Variation in Specialists' Reported Hospitalization Practices of Children Sustaining Blunt Head Trauma

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Supervising Section Editor: Judith Klein, MD
Submission history: Submitted November 8, 2011; Revision received March 12, 2012; Accepted March 26, 2012
Full text available through open access at http://escholarship.org/uc/uciem_westjem
DOI: 10.5811/westjem.2012.3.6924

Introduction: Questions surround the appropriate emergency department (ED) disposition of children who have sustained blunt head trauma (BHT). Our objective was to identify physician disposition preferences of children with blunt head trauma (BHT) and varying computed tomography (CT) findings.

Methods: We surveyed pediatric and general emergency physicians (EP), pediatric neurosurgeons (PNSurg), general neurosurgeons (GNSurg), pediatric surgeons (PSurg) and trauma surgeons regarding care of two hypothetical patients: Case 1: a 9-year-old who fell 10 feet and Case 2: an 11-month-old who fell 5 feet. We presented various CT findings and asked physicians about disposition preferences. We evaluated predictors of patient discharge using multivariable regression analysis adjusting for hospital and ED characteristics and clinician experience. Pediatric EPs served as the reference group.

Results: Of 2,341 eligible surveyed, 715 (31%) responded. Most would discharge children with linear skull fractures (Case 1, 71%; Case 2, 62%). Neurosurgeons were more likely to discharge children with small subarachnoid hemorrhages (Case 1 PNSurg OR 6.87, 95% CI 3.60, 13.10; GNSurg OR 6.54, 95% CI 2.38, 17.98; Case 2 PNSurg OR 5.38, 95% CI 2.64, 10.99; GNSurg OR 6.07, 95% CI 2.08, 17.76). PSurg were least likely to discharge children with any CT finding, even linear skull fractures (Case 1 OR 0.14, 95% CI 0.08, 0.23; Case 2 OR 0.18, 95% CI 0.11, 0.30). Few respondents (<6%) would discharge children with small intraventricular, subdural, or epidural bleeds.

Conclusion: Substantial variation exists between specialties in reported hospitalization practices of neurologically-normal children with BHT and traumatic CT findings. [West J Emerg Med. 2013;14(1):29-36.]

INTRODUCTION

Traumatic brain injury (TBI) is a leading cause of death in children older than 1 year of age and a significant cause of morbidity. Between 2002 and 2006 the estimated annual number of TBIs in children less than 15 years of age in the U.S. was approximately 511,000, including approximately 2,200 deaths, 35,000 hospitalizations, and 474,000 emergency department (ED) visits.[1] Cranial computed tomography (CT) is the diagnostic test of choice for evaluating children with blunt head trauma in the ED. Fewer than 10% of these CTs, however, are diagnostic of TBI.[2-9] Furthermore, the implications of small traumatic findings on CT are not clear.[10-12] Therefore, CT should ideally be selectively used with the goal of identifying clinically-important findings.

Several large studies have suggested that the presence or absence of certain clinical signs and symptoms are predictive of a TBI requiring acute intervention, such as hospitalization, neurological surgery, or on-going anti-epileptic pharmacotherapy.[3, 8, 9, 13,14] Studies such as these have caused investigators to question the necessity of identifying children with TBIs that are not clinically important.[10, 11] With newer generation helical CT scanners, TBIs not identified

Table 1. Characteristics of survey respondents.

Demographic	n=636	%
Physician characteristics		
Practice specialty		
Pediatric emergency medicine	336	47
General emergency medicine	161	22
Pediatric neurosurgery	58	8
General neurosurgery	21	3
Pediatric surgery	76	11
Trauma surgery	48	7
Other	15	2
Years in practice		
0-5 years	173	24
6-10 years	167	24
11-15 years	144	20
> 15 years	231	32
Percentage of patients that are children		
0-10%	83	12
11%-30%	151	21
31%-50%	25	3
51%-95%	51	7
> 95%	405	57
Hospital characteristics		
Annual ED pediatric volume		
< 20,000	166	23
20,000-40,000	190	27
40,000-60,000	177	25
> 60,000	182	25
Practice setting*		
Children's hospital	416	58
General hospital	220	31
Private hospital	143	20
Academic hospital	481	67
Geographic location		
Urban (> 50,000 pop)	651	91
Non-urban (< 50,000 pop)	64	9

