
PERSONAL VIEW

Accident and emergency medicine—the next 25 years

James Binchy

The founders of the Casualty Surgeons Association could scarcely have envisaged, back in 1967, that their successors 30 years later would be giving streptokinase to patients who presented to their departments with acute myocardial infarction. Therefore I shall not try to predict what will be going on in accident and emergency (A&E) departments in 25 years time. What I would like to do is look at some of the issues that face us, suggest how these might develop in the future, and how we might address them.

Increasing work load

The number of new attendances to A&E departments has risen by an average of 2% per year since 1981.¹ The rapid increase in the workload experienced by many A&E departments in recent years has exceeded this and is largely due to a rapid rise in the number of admissions. Most of these are due to the increased numbers of medical admissions. In my department between 1994 and 1997 the number of new attendances increased by 1.4%. (This has been distorted by the opening of a minor injuries unit two years ago.) However over the same period the number of medical admissions via A&E has increased by 30% from 3100 to 4100. Some of this can be explained by an increase in the elderly population with greater health needs. However much may be due to changes in medical practice. Other factors that are greatly increasing our workload and will continue to do so are:

(1) Changes in medical treatment: for example streptokinase in myocardial infarction, use of *N*-acetylcysteine in paracetamol overdoses, continuous positive airway pressure and the use of intravenous nitrates in acute left ventricular failure.

(2) Greater expectation of investigation and intervention by the general population. One study in Nottingham showed a twofold increase in chest pain assessments for myocardial infarction in the A&E department over 10 years.²

(3) Increasing numbers of patients with fractured neck of femur. Where I work the number of fractured femurs coming through the department has increased from 2.8/1000 new attendances in 1990 to 4.2/1000 in 1997. These patients, while not using a lot of medical resources, consume a lot of nursing hours. The

numbers will continue to increase until 2020 by which time the number of people over 75 will have stabilised. There will be a similar rise in the number of patients with Colles' fractures. As these are manipulated in many departments this will consume more resources.

(4) Increasing incidence of deliberate self harm. In Plymouth the number of patients presenting with deliberate self harm or overdose increased by 21% between 1994 and 1997 (from 2406 to 2912).

(5) Increased fear of litigation leads to an increased referral rate, increased investigations, and decreased discharge rate.

(6) Changes in the provision of out of hours primary care

These pressures are likely to increase in the future as new treatments become available for the acute management of such diseases as stroke. Any new treatment for strokes will be extremely time dependent and will most likely involve immediate computed tomography in such patients. This will result in increasing numbers of strokes attending A&E departments for assessment and initial management.

We should be embracing these changes and ensuring that patients get the most appropriate treatment at the earliest opportunity in our departments.

General medicine in the UK appears to be following the same trend as in the United States, with increasing subspecialisation and concentration on outpatient care, with the demise of the acute general physician. This puts greater pressure on A&E departments to make a definitive diagnosis, institute early treatment, and refer to the appropriate subspecialty. It may be that A&E medicine replaces acute general medicine and will fully work up patients resulting in discharge or admission and referral to the appropriate subspecialty. In order to fulfil this role A&E medicine will have to have ready access to laboratory and radiological investigations on a 24 hour basis seven days a week. Many departments abroad operate such a system with regard to patients with chest pain and non-diagnostic electrocardiography. These patients are admitted under their care for observation until myocardial infarction can be confirmed or refuted with the help of biochemical markers. In such a system the A&E department would have to have more

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Accepted 7 August 1998

high dependency beds with the appropriate staffing levels to match.

The last 25 years has seen the transformation of the casualty surgeon to the A&E physician. Will the demise of the general physician complete the transformation of the casualty surgeon to the emergency physician?

Consultant work patterns

It is neither realistic nor economically viable to have a consultant based service in which most patients are seen and treated by consultants. The number of consultants required would be excessive. Most doctors in their 50s and 60s do not want to work night shifts. There is little evidence that the presence of a consultant on site 24 hours a day improves outcome. Unless such work patterns were the norm for consultants in all specialties there would be difficulties in recruiting high quality candidates to training posts.

