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Patients with major trauma who do not use emergency ambulances

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When planning a trauma service it is important to estimate the number of injured patients who will attend a hospital other than the designated trauma centre. Up to a third of patients in one study went to the wrong hospital.¹ This happens because paramedics make triage errors and take patients to the wrong hospital² and (we hypothesise) because some patients make their own way to hospital. Because a trauma service may be established in Northern Ireland we tried to estimate the numbers of injured patients likely to take themselves to the wrong hospital.

Methods and results

For one year a surveillance system monitored 12 randomly chosen hospitals out of the 19 in Northern Ireland that receive cases of major trauma. Patients were detected by monitoring all the accident and emergency and intensive care units, tertiary referral centres, and necropsies. Patients with an injury severity score of >15 who reached hospital alive were included. Data were collected by twice weekly monitoring of each hospital and the ambulance service (where all emergency calls are tape recorded). We collected data on how each patient had arrived at hospital.

Of 239 patients in the study 39 (34 men, 5 women) did not arrive at hospital by ambulance (see table). Thirty one patients went to their nearest hospital. Their median injury severity score was 24, and five died. Seven injuries were penetrating. Half of the patients (20) required immediate surgery (defined as surgery for life threatening injury to vessels or organs scoring abbreviated injury score of 3 or more), nine neurosurgical procedures, and eight laparotomies. Among the 200 patients who did use emergency ambulances 44 (22%) required immediate surgery ($\chi^2=00.00$; $P<0.001$).

Seventeen patients had a delay between injury and transport to hospital. This was due to delays in the appearance of physical signs and delays in acting on them by relatives or general practitioners. Ten of these patients were injured in falls at ground level and were not found for some time or treated as drunk.

Comment

Studies from the United States have shown that between 7% and 21% of all trauma victims may be taken to the wrong hospital by the paramedics staffing emergency ambulances.^{2,3} If even trained paramedics make wrong decisions then patients themselves might be likely to. Moreover, patients cannot be expected to know which hospitals are trauma centres and which are not. Our study showed that even in a place with a free emergency ambulance service, 16% of badly injured patients make their own way to hospital.

These findings suggest that within a planned trauma service, with designated trauma centres, any hospital with an accident and emergency department, whether a trauma unit or not, should be prepared to receive critically injured patients unexpectedly. Based on our data and those from the United States the proportion may be anywhere between 7% and 37% (though not all the patients who make their own way to hospital will go to the wrong one). The likely size of this group, the relative fate of these "outcasts," and whether a higher morbidity among this group offsets the benefits of trauma centres need to be prospectively researched. In both predicting and evaluating the effectiveness of a trauma service these patients need to be included in the calculations.

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Mode of transport to hospital by those patients who did not arrive in an emergency ambulance

	No
Unknown*	14
Car	14
Other ambulance†	6
Carried	2
Police	2
Bus‡	1
Total	39

*These patients did not have mode of transport recorded in their hospital records, but we know they did not use emergency ambulances.
†Two of these were requested by family doctors.
‡An injured bus driver.