge, no national studies have compared timings for medical assessments between referral source.

Our initial audit cycle (C1) demonstrated that overall, the percentage of initial clerking (84.7%) and consultant reviews (80.3%) within the recommended time was comparable to the national average. However, when separated via referral source, there was a significantly greater percentage of ED-referred patients who had their initial clerking and consultant review within recommended times, compared with GP-referred patients. This discrepancy raised concern within the trust about patient safety and equity, and drove a demand for a change to our current practice. Our initial audit also compared weekday and weekend admissions; however, there was no significant difference in time taken for initial clerking and consultant review, and therefore, no changes to weekend practice were recommended.

Intervention and aims

Following these findings, we prepared a targeted educational presentation and piloted a change in the senior house officer (SHO) rota. The SHO group includes foundation year two doctors, core medical trainees (CMT) and acute care common stem (ACCS) trainees. We raised awareness of the time discrepancy between referral source by presenting our findings at the Medical Directorate board meeting, and at local and regional quality improvement meetings. After discussion, and collecting local feedback, we modified the SHO clerking rota to incorporate a 'GP priority' clerking shift, where a specified SHO gave precedence to GP-referred patients, seeing only ED referrals if clinically urgent or if there were no GP referrals awaiting review (Fig 1). Furthermore, we arranged that the ED nurse in charge liaised with the on-call medical registrar when GP-referred patients arrive in their department, ensuring that an accurate arrival time is captured promptly. All team members, including the medical registrar and ED/AMU nursing staff, further highlighted all patients who had waited longer than 3 hours for clerking. This ensured prioritisation of those patients close to breaching, thereby avoiding extended waiting times. All these changes were implemented without adjustments to overall staffing levels.

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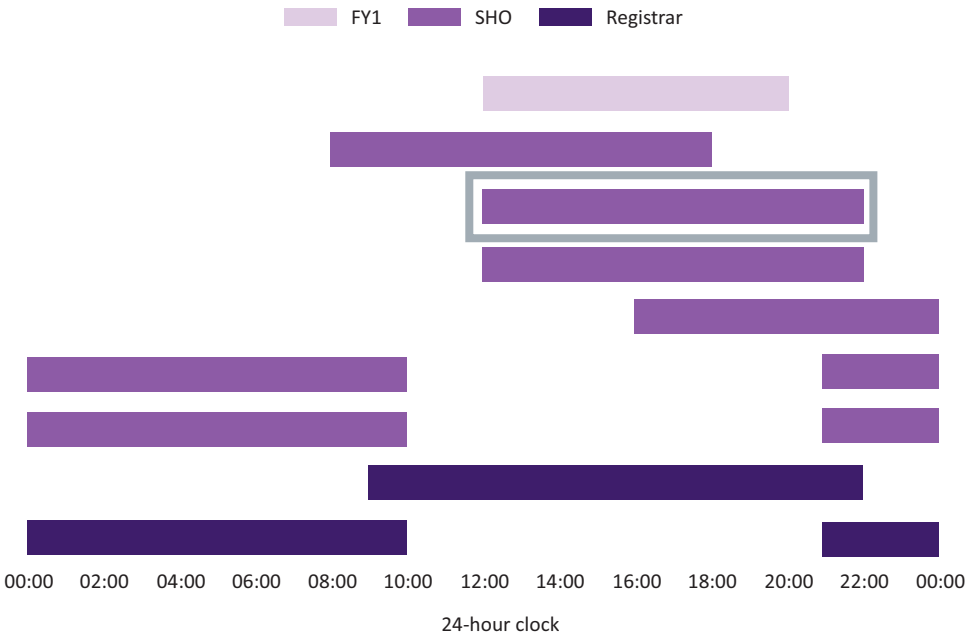

Fig 1. The current rotated hours for medical clerking junior doctors on weekdays. The grey square illustrates the shift which has been changed to a 'GP priority' clerking shift, when most GP-referred patients will arrive at the hospital. FY1 = foundation year 1; GP = general practitioner; SHO = senior house officer

The aims of audit cycle two (C2) were to determine if the implemented changes had positively impacted on the proportion of patients reviewed within the recommended time, and to determine if these changes reduced waiting times for GP referrals, without negatively impacting ED referrals. Time taken for assessments between weekend and weekday admissions was also re-audited.

