



## Medical audit

# The next millennium – are we becoming emergency surgeons? A seven year audit of surgical and urological admissions in a rural district general hospital

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Traditionally, the in-patient workload of consultant surgeons has been elective surgery with a smaller number of emergencies initially managed by the junior staff. Studies have already shown dramatic changes in emergency admissions to surgical specialities since the early 1980s. Figures from Scotland showed an increase of 2% per annum in the 1980s rising to 3% per annum in the early 1990s.<sup>1</sup> In general surgery there was a 9% increase in the North West over 4 years between 1991/92 and 1995/96.<sup>2</sup> In a district general hospital in Wakefield, the figure was 28% in from 1995/96 to 1996/97.<sup>3</sup> The widespread adoption of day-case surgery should also have reduced the elective in-patient workload. These two changes should mean that consultant surgeons now manage more emergency patients and, if this continues, their working practice should now reflect these changes.

The North West study also showed that there was an increase in the number of patients more than 85 years of age admitted but did not analyse what proportion of them were surgical emergencies.<sup>2</sup>

Our study was undertaken to assess whether this trend in emergency admissions persists and to assess the

impact of an ageing population on surgical/urology practice in a rural district general hospital.

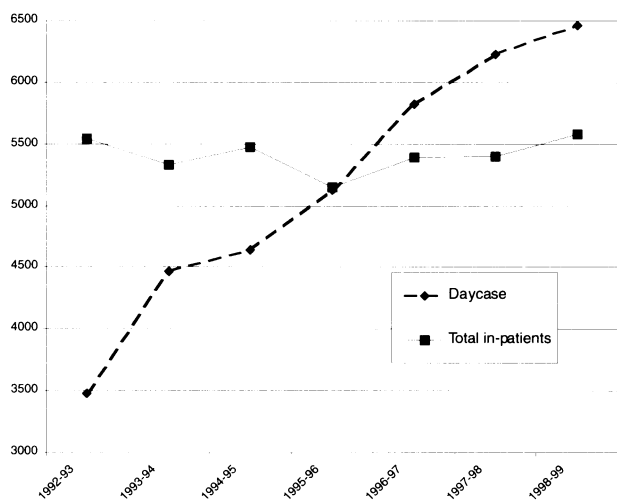
## Patients and Methods

The Department of Surgery in Gwynedd had six general surgeons with two having an interest in urology. It serves a rural population of about 230,000. Both surgical and urological patients were admitted under the consultant on call. In 1996, the department divided after the appointment of a urologist. Since then there have been six general surgeons and two urologists. All emergencies are still admitted by the general surgeons and those with urological problems subsequently transferred. Between July 1994 and February 1996, one of the surgeons was on sick leave and then retired. Locum cover was provided in the later part of this period and his replacement began in February 1996.

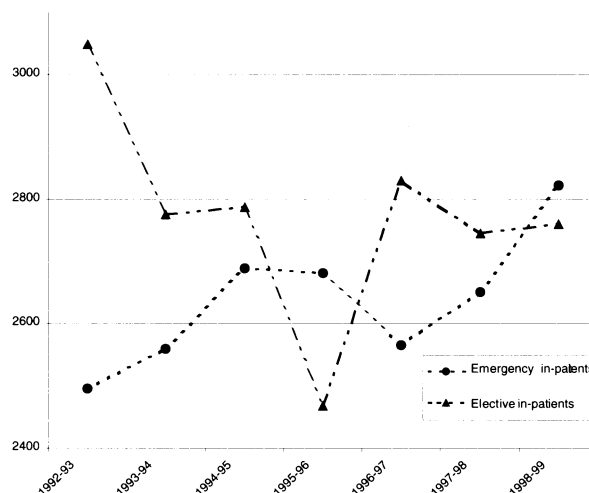
Data were collected from PIMS (Patient Information and Management System), the hospital data base,

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**Figure 1** Comparison between the total number of in-patients (elective and emergency) and the day-cases over 7 years.



**Figure 2** Comparison between the emergency admissions and the elective admissions over 7 years.

established in 1992. These data were validated against MICROMED, the surgical database and also a diary of emergency admissions kept on the wards.

Details of the number of admissions were obtained for the 7 years from April 1992 to March 1999. The total number of elective and day-case admissions were recorded for comparative purposes. Detailed analysis of the monthly breakdown, age groups and the length of stay was also recorded.

A more detailed investigation of patients aged 90 years or over was undertaken after the initial analysis, looking at the number requiring surgery and the overall outcome.

