

Differences in priorities assigned to patients by triage nurses and by consultant physicians in accident and emergency departments

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Abstract

Study Objectives—To investigate whether the greater urgency assigned to accident and emergency patients by triage nurses than by accident and emergency doctors was uniform across all patient groups.

Design—Patients attending an accident and emergency department between 8.00 am and 9.00 pm over a six week period were assessed prospectively for degree of urgency by triage nurses, and retrospectively for urgency by one of two consultant accident and emergency doctors. Patients were grouped according to their clinical mode of presentation.

Setting—An accident and emergency department of a district general hospital in the Midlands, UK, in 1990.

Patients—1213 patients who presented over six weeks.

Measurements and main results—As might be expected, patients' conditions were assessed as being more urgent prospectively than retrospectively. This finding, however, was not uniform across all patient groups. Nurses' assessments of urgency tended to favour children and patients who presented with eye complaints and gave less priority to medical cases, particularly those with cardiorespiratory symptoms.

Conclusions—These findings have implications for all those involved in the organisation of triage systems and in the training of nurses in accident and emergency departments. It is essential that judgements on how urgently patients need to be seen are made in a completely objective manner.

that triage may extend waiting times for all patients, particularly those in most urgent need of attention.³ We have further shown that it is the queuing problems subsequent to triage that cause delays, rather than the triage process itself.⁴ Our own and other studies⁵⁻⁹ show that nurses prefer to err on the side of safety and consistently give higher priorities than doctors which may cause a "bottleneck" in the accident and emergency department.

To investigate how this practice might be modified to achieve the desired benefits, we decided to see whether this tendency to higher prioritisation by nurses was uniform across all patient groups or affected some groups more than others.

The triage process at our accident and emergency department

The triage process at our study site was normative in character, and the triage categorisation system is given below:

CATEGORY ONE

Severe illness or injury requiring immediate care to combat danger to life or limb, and where a delay would result in deterioration.

CATEGORY TWO

Illness or injury requiring treatment within 60 minutes, but where the delay poses no threat to life or limb. The patient is not in severe pain, and poses no threat to self or others.

CATEGORY THREE

Injury or illness requiring treatment within 60-120 minutes, but where the delay poses no threat to life or limb. There is no threat of permanent disability or illness.

CATEGORY FOUR

Where a delay of 24 hours would make no appreciable difference to the clinical condition, and where subsequent referral may be made to the appropriate alternative specialty.

Our study department, like most others, was divided into different areas which performed different functions. The basic division was into major and minor areas. The major area served patients who had suffered major accidents, patients who required resuscitation, patients whose condition was likely to deteriorate and who required observation, and patients who needed to lie down while waiting, for example, those with back injuries. Patients in triage category one were routed automatically to this area. The minor area

J Epidemiol Community Health 1993; 47: 00-00

"Nurse triage" refers to the formal process by which there is early assessment of patients attending an accident and emergency department by a trained nurse, in an attempt to ensure that patients receive appropriate attention in a suitable location, and with the requisite degree of urgency.^{1,2} Systems for deciding degrees of urgency may be based upon explicit criteria (for example, listing specific sites of injury, symptoms, and signs) or may be more normative in character (for example, assigning patients to priority groups according to the maximum time that it is estimated they can wait to be treated, or merely by placing them in rank order).

The benefits claimed for triage include a reduction in waiting times, especially for more urgent patients, and increased patient satisfaction. Our recent work questions these claims and shows

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Accepted for publication
November 1992

was divided into several cubicles for the treatment of minor injuries, and also contained specialist paediatric and ophthalmic treatment areas. All patients with eye injuries were routed to the ophthalmic area, regardless of urgency.

