

# Improving Quality of, and Access to Paediatric Simulation Training for Medical Students



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## Background

The University of Aberdeen in conjunction with the Paediatric department at the Royal Aberdeen Children's Hospital offers students training in managing unwell children in a simulated environment.

Historically small groups of students worked through a multi-stage simulation including assessment, management, prescribing and handover. This session encouraged group participation, although allowed students with different personalities to either dominate or avoid the scenario.

## Methods

The redesigned program involves a brief focused A-E revision tutorial followed by students performing a series of (10-15mins) short scenarios with extended clinical questions. Each scenario focuses on a different aspect of A-E approach with different condition(s), building on each other in terms of complexity and designed to encourage experiential learning. Scenarios included:

- Acute asthma attack
- Sepsis
- Seizure secondary to hypoglycaemia
- Surgical emergency (intussusception)

Scenarios were tested using a low-fidelity settings and high-fidelity simulation models.

Each student is given the opportunity to lead a primary survey assessment and handover. Other students are assigned supporting and rotating roles within each scenario.

Peer student feedback is encouraged and guided group discussion is led by the tutor.

Feedback was obtained using a combination of Likert scales and qualitative responses from students following implementation (see below)

**Aim: To improve student participation and curriculum coverage in simulation training.**

### Simulation 2 – Septic shock secondary to meningitis

#### Background:

6yo boy with 3-day history of being progressively more unwell with reduced intake this morning. Unvaccinated otherwise no PMHx

#### Presentation:

Brought in by Dad with concerns over how little he has had to eat and drink this morning

A: Patent

B: RR 35, Sats 91%, No WOB, Faint grunt, Clear chest

C: HR 145, BP 80/40, CRT 4 sec, Cool peripheries

D: Response to voice, BM 6, moving all four limbs, no seizure activity

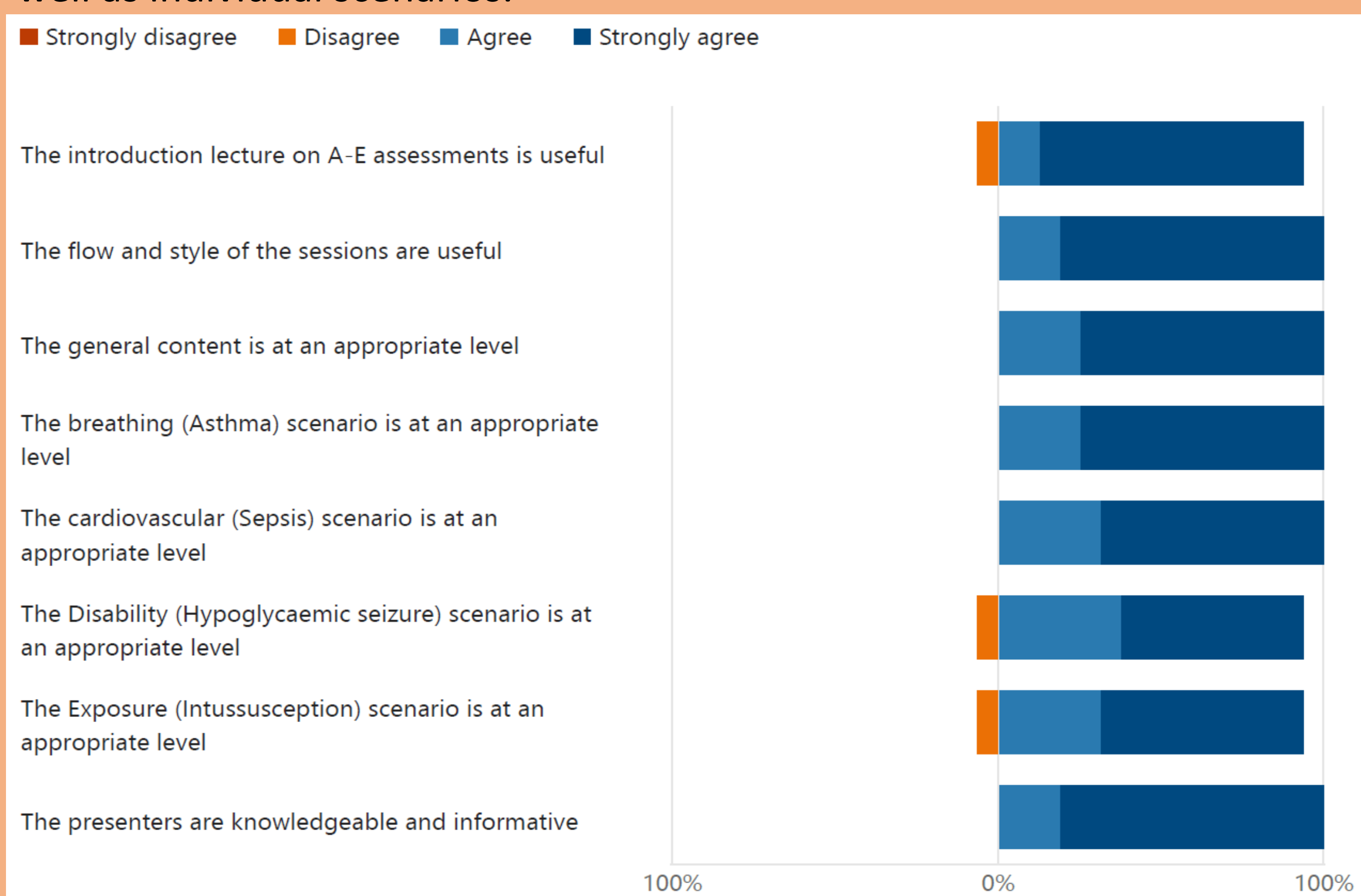
E: Temp 39.5, Dark non-blanching purpura on lower limbs

