

Unnecessary delays in accident and emergency departments: do medical and surgical senior house officers need to vet admissions?

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SUMMARY

Work was carried out to determine whether patients requiring emergency medical or surgical admission to hospital via accident and emergency (A&E) departments benefit from initial assessment by the ward senior house officer (SHO) as well as the A&E SHO. Two comparable consultant-led A&E departments sharing the same catchment population and receiving similar numbers of new patients each year were studied.

A panel of four consultants audited the A&E notes and in-patient records of consecutive emergency medical and surgical patients admitted to two hospitals over the same 6 month period. In one hospital patients were seen and admitted by the A&E SHO alone. In the other hospital patients were seen by the A&E SHO and the medical or surgical SHO from the admitting unit. Diagnostic errors, inappropriate admissions to hospital and admission of patients to inappropriate wards were used as outcome measures.

There was no significant difference in the rates of diagnostic error or inappropriate admissions between those patients seen by an A&E SHO only, and those seen in A&E by the A&E and ward SHOs. Detaining emergency medical and surgical patients in the A&E department for further assessment by ward SHOs does not alter inappropriate admission rate or improve diagnostic accuracy.

Key words: admission rates, diagnostic accuracy, patient assessment

INTRODUCTION

In most accident and emergency (A&E) departments in the UK it is common practice for junior doctors to be called from the wards to re-assess patients already examined by the A&E doctor.

Traditionally, it was thought that this would prevent the wards being swamped with inappropriate admissions and incorrectly diagnosed patients.¹⁻⁴ Such a system results in delay. Junior doctors may be detained on ward rounds, in theatre or at out-patient clinics. Patients requiring emergency medical/surgical admission are ill and may deteriorate while waiting for a second assessment. Furthermore, repeated history taking and clinical examination can be exhausting for such patients. Queues of patients tend to build up, 'clogging' the department.

In Belfast two major teaching hospitals receive all emergency medical and surgical patients (including general practitioner referrals) on alternate days from the same catchment area. However, different admission systems operate in each hospital. In hospital A patients are assessed and the decision to admit is made by the A&E doctor alone. In hospital B A&E doctors see patients initially, but ward senior house officers (SHOs) then come to the department to re-assess patients and they make a decision about admission.

The aim of this study was to establish whether there was any benefit to be gained (by either patient or hospital) in having ward SHOs coming to the A&E department to assess patients already seen by A&E SHOs.

SUBJECTS AND METHODS

Consecutive emergency medical and surgical patients admitted via the A&E departments of hospitals A and B over the same 6 month period were audited. A total of 400 patients seen by the A&E doctor alone in hospital A were compared with 400 patients treated by both A&E and ward SHOs from hospital B. A control group of 400 patients seen by an A&E SHO alone from hospital B was created

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for the purpose of the study to allow for any differences in clinical ability in A&E SHOs between the two hospitals. The clinical competence of both groups of A&E SHOs was similar in both hospitals. The control group consisted of consecutive patients admitted directly to the wards by the A&E SHO alone as a result of the medical and surgical SHOs being unavailable at the time to come and assess patients in the department. The period of study spanned the changeover period of all SHOs in both hospitals, thus increasing the number of doctors in the study and reducing the chance of differences in clinical abilities of SHOs in the two hospitals. (Table 1).

None of the patients in the study had been discussed with senior A&E staff in either hospital.

A panel of four consultants audited the A&E notes and in-patient records. The panel consisted of two A&E consultants, one from each hospital, a consultant physician from one hospital and a consultant surgeon from the other hospital.

Both A&E consultants audited all patients, the consultant physician audited the medical patients and the consultant surgeon audited the surgical patients. All consultants knew whether the patients had been admitted to hospital A or B. The panel were asked three questions about each patient.

1. Was the diagnosis made in the A&E department correct (given the investigations and patient information available in A&E)? The panel were asked to score incorrect diagnoses as follows: 1, minor error; 2, moderate error; 3, major error; and 4, major error, potentially affecting outcome.
2. Was admission to hospital appropriate? The answer was denoted by a 'yes' or 'no'.
3. Was the patient admitted to the most appropriate ward? The answer to this question was

Table 1. Details of study and control groups. Each group consisted of 200 medical and 200 surgical patients

| | |
|---------------|----------------------------|
| Study groups | |
| Hospital A | A&E doctor only |
| Hospital B | A&E doctor and ward doctor |
| Control group | |
| Hospital B | A&E doctor only |

A&E, accident and emergency.

marked by one of two responses. Where the admission to an inappropriate ward was the result of an error in diagnosis, this was counted as a primary diagnostic error and marked accordingly. If the diagnosis was correct, but the patient was subsequently admitted to the wrong ward, this was recorded as an admission to an inappropriate ward.

χ^2 and logistic regression were used for the analysis of data.