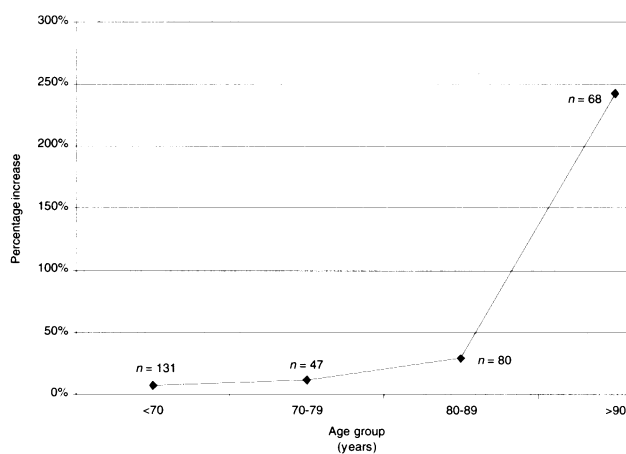
**Results**

*Surgical workload*

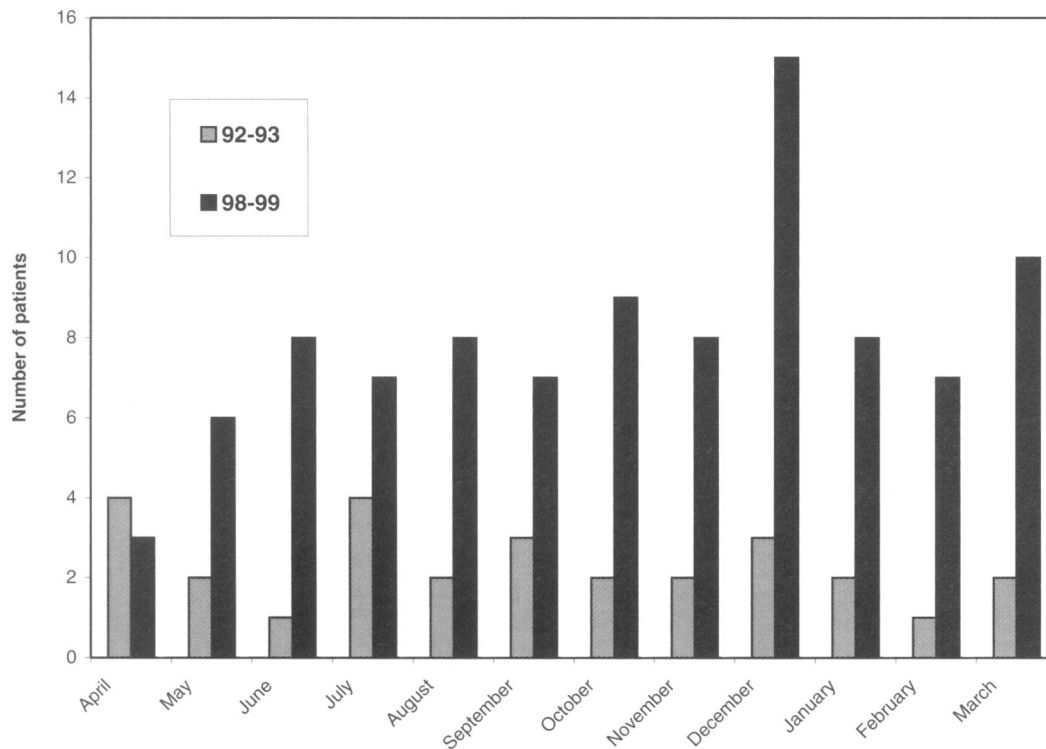
The total number of admissions rose from 8974 to 12,007 over the 7 years, representing about 1500 patients for each consultant. The number of day-cases rose markedly during this period from 3476 to 6461 (86%). Day-cases accounted for 54% of elective admissions in 1992/93 and 70% in 1998/99 (Fig. 1). The total number of in-patients (elective and emergency admissions) fell from 5544 to 5334 after the initial change to day surgery in 1992/93 and it remained relatively stable at 5400 cases per annum. It is now beginning to rise (5396 in 1998 and 5582 in 1999) in spite of a continued increase in day-cases. There was only a modest fall in elective in-patients ( $n = 273$ ) in 1993/94 in spite of a marked rise in day-cases ( $n = 989$ ). There was a fall in the number of

elective in-patients in 1995/6 due to the loss of one consultant. Over the 7 year period there has been a decline of 9% overall but the numbers have been stable at around 2750 for the last 2 years (Fig. 2).

The number of emergency admissions rose by 13% over the 7 year period and continues to show an increasing trend. Emergencies now exceed elective admissions reversing the pattern seen in 1992. For those aged less than 70 years, the increase was 7%. For those in the age group 70–79 years, the increase was 11% and for those aged 80–90 years, it was 29%. There was a 240% rise in the number of those aged 90 years or over (Fig. 3). Males were more likely to be admitted as emergencies



**Figure 3** The percentage increase in emergency admissions in different age groups between 1992/93 and 1998/99;  $n =$  difference in the total number of admissions between 1992/93 and 1998/99.