A&E services should continue to be provided as a consultant led service but with consultants leading the charge. Consultants should spend a significant proportion of their working week on the shop floor, actively supervising senior house officers (SHOs) and seeing patients as necessary. It goes without saying that they should be actively involved with or supervising the resuscitation of all seriously ill or traumatised patients within the department.

The continuing rise in medical patients requiring active intervention within A&E departments means that junior doctors require more teaching and supervision. The reduction in junior doctor hours, protected teaching time, and the more structured approach to training have already and will continue to make great demands on consultant workload. We need to embrace these changes and use them as a tool to increase the numbers of consultant and middle grade doctors. I think that the arguments in favour of having a minimum of three consultants in any department providing a comprehensive 24 hour service are overwhelming.

In departments with more than two consultants (which I think should become the norm) there will be pressure to provide extended consultant presence within departments perhaps until 10 pm or midnight. I think that this has been accepted by the majority in the specialty. However it is important that this is undertaken within some national terms and conditions for such antisocial hours. Time off in lieu is often not practical as most meetings occur during office hours and therefore doctors end up coming in during their time off. It may be that the specialty should refuse to provide such a service until the increased workload is recognised and financed appropriately. One answer to this may be the option of early retirement on full pension at 55, as was the case for medical officers of health.

The present clinical role for consultants seems to be limited to leading resuscitations, running review clinics, and queue busting. Queue shifting is a pragmatic solution to the problem of prolonged waiting times. However it is not necessarily good medicine, can be soul

destroying, and may lead to consultant burn-out. Most doctors didn't go into A&E medicine to spend most of their clinical time seeing sprained ankles and other minor conditions. It is important that we try to define exactly what a consultant's clinical role should be, ensuring that they are involved with a more balanced case mix. It may be that we should define a comprehensive list of patient categories that should have consultant involvement. Perhaps every patient referred to an inpatient team by a SHO should be discussed with a consultant before referral. Ensuring that departments are adequately staffed with experienced doctors will go a long way to enabling consultants to have a more diverse clinical involvement.

The move to multiconsultant departments will no doubt lead to subspecialisation within the specialty. Obvious areas include paediatrics, sports injuries, pre-hospital care, acute general medicine, and possibly toxicology. This can only be of benefit to patients and departments.

Middle grade cover

There is no doubt that, if we are to improve and maintain standards of care to patients, increasing numbers of patients must be seen by trained and experienced doctors. It is not feasible for all of this to be taken on by consultants and so there needs to be an expansion in the numbers of middle grade doctors.

If most departments have three or more consultants the total needed will be 700 to 800.³ Estimating the average consultant life span as 30 years' service, we would then need about 30 new consultant appointments each year. Assuming a five year training programme that gives a total of 150 trainees nationally. These trainees will spend one year on secondments outside the department leaving 120 trainees to provide a middle grade service nationally. Even if we expand to 1000 consultants we are unlikely to need more than 200 trainees to replenish them. These will almost certainly be concentrated in teaching hospitals and the larger centres with some rotation out to small district general hospitals. Obviously it is impossible to provide an adequate 24 hour or even 16 hour middle grade cover with these numbers and therefore most departments will come to rely on other grades, such as staff grade doctors, to fill this role.

Staff grade doctors

In 1990 there were 40 staff grade doctors in A&E. There are now between 250 and 300. If the specialty is to recruit and retain suitably trained candidates for these posts it will have to redefine and increase the profile of the staff grade doctor. It is important that they are not solely used as work horses to fill gaps in the service but are given appropriate teaching, management, and audit roles as well. They must also have protected study time and be encouraged to continue to develop professionally. With the present system and the inability to advance both professionally and financially there is a risk that we could end up with a disillusioned workforce. The new staff grade

contract with its optional points system may go some way to addressing this.

