shown to be unnecessary.² In our study the value of anteroposterior radiographs was limited to identifying neurocentral joint disease, scoliosis, and cervical ribs (these were the only abnormalities in seven of the 151 patients (<5%)) and assessing the facet joints, although in most cases changes were also detectable in the lateral radiographs.

We consider that the additional information gained from the anteroposterior view is limited and, in terms of both cost to the NHS (H M Saxton, unpublished data) and radiation given to the patient, does not

justify its routine use in patients with cervical pain of non-traumatic origin. We think that examination of such patients could be limited to the single lateral radiograph in the first instance unless a cervical rib is suspected.

- 1 Heller CA, Stanley P, Lewis-Jones B, Heller RF. Value of x ray examinations of the cervical spine. *Br Med J* 1983;287:1276-8.
- 2 Macpherson P, Macpherson ELS. Cervical spondylosis—routine oblique films are unnecessary. *Health Bull Edinb* 1981;32:89-91.

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Unnecessary x ray examinations

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The risks of radiographic examinations have been highlighted recently.¹ Most patients referred by their general practitioners to hospital clinics have already had a radiographic examination, but the films may not be available when the patient presents at the clinic and repeating the examination is often the most expedient solution. We present the results of a survey which defines the magnitude of this problem at our hospital.

Patients, methods, and results

At 45 consecutive orthopaedic clinics for new patients the details of any relevant x ray examinations carried out by the patients' general practitioners and the availability of the films were recorded. If the films were not available the action taken was noted. The type of centre where the examination was performed was identified.

Of the 420 patients seen, 141 had had 163 radiographic examinations arranged by their general practitioners, but only nine patients had x ray films available. Of the 132 patients whose x ray films were not available, 125 had their examination repeated, one patient was given a new appointment, and the remaining six either did not require radiographs or the report was adequate.

x Ray examinations had been performed in health centres for 92 patients and in hospital departments in the district for the others. Radiography of the lumbo-

sacral spine accounted for a third of the repeated examinations. Table I shows the results of a simple cost analysis. A third of all patients had repeat examinations because the original x ray film was not sent despite their request. A radiologist's report was available in nearly half the cases without x ray films, but this was considered inadequate as radiography is an integral part of the orthopaedic examination.

Comment

The regulations on ionising radiations state that for any radiological examination there must be a net benefit to the patient and that exposures must be kept to a minimum.² A duplicate radiograph does not fulfil these criteria. The risk to the individual of a repeat examination seems low: examination of the lumbosacral spine affords the patient an excess risk of 25×10^{-6} of developing neoplasia, but the genetic risk must also be added. As a third of all patients attending the orthopaedic clinic had an unnecessary duplicate examination the increase in the population risk is appreciable and a cause for concern.

There is no evidence that general practitioners should have their radiological facilities curtailed. The specialist ordered most of the repeat examinations so they can be assumed to be appropriate for effective patient management. A report of an examination alone is generally insufficient for adequate orthopaedic assessment; this should be made clear to doctors referring orthopaedic patients.

As a total of 3267 patients attended the orthopaedic outpatient department in the previous year in our hospital the extrapolated annual excess cost of the repeated radiographs is approximately £26 000. A full cost-benefit analysis has not been undertaken.

A considerable financial saving and a reduction in the population risk can be made by improved administrative arrangements and greater coordination between hospital and community services. Patients in the private sector who are made responsible for their own x ray films rarely lose them. Introducing such a system to NHS patients is one solution.

- 1 Russell JGB. How dangerous are diagnostic x-rays? *Clin Rad* 1984;35:347-51.
- 2 National Radiological Protection Board. *Living with radiation: the system of radiological protection*. London: HMSO, 1987:27-32.

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Cost of repeated x ray examinations

	No of examinations performed with results unavailable*	No of repeat examinations	Cost (£)†	
			Each examination	Total
Cervical spine	11	11	20.00	220
Lumbar spine	56	54	26.00	1400
Knee	41	41	20.00	820
Ankle or foot	21	17	20.00	340
Other	34	33	20.00	660
Total	163	156		3440

*Some patients had more than one region x rayed.

†Based on DHSS category 2 changes.