The future of general medicine: lessons from an admissions ward

ABSTRACT — **Objective:** To define the expertise required of general physicians by surveying the work of an admissions ward.
- **Design:** Observational study during a three-year period.
- **Setting:** A 30-bed medical admissions ward in a district general hospital.
- **Main measurements:** Demography, diagnoses and management of 30,798 patients admitted.
- **Results:** Patients admitted as emergencies through the admissions ward made up the bulk of inpatients in general medical and health care of the elderly wards. The most common age group was 70–79 years, and there was a slight predominance of men. Fifty-eight per cent of patients came to hospital as a result of emergency ambulance calls, without the involvement of a general practitioner. Cardiovascular diagnoses were most common (40% of patients) but virtually all medical conditions were represented. Twenty-nine per cent of patients were discharged within 24 hours and few were readmitted.
- **Conclusions:** Management of patients according to different age groups, or by specialties, does not seem feasible. Although specialty expertise is needed in a district general hospital, only a physician with an interest and training in general medicine can handle the scale and scope of medical emergencies. The majority of physicians still need to be ‘general physicians with a special interest’.

Despite the government’s emphasis on the development of primary care, increasing numbers of patients are being admitted as emergencies with medical conditions to district general hospitals (DGHs). A report by the Royal College of Physicians, *Future patterns of care by general and specialist physicians*, considered *inter alia* how these patients should be managed. The report concluded that the current system of physicians who divide their time between general and specialist medicine worked well. The report said: ‘the number of general physicians is threatened by the trend for some specialities to withdraw from general medicine, and by purchasing arrangements that concentrate specialist care in some hospitals, leaving others with insufficient physicians to run an effective emergency service; the benefits of specialist care have to be weighed against the need for excellent general emergency care’.

Queen’s Medical Centre (QMC), Nottingham, is a teaching hospital which is a DGH for the local population but also a tertiary referral centre; in common with other hospitals, some physicians would prefer to withdraw from emergency work and concentrate on their speciality. Because of the need to manage an increasing number of medical emergencies an admission ward was set up at the end of 1993, and the activity of this ward has been surveyed to establish the type of expertise required in the consultant physicians.

**Methods**

The hospital

Queen’s Medical Centre is a large (1,200 bed) teaching hospital which is one of two hospitals that provide DGH functions for the local population of about 650,000. It is the only hospital in the catchment area with an accident and emergency (A&E) department; it provides a tertiary referral service in several disciplines.

The four medical firms are currently staffed by physicians who all share in the medical emergency work, but each physician has a ‘special interest’. With a little simplification, the four firms can be referred to as being concerned with cardiology, respiratory disease, gastroenterology and diabetes/metabolism, though most of the inpatient work of all the firms relates to medical emergencies. There are also four firms in the health care of the elderly (HCE) directorate, all of which handle emergency work and specialise in rehabilitation; none of these firms is system-specialised. The only physicians at QMC who do not take part in the management of medical emergencies are the clinical haematologists and immunologists.

The admissions ward

A 30-bed ward was designated for the management of medical emergency admissions in November 1993. ‘On-take’ arrangements were reorganised so that a team rather than a firm was responsible for each 24-hour period; the team consists of a general medical and an HCE consultant physician with registrars, senior house officers, and preregistration house officers drawn from each firm. Admissions are handled administratively by a senior house officer who is designated as resident medical officer (RMO) for the day.

QMC accepts medical emergency patients every day who arrive in the A&E department as a result of ‘999’ emergency ambulance calls. On somewhat fewer than alternate days (‘full-take’) the hospital also takes referrals from general practitioners; on the other days GP referrals are sent to the other Nottingham hospital. Patients referred by GPs may be
sent directly to a general medical or an HCE ward if they are already under the care of a particular firm; patients diagnosed in the A&E department as having a myocardial infarction are transferred directly to the coronary care unit (CCU); all other patients are admitted via the admissions ward.

Consultant ward rounds are held daily (weekends included) at 8.00 am and 5.00 pm so that patients who are well enough can be sent home after review by a consultant.

In the last six months of the study period, patients found to need a stay of longer than 24 hours were categorised at the consultant ward round into one of three groups: category 1 for patients needing specialist care provided by a particular firm, category 2 for patients who might benefit from such specialist care if a bed were available in the specialty ward, and category 3 for the remainder who could be sent to any ward where a bed was available.

