ABSTRACT
A short review was carried out to see if teaching cognitive forcing strategies reduces cognitive error in the practice of emergency medicine. Two relevant papers were found using the described search strategy. The author, date and country of publication, patient group studied, study type, relevant outcomes, results and study weaknesses of these papers are tabulated. There is currently little evidence that teaching cognitive forcing strategies reduces cognitive error in the practice of emergency medicine.

THREE PART QUESTION
In (emergency medicine physicians or students) does (teaching cognitive debiasing, cognitive forcing strategies or meta-cognition) lead to (a reduction in error attributable to cognition)?

CLINICAL RELEVANCE
Very few environments rival the complexity, unpredictability, acuity, time pressures and decision density of the ED. Unsurprisingly, it has been described as a natural laboratory for human error. Despite the skills of the emergency physician in making decisions, an unacceptable number of decisions made in the process of medical diagnoses are wrong with error or diagnostic failure rate estimated to occur in 10%–15% of decisions in the ED. Expert opinions within emergency medicine have highlighted the role of cognitive debiasing strategies and cognitive forcing strategies to decrease the error attributable to cognition.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Relevant papers for BET 2</th>
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<tbody>
<tr>
<td>Author, date &amp; country</td>
<td>Patient group</td>
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<tr>
<td>Sherbino et al, 2011, Canada</td>
<td>Fifty-six final-year medical students on emergency medicine at a single university. Each attended a 90 min seminar on cognitive forcing. Students were then tested on four scenarios similar (near group) or dissimilar (far group) to educational cases they had reviewed, two of which had a subtle second diagnosis to detect and two did not. Forty-seven students were tested immediately; 9 students were tested after 2 weeks</td>
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<tr>
<td>Sherbino et al, 2014, Canada</td>
<td>One hundred and ninety-one final-year medical students on emergency medicine. One hundred and forty-five attended a 90 min seminar on cognitive forcing (intervention group) and 46 did not (controls). Tested on six scenarios after 3 weeks.</td>
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Best evidence topic reports

Emerg Med J August 2017 Vol 34 No 8
The need to take all available steps to prevent error and harm from occurring has been highlighted as a moral and professional obligation in order to honour the ethical principles of beneficence, non-maleficence, fairness and justice.7

SEARCH STRATEGY
PubMed (inc. Medline), search strategy A=106
Embase 1974–2016 via Ovid interface, search strategy A=289
Cochrane Library, search strategy B=220

Search terms
(1) Emergency, (2) Error, (3) Cognitive and (4) Metacognition

Search strategy using search terms above
A. (1) (All text) AND (2) (All text) AND (3) (All text) OR (4) (All text)
B. (1) (Abstract, Keywords, Titles) AND (2) (Abstract, Keywords, Titles) AND (3) (Abstract, Keywords, Titles) OR (4) (Abstract, Keywords, Titles)

SEARCH OUTCOME
Six hundred and fifteen papers were returned, of which 2 were relevant.8 9
These are displayed in table 2.

COMMENT(S)
There is currently little evidence that teaching cognitive forcing strategies reduces cognitive error in the practice of emergency medicine. The evidence that is available is subject to important limitations. That evidence suggests that the delivery of a single 90 min teaching intervention to medical students has no effect on search satisfaction bias, availability bias or the prevalence of false positive diagnoses on testing after 3 weeks. No evidence is currently available on the impact of teaching cognitive debiasing, metacognition or cognitive forcing strategies on error attributable to cognition in postgraduate learners of any grade practising in emergency medicine.

FUTURE RESEARCH
There is a clear need for further research into cognitive debiasing and cognitive forcing strategies and their role in the reduction of cognitive errors made within the ED. There has been insufficient progress in systematically evaluating and implementing proposed strategies.7 It is an ethical imperative to act on the expanding body of expert opinion; continued refinement of this area should be considered integral to medical education and be seen not only as a research priority but also a moral and professional duty.7

REFERENCES

Competing interests None declared.

Provenance and peer review Not commissioned; internally peer reviewed.

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BET 2: Poor evidence on whether teaching cognitive debiasing, or cognitive forcing strategies, lead to a reduction in errors attributable to cognition in emergency medicine students or doctors
Govind Oliver, Gopal Oliver and Rick Body

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