ED, emergency department
*Total greater than 100% as some respondents indicated multiple practice settings

20 years ago are now being more readily visualized. Furthermore, with more sensitive neuroimaging tools, such as magnetic resonance imaging (MRI) and single-photon emission computed tomography (SPECT) brain perfusion imaging, TBIs not visible on cranial CT are also being identified.[15,16] Considering this rapid pace of technological developments in neuroimaging, future modalities will likely identify even smaller, more subtle TBIs, and challenge current neuroimaging decision rules that focus on TBI identified on cranial CT.

Current clinical practice patterns result in a number of neurologically-normal children with small TBIs undergoing cranial CT and hospitalization for observation despite the lack of need for acute intervention.[3, 9] The potential inefficiency in this practice prompted us to seek the opinion of specialists on what constitutes a clinically-significant TBI on CT scan for the purposes of hospitalization and acute management. Our objective was to identify variations and factors associated with ED disposition of neurologically-normal children with blunt head trauma and different traumatic cranial CT findings. We hypothesized that substantial variation in practice exists among physicians caring for neurologically-normal children with TBIs on CT and that factors associated with this variation can be identified.

METHODS

Study Design and Population

We surveyed by electronic and regular mail, physicians caring for children with blunt head trauma practicing in all U.S. pediatric Level I and Level II trauma centers, children's hospitals, and trauma centers with a pediatric commitment between July 2006 and May 2007. We compiled a mailing list from information obtained through the American College of Surgeons (ACS), the National Association of Children's Hospitals and Related Institutions (NACHRI), and websites of verified ACS and NACHRI member institutions. We surveyed all physicians trained in pediatric emergency medicine (PEM),

Table 2. Overall emergency department discharge rates by isolated cranial computed tomography (CT) finding.

CT finding	Case 1	Case 2
Linear nondisplaced skull fracture	71%	62%
Diastatic (widened) skull fracture	26%	22%
Depressed skull fracture	19%	17%
Basilar skull fracture	23%	17%
Pneumocephalus	9%	7%
Small intracerebral hemorrhage	10%	6%
Small subarachnoid hemorrhage	9%	7%
Small intraventricular hemorrhage	4%	3%
Subdural hematoma	6%	4%
Epidural hematoma	2%	2%

general emergency medicine (GEM), pediatric neurosurgery (PNSurg), general neurosurgery (GNSurg), pediatric surgery (PSurg) and trauma surgery (TSurg) practicing in these centers identified by the methods listed above. The local institutional review committee approved this study.

Survey Content and Administration

In the survey we presented case studies of 2 hypothetical neurologically-normal children with blunt head trauma: Case 1, a 9-year-old boy who fell 10 feet from a tree landing on dirt with unknown history of loss of consciousness; and Case 2, an 11-month-old girl crying vigorously and attempting to crawl after falling 5 feet from the sibling's bunk bed with an unknown history of loss of consciousness. Both patients were further described as being asymptomatic and having normal neurological examinations after 4 hours of ED observation. Survey participants were asked whether they would be willing to discharge the patients home to reliable parents with good follow up, given any of the following 10 differing *isolated*, traumatic cranial CT findings: linear nondisplaced skull fracture, diastatic (widened) skull fracture, depressed skull fracture (less than the table width of the skull), basilar skull fracture, pneumocephalus, very small subarachnoid hemorrhage, very small intraventricular hemorrhage, subdural hematoma without midline shift, epidural hematoma without midline shift, and small intracerebral hemorrhage. The survey instrument also included 7 items pertaining to participants' demographic characteristics.

We contacted participants via electronic mail in July 2006 and invited them to participate in the web-based survey. Each participant was provided with a hyperlink text to gain access to the questionnaire. For physicians with undeliverable e-mail addresses, we sent the survey via U.S. Postal Service in August 2006. Non-responders to the initial e-mail survey were sent a second e-mail request for participation in September 2006 with the survey attached as an electronic PDF document. We sent physicians who did not respond to the web-based or electronic surveys a cover letter and survey by U.S. Postal Service in December 2006. A final mailing to non-responders was distributed by U.S. Postal Service in February 2007.