The survey
Data relating to the activity of the general medical, HCE and admissions wards were obtained for the three calendar years 1994, 1995 and 1996 from the hospital information system. For the 18 months from June 1995 to November 1996 inclusive, detailed data relating to the admissions ward were collected on a daily basis by a research nurse (AG).

Results

Numbers of patients admitted
During 1994, 14,125 patients were admitted to the general medical and health care of the elderly wards; 8,771 (62%) of them came through the admissions ward. Of the patients admitted directly to other wards, 874 (6.2% of the total) went to the coronary care unit (CCU) or medical high dependency unit (HDU). Although 1,619 medical admissions were classified as 'elective', most of them were actually urgent admissions either from clinics or were sent in directly by GPs to medical or HCE firms to whom the patient was already known.

In 1995, 15,423 patients were admitted, 10,730 (69%) via the admissions ward and 878 (5.7%) directly to the CCU or HDU. In 1996, 15,760 patients were admitted, 11,297 (72%) via the admissions ward and 859 (5.4%) directly to the CCU and HDU.

The following data concern patients admitted via the admissions ward in 1994, 1995 and 1996. Emergency patients admitted directly to other medical or HCE wards, or to the CCU and HDU, will not be considered further.

During 1994, the average number of patients admitted per day when the hospital took in patients both from GPs and from the A&E department was 31 (range 15–58), and on days when only A&E patients were admitted the average was 19 (range 9–33). Corresponding figures for 1996 were 40 (range 20–94) and 24 (range 12–47). In the week after this survey was completed, 120 patients were admitted via the admissions ward in a single 24-hour period.

Age and sex
Figure 1 shows the distribution of age and sex of the 16,613 patients passing through the admissions ward during the 18 months of the detailed survey in 1995/96; 8,702 patients (52%) were men; the women were slightly older than the men with an average age of 63 compared with 59 years.

The age group containing most patients of either sex was 70–79 years; it accounted for 22% of admissions, followed by those aged 60–69 years; 3% of patients were younger than 20 years and 3% were aged 90 years or over.

Route of admission
A total of 9,580 patients (58% of admissions) arrived in the A&E department as a result of '999' emergency calls for an ambulance; 573 (3%) came to the A&E department in other ways, usually by the car of family or friends; 6,480 (39%) patients had contacted their GP, who then arranged the admission via the RMO. The balance between '999' and GP admissions did not change significantly during the period of the study and there were no obvious seasonal differences.

Conditions leading to admission
Table 1 shows the most common diagnoses made on admission; where there were multiple problems the most important has been recorded. Sixteen groups of diagnoses accounted for 91% of admissions, the other 9% being made up of small numbers of virtually all possible medical conditions. Nearly one-third of admissions were due to chest pain, patients with an obvious diagnosis of myocardial infarction having been routed directly from the A&E department to the CCU; most of these other patients with chest pain had ischaemic heart disease but no ECG changes of acute infarction, and many who had prolonged chest pain at rest, fitted one of the categories of 'unstable angina'. A small proportion of patients had chest pain for which a non-cardiac cause was later found, and a few had chest pain that remained undiagnosed by the time of discharge.

Potential cardiovascular diagnoses (chest pain, heart failure, arrhythmias, venous thrombosis) accounted for 40% of admissions; respiratory problems (asthma and chest infections) accounted for 11% and gastrointestinal disorders (gastrointestinal bleeding, abdominal pain, diarrhoea, vomiting) for 7%. Seven per cent of admissions were the result of deliberate self-harm. Diabetes was responsible for only 3% of admissions, but diabetic patients, many already known to the diabetic firm, were often admitted directly to the diabetic ward.

Even in the relatively elderly group of patients, only 4% were admitted because of falls or an inability to cope at home; again, such patients were sometimes admitted directly to one of the HCE wards if a bed was available.
**Discharge and transfers from the admissions ward**

During the 18 months of the study, 4,792 patients (29% of admissions) were discharged home from the admissions ward, almost all of them within 24 hours of admission. The main diagnoses in this group were chest pain (myocardial infarction having been excluded by repeat ECG and biochemical tests), deliberate self-harm, suspected (usually excluded) venous thrombosis, and asthma.

