report can be negative: first the search strategy may be flawed and secondly no research may have been published. In the latter case this may be because the research question is novel or because the question being asked has been considered not worth answering.

We go to great lengths to ensure that the search strategies used are highly sensitive⁴ (particularly in the case of negative BETs), but recognise the limitations of Medline. We believe that by only seeking to answer questions that arise in clinical practice we avoid questions that are not worth answering. Thus negative BETs should identify novel research questions or highlight areas of clinical uncertainty.

It is therefore disappointing to see these negative BETs labelled as unhelpful, potentially misleading, or as a cause for misunderstanding. Rather they offer an opportunity for re-examining our ideas about the treatment of these conditions, and allow us to decide whether well designed studies that really answer the questions posed are needed.

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Management of minor head injuries by non-specialists

EDITOR,—The management of patients with a minor head injury (MHI)—that is a Glasgow coma scale score of 13–15,¹ once the decision has been made to admit them, is relatively simple and straightforward. The value of having neurosurgical specialist input could be looked upon as a luxury. In Nottingham there is a co-located accident and emergency (A&E) department with a regional neurosurgical unit. It is often the case that the A&E beds for observation become full and the local arrangement is for the regional neurosurgical unit to admit the patient under their care. The use of this resource for this condition has been questioned and a retrospective review of patients with a MHI admitted to this hospital was undertaken to determine the actual involvement of neurosurgery in the management of these cases in a typical teaching hospital.

For the calendar year of 1996, 618 adults (>16 years of age) were admitted with a diagnosis of MHI for observation, of whom 89 (14.4%) were referred to the regional neurosurgical unit (M:F = 63:26; 70.8%:29.2%). Thirty seven (42%) had other injuries, some of which would have required admission in any case, for example maxillofacial or spinal fracture in eight (9%), their MHI being truly minor.

The A&E referral was made because of no A&E beds in 47 (53%), was not stated at all on the admission card in 22 (25%), was for "social reasons" in four (4%), and in two (2%) was because they had been under a neurosurgeon some years previously for totally unrelated conditions. Only two of 24 (8%) patients who had a computed tomography during their admission had anything abnormal detected, neither of whom needed any intervention beyond simple observation.

The same survey carried out in the same hospital in the year 1992 revealed, using a randomly acquired sample of 90 patients with MHI, that eight (9%) were referred to the regional neurosurgical unit, none of whom needed any active intervention.

One of the authors (NB) carried out a similar review of patients admitted under general surgeons with MHI for the year 1991 in a different large general hospital with a co-located A&E department (at that time a trial trauma centre) and subregional neurosurgical unit. Of 53 patients admitted with MHI only four (7.5%) required a neurosurgical opinion and none required active intervention.

These three temporally separate studies in two different, but similar, hospitals found a total of 761 patients admitted with MHI, none of whom required neurosurgery. It is our contention that no patients with MHI need be admitted under the care of neurosurgeons in this country and that patients who need specialist neurosurgical input can be identified by neurological observations in a non-specialist setting and referred for advice or action accordingly.

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Visual assessment of blood loss by accident and emergency staff

EDITOR,—Birkinshaw *et al* have recently demonstrated that in reconstructed scenarios using manikins, 80% of estimates of blood loss by paramedics and technicians were underestimates, and for a blood loss of 3 litres the mean underestimate was 60%.¹ It is also important that staff in the accident and emergency (A&E) department can assess blood loss that is continuing within the department and also assess loss in clothing as it is removed, as is stressed in Advanced Trauma Life Support courses.²

We undertook a study whereby a measured volume (450 ml) of expired human whole blood was spilt over some clothing on a non-absorbent surface. After five minutes this scene was photographed. The photograph was shown to staff of the A&E department and they were asked to estimate the volume of blood shown in the photograph.

Forty A&E nurses and 18 senior house officers (SHOs) were surveyed. Their estimates of blood loss are shown in table 1.

This demonstrates that staff in A&E show a wide variation in the accuracy of their estimations of blood loss and it is not reliable for clinical decision making. In contrast to the pre-hospital study, A&E staff appear to overestimate blood loss. None of the staff had ever been shown pictures of measured blood loss as part of their training. There is a need to train A&E staff in the assessment of external blood loss.

Table 1 A&E staff's estimate of volume of a measured 450 ml blood loss

	No surveyed	Mean	Maximum	Minimum	1st quartile	3rd quartile
Nurse	40	577.6	3000	50	200	681
SHO	18	633.9	2500	30	250	575

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Transtacheal jet ventilation and the completely obstructed airway: incorporating an active expiratory phase

EDITOR,—Transtacheal jet ventilation is an important technique in emergency airway management. During an audit of equipment available for emergency airway management we had occasion to test various devices for transtacheal jet ventilation on a model trachea and lung (BOC Lung Ventilator Performance Analyser, compliance 50 ml/cm H₂O) with an interposed Wright respirometer to measure minute ventilation. Using a 14 gauge cannula and Sander's injector connected to a 400 kPa oxygen outlet in a model where the "laryngeal" end of the "trachea" was completely obstructed, further ventilation following the first insufflation was clearly not possible without hyperinflation of the model lung.

In this situation where expiration via the natural airway is not possible, it is a commonly believed myth that insertion of another 14 gauge cannula will allow the lungs to deflate between insufflations. In our model, when this was performed, a minute ventilation of 2.5 l/min was achieved. This is clearly insufficient for adequate ventilation for any considerable length of time. However, when the expiratory cannula was connected to standard wall suction set at "high" (80 kPa), a minute ventilation of 10 l/min was consistently achieved. A similar result was obtained using only one cannula connected to the Sander's injector and suction via a three way tap alternating between the two for inspiration and expiration.

This technique has not been tried in clinical practice and it is possible that the expiratory phase could become obstructed by tracheal mucosa, blood, or mucus. However, in the situation of a completely obstructed airway where a satisfactory needle cricothyroidotomy for transtacheal jet ventilation has been performed incorporation of an active expiratory phase may allow a clinically useful minute ventilation and would remove to some degree the time pressure before a more satisfactory definitive airway (for example surgical cricothyroidotomy) is achieved.

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