

Should nurses be allowed to request X-rays in an accident & emergency department?

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SUMMARY

A prospective study was carried out during the month of November, 1990 in the A&E Department, St John's Hospital, Livingstone in order to assess the extended role of the A&E nurse and their ability to request X-rays prior to patients being seen by a doctor.

A total of 579 randomly selected patients were triaged by A&E Department nurses. Almost 3/4 of these patients were X-rayed at the request of the triage nurse. Less than 7% of these X-rays were considered to have been unnecessary by the doctor who subsequently managed the patient. Of those patients who had an X-ray after seeing a doctor, more than 90% fell within the X-ray triage criteria but had not had an X-ray requested by the triage nurse.

Overall, nurses were shown to request X-rays correctly and efficiently with the result that patients had to spend less time in the A&E Department.

INTRODUCTION

A system of triage by a trained nurse has been introduced to the A&E Department of St John's Hospital during 1990. An average of 29,000 new patients are seen each year and approximately 80% of these patients are triaged. Each patient has to wait for an average of 6.4 min from the time they arrive at Reception until they are seen by a triage nurse.

Within the scope of triage, patients are categorized into 3 groups:

- (1) Red — requires immediate attention
- (2) Blue — requires urgent attention
- (3) Green — can wait

As part of the triage process, nurses are allowed to assess a patient's need for

an X-ray and, within a given set of criteria, may request this X-ray prior to the patient being seen by an A&E doctor.

The criteria are: (1) Patients with minor head injuries and a history of loss of consciousness or amnesia; (2) Patients with a history of skeletal trauma *and* local bony tenderness on examination; (3) Patients with a history that suggests possible retention foreign body e.g. glass; and (4) Patients with a letter from their General Practitioner requesting an X-ray.

This system was introduced with considerable co-operation from both the Radiologists and Radiographers in the hospital. Ultimately all X-rays ordered by nurses were considered to be ordered on behalf of the Department Consultant, and X-ray request slips could be queried by the X-ray Department staff. However, nurses were excluded from ordering X-rays of the chest, abdomen or spine as it was thought too difficult to define triage criteria to include these patient groups.

The study was designed to assess whether nurses would order the correct X-rays on appropriate patients and whether the process would reduce the amount of time patients spent in the Department compared with those who had their X-rays requested by doctors along the more traditional lines.

METHODS

The study was carried out during November 1990. For each patient that was triaged during this period a single form was completed by the nurses. The form asked patient details, date and time they were triaged, whether or not an X-ray was ordered and, if so, which view.

The form was then passed with the patient's notes to the A&E doctor who managed the patient. The doctor completed one of two further parts of the form: (a) *Part One* — if an X-ray had been ordered, whether or not it was the correct view, whether or not they would have ordered it, whether or not it was essential for the treatment, the time the patient was seen and the time the patient left the Department or;

(b) *Part Two* — if no X-ray had been ordered, whether or not the doctor ordered one having seen the patient and whether or not the injury fell within the triage criteria and, therefore, could have been ordered by the triage nurse. Times that the patient was seen and left the department were also included.

RESULTS

During November 1990, 2381 new patients attended A&E. A total of 1833 (77%) were triaged and 579 patients had their proforma completed and were, therefore, included in the study.

A total of 493 patients were X-rayed (515 X-rays including those patients who required additional views). A total of 416 X-rays were ordered by the triage nurse and a further 77 patients had X-rays ordered by doctors.

Only 27 (6.5%) X-rays ordered by nurses were thought to have been unnecessary.

In 71 cases of X-rays ordered by doctors the patient fell within triage criteria and, therefore, the X-ray could have been ordered by the triage nurse. Twenty-two patients required additional X-rays to be performed after seeing the A&E doctor either because the view ordered by the nurse did not demonstrate the problem, or because an additional injury was discovered on examination of the patient.