During the final six months of the study, when the process of categorising patients according to their need for transfer to a particular ward was in use, 675 (16%) were allocated to category 1 (definite transfer to a particular ward), 199 (4%) to category 2 (transfer to a particular firm desirable but not essential) and the remaining 4,432 (80%) to category 3 (to be transferred to whichever ward had an empty bed). Of the 675 patients in category 1, 227 (26%) were transferred to the ward of the cardiology firm, 219 (25%) to the ward in which the firm had a respiratory interest, 107 (12%) were transferred to the ward run by the gastroenterology firm, and 98 (11%) were transferred to the ward of the diabetic firm; 14 (2%) were allocated to category 1 for direct transfer to an HCE ward, but this proportion was artificially low as beds in these wards were frequently not available and it was appreciated that labelling the patients as 'category 1' would necessitate an unacceptable length of stay in the admissions ward.

**Readmissions**

Of the 4,792 patients who were discharged home directly from the admissions ward, 324 (1.9%) were readmitted within one week. A further 179 (1%) were readmitted during the second week after discharge, and 164 (0.9%) and 55 (0.3%) in the third and fourth weeks after discharge.

**Discussion**

Three years' experience of an admissions ward shows that unselected emergency admissions comprise 68% of all the patients admitted under the care of general medical or HCE physicians, that the majority of patients is elderly, that cardiovascular problems comprise the most common diagnoses, and that about a third of patients can be discharged home within 24 hours. This is the workload that has to be managed under the heading of 'general medicine'.

The increase in the number of patients admitted as medical emergencies, which has been documented as a national trend, is reflected by the Nottingham experience. Although government policy is intended to increase the role of primary care, and apparently sees GPs as 'gatekeepers' to hospital service, the fact that the majority of patients bypass their GPs and refer themselves to hospital via an emergency ambulance call means that hospitals are effectively providing primary care. Attempts at Queen's Medical Centre to return such patients to the community immediately by placing a senior physician in the A&E department have failed; the vast majority of patients either need immediate investigation and treatment (albeit sometimes only for a few hours, such as those with chest pain or deliberate self-harm) or they feel too unwell or are indeed too ill, infirm or socially isolated to make refusal of admission a humane option. If these patients are to be managed as efficiently as possible, and at the high standard they
Table 1. The diagnoses of the patients admitted to the admissions ward during the 18 months June 1995 to November 1996.

| Diagnosis                   | Number of admissions | Percentage of total admissions |
|-----------------------------|----------------------|-------------------------------|
| Chest pain                  | 4,865                | 29                            |
| Asthma                      | 1,171                | 7                             |
| Overdose                    | 1,153                | 7                             |
| Stroke                      | 935                  | 6                             |
| Heart failure               | 886                  | 5                             |
| Collapse                    | 783                  | 5                             |
| Infection (not chest)       | 755                  | 4                             |
| Chest infection             | 740                  | 4                             |
| Gastrointestinal bleed      | 731                  | 4                             |
| Falls/social admission      | 657                  | 4                             |
| Arrhythmia                  | 581                  | 3                             |
| Deep vein thrombosis        | 496                  | 3                             |
| Diabetes                    | 462                  | 3                             |
| Abdominal pain/diarhoea & vomiting | 444 | 3                             |
| Headache                    | 369                  | 2                             |
| Fits                        | 292                  | 2                             |
| Other                       | 1,482                | 9                             |

deserve, consultant involvement seems inevitable; it is also important to protect the hospital against the complaints and litigation that are becoming a way of life. Long-term strategies for the management of emergency medical admissions are clearly essential, and these will have to include the involvement of consultant physicians.

It is evident that most emergency medical admissions are elderly patients, and separating patients into different admission streams according to age is clearly meaningless. The report of the Royal College of Physicians suggested that one model for handling emergencies was to have several single-system specialist teams who would take care of patients with problems related to their system. However, the term ‘single-system specialist’ is unhelpful. Health care of the elderly cannot be practised on the basis of age because most emergency admissions are elderly. Physicians with special expertise in the care of elderly patients seldom deal with patients who have single-system diseases: these patients have multiple problems and definitive treatments are often not possible. Similarly, although physicians specialising in diabetes may be concerned with a disease of the endocrine system, its effects on other systems are so profound that to call diabetes a ‘single-system specialty’ seems inappropriate. 'Specialist' would seem a better term than ‘single-system specialist’ for physicians whose work is limited to particular areas (specialties) under the medicine umbrella.