Data Analysis

We entered data into a Microsoft Access database (Microsoft Corp., Redmond, WA) and analyzed it using

Table 3. Case 1 emergency department discharge rates by practice specialty.

	PEM (n=336)	GEM (n=161)	PNSG (n=58)	GNSG (n=21)	PS (n=76)	TS (n=48)
†Linear nondisplaced skull fracture***	86%	63%	64%	55%	39%	55%
‡Diastatic (widened) skull fracture***	33%	16%	29%	29%	12%	26%
§Depressed skull fracture**	25%	14%	22%	29%	5%	15%
‖Basilar skull fracture***	28%	22%	33%	33%	0%	11%
¶Pneumocephalus*	10%	8%	16%	20%	1%	4%
††Small intracerebral hemorrhage***	9%	11%	21%	33%	2%	2%
‡‡Small subarachnoid hemorrhage***	7%	6%	31%	30%	1%	6%
§§Small intraventricular hemorrhage**	5%	2%	10%	20%	1%	2%
Subdural hematoma	6%	6%	7%	15%	1%	2%
‖‖Epidural hematoma***	1%	1%	13%	7%	0%	2%

PEM, pediatric emergency medicine; *GEM*, general emergency medicine; *PNSG,* pediatric neurosurgery; *GNSG,* general neurosurgery; *PS*, pediatric surgery; *TS,* trauma surgery

Overall significant differences (by Chi-square test of homogeneity of proportions, with 5 degrees of freedom):

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Two-way significant differences (using Holm correction for Bonferroni multiple test procedure):

†PEM v. GEM, PNSG, GNSG, PS, and TS; GEM v. PS; PNSG v. PS
‡PEM v. GEM and PS
§PEM v. GEM and PS; PNSG v. PS; GNSG v. PS
‖PEM v. PS; GEM v. PS; PNSG v. PS; GNSG v. PS; PS v. TS
¶PNSG v. PS; GNSG v. PS
††PNSG v. PS; GNSG v. PS and TS
‡‡PEM v. PNSG and GNSG; GEM v. PNSG and GNSG; PNSG v. PS and TS; GNSG v. PS
§§GEM v. GNSG; GNSG v. PS
‖‖PEM v. PNSG; GEM v. PNSG

Table 4. Case 2 emergency department discharge rates by practice specialty.

	PEM (n=336)	GEM (n=161)	PNSG (n=58)	GNSG (n=21)	PS (n=76)	TS (n=48)
†Linear nondisplaced skull fracture***	78%	48%	60%	52%	37%	45%
‡Diastatic (widened) skull fracture***	29%	14%	29%	33%	7%	15%
§Depressed skull fracture***	23%	9%	26%	33%	4%	11%
||Basilar skull fracture***	20%	13%	26%	29%	1%	15%
Pneumocephalus	9%	5%	11%	15%	1%	2%
¶Small intracerebral hemorrhage*	6%	5%	13%	20%	2%	2%
††Small subarachnoid hemorrhage***	6%	5%	23%	25%	3%	4%
‡‡Small intraventricular hemorrhage***	3%	1%	11%	15%	1%	2%
Subdural hematoma	5%	3%	9%	5%	1%	2%
Epidural hematoma	1%	2%	4%	0%	0%	2%

PEM, pediatric emergency medicine; *GEM*, general emergency medicine; *PNSG*, pediatric neurosurgery; *GNSG*, general neurosurgery; *PS*, pediatric surgery; *TS*, trauma surgery

Overall significant differences (by Chi-square test of homogeneity of proportions, with 5 degrees of freedom): * $P < 0.05$; *** $P < 0.001$

Two-way significant differences (using Holm correction for Bonferroni multiple test procedure):

†PEM v. GEM, PNSG, PS, and TS

‡PEM v. GEM and PS; PNSG v. PS; GNSG v. PS

§PEM v. GEM and PS; GEM v. PNSG and GNSG; PNSG v. PS; GNSG v. PS

||PEM v. PS; PNSG v. PS; GNSG v. PS; PS v. TS

¶Signifcant on overall chi-square, but no pairwise significant differences.