These positions are often perceived as being second rate and filled by doctors who didn't quite make the grade in hospital medicine. We need to be proactive in dispelling this misconception as many are highly trained doctors who have for personal reasons chosen not to pursue a consultant career path. It may be that we need to reinvent the post with a more positive image and a new title such as staff physician.

Part time working and job sharing have become accepted career options and their popularity will probably increase. A&E work is especially suitable for sessional work and we should be actively encouraging appropriately trained and motivated doctors who wish to follow this career option to take up such posts.

Senior house officers

A&E departments will continue to require SHOs to see a large proportion of the patients. However as the staffing levels in A&E expand with more middle grade doctors I expect SHO numbers to remain static and so become a smaller proportion of total staffing requirements. These will remain as training posts for general professional training.

Centralising trauma services and the amalgamation of smaller department

In its report *By Accident or Design?* the Audit Commission suggested closing some A&E departments that were seeing fewer than 50 000 patients a year and were less than 10 miles from an alternative centre.¹ However the case for centralising trauma services has been weakened by the recent findings from the North Staffordshire experience.⁴ Major trauma only accounts for about 0.1% of all A&E attendances and the mortality from road traffic accidents and industrial accidents has continued to fall over the last 20 years. I think that while the management of multiple trauma will remain a priority and continue to consume a large amount of resources it will be a small part of our workload and will probably decrease.

However life threatening medical emergencies, which are 10 times more common than major trauma and now account for 1% of attendances, are likely to increase with an increasingly elderly population at risk. Intervention in medical emergencies is more likely to be time critical and therefore the argument for centralising key services to larger units, with the closure of more peripheral smaller units, is not necessarily valid. There is no acceptable evidence as to what good access is: 10 miles in a rural area may be fine but in a built-up metropolitan area it is another matter!

Minor injury units

The Audit Commission suggested that some smaller departments be replaced with minor injury units. There is also a move to open minor injury units in large urban areas to meet the local needs while major injuries and medical emergencies are admitted to a larger central unit, thus relieving the pressure on the central A&E department. However this is unlikely to

result in cost savings as it may lead to an increase in supply led demand. The marginal cost of treating minor injuries in larger A&E departments is low. If most of these patients are diverted to minor injury units the marginal costs of treating other patients will rise.

However minor injury units can provide a local service which is responsive to the needs of patients. Reports suggest that patients use these appropriately and that their satisfaction with them is high.⁵ These units should not receive ambulance calls and it must be well publicised that they do not treat medical emergencies.

It is important that the specialty continues to maintain standards in A&E care and therefore it should ensure that these units continue to be under the control of consultants in A&E medicine based at the central A&E department. This will provide the opportunity for training and supervision of both medical and nursing staff and allow members of staff to rotate between the departments. It will also facilitate the transfer of care of patients between the two departments. There needs to be good communication, probably with video links, between more remote units.

Nurse practitioners

There is an increasing trend to employ nurse practitioners to see and treat patients with minor injuries and illnesses and so decrease the number of patients who have to be seen by a junior doctor, thus freeing up their time. I am not sure that the rush to develop the role of nurse practitioners in A&E departments is a good idea in the long term. Much of this appears to be based on the push to reduce junior doctor hours by off loading some of their more mundane tasks onto the nursing staff. I know of no A&E department that has a surplus of nursing staff to its requirements and simply giving nursing staff further duties, in the glorified guise of nurse practitioner, is adding to their already overstretched position.

If nurses can be trained on day release courses to assess wounds and prescribe, why do doctors need five years in medical school learning about anatomy and pharmacology?

While there have been some studies looking at nurse practitioners ordering and interpreting x rays I am not aware of any studies comparing the clinical effectiveness or the cost effectiveness of nurse practitioners as compared with junior doctors in A&E departments.⁶ In large A&E departments there are disadvantages to training nurses to practice as nurse practitioners in that it decreases the number of nurses available to undertake nursing roles for the iller patients. In the short term and especially around the changeover periods of February and August it may be very advantageous to have members of the nursing staff who can see, treat, and discharge patients.

