

# Out-of-hours radiographs: the effect of resident registrar cover

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## SUMMARY

A retrospective study was undertaken to assess the effect of the presence of a resident compared with a non-resident registrar on the selection of patients for radiography outside normal working hours at a north London district general hospital accident and emergency (A&E) department. During periods when the registrar was resident there was a significant reduction in the proportion of patients referred for radiography.

**Key words:** emergency radiography

## METHODS

In this retrospective study, four Sundays (09.00 h Sunday morning to 09.00 h Monday morning) were chosen for analysis. During two of the periods of 24 h (Sundays) the A&E registrar was available within the department for direct consultation. During the other two periods of 24 h the A&E registrar was not physically present in the hospital but was available by telephone.

The A&E notes for patients admitted during these two periods were reviewed and the indications for the radiographic examination assessed. The assessment of the appropriateness of the radiograph was made according to analysis of the notes under the following headings:

- (1) Clinical findings on history and examination compared with departmental guidelines.
- (2) Age of the patient.
- (3) Time of day of the request.

Figures were thus obtained for the proportion of appropriate radiographic investigations during each 24-h period. Statistical comparison was made using the non-parametric  $\chi^2$  test of independence.

The study was entirely retrospective by analysis of the A&E notes. During the periods of the study, when an A&E registrar was resident, they were physically present in the A&E department for the

24-h period and consequently were available for direct consultation with the senior house officers (SHOs) and were in a position to examine selected patients following assessment by the SHO.

Although no direct attempt was made to assess the comparability of the patients attending the department on the various study days, the patients were drawn from a catchment area of over 290 000 and there were no apparent unusual factors present on any of the individual study days to suggest that a bias in the type of patient presenting on any one of the days had been introduced.

## RESULTS

During the four periods of 24 h under investigation, a total of 558 patients attended the A&E Department at Edgware General Hospital. Of these, a total of 144 (26%) attenders required radiographic investigation.

Comparison of the figures for the proportion of attendees having radiographs taken during the period when an A&E registrar was resident with those for the period when they were non-resident (Table 1) show that there is a marked drop in the proportion of patients having radiographs when a registrar was resident. A total of 22% of patients had radiographs taken when the registrar was resident as against 30% when they were non-resident. This is statistically significant at the  $P < 0.05$  level.

The figures comparing the proportion of the radiograph requests assessed as being appropriate according to retrospective review of the notes show a comparable variation. During the periods when the registrar was resident, the proportion of the requests deemed appropriate was 81%. This contrasts with a figure of 60% when the registrar was non resident. These results are statistically significant at the  $P < 0.025$  level.

Our results suggest that the ready availability of more experienced staff in the A&E department strongly influences the referral pattern, with a lower

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	No. of patients	No. of patients radiographed	No. of radiographs indicated	Percentage indicated
Resident registrar	285	63 (22%)	51	81
Non-resident registrar	273	81 (30%)	49	60

**Table 1.** Proportion of attendees having radiographs taken when the registrar was resident compared with when the registrar was non-resident

proportion of patients being radiographed, and a higher proportion of the radiograph requests being deemed appropriate.

## DISCUSSION

The question of selection of patients for radiographic investigation in the A&E department has been the subject of considerable debate. It is clearly desirable to limit the proportion of patients who are radiographed to the minimum, providing this is consistent with ensuring that clinically significant lesions are not missed. A&E officers at Edgware attend a 3-day induction course, which includes contributions from the Radiology Department, and are issued with guidelines, based on those developed by the Royal College of Radiologists<sup>1</sup>, on selecting patients for radiography. The guidelines together with feedback from the weekly A&E radiology meetings assist A&E officers in selecting appropriate patients for radiography. The development of clinical guidelines has been widely and successfully used to improve the selectivity of A&E radiograph referral.<sup>2,3</sup> Auletta *et al.* have stressed that the key to achieving low radiograph referral rates while simultaneously identifying significant lesions, lies in accurate clinical examination performed by experienced clinicians.<sup>4</sup>

Our study suggests that there is an improvement in patient selection for radiography within the A&E department when more experienced A&E staff are directly available for consultation within the department outside normal working hours. This finding would seem reasonable in the light of Auletta's conclusions. Our results imply that consultation between SHOs and the registrar, and their subsequent examination of some patients, influences patient referral for radiography even if registrars are not directly selecting all the patients themselves.

Our figures show that on average 26% of all new A&E attendees at Edgware General hospital are referred for radiographs. This is significantly lower than other figures of 46.7 and 48.2 quoted elsewhere for the radiography of all A&E attendees after the introduction of clinical guidelines.<sup>5,6</sup> The previous studies quoted above were performed in 1976 and 1985 respectively. Our lower figures, obtained in 1992, may reflect the trend towards improved in-house training for A&E officers, greater supervision of their activities by seniors and increasing restriction of radiography for such indications as fractures of the nasal bones, coccyx and toes.

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