Method

The population described in this paper forms a subset of that described in our earlier work.³ All patients attending an accident and emergency department between 8.00 am and 9.00 pm over a six week period were recruited into the study except those who attended either by appointment (for example, to fracture clinics) or by prior arrangement for admission as inpatients. We have reported previously³ that only 1213 of 2515 patients who attended during periods when triage was supposed to be operating actually received an assessment decision from a triage nurse. That group forms the subject of this paper.

In addition to the triage nurse assessment, the degree of urgency of each patient was assessed retrospectively from the clinical record by either one of two consultant accident and emergency doctors, using the same criteria as those used by the triage nurses. A table comparing the assignments to priority groups performed prospectively by the nurses and retrospectively by doctors was constructed, and the degree of chance corrected agreement between the two assessments was estimated using Cohen's Kappa.¹⁰ This table can be simplified by grouping cases according to whether they were assessed as being of equal urgency (the central area of agreement) as being more urgent by the nurse than by the doctor (the top right "wing") or as being more urgent by the doctor than the nurse (the bottom left "wing"). Further analysis was undertaken using this simplified grouping.

An analysis was performed of the proportion of patients aged 15 years and under in each wing, and in the central area of agreement, and differences between the proportions were tested using a χ^2 test.

A list of 30 modes of presentation was constructed using records from a pilot population, and all 1213 cases were assigned to one of these presentation modes using the information on the clinical record card and the triage record. In order to make larger groups for analysis, and to allow for overlap between modes of presentation (for example, suspected fracture/dislocation distal limb and sprain/soft tissue injury), 27 of these modes were combined into three categories, containing orthopaedic, surgical, and medical cases. Initially, an attempt was made to categorise patients according to other criteria in addition to the presenting complaint, including social factors pertaining to attendance and pain score. The collection of data on these items during the pilot study, however, was so poor as to preclude their further use.

For each of the presentation modes and the larger groups, the proportions of cases in the two "wings" of each table were compared using a χ^2 test with Yates's correction, or a two tailed Fisher's exact test where the expected frequency in any cell fell to less than five. This gives a measure of whether spread into the two wings from the central area of agreement is even, or is more in one direction than the other. To allow for simultaneous inference, significance was tested at a level of 0.017, a level set using a Bonferroni approach.¹¹

Results

Table I compares the overall assignment to priority groups as performed prospectively by the triage nurses and retrospectively by the two doctors. There was poor agreement between the two assessments (Cohen's Kappa=0.18: 95% confidence interval (CI)=0.12, 0.24) and it is clear that the nurses tended to give patients more urgent status than did the doctors, although the doctors obviously had the benefit of hindsight.

Nurses tended to give higher priority to younger patients. This is shown in table II by the large number of children aged 15 or under in the group who were assessed as more urgent by the nurse than the doctor.

Table III shows the list of presenting conditions and the number of cases assigned to each. The orthopaedic group was the largest, comprising 615 of the 1213 patients in the study, and the medical group was the smallest, with only 97 patients. Fourteen patients presented with a variety of psychiatric or social problems or reasons for attendance that could not be classified. The relative scarcity of intoxicated persons on this list can be explained by the classification being in terms of the presenting complaint, so that some of those with other presenting conditions might also have been intoxicated, and by the fact that the

Table I Distribution by urgency of 1213 patients assessed both prospectively by a triage nurse and retrospectively by an accident and emergency clinician

Treatment category given to 1213 patients assessed prospectively by triage nurse	Retrospective priority group assigned by either of two clinicians				Total
	1 (Most urgent)	2	3	4 (Least urgent)	
1 (Most urgent)	11	46	32	2	91
2	12	186	252	19	469
3	1	73	364	123	561
4 (Least urgent)	0	4	54	34	92
Total	24	309	702	178	1213

Kappa=0.18
98% CI=0.12, 0.24
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Table II Proportion of patients aged less than 15 in three categories of agreement

	Doctor > nurse	Agree	Nurse > doctor
Age 15 or under	21 (14.6%)	135 (22.7%)	126 (26.6%)
Age > 15	123 (85.4%)	460 (77.3%)	348 (73.4%)
Total	144	595	474