Moreover I think that recruiting nurse practitioners in place of SHOs may be short sighted in that it decreases the flexibility available within departments. SHOs are an extremely versatile group generally and can be trained very quickly and adapt to rapidly changing

circumstances. If you replace large numbers of SHOs with nurse practitioners who can see and treat possibly up to 20% of the A&E attendances you may find that you do not have the medical staff available when large numbers of medical or more seriously injured patients attend. The advantage of having SHOs seeing the minor conditions is that when all hell breaks loose the SHOs can be redeployed to working on the major side. If SHOs are not exposed to these conditions they may have no other opportunity to gain experience in them. Having to employ extra nurses at F grade or above decreases the financial argument for such a move.

The major role for nurse practitioners is in minor injury units where they can see and treat a wide variety of minor illnesses and injuries according to strict protocols.

If we want to free up doctors' time we need to train people as physician assistants who will have no medical or nursing role but who will undertake manual tasks such as cannulation, phlebotomy, arterial gas sampling, electrocardiographic recording, plastering, etc, and clerical duties such as contacting inpatient teams, etc. Such a system already operates in the United States and in the military here. These posts must be new posts extra to present staffing levels.

Government white paper

Having read the white paper I am very disappointed by the absence of any concrete proposals as to how they plan to manage the ever increasing demand for A&E services.⁷ There is usual talk of "hard choices and third ways" but the only real references to emergency services were:

- (1) Individual patients, who too often have been passed from pillar to post between competing agencies, will have access to an integrated system of care that is quick and reliable.
- (2) Front line patient services will be backed by more resources and better technology.
- (3) If you are ill or injured there will be a NHS there to help: and access to it will be based on need and need alone.

There is of course the commitment to establish a 24 hour nurse based help line. The government appears to be under the delusion that increased access to health information will decrease demand. While increased access to information may help the public choose the most appropriate service there is no evidence that it will decrease demand and anecdotal evidence suggests that it will increase.

Telephone advice lines

A&E departments have historically provided medical advice via the telephone to the local population. In its recent white paper the government states that it intends to set up telephone advice lines nationally. It has apparently allocated £1/person in England and Wales to set up such a service. This amounts to £250 000 for the average district general hospital population. This is an opportunity for A&E medicine to gain recognition and funding

for a service which is already provided on an informal basis in many areas. A&E departments are in a unique position to provide this service. They are staffed 24 hours a day by experienced nurses who have been trained in triage. There is always a doctor on site and in many cases there is a senior doctor available. The specialty has already drawn up guidelines on how these should be run. There are reports documenting their usefulness and there is some evidence that it may reduce the workload at A&E departments.⁸

If we are to take this forward we must act quickly as more work needs to be done to standardise the service and to ensure that the advice given is safe and consistent. This should be undertaken in conjunction with local GP groups, ambulance services, and health information services.

Hospital admissions unit

There should be a single unit through which all emergency admissions to the hospital come to be assessed by a senior doctor in the appropriate specialty.

Many hospitals have already established medical admissions units as a method of dealing with increasing numbers of general practitioner (GP) referrals and admissions. There are many reports of these working well. There is no doubt that they greatly improve the process of patient care and will no doubt become more widespread. However it is important that they are adequately resourced and are staffed by senior doctors, who have no other fixed commitments for that session, and not viewed merely as a means of avoiding admissions. These units could be expanded to include acute surgical and gynaecological patients. It is common sense to have these units located close to A&E departments and radiology facilities.

These units will provide an invaluable opportunity for training in acute general medicine and a period working in such units should be an essential requirement for training in A&E medicine. Some of these units may well come under the control of A&E physicians. One of the ways that we could greatly improve the relationship between medical assessment units and A&E departments is by the appointment of consultants with shared responsibilities across the two units. It may be the appointment of a consultant physician with a special interest in trauma or a consultant in A&E medicine with a special interest in general medicine. Such posts already exist between intensive care and A&E and apparently work well.