Methods

The initial audit cycle (C1) used data collected from 85 admissions over a 2-month period. The re-audit cycle (C2) data were collected 6 months later, from another 85 admissions over an identical 2-month timescale. In both audit cycles, patients were selected from six medical wards using a random number generator sequence. Patients referred via other sources were excluded.

Clinical data were collected retrospectively from patient notes and the medical referral system. The earliest possible time of initial assessment was deemed t=0; for ED patients, this was the time of referral to the medical team and for GP patients, their time of arrival to ED or AMU. Times of initial clerking and consultant review were obtained from entries in patients, notes. Assessments were considered to be inside the recommended time if initial clerking was within 4 hours of referral and consultant review within 8 hours (if referred between 8am and 6pm) or 14 hours (if referred between 6.01pm and 7.59am). Notes with both clerking and consultant timings missing were excluded. Patients with incomplete data (ie only clerking entry time or consultant entry time documented) had their available data integrated into the analysis.

Statistical analyses were conducted in the IBM-SPSS statistical software package v21, and confidence interval analysis software was utilised where required. A significance level of p=0.05 was used. The Mann–Whitney *U* test was used for analysis of time taken for clerking and consultant review between groups. For percentage binary calculations, Fisher's exact, or chi-squared, test was employed.

Results

Patient demographics for both audit cycles are shown in Table 1.

Following the intervention, there was no significant difference in time taken for initial clerking between groups (ED: 1h30min [IQR 55min,2h25min], GP: 1h36min [49min,2h13min], p=0.912), with comparable proportions seen within the recommended times (ED 84.9%, GP 95.5%, p=0.57) (Table 2). There remained no difference after adjusting for weekend and out-of-hours admissions (p=0.368).

There was no significant difference in time taken for consultant post take between referral sources (ED 4h48min [1h59min,12h27min]; GP 3h21min [2h18min,5h25min], p=0.530). 88.3% of ED-referred patients and 90.5% of GP-referred patients were seen within the recommended time, with no significant difference between groups (p=0.573) (Table 2). This remained non-significant after adjusting for weekend and out-of-hours admissions (p=0.855).

Comparing weekday (WD) and weekend (WE) admissions, the difference in time taken for initial clerking was not significant (WD 1h35min [48min,2h20min]; WE 1h30min [1h5min,2h8min], p=0.719) and there was no difference in the proportion seen within the recommended time (WD 87.7%, WE 88.9%, p=1.00). However, when comparing time taken for consultant review, there was a significant difference between groups (WD 3h21min [2h6min,9h49min]; WE 10h20min [3h15min,12h50min], p=0.031). However, there was no difference in the proportion of patients seen within the recommended time (WD 88.7%, WE 89.5%, p=1.00).

Comparison between audit cycle one and two

On review of all patients collectively, there was no significant difference in median time waited for initial clerking between audit

Table 1. Patient referral demographics between audit cycles

Patient demographics	Audit cycle one	Audit cycle two	p-value	95% CI
Total	**85**	**85**		
Excluded*	9	3	0.072	–0.009 to 0.157
Complete missing data	*(7)*	*(0)*		
Other referral source (clinic, hospital transfers)	*(2)*	*(1)*		
Number suitable for analysis	76	82		
Full data available	*(64)*	*(74)*		
Incomplete data available				
Initial clerking time only	*(6)*	*(1)*		
Consultant review only	*(6)*	*(7)*		
Referral source			0.293	–0.062 to 0.199
ED	61 (80.3%)	60 (73.2%)		
GP	15 (19.7%)	22 (26.8%)		
Day of referral			**0.002**	0.081 to 0.365
Weekday	41 (53.9%)	63 (76.8%)		
Weekend	35 (46.1%)	19 (23.2%)		
Time of referral			0.215	–0.0559 to 0.247
In hours	37 (48.7%)	48 (58.5%)		
Out of hours	39 (51.3%)	34 (41.5%)		

*Complete missing data: both initial clerking and consultant review times missing
ED = Emergency Department

cycles (C1 2h5min [56min,3h4min]; C2 1h30min [50min,2h15min], p=0.107), with similar proportions seen within recommended time (C1 84.7%; C2 88.0%, p=0.517) (Table 3). Similar findings were observed for consultant review (C1 6h45min [3h11min,11h9min]; C2 3h55min [2h17min,11h14min], p=0.086), with 80.3% reviewed by a consultant within the recommended time in C1, and 88.9% in C2 (p=0.130).

