**What did you do?**

We incorporated SimMan into pre-clinical pharmacology teaching, to build a deeper level of understanding of the subject and place the patient at the heart of the learning experience. SimMan is a high-fidelity patient simulator who can be programmed to display a wide range of physiological and pathophysiological signs and respond appropriately to treatment, be it physical e.g. cardiopulmonary resuscitation or therapeutic e.g. administration of drugs. I designed simulations to be delivered en masse to the whole year group. Using this approach we had to mitigate a potential lack of engagement from the whole class if only the tutor and/or a few students controlled the scenario.

**Who is involved?**

Stage 1 and 2 MBBS (Medicine) students at Newcastle University. Clare Guilding runs the sessions with help from colleagues, including Jo Matthan and Eimear Fagan (both School of Medical Education), plus a variety of clinical teaching fellows on rotation in the School. Garry Mackenzie provides excellent technical assistance in writing up SimMan and all associated technology in the lecture theatre.

**How do you do it?**

I created a range of interactive simulated medical emergencies for delivery in the lecture theatre. All scenarios run for approximately 15 minutes within traditional 1 hour lecture slots. To enable the entire class to engage in clinical decision-making, split-screen and interactive voting technologies are employed. One of the screens projects the physiological readouts from SimMan such as his blood pressure, ECG heart trace and oxygen saturation; the other screen is linked to a TurningPoint interactive quiz. Each student is supplied with a TurningPoint handset and at a series of key clinical points throughout the scenario the students are asked to vote individually and anonymously on the most appropriate course of action (e.g. initial patient management steps, which drug should be administered). The option with the most votes, (whether or not this was the correct management option) is applied to SimMan and the students then observe the physiological effects this has in real time.

Scenarios developed and delivered to date include an acute asthma attack and anaphylaxis. Clinical teaching fellows portray the emergency doctors, paramedics and nurses. A microphone is attached to SimMan to project his breathing throughout the lecture theatre and a colleague off-stage provides a voice for SimMan in response to questioning. The simulations are followed by a short debrief in class where the consequences of the choices were explained along with explanations as to the correct course of action. A detailed debrief handout is distributed to support independent and further study.

**Why do you do it?**

High-fidelity patient simulation provides a unique opportunity for students to apply learned principles in a safe, controlled learning environment, and can encourage a deeper level of understanding through active and experiential learning.

**Does it work?**

Online end of unit evaluation of this innovation has been positive. 395 of the 511 respondents (76%) agreed/strongly agreed with the statement ‘The use of SimMan enhanced my learning experience’ measured on a five point likert scale (96% response rate). Thematic analysis of free text qualitative feedback uncovered two main themes:

1. The simulations demonstrated the effects of drugs in a patient-centred manner.
2. The simulations enabled students to see how the content of the course applied to clinical practice.

An example of feedback illustrating this latter point is: ‘The lecture using SimMan at the end was really good, especially using TurningPoint so that we could try to ‘treat’ SimMan. It kept the lecture clinically focussed and enabled us to see how the information would come in useful in practice’. Simulations where SimMan died, for example after administration of 5ml 1:1000 intravenous adrenaline for anaphylaxis, provided particularly memorable learning experiences. Feedback on this particular encounter included: ‘SimMan… cemented my learning on this topic and it made the entire lecture very memorable, I can still remember the entire SimMan session a year on’.

**Your title** Combining interactive voting technology and high-fidelity patient simulations in the lecture theatre

1. **Coherent Curriculum themes**

Assessment and feedback

Research-informed teaching

Skills and Employability

Student engagement

Technology enhanced learning

**Students' Stage**

1. Undergraduate (stage 1 and 2)

**Students' academic unit**

1. MBBS (Medicine)

**Learning technologies**

1. SimMan

TurningPoint

**Type of interaction**

1. Over 200 students per group

**Main trigger for your practice**

1. In response to issues

**Tags**

1. SimMan / TurningPoint / simulation / scenarios / voting technologies / split-screen /

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