RESULTS

There was no statistically significant difference in either the rate of diagnostic error between a single admitting A&E SHO or a combination of A&E plus ward SHO (Table 2). The value of χ^2 was 1.68, significance occurring at 3.84 for diagnostic error rate. Logistic regression analysis showed no difference in the severity of diagnostic errors between these two groups of doctors. In the group of 400 patients from hospital A admitted by the A&E SHO, the overall diagnostic error rate was 10.5%. In hospital B the overall diagnostic error rate for the A&E SHO admitting alone was 12.5%, whereas the combined A&E and ward SHOs in hospital B had a diagnostic error rate of 11.5%. The value of χ^2 was

| | Minor error | Moderate error | Major error | Major error potentially affecting outcome |
|-----------------------------------|-------------|----------------|-------------|---|
| Hospital A (A&E SHO) | 33 | 7 | 1 | 1 |
| Hospital B (A&E SHO) | 46 | 3 | 0 | 2 |
| Hospital B (A&E SHO and ward SHO) | 34 | 10 | 0 | 2 |

Table 2. Frequency and severity of diagnostic errors in both hospitals. Values are numbers of errors

A&E, accident and emergency; and SHO, senior house officer.

0.78 (not significant). Major errors potentially affecting outcome are shown in Table 3. Typical diagnostic difficulties included the differentiation of heart failure, chest infection and other chest problems, as well as the differential diagnosis of abdominal pain. Difficulty was also experienced in differentiating between sub-arachnoid haemorrhage and migraine. The diagnosis of septicaemia in the elderly was not made in the A&E department, but patients were recognized as being ill and were admitted to hospital.

Table 4 shows inappropriate hospital admissions. There was no statistically significant difference in inappropriate hospital admissions between an A&E SHO admitting and a combination of both A&E and medical/surgical SHOs admitting.

There was no significant difference in the number of patients admitted to an inappropriate ward between A&E doctors admitting alone and A&E and ward SHOs together (Table 5). All the patients in Table 5 could have gone to the observation ward rather than medical or surgical wards, having

Table 3. Major errors potentially affecting outcome

| Group | Hospital | A&E diagnosis | Final diagnosis | Outcome | Comment |
|--------------------|----------|-------------------------|--|----------|---|
| A&E SHO | A | Chest infection | Chest infection, diabetic ketoacidosis | Died | Had myocardial infarction 2 days after admission |
| A&E SHO | B | Torsion of testis | Aortic aneurysm | Died | Presented with left iliac fossa pain radiating to left testis — aneurysm — ruptured |
| A&E SHO | B | Heart failure | Saddle embolus | Died | Patient admitted to medical ward. Seven hour delay before correct diagnosis and transfer to surgical ward |
| A&E SHO + ward SHO | B | Toxic confusional state | Meningococcal meningitis | Survived | |
| A&E SHO + ward SHO | B | Cholecystitis | Heart failure | Died | Jaundiced patient with right upper quadrant pain admitted to surgical ward |

A&E, accident and emergency; and SHO, senior house officer.

Table 4. Inappropriate hospital admissions (patients admitted to wrong ward despite correct diagnosis)

| Group | Hospital | A&E diagnosis | Ward diagnosis | Comment |
|--------------------|----------|-----------------------------|--------------------|---|
| A&E SHO | A | Femoral hernia | None found | Discharged home same day |
| A&E SHO | B | No inappropriate admissions | | |
| A&E SHO + Ward SHO | B | Prolapsed haemorrhoids | Perianal haematoma | Could have been treated by A&E department or in outpatients |
| A&E SHO + Ward SHO | B | Epididymo-orchitis | Epididymo-orchitis | Could have been treated as an outpatient |

A&E, accident and emergency; and SHO, senior house officer.

Table 5. Inappropriate ward admissions

| Hospital | No. of doctors | No. of errors per group of 400 patients | Error (%) |
|----------|----------------|---|-----------|
| A | A&E SHO | 8 | 2 |
| B | A&E SHO | 14 | 3 |
| | A&E SHO | 7 | 2 |
| | Ward SHO | | |

A&E, Accident and emergency; and SHO, senior house officer.

disorders such as renal colic, non-specific chest pain, non-specific abdominal pain, urinary tract infections and minor head injuries. Observation wards in both hospital A and hospital B routinely manage all the above disorders initially. If problems develop or patients require care beyond 24 h they are transferred to the appropriate medical/surgical ward.

DISCUSSION

In most hospitals in the UK, ward SHOs are called to A&E departments to assess patients who potentially require emergency admission to medical or surgical units. This may cause difficulty in two ways. Firstly, the patient may be kept waiting in the A&E department and there may be a deterioration in their clinical condition. Secondly, ward SHOs have to leave their normal duties, whether on ward rounds, in out-patients or in the operating theatre, and this may occur on a frequent basis.

This study identified some errors of diagnosis and management, but the number of serious errors was small and there was no difference in the rate of error, whether or not an additional opinion was provided by a ward SHO.

Though the patient populations were not compared for similarity of clinical condition and severity, they were drawn from the same catchment population on alternate days in the week over a 6 month period. With the large numbers of patients in each group it is highly unlikely that there would be considerable differences in the spectrum of illness or severity between the two groups. Owing to the difficulties in follow up this study did not include a cohort of

patients discharged from hospital. This is certainly a weakness in the study; however, follow up of patients discharged home from hospital is notoriously difficult and there is little relevant published information about this.

Overall there was no advantage in having ward SHOs come to A&E departments to vet admissions, either in terms of diagnostic accuracy or appropriateness of destination. It might be argued that an opinion from a more senior ward doctor would be beneficial.

With the current expansion in numbers of middle-grade and senior A&E staff, however, SHOs are likely to obtain senior advice where necessary within their own department. A streamlined decision-making process within a single department seems more likely to prevent delay and increase efficiency of patient management.

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