

comments related to the application itself being 'user-friendly and aesthetically pleasing'.

Further studies are planned to evaluate the potential of the eCRPs to assess clinical reasoning skills across candidates with a range of expertise, from students and novices to experienced clinicians.

REFERENCE

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Bedside teaching of clinical reasoning and evidence-based physical examination

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Context and setting Medical school physical examination (PE) education focuses on the acquisition of skills in three domains: psychomotor (motor skills); affective (interaction with examinees), and cognitive (interpretation). To reinforce learning in the cognitive domain, we currently offer an advanced physical diagnosis elective to senior medical students to teach the principles of evidence-based physical examination (EBPE).

Why the idea was necessary Recent studies have emphasised a 'synthetic' domain: practising doctors must not only recognise findings and understand their evidence-based utility, but must also make optimal management decisions based on these findings. 'Synthesis' is rarely taught; rather, students are expected to become adept simply with experience. Consequently, as they make the transition to internship, students may be ill-prepared to apply EBPE in practice.

What was done The existing elective includes an introduction to the principles of EBPE. We developed a 3-hour structured bedside rounding session to reinforce key EBPE skills, including: estimation of pre-test probability; recognition of PE findings; evidence-based estimation of post-test probability of the disease, and decision making based on this

assessment. For example, in a patient with dyspnoea, elevated neck veins, S3 heart sound and abdominojugular reflux, students decide whether to prescribe diuretics or to order an echocardiogram. Each session is structured as follows: faculty staff pre-select two to four patients to examine at the bedside; small groups of three or four students examine the patients and are given feedback by the faculty staff about their examination technique and findings; the students commit to a next step in management, and the faculty staff provide feedback on the students' decision making.

Students answered pre- and post-elective questionnaires that measured their confidence in their ability to perform EBPE, the perceived utility of PE, and the usefulness of elective activities. Clinical vignettes presenting practice choices were used to assess clinical reasoning.

Evaluation of results and impact Three 2-week electives were offered between November 2009 and March 2010. Twenty-one students participated. On a Likert scale of 1–5 (1 = not at all confident, 5 = very confident), students showed increased confidence in: (i) their PE skills in general (mean \pm standard deviation [SD] score: retrospective pre-elective 3.38 ± 0.50 , post-elective 4.19 ± 0.40 ; $p < 0.05$); (ii) understanding the significance of findings (mean \pm SD: retrospective pre-elective 2.86 ± 0.57 , post-elective 4.23 ± 0.44 ; $p < 0.05$), and (iii) making management decisions based on findings (mean \pm SD: retrospective pre-elective 2.90 ± 0.87 , post-elective 4.57 ± 0.60 ; $p < 0.05$). Most students requested that more bedside rounds be included in the elective. Vignettes designed to assess clinical reasoning won high pre-elective scores that did not change appreciably in post-elective testing.

Our pilot of structured bedside rounds to teach senior medical students to recognise findings, understand their evidence-based utility and use assessments to make optimal management decisions was well received and valued by students. Students reported increased confidence in making management decisions based on PE findings at the end of the elective. However, improvement in clinical reasoning could not be detected using our assessments, indicating that better calibrated instruments to measure the synthetic domain must be developed.

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