Information technology

Most of the recent advances in computer technology other than advances in radiology have failed to deliver any real benefits to the practice of A&E medicine. Most departments are computerised, some better so than others, but most of these are mainly concerned with collecting information for management purposes and meeting patient's charter standards.

On the whole computer systems will not improve the quality of care in terms of outcome

to the patient but they may greatly improve the process of care. Examples that come to mind are:

- Real time tracking of patients through the department, entering of discharge diagnosis and management, with creation of the discharge letter before discharge. This could either be typed and picked up by the patient or e-mailed to the GP.
- Online ordering of radiography and laboratory investigations.
- Rapid access to previous records and results.
- Online prescribing where the pharmacy receives the order before the patient has even left the A&E department.
- The move to digital radiology will allow rapid access to x rays and joint viewing with a radiologist at another site.

In the long term there is the possibility of direct access to GP records and the possibility of patients carrying SMART cards with their medical histories into which we could put updates.

Audit and quality assurance

At the present time the only way of comparing a department's performance with others nationally is via the patient's charter standards such as triage times and times to see a doctor. While these do have some reflection on the process of care, they take no account of the different case mixes.

The specialty needs to be proactive in defining standards or goals which will be useful in assessing the performance of departments. Many departments are already involved with one of these, namely the Major Trauma Outcome Study. Other parameters that could be measured that reflect both on the quality of care and the clinical outcome are:

- (1) Outcome from cardiac arrests that occur within an A&E department.
- (2) Door to needle time for patients presenting with acute myocardial infarction.
- (3) Percentage of patients with fractured necks of femur who spend more than two hours in the department.
- (4) Number of unplanned return visits.
- (5) Number of patients who did not wait to be seen.

Individual departments should develop quality standards for the management of common conditions presenting to A&E. These may include national standards but would need to be much more comprehensive. Some examples could be:

- All patients who fulfil the criteria receive streptokinase within 15 minutes of arrival.
- All deformed fractures receive analgesia within 10 minutes of arrival.
- All patients discharged with asthma receive steroids.
- All patients who are discharged with fractures receive analgesia.

Staff would be expected to treat patients to these standards and regular audit would highlight cases that failed to reach the accepted standard.

College of accident and emergency medicine

We now have our own intercollegiate faculty with a fellowship examination. However I do not think that we will be accepted as equals with other specialties until we have our own college. It is important to have the prestige of college status if we are to have a major influence on the future development of emergency services.

The specialty is already being discriminated against in that it is not represented on the Specialist Training Authority or the Academy of Royal Colleges.

Service alone will not gain college recognition. We must increase our academic profile if we are to get proper recognition from our peers. If A&E medicine is to advance there must be high quality research within the field. This requires the establishment of full time academic posts within the specialty. Most A&E doctors are not particularly interested in research and we will need to attract academically minded doctors into the specialty. The best way to do this is to have some academic centres with a track record for quality research and attracting grants.

Defining a core service

Many of the roles thrust upon A&E medicine over the last 25 years have been reactive and as a result of failings of other parts of the health service to provide comprehensive cover. A&E medicine has established itself as a unique specialty with its own training programme, examinations, and intercollegiate faculty. It is important that we take a more proactive role in defining what is a core A&E service and how it should be provided. Obviously there will be the need for some flexibility to take account of the variations in the needs of the local population. However while A&E departments will continue to function as a safety net for the health services we must strive to ensure that A&E departments are not used to plug the deficiencies in other aspects of the health service. As clinicians at the interface between primary and secondary care we should be the driving force behind future developments in the provision of emergency care.

The British Association for Accident and Emergency Medicine (BAEM) has, in its document *The Way Ahead*, already defined what should constitute a core service.³ This can be essentially summarised under four headings:

- (1) Assessment, resuscitation, and treatment, by appropriately trained staff, of all acute emergencies be they medical, surgical, or traumatic in all age groups.
- (2) Management of acute injury—less than 48 hours.
- (3) Management of acute pain.
- (4) Management of patients with acute changes in respiratory, cardiovascular, or mental status.