**Figure 4** Seasonal changes and comparison in emergency admissions of patients aged more than 90 years in 1992/93 and 1998/99.

and the ratio remained unchanged over the years in spite of the increase in admissions (ratio 13:11). The proportion of patients undergoing surgery during an emergency admission has also fallen from 53% in 1992/93 to 36% in 1998/99.

There was no seasonal trend in most age groups but there was a 2-fold increase in admissions in December for those patients aged 90 years or over in 1998/99 (Fig. 4). Fifteen patients were admitted with an average length of stay of 11 days. In our hospital this would be half a surgical ward.

#### *Length of stay*

For patients below 70 years, the mean length of stay was 5.7 days and 6.1 days for the year 1992/93 and 1998/99, respectively. It was twice this for patients aged > 70 years, but it was not dissimilar to those of 90 years or over (11.7 and 11, days respectively).

#### *Analysis of patients 90 years old or over*

Twenty-seven patients were admitted in 1992/93 and four (15%) died. There was only one surgical death following a femoral embolectomy. The other three died of medical causes.

Only 3/27 (11%) had surgery. Of the remaining two patients, one with diabetes had an amputation and the other had repair of a femoral hernia.

Ninety-five patients were admitted in 1998/99 and 17 (18%) died. None of these died after surgery although two died of a perforated viscus with peritonitis but they did not undergo operation. One patient died of a bleeding duodenal ulcer. The remaining deaths were from pulmonary disease (6), malignancies (4) or cardiac and vascular disease (4).

Only three (3%) had surgery. One had a cholecystectomy for empyema but this patient also had liver metastasis not detected by ultrasound. Two had strangulated hernias repaired – one femoral and one inguinal.

Two patients required ERCP for gallstones and seven were catheterized for hematuria or retention.

#### Discussion

This study has shown that the number of surgical/urological emergencies continues to rise at a rate of about 2% per annum in our rural district general hospital. In Wakefield, an urban hospital, a rise of 28% can occur within one year.<sup>3</sup> The adoption of day surgery helped to reduce the impact of the greater demand for

in-patient beds in the early years, but this was not marked. Since then, day surgery has increased, and continues to do so at a rapid rate, whereas elective activity has remained relatively stable at around 2750 per annum. The two now appear to be independent. The numbers of emergencies now exceed the number of elective in-patients. A similar pattern was seen in Wakefield,<sup>3</sup> and in three of four North Eastern district general hospitals.<sup>4</sup> This evidence suggests that emergency cases in most hospitals now exceed elective admissions and that the numbers continue to rise. When day-case surgery was encouraged, we moved more elective cases from in-patients to day-cases. We now have more emergencies than elective in-patients and we should now consider adjusting our working practices to meet this new and ever increasing demand. We may need to reduce our elective commitments to meet this rising tide of emergencies.

It has long been forecast that the number of elderly people will rise with some estimates of 50,000 being more than 100 years old by the year 2000. Traditionally, surgery was reserved for younger and fitter patients but this study has shown a marked rise in the admission of patients who are 90 years old or more. They remain in hospital for almost twice as long as those less than 70 years and, in this study, only 3% need or are fit enough for surgery. One in five will die during their stay. The extra in-patient beds released by the transfer to day-surgery are no longer sufficient to meet the increased demand of these elderly patients who stay in hospital longer. This rise in the number of elderly patients will need a greater provision of surgical beds and more support from other allied professionals, *e.g.* social workers, physiotherapists, *etc.*

Elderly patients are more difficult to manage as they frequently have co-morbidity and do not manifest the classical signs of illness. Some may be unfit for surgery and will inevitably die of their disease even though it is surgically correctable. The decision not to operate is very

difficult for a trainee and they will need more consultant supervision. This again supports the concept of greater consultant involvement in emergency surgical practice.

## Conclusions

This paper has highlighted an increasing problem for surgery. Emergency admissions are forming the greater part of our work load and the patients are older. We should consider adjusting our working practices to address these changes. Some units have now stopped elective work when they are on call and perhaps this should become standard practice. The greater care needed for the patients admitted as emergencies will inevitably mean that we are less able to meet the rising demand for elective surgery. Although the regional hospital model suggested by the Royal College may be the solution for the future, these problems need to be addressed now. If we adopted this policy there will be a fall in the amount of elective surgery performed. This could be prevented by consultant expansion if accompanied by appropriate facilities. Similar studies need to be undertaken in every hospital to help with future planning.

## References

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