Comparing GP-referred patients between audit cycles, there is a significant reduction of >1.5 hours in time taken for initial clerking (C1 3h6min ± 1h47min; C2 1h36min [49min,2h13min], p=0.017)

Table 2. Time taken for initial clerking and consultant review, comparing ED and GP-referred patients for both audit cycles (average) time taken is displayed as median [lower quartile, upper quartile] or mean ± standard deviation)

		ED referrals	GP referrals	p-value	95% CI
Audit cycle one					
Initial clerking	Within 4 hours	90.9% (n=50)	60.0% (n=9)	0.009	0.10 to 0.64
	Average time taken	1h47m [52min, 2h38 min]	3h6min ± 1h47min	0.023	+9min to +2h3min
Consultant review	In recommended time	87.5% (n=49)	50% (n=7)	0.005	0.12 to 0.62
	Average time taken	6h35min [2h54min, 10h29min]	10h36min [3h44min, 17h48min]	0.094	–1h6min to +7h54min
Audit cycle two					
Initial clerking	Within 4 hours	84.9% (n=45)	95.5% (n=21)	0.573	–0.082 to 0.231
	Average time taken	1h30min [55min, 2h25min]	1h36min [49min, 2h13min]	0.800	–1h22min to +48min
Consultant review	In recommended time	88.3% (n=53)	90.5% (n=19)	0.573	–0.181 to 0.147
	Average time taken	4h48min [1h59min, 12h27min]	3h21min [2h18min, 5h25min]	0.530	–33min to +4h23min