Even patients with disease in only one system do not present neatly labelled with the system involved, and the model suggested by the Royal College of Physicians sidesteps the question of who might make the initial diagnosis and sort the patients out for the different specialist teams. We have shown that disease of the cardiovascular system leads to more emergency admissions than any other, and if we were to follow the single-system specialist model, most physicians in a hospital handling medical emergencies would have to be cardiovascular specialists.

If it is accepted that the increasing numbers of patients with medical emergencies that we have documented do indeed have to be handled by a district general hospital, we need to define very carefully what physicians are expected to do. A specialist needs expertise in special procedures – cardiovascular catheterisation and intervention (what used to be called the ‘type A' cardiologist), endoscopy, bronchoscopy, and so on – and needs the breadth of special experience that allows proper management of rare diseases. This sort of specialty work is predominantly outpatient, where initial sorting is now much better performed by general practitioners than used to be the case, and most of the special procedures can be performed on a day case basis. The specialist needs few beds in a modern hospital for this sort of work. Some specialists do not need or provide techniques that require special training, but to function properly they have to have considerable team support from specialist nurses or dietitians, and need facilities for large-scale outpatient work; diabetes is perhaps the prime example of this. Physicians with special expertise in HCE need another balance of facilities: rehabilitation requires beds with a slow turnover, and HCE requires more therapists and a detailed understanding of, and access to, community facilities.

The specialist can offer a package of management that allows patients to gain maximum benefit from a team best fitted to deal with their particular – usually continuing – problem. Some patients admitted as emergencies clearly require such a package, but many do not and few require it on the day of admission. It would be inappropriate for the physician running an admissions ward to see it as his or her function simply to sort the patients into the care of the 'apparently' relevant specialist: where treatment is properly evidence based (as, for example, in the care of patients with acute myocardial infarction), management is by protocol that can be followed by any physician, or indeed by appropriately trained nurses. The patients who might benefit most from specialists are those whose optimal management remains undefined: for example, all those admitted with ischaemic chest pain without infarction ('unstable angina') could fit into this category, but the number of patients involved and the expense of handling all of them through a single-specialist system would make this model of care impracticable.

Although the need for a limited number of specialists should not be denied, the workload of a DGH, as demonstrated by the Queen's Medical Centre admissions ward, dictates that most physicians will have to remain generalists. In a big DGH such as Queen’s Medical Centre it may be possible to encourage some physicians only to see patients
already defined as needing a specialist, but unless there is a large (and very unlikely) increase in the number of physicians, this will not be possible in most hospitals. The Royal College of Physicians' report The consultant physician: responding to change\(^5\) recommended that the practice of allowing physicians to opt out of acute admissions work should be discouraged, and this seems to be the correct course.

Will the consultant physician of the future have the expertise, or – more important – the interest to handle properly the number of medical emergencies that DGHs have to face?\(^5\) The curricula for higher specialist training seem to leave room for doubt. The curriculum for general (internal) medicine\(^6\) assumes that specialists will have dual accreditation with a specialty. Two years of general (pre-MRCP) training are required, followed by a single year of 'general' experience, which may be undertaken on the firm or team practising the trainee's intended specialty. During that year the trainee must be involved in the acute unselected take once a week, and thereafter he or she must have a continuing commitment to the emergency take-in rota; but the degree of that commitment is not specified, nor is the scale of the daily intake that would be seen to provide appropriate experience. Although it has been suggested that a new type of physician could be trained who would specialise simply in general medicine – that is, in emergency care – the Joint Committee on Higher Medical Training (JCHMT) evidently does not consider this a realistic possibility. If we accept that most DGH inpatient medical work involves emergency admissions, that handling these patients by groups of specialists is unnecessary and inappropriate, and that these patients must be under the care of consultant physicians who individually also have specialty training, then we must ask whether the proposed general internal medicine training component of the specialist registrar programme is adequate.

A study of the workload of a DGH – even a large one with tertiary services such as Queen's Medical Centre in Nottingham – shows that the 'general physician with an interest' is not a dinosaur\(^6\), but is actually totally relevant to current needs.

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