In defining a core service it is often important to define what is not appropriate use of A&E departments. Again this has been addressed by BAEM. The problem, however, is that "Joe

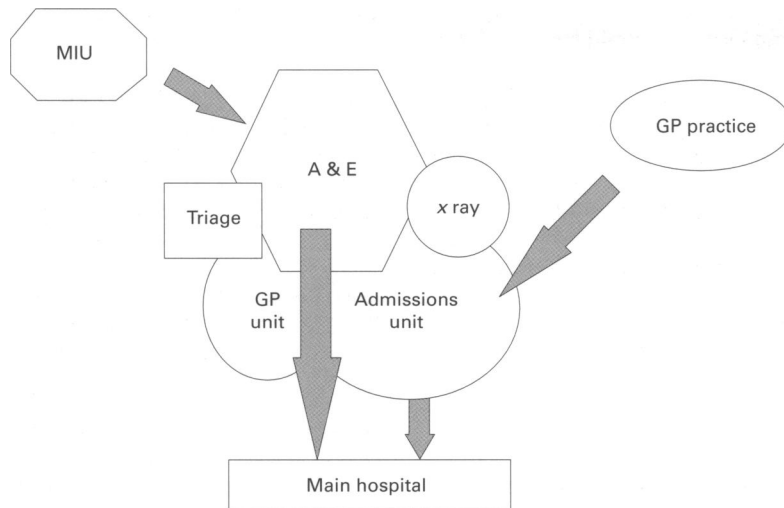


Figure 1 The “one stop shop”; MIU = minor injuries unit.

Public” hasn’t read and is unlikely ever to read *The Way Ahead*. A simple measure may be for the specialty to announce nationally that it does not provide a family planning service and that departments would not stock the morning after pill. This would not involve a great change in practice and would only affect a small group of patients. However it may help to get the message across that the role of A&E is not to provide a primary care service.

Perhaps we should take this a stage further as there appears to be an ever increasing demand on A&E services. The specialty could announce that it was no longer prepared to see and treat patients with conditions more than five days old, unless they were accompanied by a letter from a GP. The cut off period could then be reduced by one day each year until we reached the 48 hour threshold. Of course we would not refuse to see such patients but they would be informed at triage that they would have to wait until the more acute patients had been seen. Again this may not greatly decrease our workload but it may get the message across as to what is the role of an A&E department. This would have to correspond with improved access to primary care services.

Primary care/inappropriate attenders

The first question is from whose point of view are these inappropriate. Most of the patients that we classify as “inappropriate attenders” do not think their attendance is inappropriate. They may have a minor medical condition but they do not perceive it as such and until they are reassured to the contrary their attendances

are probably appropriate. Studies have shown that a significant number of these patients end up being admitted to hospital.⁹ Many are prepared to wait three to four hours or longer to be seen.

The size of this group of patients has been estimated at between 7–70% depending on the source. More realistic figures are between 25–30%, though there is wide geographical variation. However the term “inappropriate attender” is probably inappropriate and it is best to think of these patients as having primary care problems—that is, they are in an inappropriate place. Many of these patients attend because of the difficulty in getting access to primary care, especially out of hours.

Whether we like it or not the “inappropriate attender” is here to stay. I do not think the way to tackle this problem is by trying to decrease the demand side. There have been studies in the United States that have showed that redirecting primary care patients back to the community does not have any significant impact on the A&E workload. The way to tackle this is to identify this group of patients and to accept that they have a need. It has already been demonstrated that this need may be more efficiently met when the patients are seen by more experienced doctors.¹⁰ In using this we should be pushing either for the employment of more consultants or staff grade doctors in the A&E department.

In departments that have an excessive number of these patients, such as inner city departments, there may be an argument for employing GPs to see these patients. However I think it would be best to take this one step further and open adjacent primary care units.