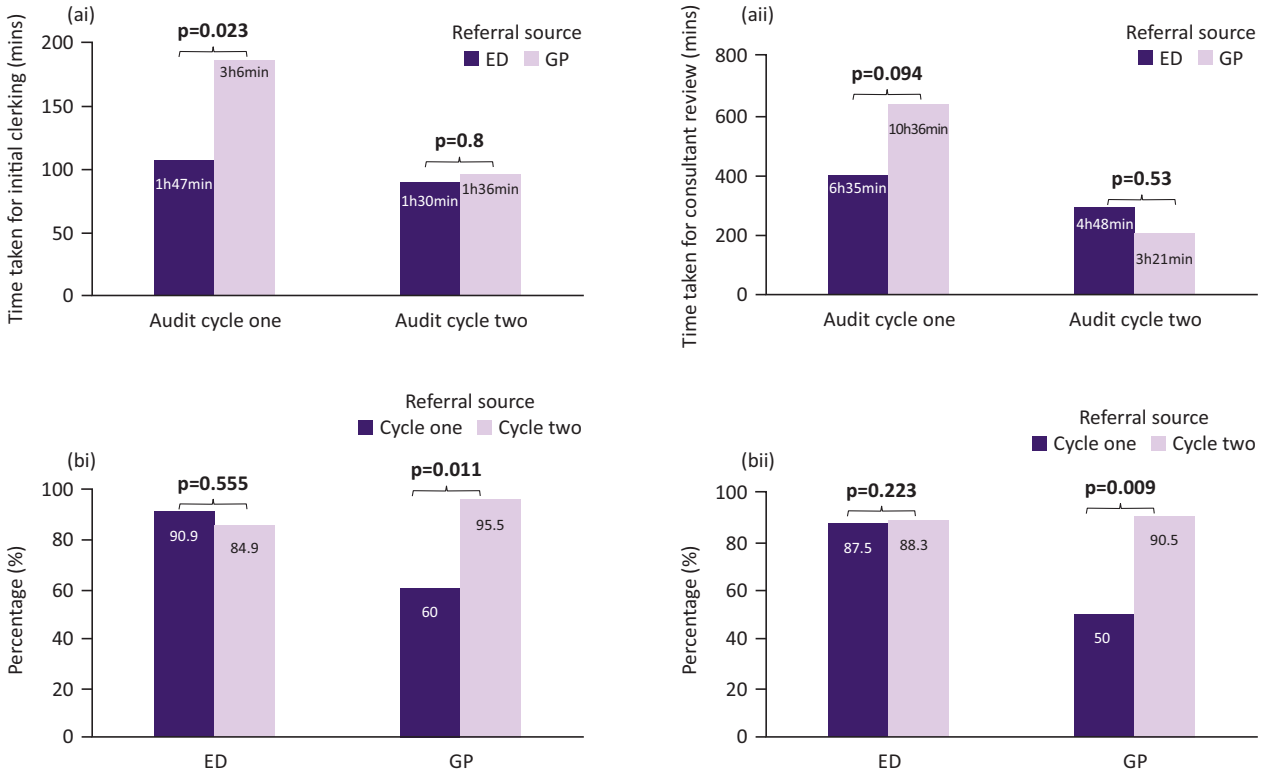

Fig 2. Figures showing the time taken for (i) initial clerking and (ii) consultant post take. (a) Compares assessments between GP- and ED-referred patients for both audit cycles. **(b)** Compares assessments between audit cycles for both referral source. ED = Emergency Department

Table 3. Time taken for initial clerking and consultant review, comparing cycle one and two

		Audit cycle one	Audit cycle two	p-value	95% CI
Initial clerking	**% seen in recommended time**				
	Total	84.7	88.0	0.517	–0.074 to +0.161
	ED	90.9	84.9	0.555	–0.074 to 0.188
	GP	60.0	95.5	**0.011**	+0.089 to +0.600
	Average time taken				
	Total	2h5min [56min,3h4min]	1h30min [50min,2h15min]	0.107	–24min to +56min
	ED only	1h47min [52min,2h38min]	1h30min [55min,2h25min]	0.557	–31min to +40min
	GP only	3h6min ± 1h47min	1h36min [49min,2h13min]	**0.017**	–25min to +2h27min
Consultant review	**% seen in recommended time**				
	Total	80.3	88.9	0.130	–0.023 to +0.217
	ED	87.5	88.3	0.223	–0.111 to +0.142
	GP	50.0	90.5	**0.009**	+0.083 to +0.639
	Average time taken				
	Total	6h45min [3h11min,11h9min]	3h55min [2h17min,11h14min]	0.086	–31min to +3h9min
	ED	6h35min [2h55min,10h29min]	4h48min [1h59min,12h27min]	0.623	–1h54min to +1h49min
	GP	10h36min [3h44min,17h48min]	3h21min [2h19min,5h25min]	**0.01**	+1h59min to +9h46min

ED = Emergency Department

and a significant improvement in the proportion seen within the recommended time (60.0% and 95.5% respectively, p=0.011) (Fig 2, Table 3). This remains significant when adjusted for out-of-hours and weekend referrals, with GP-referred patients having over 14 times greater odds of being clerked within 4 hours since implemented changes (OR 14.49, p=0.026, 95% CI 1.37–142.86). However, importantly, there was no significant difference in the time taken for initial clerking between cycles for ED referrals, nor a significant change in the percentage of ED-referred patients that were reviewed within the recommended time (Fig 2, Table 3), even when adjusted for weekend and out-of-hours referrals (p=0.271, 95% CI 0.574–7.227).

Comparing GP-referred patients between audit cycles, there is a median reduction of 7h15min in time taken for consultant review (C1 10h36min [3h44min,17h48min]; C2 3h21min [2h19min,5h25min], p=0.01), with a significantly greater percentage assessed by consultant within the recommended time (C1 50%; C2 90.5%, p=0.009) (Fig 2, Table 3). This also remains significant after adjusting for out-of-hours and weekend referrals (OR 11.76, p=0.023, 95% CI 1.41–100). Comparing datasets for ED-referred patients, there was no significant difference in time taken for consultant review between the audit cycles (C1 6h35min [2h55min,10h29min]; C2 4h48min [1h59min,12h27min], p=0.623), remaining non-significant after adjusting for weekend and out-of-hours referrals (p=0.955, 95% CI 0.303–3.087).

Discussion

Our primary aim was to ensure equitable care for patients referred via ED and GP. General practitioner-referred patients had over nine times greater odds of seeing a consultant within the recommended time after implemented changes, which is both statistically and clinically important. This is likely to have had a positive impact on optimising best clinical practice and safety for these patients, since early consultant review has been proven to enhance clinical outcomes.[8] Furthermore, this reduction in waiting time for GP-referred patients has been achieved without increasing staffing levels or compromising care for ED-referred patients.

On analysis of all patients collectively, time taken for initial clerking and consultant review improved following implementation of our changes, but it was not statistically significant. With a greater sample size, we may have found that these results became statistically significant.

