



## Background

Recent guidelines and service developments may have changed the management of isolated minor head injuries in the United Kingdom. We aimed to review current practice and national statistics, and determine whether methods of service delivery are associated with differences in admission rates.

### a) Questionnaire specification

A simple postal questionnaire survey was developed to identify key elements of service provision for isolated minor head injury. The survey was designed to be completed within five minutes by the lead clinician based entirely upon their working knowledge of the department. The clinician was not asked to seek out data or estimate any parameters, such as proportions of patients receiving a particular form of care. Two further reminders, sent at three week intervals, were sent to non-responders.

### b) Hospital Episode Statistics Data Requests

Hospital Episode Statistics (HES) is a data warehouse containing details of all admissions to NHS hospitals in England and is openly accessible online ([www.hesonline.org.uk](http://www.hesonline.org.uk)). HES data were formally requested from the Health and Social Care Information Centre for all records between 2007/2008 containing the ED diagnosis head injury and attendance disposal (e.g. admission or discharge) by each provider (e.g. hospital or Trust) in the UK.

## Data Analysis

The questionnaire survey responses were entered onto a Microsoft Excel spreadsheet and simple descriptive analysis of proportions in each response category were undertaken. HES data were received on a Microsoft Excel spreadsheet and were also analysed descriptively. Cases were divided into children (age 0 to 14) and adults (age > 15) and analysed separately. The proportion of adults and children at each Trust who were admitted, discharged or had an unknown disposal from the ED were calculated, and then the proportion of cases in each category were determined. The following were excluded: Trusts where all patients were admitted, all were discharged or more than 50% were unknown. The median proportion of patients admitted and discharged was then estimated.

Finally, each Trust with analysable HES data was matched to an acute hospital associated with those Trusts that had been sent and returned a questionnaire. Data were analysed using SPSS for Windows (version 15.0). The median and inter-quartile range of the proportion of patients admitted between different types of service delivery were compared, and the Mann-Whitney test was used to assess the association between the proportions admitted and type of service delivery. Data were presented separately for adults and children.

## Adults

Completed questionnaires were returned from 174/250 hospitals (69.6%). Table 63 summarises the questionnaire responses. Nearly all hospitals had unrestricted CT access. NICE guidelines were followed by 147/174 hospitals (84.5%), although amendments had been made to 33/147 (22.4%). Of the 33 hospitals that had made modifications to formal guidelines for local use, 17 provided further details on the changes undertaken. These typically took the form of additional criteria (not specified in the NICE guidelines) for CT scanning, including immediate CT for any reduction in GCS at presentation, delayed CT for patients that make assessment difficult whilst under the influence of alcohol and drugs, considering CT for severe (persistent/prolonged) headache and CT indicated in patients that return to the emergency department within 48 hours. The admission location varied between hospitals, but most hospitals admitted adults under the ED staff and most required approval for admission by a senior or specialist doctor.

### Questionnaire responses for adults

Question	Response	N (%)
Guidelines	NICE (not specified)	12 (6.9%)
	NICE (2003)	7 (4.0%)
	NICE (2007)	128 (73.6%)
	Other, including SIGN	24 (13.8%)
	None	3 (1.7%)
CT access	Yes	167 (96.0%)
	No	6 (3.4%)
	Not completed	1 (0.6%)
Admission location	ED observation	69 (39.7%)
	Clinical decision unit	36 (20.7%)
	Formal admission	69 (39.7%)
Admission team	ED staff	122 (70.1%)
	Inpatient team	50 (28.7%)
	Not completed	2 (1.2%)
Admission approval	Any doctor	53 (30.5%)
	Senior doctor	94 (54.0%)
	Senior or specialist	11 (6.3%)
	Specialist	14 (8.0%)
	Not completed	2 (1.1%)

NICE, National Institute of Health and Clinical Excellence; SIGN, Scottish Intercollegiate Guidelines Network; ED, Emergency Department; CT, computed tomography

HES data relating to adults were available from 121 trusts. We excluded 21 from further analysis because they either recorded that all patients were discharged, all were admitted, or had no admission or discharge data for over half the patients. The number of adult cases attending the remaining 100 trusts ranged from 15 to 5630 (median 1050). The proportion discharged ranged from 54 to 95% (median 80%) and the proportion admitted from 1 to 45% (median 18%).