Single point of access to emergency services: the “one stop shop”

The answer to the problem of inappropriate attenders and out of hours primary care cover may be to embrace the “one stop shop” model (see fig 1). A&E departments, primary care clinics, and admission/assessment units located together on one site. These would be separate departments, probably with a common entrance and triage area but with close links allowing for the easy transfer of patients and staff between them. There would need to be 24 hour access to high tech investigations such as computed tomography, venography, biochemistry, etc. Patients would be worked up and a definitive diagnosis made before admission or discharge. Under such a system patients presenting with chest pain would be admitted when a myocardial infarction was confirmed by electrocardiography or by biochemical markers. Patients with non-diagnostic electrocardiograms or biochemistry would have an exercise stress test before discharge or within 24 hours. Similarly patients with an acute wrist (?scaphoid) injury would have bone scan or computed tomography.

If such units were to function properly they must have their own support services such as social workers, physiotherapists, and occupational therapists working on an extended hours basis.

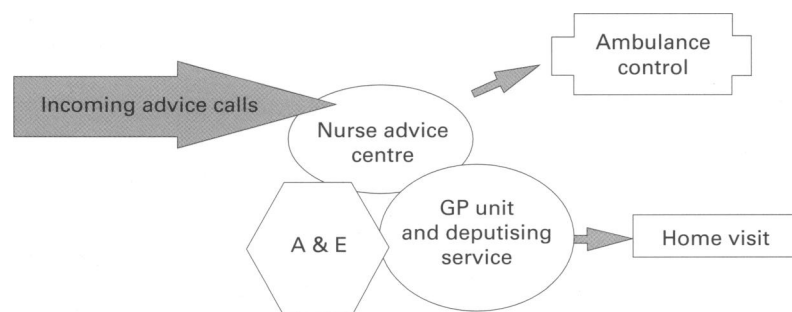


Figure 2 Out of hours telephone advice.

Similarly the nurse telephone advice service and primary care out of hours service would be based at the same centre (see fig 2). Patients would ring to seek medical advice. If it was thought that the patient needed to see a doctor at that time they would be instructed to attend either the primary care centre or the A&E department. If it was felt that a doctor should make a home visit this would also be arranged from the primary care centre. Where it was felt that the caller warranted emergency care an ambulance or a paramedic response vehicle would be dispatched.

Conclusion

I have given a personal view of some of the issues and challenges that face the specialty. This is by no means comprehensive and there are many other challenges facing us. I do not claim to have any of the answers. However I think it is important that we address these issues and be proactive in determining the

future provision of emergency care. I hope to have raised some points for further discussion.

- 1 Audit Commission. *By accident or design? Improving A&E services in England and Wales*. London: HMSO, 1996.
- 2 Williams B, Nicholl J, Brazier J. *Health care needs assessment: accident and emergency departments*. Sheffield: Department of Public Health Medicine and Sheffield Centre for Health and Related Research, University of Sheffield, 1996.
- 3 British Association for Accident and Emergency Medicine. *The way ahead*. London: BAEM, 1997.
- 4 Nicholl J, Turner J. Effectiveness of a regional trauma system in reducing mortality from major trauma: before and after study. *BMJ* 1997;315:1349-54.
- 5 Dale J, Dolan B. Do patients use minor injury units appropriately? *J Public Health Med* 1996;18:152-6.
- 6 Salt P, Clancy M. Implementation of the Ottawa ankle rules by nurses working in an accident and emergency department. *J Accid Emerg Med* 1997;14:363-5.
- 7 Secretary of State for Health. *The new NHS*. London: Stationery Office, 1997.
- 8 Srinivas S, Poole F, Redpath J, et al. Review of a computer based telephone helpline in the A&E department. *J Accid Emerg Med* 1996;13:330-3.
- 9 Dale J, Green J, Reid F, et al. Primary care in the accident and emergency department: 1. Prospective identification of patients. *BMJ* 1995;311:423-6.
- 10 Murphy AW, Bury G, Gibney D, et al. Randomised controlled trial of GP versus usual medical care in an urban accident and emergency department: process, outcome, and comparative cost. *BMJ* 1996;312:1135-42.