In C2, although weekend referrals had a significantly longer waiting time for consultant review, the comparable overlap of lower and upper quartiles for weekend and weekday data implies that there is unlikely to be a discernible difference in clinical practice. This is further supported by the similar proportion of patients in both groups who were seen in recommended time. However, this should be closely audited for ongoing discrepancy to assess the adequacy of weekend staffing and explored accordingly.

For GP patients, time of arrival was employed as t=0, which may seem inconsistent with ED patients, where t=0 was time of referral. However, this method eliminated the variable 'travel time', which the clerking doctor cannot control, and ensured that both groups had the same probability of assessment from t=0. If time of referral was used for GP patients, this variable travel period may have resulted in falsely long waiting times, thereby inaccurately portraying clinical performance, particularly for less urgent cases whereby travel time may be a number of hours. However, it does raise the question of whether travel delay in GP-referred patients impacts negatively on time-critical management, and whether GP-referred patients should be assessed earlier than ED-referred patients to offset this delay.

In our study, there were notably less GP referrals than ED referrals, which accurately reflects the proportions seen in clinical practice in our institution. However, this may not be analogous with other institutions, and it may be that some hospitals with more GP referrals may benefit from more than one daily GP-priority shift.

In the initial audit cycle, it was noted that 22.4% (n=19) of patients had one or more missing timings of events in their patient notes. In the repeat audit, only 9.4% (n=8) of patients' notes had missing data. Although 9.4% remains a high proportion of incomplete documentation, the improvement should be noted. We believe the educational presentations enabled us to increase awareness regarding the lack of appropriate documentation and the imperative need for accurate recording of events. The Royal College of Physicians state that every entry in the medical record should be dated and timed to maximise patient safety and quality of care.[9] Despite the improvement, the lack of ongoing consistent documentation of timings remains a concern.

Limitations

This audit is limited by the small sample size and single site assessment. Although resulting in significant improvements, the large confidence intervals indicate caution should be exercised in assessing the true effect size between the different referral sources. This suggests that further, larger studies would be beneficial to strengthen and confirm our findings.

In this audit, the patients' clinical condition was not considered in detail, and it may be that those patients who waited longer for assessment were more stable. However, we believe this would have been the same for both audit cycles, and so comparisons between these two groups would likely not be directly affected by this. Furthermore, one cannot assume that referral source would necessarily determine a patient's clinical stability, with both GP and ED specialties referring patients who require urgent management. Nonetheless, a comparative assessment of acuity between groups would be of interest and may offer further insight into whether patients are receiving equitable care based on clinical urgency. The potential value of this research should be recognised and, if possible, integrated into future rolling audits.

Moreover, obtaining data from ward patients only may represent a selection bias. Patients who were directly discharged after review by consultant were less likely to be captured in this audit, and may represent individuals who were more stable; therefore, potentially waiting longer for review. If these patients were included, it may have increased the average overall waiting time for assessments. Equally, data from subsequently deceased patients was also not captured, potentially excluding a larger proportion of clinically unstable patients who required more immediate attention. Although the method of data collection favoured the selection of patients with longer hospital admissions, inclusion of data from both acute and long-stay wards ensured that a variety of hospital stay lengths were represented. For future studies, data selection could be sourced from a list of all medical admissions during a

specified time period to minimise bias; although, the accessibly of patient notes may prove to be a limitation. However, we believe our method is unlikely to have had a profound impact on results, and would not have had an effect on comparisons between groups, as ED and GP patients in both audit cycles should have been equally affected.

The data for audit cycles were collected at different times of the year (spring and autumn), and it is conceivable that that seasonal variation could have affected the number of medical admissions and clinical experience of the junior doctors assessing the admissions.

Conclusion

Simple modifications to the referral process has enabled a more equitable and safe care system for medical patients. Further studies with larger sample sizes would help confirm this equitably and ensure that it is maintained. Institutions should be aware of a potential difference in time taken for assessments between referral sources. We encourage other institutions to introduce a rolling audit to regularly review this, which could also be extended to other teams, for example surgical referrals. If a discrepancy is revealed, with a longer waiting time for GP-referrals, employing a GP-priority shift alongside educational awareness may help facilitate a more balanced, objective patient-centred care, without the need for extra resources or adversely impacting other patient groups. ■

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