††PEM v. PNSG and GNSG; GEM v. PNSG and GNSG; PNSG v. PS; GNSG v. PS

‡‡PEM v. PNSG and GNSG; GEM v. PNSG and GNSG

Stata/SE 8.2 for Windows (Version 8. StataCorp LP, College Station, TX). We assessed overall significant differences between practice specialties and disposition with chi-square tests. Post hoc testing was conducted using Holm's correction for Bonferroni multiple test procedure.[17] Because there were so few (15) surveys returned from practitioners in the "other" practice specialty group, we removed these from further analysis. We then performed backward stepwise multivariable logistic regression to examine the impact of physician characteristics (practice specialty, years in practice, and percentage of patients in their practices who are children) and hospital characteristics (annual ED pediatric patient volume, practice setting, and geographic location) on disposition decision-making for each hypothetical patient with any of the 10 cranial CT findings. Pediatric EPs, > 15 years of practice, and > 95% pediatric patients were selected as reference standards for data analysis because they were the most populous subgroups. We also selected pediatric ED volume of > 60,000 as the reference standard group, as the frequency of all ED volume categories were nearly equivalent. Results are presented with odds ratios (OR) with 95% confidence intervals (CI).

RESULTS

We distributed 2,799 surveys. Three hundred sixty-seven were ultimately undeliverable. Ninety-one respondents were ineligible to participate in the survey (90 did not care for children younger than 18 years with trauma and one was a nurse practitioner). In total, 715 (31%) of 2,341 eligible participants responded to the survey. Response rates within subspecialty were pediatric emergency medicine 336/878 (38%), general emergency medicine 161/645 (25%), pediatric neurosurgery 58/135 (43%), general neurosurgery 21/203 (10%), pediatric surgery 76/387 (20%), and trauma surgery 48/93 (52%).

Physician and hospital characteristics of respondents are shown in Table 1. Nearly one-half of all participants specialize in PEM. One-third have more than 15 years of practice experience. Most respondents care almost exclusively for pediatric patients. Participants were evenly distributed across the 4 categories representing annual pediatric patient volume. Most respondents practice in urban areas.

Overall patient discharge rates by isolated CT finding for Case 1 and Case 2 are shown in Table 2. Most respondents would discharge patients having isolated linear, non-displaced skull fractures. Up to 1 quarter of respondents would discharge patients with diastatic (widened) skull fractures, depressed skull fractures, or basilar skull fractures. Few respondents would discharge patients with pneumocephalus, small intracerebral hemorrhage, subarachnoid or very small intraventricular hemorrhages, subdural or epidural hematomas. Discharge rates by practice specialty for both cases are reported in Tables 3 and 4.

The statistically significant results of the multivariable analyses for the 2 cases are shown in Tables 5 and 6, respectively. Pediatric surgeons were least likely to discharge

Table 5. Case 1 physician and hospital predictors of patient discharge on multivariate analysis.