In order to evaluate the benefit of nurses pre-ordering X-rays, a group of common A&E injuries were divided into 2 groups:

- (1) Those who had an X-ray requested by a triage nurse prior to being seen by an A&E doctor; and
- (2) Those who had an X-ray only after seeing a doctor but who fell within the triage criteria (drawn from the group of 71 patients mentioned previously).

Patients in each group were matched as closely as possible in diagnosis and time of day that the patient was seen in A&E in order to minimize variables. The two groups were compared on two time categories:

- (a) Post-triage time – considered to be the time from when the patient was triaged to when they left the Department; and
- (b) Post-doctor time – from when the doctor first saw the patient to when they left the Department. (Figs 1 & 2).

For the different injuries the savings of time in both categories can be seen in those groups where the patient had a triage X-ray (Table 1).

For all categories of injury, significantly less time was required for the diagnosis and treatment of patients who had received an X-ray as part of the triage process. This ranged from a mean saving of 8.5 min in post-triage time of sprained ankles to a mean saving of 60.5 min in post-triage for an injury including sprained knee ligaments.

DISCUSSION

The above results show that nurses, after proper instruction, are very capable of requesting the appropriate X-ray within a given set of criteria and undertake very

Table 1. Mean time saved by triage X-ray.

Injury	Post-triage time	Post-doctor time
Sprained ankle	8.5 min	10.5 min
Scaphoid fracture	21.5 min	8.5 min
Ankle fracture	20 min	40 min
Clavicle fracture	10 min	22 min
Sprained knee	60.5 min	27.5 min
Soft tissue injury foot	23 min	21.5 min

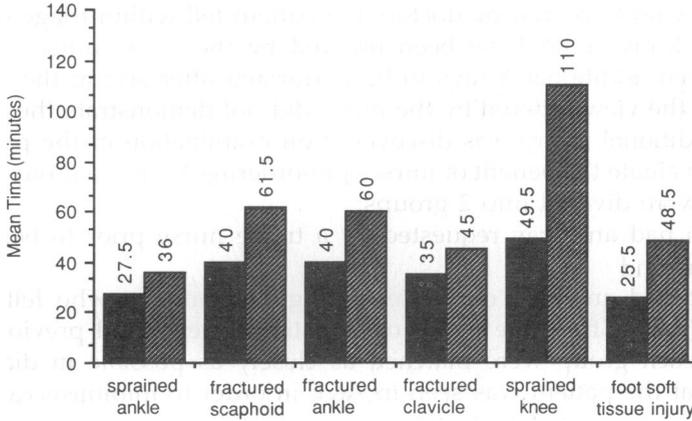


Fig. 1. Post-triage time, ■ triage X-ray, □ doctor X-ray.

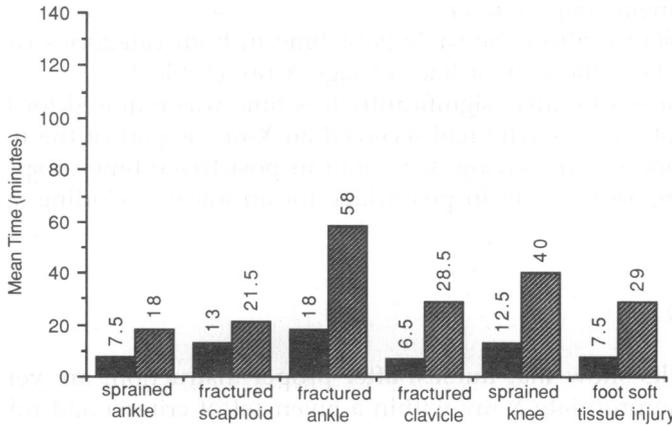


Fig. 2. Post-doctor time, ■ triage X-ray, □ doctor X-ray.

few unnecessary investigations. The positive benefits are obvious from both the patient’s point of view, in that they have to spend less time in the Department, and also for the doctors in reducing the amount of time they are required to spend on any particular patient.

The A&E Department at St John’s would therefore advocate the widespread use of both triage and the extended role of the nurse to improve the service available to patients in times when facilities are already stretched by financial constraints.

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