

## Authors' Response

Sir,

We appreciate Dr. Greeley's letter, which draws attention to the difficulties in evaluating a traumatic head injury in an infant and the methods of literature searches.

First, to clarify for Dr. Greeley, our article is a case report, not a letter, and the infant was not a 7-month-old female but a 7 $\frac{1}{4}$ -month-old male. He arrived in extremis at our medical center and died in the operating suite 2 h and 12 min later. As such, additional coagulation tests were not ordered prior to his death, and postmortem coagulation testing would not have been reliable. If he had survived, it would have been imperative to repeat the prothrombin time (PT) and partial thromboplastin time (PTT) to exclude pre-analytical and analytical errors. Dr. Greeley's statement that this degree of coagulopathy would be unexpected contradicts the findings in his second reference, which he cited incorrectly—the publication date was 1989 not 1998. Olson et al. (1) found that prolongation of the activated partial thromboplastin time (APTT) correlated strongly with unfavorable outcome in a large group of patients, and in a small group, markedly accelerated APTT also predicted death.

A remote possibility exists that this infant had an undiagnosed congenital or acquired bleeding disorder unrelated to his head injury; however, he had no abnormal bleeding following delivery, heel stick blood sampling, circumcision, umbilical cord separation, or following his routine immunizations, and there is no family history of a bleeding diathesis. Dr. Greeley contends that without a clearer understanding of this infant's elevated PT and PTT, the underlying cause of the subdural and retinal hemorrhages must be guarded. He must then apply the same reasoning and criteria for coagulation testing to all infants and children with subdural hematomas and retinal hemorrhages who have *possible* coagulopathies.

Literature search strategies can be confusing, as shown by Dr. Greeley's attempts. Accordingly, we asked Janine Tillett, MSLS, AHIP to assist with this response. Our literature search was designed so it could be copied and pasted into PubMed (with limits added). Dr. Greeley retyped the search without the “/” that connects MeSH terms to the subheadings. This generates the exact PubMed error message he noted. This mistake skewed the search numbers and retrieval for the remainder of his search. Without the “/,” PubMed could add the subheadings as separate MeSH terms, as the [MeSH] rubric follows the word, or it could ignore the phrases mentioned in the error message. If Dr. Greeley had checked the indexing on an article (from the abstract view, clicking

on “MeSH Terms”), he would have seen MeSH heading/subheading combinations connected by the “/.”

Dr. Greeley's statement about the difference between MeSH headings and subheadings is incorrect. “Accidental falls,” “retinal hemorrhage,” and “intracranial hemorrhages” are MeSH terms, as are “accidents,” “child abuse,” and “craniocerebral trauma.” The subheadings are “mortality” (attached to “accidents”), “diagnosis” (attached to “child abuse”), and “etiology” (attached to “craniocerebral trauma”). “Mortality” and “diagnosis” are also MeSH terms on their own if used differently. The subheadings are used to pull together a specific subdivision of the literature indexed to the subject heading: for example, “child abuse/diagnosis” pulls the *diagnosis* of child abuse papers together rather than the *treatment* of child abuse (child abuse/therapy) or *prevalence* of child abuse (child abuse/epidemiology).

Dr. Greeley's simplified, limited search strategy does not reflect our intent. We were interested in head and eye findings (subdural hematoma OR retinal hemorrhage OR craniocerebral trauma OR intracranial hemorrhage) associated with a fall, not a limited group of articles in which several of the findings were all present (Dr. Greeley's strategy of: falls AND subdural hematoma AND retinal hemorrhage). Rather than using all ANDs, as in his example, we would have first used an OR: subdural hematoma OR retinal hemorrhage, and then an AND: accidental falls AND (subdural hematoma OR retinal hemorrhage). We never used “subdural hematoma” *per se* because it is included in the explosion of “craniocerebral trauma [MeSH].” Dr. Greeley's difficulties with his PubMed search attempts highlight the necessity of consulting with a research librarian before a foray into systematic literature searches.

Finally, not all seemingly minor falls are minor. Based on the current medical literature, we urge caution in dismissing a history of a stairway or low-height fall if an infant or young child has a subdural hematoma and retinal hemorrhages.

## Reference

1. Olson JD, Kaufman HH, Moake J, O'Gorman TW, Hoots K, Wagner K, et al. The incidence and significance of hemostatic abnormalities in patients with head injuries. *Neurosurgery* 1989;24:825–32.

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