Expected management: Sepsis 6: Oxygen 15L non-rebreather mask, IVF bolus, IV antibiotics, Lactate, Blood Culture, Measure urine output

#### Further questions:

- What is the diagnosis? Confirmed septic shock, suspected secondary to meningococcal meningitis
- How much oxygen would you give him: 15L in unwell patients
- How much fluid would you give him: 10mL/kg bolus of any isotonic crystalloid
- If the bolus doesn't work, what would you do next to support cardiovascular function: Ensure called for help, another bolus at 10mL/kg, can consider continuing up to 40mL/kg, Inotropes, Invasive monitoring
- This patient's lactate is 7, by what mechanism is lactate produced and what does it represent: Anaerobic metabolism in the context of poor tissue perfusion due to distributive shock
- What about an LP: Not currently as unstable, risk of bleeding due to possible coagulopathy and herniation due to possible raised ICP, it won't change immediate management.

**Figure 1:** Likert scale results reviewing both simulation session design as well as individual scenarios.



The feedback afterwards was very helpful and it was nice to have a practice within the safe environment of the simulation session.

The fact that everything was available in the room i.e. guidelines, equipment etc. made it feel more like a real scenario.

The feedback from the tutors was really helpful and they had a very relaxed attitude so the session didn't feel overwhelming and stressful

Number of responses = 16

## Outcomes

The introduction of more conditions allowed us to achieve significantly greater (four times more) curriculum and GMC MLA mapping in the same length of session.

Guided discussion questions allowed simulation sessions to be near peer/trainee run with minimal prior training. Thus freeing up consultant teaching time.

Sessions were run on both low and high-fidelity mannequins with minimal difference in feedback, suggesting that this style of session can be run sustainably with minimal resources.

Engagement improved by placing the expectation for each student to take a turn. This pressure wasn't reflected in negative feedback.

Our current format has limited scope to scale with expected larger student cohorts. Further work is likely needed in incorporating audiovisual technology to address this.

**Conclusion:** Simulation training is a recognised important part of medical education. Our strategy has shown success in improving quality of student learning experience, encouraging wider student participation and broadening curriculum coverage