χ^2 (2 degrees of freedom)=9.12: significance of difference p=0.011

Table III Presentation mode list showing number of cases assigned to each mode of presentation, numbers where doctors working retrospectively gave a higher degree of urgency than nurses working prospectively, numbers where doctors and nurses agreed, numbers where nurses working prospectively gave a higher degree of urgency than doctors working retrospectively, and significance of the difference in proportions assigned to the two categories of disagreement calculated by a χ^2 test, or by a Fisher's exact test where the expected value in any cell fell to less than five

Symptom	Total cases	Doctor>nurse	Agree	Nurse>doctor	χ^2	p
01 Multiple injuries	3	0	2	1	-	1-0000
02 Head/facial injury	106	7	64	35	0.75	0.3874
03 Fracture/dislocation central	36	4	21	11	0.00	0.9976
04 Fracture/dislocation proximal	58	9	30	19	0.82	0.3660
05 Fracture/dislocation distal	295	33	151	111	0.00	0.9904
06 Sprain/soft tissue injury	96	7	59	30	0.20	0.6529
07 Orthopaedic non-trauma	21	0	12	9	1.61	0.2046
Orthopaedic total	615	60	339	216	0.53	0.4658
08 Potential surgical emergency	10	4	4	2	-	0.0287
09 Haemorrhage	0	0	0	0	-	-
10 Gynae/obstetric	7	2	3	2	-	0.2330
11 Urinary tract	3	0	2	1	-	1.0000
12 Infection (localised)	36	8	17	11	-	0.0571
13 Cut-graze	231	31	103	97	0.03	0.8741
14 Foreign body	22	3	13	6	-	0.4417
15 Burn/scald	14	1	6	7	-	0.6884
16 Sting/bite	12	0	4	8	-	0.2086
17 Eyes	120	5	38	77	14.57	0.0001
18 ENT	28	5	11	12	-	0.5626
19 Dental	4	0	0	4	-	0.5780
Surgical total	487	59	201	227	1.86	0.1730
20 Altered consciousness	27	7	12	8	-	0.0558
21 Cardiorespiratory	21	6	14	1	-	0.0011
22 Gastrointestinal	10	1	7	2	-	0.5495
23 Noxious ingestion	20	4	9	7	-	0.2922
24 Intoxication	2	1	0	1	-	0.4120
25 Fever	3	0	3	0	-	-
26 Pain	2	1	0	1	-	0.4120
27 Generally unwell	12	3	7	2	-	0.0856
Medical total	97	23	52	22	19.36	0.00001
28 Psychiatric	2	1	0	1	-	0.4120
29 Social problems	2	0	1	1	-	1.0000
30 Other	10	1	2	7	-	0.6884
Total cases	1213	144	595	474		

study period was between 8.00 am and 9.00 pm, and did not include late evening periods. Table III also shows that for orthopaedics the proportion of patients assigned to the nurse>doctor wing (216:258) was not significantly different from that assigned to the doctor>nurse wing (60:84, $\chi^2=0.53$ p=0.47). Similarly, the proportions of patients assigned to the two wings of the surgical table did not differ significantly ($\chi^2=1.86$, p=0.17). In the case of the medical table, however, the proportions of patients assigned to the doctor>nurse wing (23:121) was significantly more than that assigned to the nurse>doctor wing (22:452, $\chi^2=19.36$ p=0.00001). This indicates that a significant number of medical patients attending the accident and emergency department were assessed as being more urgent by doctors, working retrospectively, than by nurses, prospectively.

There is also variation within each of the three categories. For those attending with eye complaints, the proportion of patients assigned to the nurse>doctor wing (77:397) was significantly greater than that assigned to the doctor>nurse wing (5:139, $\chi^2=14.57$ p=0.0001). Eye patients, therefore, were seen as being more urgent at presentation by nurses than by doctors retrospectively, and this tendency was significantly greater than could be accounted for by hindsight alone. Within the overall medical category, those with cardiorespiratory symptoms were likely to be seen as less urgent by nurses (6:138) than by doctors (1:473, p=0.0011).