	Odds ratios (95% confidence intervals)									
	Linear nondisplaced skull fracture	Diastatic (widened) skull fracture	Depressed skull fracture	Basilar skull fracture	Pneumo-cephalus	Small intracerebral hemorrhage	Small subarachnoid hemorrhage	Small intraventricular hemorrhage	Subdural hematoma	Epidural hematoma
Practice specialty										
Pediatric EM	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
General EM	ns	0.41 (0.26,0.65)	ns	ns	ns	ns	ns	ns	ns	ns
Pediatric neurosurgery	0.41 (0.22,0.75)	ns	ns	ns	ns	2.53 (1.17,5.48)	6.87 (3.60,13.10)	ns	ns	9.31 (2.99,28.96)
General neurosurgery	ns	ns	ns	ns	ns	5.95 (1.88,18.85)	6.54 (2.38,17.98)	ns	ns	ns
Pediatric surgery	0.14 (0.08,0.23)	0.32 (0.16, 0.62)	0.25 (0.11,0.60)	ns	0.09 (0.01,0.67)	0.13 (0.02,0.97)	ns	ns	ns	ns
Trauma surgery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Years in practice										
0-5 years	ns	ns	0.52 (0.32,0.86)	0.58 (0.37,0.92)	ns	ns	ns	ns	ns	ns
6-10 years	ns	ns	ns	ns	2.26 (1.31,3.91)	ns	ns	ns	ns	ns
11-15 years	1.83 (1.13,2.95)	ns	ns	ns	ns	ns	ns	ns	ns	ns
> 15 years	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Percentage of patients who are children										
0-10%	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
11%-30%	ns	ns	0.57 (0.35,0.94)	ns	ns	ns	ns	ns	ns	ns
31%-50%	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
51%-95%	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
> 95%	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Annual ED peds volume										
< 20,000	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
20,000-40,000	ns	ns	ns	ns	0.45 (0.22,0.91)	0.45 (0.21,0.96)	ns	ns	ns	ns
40,000-60,000	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
> 60,000	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Practice setting										
Children's hospital	3.11 (2.10,4.59)	ns	ns	ns	ns	ns	ns	ns	ns	ns
General hospital	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Private hospital	ns	ns	2.04 (1.31,3.18)	ns	ns	ns	ns	ns	ns	ns
Academic hospital	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Geographic location										
Urban (> 50,000 pop)	ns	ns	ns	2.22 (1.02,4.81)	ns	ns	ns	ns	ns	ns

EM, emergency medicine; *ns,* not significant; *ref,* reference group

Table 6. Case 2 physician and hospital predictors of patient discharge on multivariate analysis.

	Odds ratios (95% confidence intervals)									
	Linear nondisplaced skull fracture	Diastatic (widened) skull fracture	Depressed skull fracture	Basilar skull fracture	Pneumo-cephalus	Small intracerebral hemorrhage	Small subarachnoid hemorrhage	Small intraventricular hemorrhage	Subdural hematoma	Epidural hematoma
Practice specialty										
Pediatric EM	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
General EM	ns	ns	0.33 (0.18,0.58)	0.54 (0.32,0.90)	ns	ns	ns	ns	ns	ns
Pediatric neurosurgery	0.55 (0.30,1.00)	ns	ns	ns	ns	ns	5.38 (2.64,10.99)	4.39 (1.64,11.74)	ns	ns
General neurosurgery	ns	ns	ns	ns	ns	ns	6.07 (2.08,17.76)	ns	ns	ns
Pediatric surgery	0.18 (0.11,0.30)	0.24 (0.11,0.54)	0.21 (0.08,0.55)	0.04 (0.01,0.31)	ns	ns	ns	ns	ns	ns
Trauma surgery	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Years in practice										
0-5 years	ns	0.55 (0.34,0.87)	0.34 (0.19,0.61)	0.58 (0.35,0.98)	ns	ns	ns	ns	ns	ns
6-10 years	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
11-15 years	1.70 (1.10,2.63)	ns	ns	ns	ns	ns	ns	ns	ns	ns
>15 years	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Percentage of patients who are children										
0-10%	0.20 (0.12,0.35)	ns	ns	ns	ns	ns	ns	ns	ns	ns
11%-30%	0.22 (0.14,0.34)	ns	ns	ns	ns	ns	ns	ns	ns	ns
31%-50%	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
51%-95%	ns	1.89 (1.00,3.54)	ns	ns	ns	ns	ns	ns	ns	ns
>95%	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Annual ED peds volume										
<20,000	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
20,000-40,000	0.57 (0.38,0.85)	ns	ns	ns	ns	ns	ns	ns	0.20 (0.05,0.87)	ns
40,000-60,000	0.61 (0.39,0.95)	ns	ns	ns	ns	ns	ns	ns	ns	ns
>60,000	ref	ref	ref	ref	ref	ref	ref	ref	ref	ref
Practice setting										
Children's hospital	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
General hospital	ns	0.47 (0.30,0.73)	ns	ns	ns	ns	ns	ns	ns	ns
Private hospital	ns	ns	1.87 (1.17,2.99)	ns	ns	ns	ns	ns	ns	ns
Academic hospital	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Geographic location										
Urban (>50,000 pop)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns

EM, emergency medicine; *ns*, not significant; *ref*, reference group.

either patient with various types of skull fractures, and physicians working in children's hospitals were more likely to discharge Case 1 with a linear skull fracture. In both cases, pediatric neurosurgeons and general neurosurgeons were more likely to discharge patients with small subarachnoid hemorrhages, and for Case 1, they were more likely to discharge patients with small intracerebral hemorrhages. Of note, pediatric neurosurgeons were also substantially more likely to discharge Case 1 with a small epidural hematoma. In general, physicians with fewer than 5 years of experience also had a lower odds ratio of patient discharge with several of the CT findings.

DISCUSSION

Management of children with minor head trauma remains controversial, and there is no clear standard of care. Not only is there debate on which children require imaging, but the appropriate subsequent disposition of these children once the CT results are known is also unclear as there are no specific guidelines. In our survey of specialists caring for these children, we found substantial variation in the reported hospitalization practices of neurologically-normal children with traumatic findings on cranial CT following blunt head trauma, despite the fact that many TBIs identified on CT do not need acute intervention.[8,9, 18-20] In fact, TBIs needing neurosurgery in children with Glasgow Coma Scale scores of 14-15 are very uncommon.[3,5,8,9] If medical or surgical intervention is not needed, hospitalization may in fact not be necessary, assuming the neurologically-normal child has reliable parents, no suspicion of inflicted injuries (i.e., abuse) and acceptable follow-up.

In the case scenarios presented, while almost two-thirds of the specialists would discharge patients with a linear skull fracture, a substantial number indicated that they would still admit these children for inpatient observation. Several previous studies have suggested that neither an isolated linear skull fracture nor a basilar skull fracture is, by itself, an indication for hospital admission.[21,22] Children with isolated skull fractures in the study by Beaudin et al[23] were discharged from the ED or the pediatric ward without complications and could have easily been managed at home after a period of ED observation.

All surveyed specialty groups reported that they were less likely to discharge patients with intracranial hemorrhages (subarachnoid, intraventricular, subdural, epidural or intracerebral hemorrhages) as opposed to those with isolated skull fractures. Although the reasons for this were not elicited in this study, it is known that certain regions of the brain, especially the medial temporal lobe and the posterior fossa, tolerate mass effect poorly. Potential concern for enlargement of even small hemorrhages in the subacute phase of injury probably influences the decision to admit these patients for observation. Interestingly, pediatric EPs were the most likely of all the specialties to discharge patients with traumatic findings on cranial CT from the ED. Neurosurgeons also indicated their willingness to discharge patients with certain CT findings. In previous research, neurosurgeons have suggested that neurosurgical consultation is not necessary in patients with minor TBI findings and normal neurologic status.[24]

LIMITATIONS

The study has several limitations. We achieved a 31% response rate to our survey. While this compares favorably to many recent surveys, it is unclear to what degree the practice patterns of non-respondents may have differed from those that responded.[25-27] We also cannot be certain that the responses to the hypothetical cases reflect the actual practice patterns of those caring for children with blunt head trauma. Respondents may be more willing to discharge home a theoretical patient than an actual patient. We also surveyed only those specialists working in major pediatric trauma centers and children's hospitals because we assumed that they care for a large portion of these types of patients and considered these clinicians to be the most knowledgeable about this issue. It is possible that there are other clinicians who care for children with these injuries that did not have the opportunity to respond to our survey, and their practice patterns may differ.

CONCLUSION

Substantial variation exists between specialties in reported hospitalization practices of neurologically-normal children with blunt head trauma and traumatic cranial CT findings. Pediatric neurosurgeons and general neurosurgeons are more willing to discharge patients than are pediatric surgeons, and other important specialty differences are evident as well. Better evidence is needed to guide disposition decision-making in neurologically-normal children with minor, traumatic cranial CT findings.

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Conflicts of Interest: By the *West*JEM article submission agreement, all authors are required to disclose all affiliations, funding sources and financial or management relationships that could be perceived as potential sources of bias. The authors disclosed none.

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