Using AI-Simulated Patients to Teach Consent for Invasive Radiological Procedures

Dr Mark Hall[1], Dr Dhanwanth Chigurupati[2], Mr Conor Bradley[3], Mr Osman Omer[3]

[1]Clinical Radiology Consultant at Queen Elizabeth University Hospital, NHS Greater Glasgow & Clyde, [2] Clinical Teaching fellow at Queen Elizabeth University Hospital, [3] Medical Student at Glasgow University

NHS Greater Glasgow and Clyde

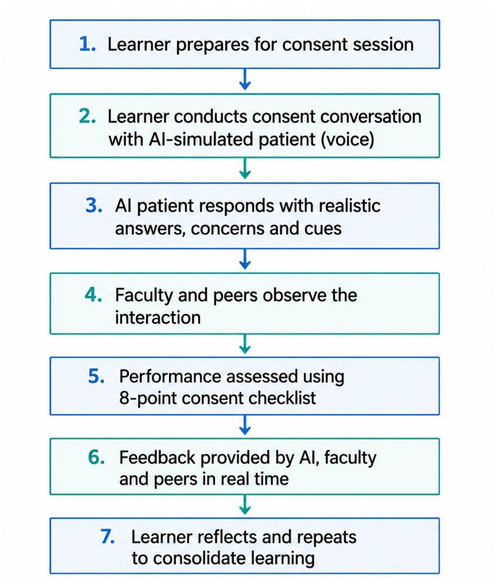
Purpose

To evaluate the feasibility, realism and educational value of using AI-simulated patients to teach and assess consent-taking skills for invasive radiological procedures.

Background

Obtaining valid consent for invasive radiological procedures requires more than factual knowledge. Learners must explain procedures clearly, discuss material risks and alternatives, respond to anxiety, avoid jargon, and check patient understanding.

Traditional teaching often relies on faculty-led role play or simulated patients, which can be resource-intensive and difficult to scale. We developed AI-driven virtual patients to provide realistic, repeatable consent practice in a safe educational environment.



Methods

We developed bespoke ChatGPT-based virtual patients for common procedural consent scenarios, including:

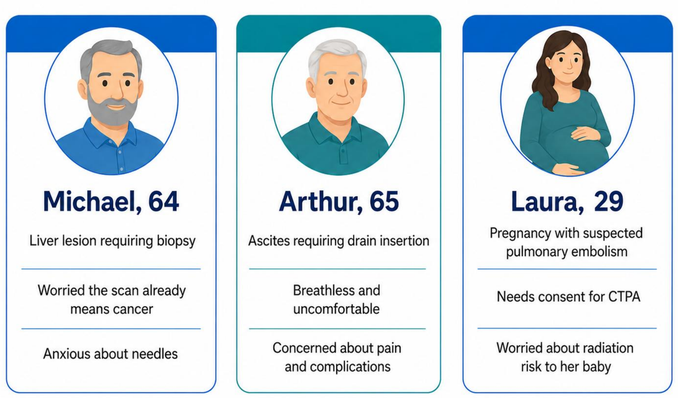
Liver biopsy, Ascitic drain insertion, ERCP, Lumbar Puncture, Consent for CTPA in a pregnant patient

Each virtual patient had a defined persona, clinical context, emotional state, and realistic response style aligned with GMC consent guidance. Teaching sessions were delivered in small groups. Learners conducted live voice-based simulated consent conversations with the AI patient. Sessions were observed by a radiologist or clinical teaching fellow, with real-time feedback provided by faculty, peers, and the AI.

A structured 8-point consent checklist was used to guide assessment and feedback.

1.Introduces self and confirms patient identity
2.Explains the reason for the procedure
3.Describes what the procedure involves
4.Discusses common and serious risks
5.Explains benefits and expected outcomes
6.Discusses alternatives, including no procedure
7.Checks understanding and invites questions
8.Confirms voluntary informed consent

Example Virtual Patient Personas



Defined AI patient personas allow standardised but realistic communication challenges.

Results

NHS Medical Education

Over 60 third-year medical students and 10 radiology students/trainees participated across ten sessions.

10 Teaching sessions

70+ Learners involved

93% Improved ability to structure consent

88% Improved confidence discussing risks and alternatives

Learner feedback suggested strong educational value, improved confidence and high perceived realism.

Discussion

AI-simulated patients provided a flexible and scalable approach to procedural consent teaching. The format allowed repeated practice without the need for additional simulated patient resource.

The AI patient could be adapted to different procedures, emotional states and levels of complexity. This made it possible to expose learners to challenging conversations, including anxious patients, misconceptions, uncertainty about cancer, and concerns about procedural risks.

The combination of AI interaction, peer observation, faculty feedback and checklist-based assessment supported targeted reflection and skill development.

Conclusion

AI-based virtual patients offer a realistic, scalable and repeatable method for teaching procedural consent in radiology and wider medical education.

This approach supports learners to practise complex communication skills, receive structured feedback, and develop confidence before real clinical encounters.

The model also demonstrates potential for AI-supported OSCE-style assessment, with AI acting as both simulated patient and examiner.