Discussion

The reason for differences between nurses' and doctors' assessments of urgency in this study are

twofold. Firstly is the difference due to the timing of the assessment: the fact that patients seem less urgent in retrospect than at the time of presentation is hardly surprising. An example might be an elderly lady who has fallen heavily and has pain in the thigh upon trying to stand. The confirmation on x-ray that there is no fracture of the femur changes entirely the degree of urgency. Secondly there is also likely to be a difference because of the different professional perspectives of doctors and nurses. Other studies^{5 6} have found that nurses still assign higher degrees of urgency to patients than do doctors, even when both groups of assessors work prospectively.

A striking feature of our study is that the tendency of the nurses to give higher priorities was not uniform across all diagnostic groups. Why is this? Most of those who have worked in accident and emergency departments will recognise the reasons for giving priority to children. They are often anxious and distressed by their illness or injury, and equally often are accompanied by parents who are at least as anxious and distressed, and usually more so. Whether the more urgent attention given is to the benefit of patients, parents, or staff, however, is a matter of debate.

It seems in this study that triage nurses awarded too little urgency to medical cases, in particular those with cardiorespiratory symptoms, and too much to ophthalmic cases. The latter finding is easily explained as, at the time of the study, the triage protocol emphasised giving priority to eye cases. This proved to be wrong when implemented as a strict rule and has since been changed. Each case is now assessed on its merits giving regard to aetiology, timing, subjective pain, and the age of the patient.

The former finding is more worrying. The lack of recognition of the urgency of medical cases is potentially serious. It may stem from the relative frequency of different modes of presentation and the ease with which they can be assessed. Orthopaedic cases formed over half of this study population, and many of these cases were traumatic in origin. Orthopaedic cases are the "bread and butter" of a nurse with experience in an accident and emergency department. Many of the surgical cases, likewise, were traumatic, and many nurses have experience not only of diagnosing but of treating these patients. On the other hand, medical cases formed a small minority of the total. They are difficult to assess quickly by either medical or nursing staff. Although there are recognised methods of assessing trauma cases based on easily recorded physiological data (for example, TRISS—pulse, respiratory rate, coma score), most "medical" assessments are complicated and used for inpatients (for example, APACHE). After this study, departmental protocols at the accident and emergency department were changed to make the assessment more objective, and extra training was introduced for nursing staff in the assessment of medical cases. Assessments are now based on physiological parameters, coupled with a high awareness of the possible speed of deterioration of such cases.

Conclusion

This study has implications for those who operate triage systems, or who intend to do so. It is for

those who devise the systems, and the protocols that go with them, to decide whether the favouring of certain groups confers an overall benefit across all groups. Indeed, should the one individual patient benefit to the detriment of many others?

It is essential that triage nurses are completely objective in their assessments of urgency, even if this runs contrary to the *raison d'être* of their profession. A screaming child may seem urgent, but is it really more urgent than the pale, clammy middle-aged man clutching his left arm? Triage is an extended nursing role and requires correct training in assessment and awareness of possible covert problems. The system requires repeated audit and retraining to achieve benefit, both to the patient and the accident and emergency department.

We thank the medical, nursing, and administrative staff of Derbyshire Royal Infirmary, and particularly Janice Glasgow and Tony Potter, for their enthusiastic cooperation and tolerance; Dr Gillian Spencer for her painstaking work in diagnostic coding and comments on the manuscript; and Mr Jon Nicholl for statistical advice.

The work was funded by the Department of Health, which, with Trent Regional Health Authority, maintains

the Medical Care Research Unit. We are grateful for their support. The views expressed in this paper, however, are those of the authors alone.

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