There was a slight trend towards a lower proportion being admitted at hospitals requiring formal admission, where admission was under an inpatient team and where admission required senior or specialist approval. However, the differences were small (1 to 2%) and none of the associations approached statistical significance.

## Adults continued

### Association between admission policies for adults and proportion admitted

Subgroup	N	Median % admitted	Inter quartile range	p value
Formal admission	27	18	14 to 24	0.194
Observation ward or CDU	43	20	14 to 28	
Admitted by ED staff	51	20	15 to 27	0.349
Admitted by inpatient team	18	18.5	13.25 to 24	
Senior or specialist	49	19	14 to 25	0.964
Any doctor can admit	21	20	14.5 to 24.5	

CDU, Clinical Decision Unit; ED, Emergency Department

## Children

Completed questionnaires were returned from 181/250 hospitals (72.4%). Table 65 summarises the questionnaire responses. Nearly all hospitals had unrestricted CT access. NICE guidelines were followed by 153/181 hospitals (84.5%), although amendments had been made to 35/153 (22.9%). Of the 35 hospitals that had made modifications to formal guidelines for local use, amendments were generally around the timing of performing CT i.e. immediate CT vs. delayed CT. The most common features that were amended for local use included delaying CT in patients with amnesia (antegrade or retrograde) lasting >5 minutes, dangerous mechanism of injury or presence of bruise, swelling or laceration >5cm on head in children <1 years of age as opposed to immediate CT as indicated in the NICE guidelines. Unlike adults, most hospitals formally admitted children under an inpatient team. Most hospitals required approval for admission by a senior or specialist doctor.

### Questionnaire responses for children

Question	Response	N (%)
Guidelines	NICE (not specified)	6 (3.3%)
	NICE (2003)	7 (3.9%)
	NICE (2007)	140 (77.3%)
	Other, including SIGN	25 (13.8)
	None	3 (1.7%)
CT access	Yes	171 (94.5%)
	No	9 (5.0%)
	Not completed	1 (0.5%)
Admission location	ED observation	10 (5.5%)
	Clinical decision unit	11 (6.1%)
	Formal admission	157 (86.7%)
	Not completed	3 (1.7%)
Admission team	ED staff	37 (20.4%)
	Inpatient team	142 (78.5%)
	Not completed	2 (1.1%)
Admission approval	Any doctor	63 (34.8%)
	Senior doctor	64 (35.4%)
	Senior or specialist	7 (3.9%)
	Specialist	45 (24.9%)
	Not completed	2 (1.1%)

NICE, National Institute of Health and Clinical Excellence; SIGN, Scottish Intercollegiate Guidelines Network; ED, Emergency Department; CT, computed tomography

HES data relating to children were available from 118 trusts. Data from 32 were excluded from further analysis because they either recorded that all patients were discharged, all patients were admitted or had no admission or discharge data for over half the patients.

The trend in children was the opposite of that in adults with slightly more being admitted at hospitals requiring formal admission and/or admission under an inpatient team. However, the differences were again small and none of the associations approached statistical significance.

### Association between admission policies for children and proportion admitted

Subgroup	N=	Median % admitted	Inter quartile range	p value
Formal admission	54	9.5	6 to 12	0.367
Observation ward or CDU	7	7	4 to 11	
Admitted by ED staff	14	8.5	4 to 11	0.282
Admitted by inpatient team	48	10	6 to 12	
Senior or specialist	40	8.5	6 to 11	0.559
Any doctor can admit	22	10.5	6.5 to 12.25	

CDU, Clinical Decision Unit; ED, Emergency Department

## Conclusion

Minor head injury admission, especially for adults, is increasingly the responsibility of the emergency department. Admission policies had no significant effect upon the proportion admitted.

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