Advantages of simulation

Students and mentors were generally positive about their experiences of interacting with the simulator, and comments were made such as:

<u>*Students*</u>

- *It was useful on the simulator to be able to concentrate on scanning and looking at the images in relation to how I was moving the transducer, without having to think about talking to the patient at the same time*
- *I get quite nervous when I'm trying to learn something new because I've always been a bit slow compared with other people, so I liked being able to practise on my own at my own pace*
- *I could use the simulator on my own and keep repeating things as many times as I liked without anyone thinking I was being too slow*
- *It's so busy scanning in the department and there's the constant pressure of getting on to the next patient. With the simulator it was more relaxed, and I had time to think about what was happening as I moved the transducer and what the images were showing*
- *It was really helpful for learning anatomy and understanding how the 2D images relate to 3D anatomy*
- *It was like having a tutor sitting next to me to answer questions, because I could get feedback and find correct answers from the simulator at any time while I was scanning*
- *I felt it was much better for my first TV patient because I'd been able to practise first on the simulator model*
- *I found it (using the simulator) more useful at the beginning of my scanning because, although it wasn't completely life-like, it did prepare me for when I had to scan my first real patient on my own*
- *I found that I really understood the orientation of the transducer and the scan planes after using the simulator. In fact I was even able to explain the TV scanning coronal plane to my mentor which she'd never thought about before!*
- *I don't get to see much pathology in my clinical department so it was really useful to be able to choose a case on the simulator which showed me the appearances of different pathologies*
- *I found it was really good to practise manipulating the simulator transducer and it gave me time to understand what happened to the image as I moved into a different position. I felt much more confident about this when I got back into work to scan a real patient*
- *Listening to a lecture on scanning doesn't always make sense unless you've already started scanning, but the simulator seemed to help me understand things because I had to practise the technique as the instructions and explanations were given*
- *I found it really helpful to be able to read information on the screen, and then put it into practice when the simulator asked us to demonstrate various structures. The guidance given was a great help and when I wasn't sure what I was looking at I could select colour coding to outline various structures*
- *It was helpful being able to work through the whole package of different organs on the simulator because then I felt I'd covered everything to the same level as everyone else on the course. I always worry that there are some 'black holes' in my knowledge which no-one's remembered to tell me about, so I found the simulator reassuring*

<u>*Mentors*</u>

- *My student this year used the simulator for TV scanning before we scanned a real patient, and she did seem much more confident in her approach to the patient compared with students in the past who I've worked with on their first TV patient*
- *I had the chance to use the simulator myself and, even though I've been scanning for many years, I still found it a useful exercise to work through the various components. It made me stop and think about why I was doing things and what I was actually seeing on the images*
- *I found that after she worked on the simulator, my student has taught me a few things about orientation which I'd never really thought about before!*
- *This year my student has grasped the anatomy and relationship of organs very quickly – not sure if she's just spent more time learning this than my previous students or whether it was the simulator that helped*
- *I spent less time this year teaching my student the basics of performing a scan. She'd managed to book time on the simulator before she scanned patients in the department, and this was a noticeable advantage*
- *My student was struggling at the beginning of her clinical training, so I arranged for her to spend time on the simulator, and this seemed to be the turning point for her, because after*

that I noticed that her hand-eye co-ordination had improved and she was much more confident

Limitations of simulation
Students and mentors were able to highlight several areas where they perceived the simulator to have limitations, such as:
<u>Students</u>
- *Although it was useful at the beginning of my scanning to get me started with learning anatomy and relationships of organs, later on I didn't really find it was like scanning a real patient.*
- *It made my arm ache because the chair and the bench weren't the correct height, so I had to keep stopping for a rest*
- *There were so many people in our year and we had trouble booking time on the system*
- *When I was trying to pass the assessments on the simulator it wanted everything done too precisely and you can fail a session just for really minor things*
- *We were all worried when we heard we would be using the simulator in our viva, so we spent time practising on the simulator again near the end of the course, just to make sure we would be able to demonstrate things in the viva, even though we didn't really feel we were getting benefit from using the simulator at that stage in our learning*
- *the formative assessments take too long to work through and we were told we had to get at least 75% right in all modules to pass*
- *Although the simulator did react when I used too much pressure on the TV scan, it wasn't the same as having to think about the patient and communicate with them*

<u>Mentors</u>
- *My student wasn't able to book time on the simulator on the days when she was already at the University and, because she lives at such a distance, this meant we had to give her additional time off work to travel to attend on days when it was available*
- *Although the simulator seemed to be useful at the beginning of the course in helping with orientation and anatomy, my student didn't seem to be gaining much benefit later on, because the feedback from her was that there was limited pathology to scan in her module*
- *It seems my two students were reluctant to use the simulator at the beginning of their course because they knew they had to pass assessments on it. This meant they waited until they were fairly confident at scanning, and left it too late to be of real benefit to us in the clinical department, because we still had to spend time teaching them the basics of scanning*
- *I think it's a really useful tool but it can't replace other aspects of teaching (such as lectures, discussions and clinical scanning). It's another piece in the jig-saw really when trying to train a student to be competent, but still a very powerful tool*
- *The simulator can never be the same as scanning a real patient so has its limitations when using it for training or assessing*

Suggestions for improvement
Several suggestions were made on how the use of the simulator could be improved during the training, and how the simulator itself could be improved:
<u>Students</u>
- *more cases of pathology to scan on the simulator would be helpful*
- *more challenging patients to scan to make it more realistic (e.g. large BMI; postmenopausal ovaries)*
- *more feedback from the simulator 'patient', such as if I was pressing too hard on the abdomen*
- *I think we should have the chance to use the simulator before scanning real patients, especially the first TV patient, because I would have felt much more confident with the technique*
- *the formative assessments could allow more latitude of positioning to avoid failing for minor inaccuracies*
- *ergonomics could be improved by being able to move the bench and the chair up and down*
- *It would help if we didn't need to pass all the formative assessments and it could perhaps be limited to a smaller number*
- *increase the availability of the simulator so that all students can get enough time*

- *it would be useful if we could have booked on the simulator before we even began the course so that we could practise scanning before dealing with real patients*

Mentors

- *opportunities for report writing and being able to check the report with a suggested version would be useful. Our students are expected to report on all their scans and this is often the area they find most challenging*
- *would be useful to arrange sessions for students to use the simulator before they've begun scanning in the department, or perhaps even earlier, using it as part of the selection process for students to identify those with good hand-eye co-ordination*
- *It would perhaps be useful to arrange for the mentor to have a session with the student when they first use the simulator to enable them to observe any weaknesses, ask questions, and be able to offer guidance in an environment where the patient isn't overhearing the conversation*
- *I feel the students should have a compulsory requirement to use the simulator at the beginning of their course, because it would save us so much time in clinical practice if they used the simulator first to master the basics*
- *it seemed to be useful to include the simulator in the viva, but perhaps the students need to be reassured beforehand that they aren't being tested on their skills with the simulator but rather, about real-life scanning. My student seemed to find this the most stressful aspect of her assessments*