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Citation: Reimers, S. (2026). Generative AI in health sciences education and practice. Part 1: chatbots and simulation. British Journal of Cardiac Nursing, 21(1), pp. 1-6. doi: 10.12968/bjca.2025.0058

This is the accepted version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: https://openaccess.city.ac.uk/id/eprint/36722/

Link to published version: https://doi.org/10.12968/bjca.2025.0058

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Generative AI in Health Sciences Education and Practice. Part 1: Chatbots and Simulation

Since the launch of ChatGPT in November 2022, generative AI has swept into what seems like every area of life, with chatbots acting as personal assistants, researchers, even therapists: writing essays (as educators are only too aware), brainstorming, and giving people company and encouragement. In the health sciences, AI is already having impact: Practitioners can use AI to support decision making and streamline mundane or repetitive tasks; patients – or the worried well – increasingly use tools like ChatGPT as their first port of call to discuss their symptoms and concerns.

AI in Healthcare

In some ways, the health sector has been more prepared for this than other areas of work: AI is already well embedded in many areas of practice, such as assisting clinicians in detecting potentially cancerous regions in X-rays or dermatological scans, and supporting decision making in a wide range of areas such as epilepsy (e.g., Wissel et al. 2023; see Hirani et al. 2024 for a review). There has been a lively discussion about the pros and cons of AI in cardiac nursing in this journal (Lotto et al. 2025).

Yet even within the health sciences, the past couple of years have seen the start of a more wholesale shift to position AI more centrally across practice, particularly in the processing and production of natural language, which generative AI models excel at: We now have AI voice models calling up discharged patients following heart failure to check

on their condition and alert a nurse if needed (Olivella et al. 2024); clinicians using ambient AI to listen in to and summarise patient consultations (see Bracken et al. 2025 for a review), and AI text being tested for creating more patient-friendly discharge summaries (Kim et al. 2024).

Strategically, the vision is clearly AI-integrated. The NHS ten-year plan states that "All hospitals will be fully AI-enabled within the lifetime of this plan", focusing on integrating AI into clinical pathways and improving efficiency and reducing bureaucracy, with the ambition of making the NHS "the most AI-enabled health system in the world" (NHS England 2025).

Changes in Education

Alongside these high-profile strategic plans for practice, AI is also quietly being integrated into healthcare training. Over 90% of UK undergraduates reporting using AI to help them with their studies, meaning students are already engaged with an AI-enabled world, but have faced challenges in how to use AI responsibly, ethically, and effectively in their developing professional identity. Universities are responding at speed, developing bespoke training modules on AI literacy, integrating discipline-specific AI competencies into curricula, and harnessing AI in the form of tools to help students learn more effectively.

This series

This series of articles looking at generative AI in health sciences training and practice will cover a range of developments in this fast-moving area, along with ways for individual practitioners to use GenAI in the same way that university students are

learning to use it: for things like skills development, clearer communication, problem solving, and motivation. It will give practical guidance to anyone, whether student or seasoned practitioner, to gain confidence and make the most of generative AI.

This first article looks at simulation, particularly using chatbots as roleplaying agents to help students and practitioners build communication skills or practise for specific situations like difficult conversations or job interviews. We'll look at what's happening in formal education and professional development, and how individual practitioners can experiment with tools like ChatGPT to build skills and confidence.

Chatbots and Simulation

Simulated practice is central to the training of nurses and other healthcare professionals, bridging abstract classroom learning and direct placement experiences with patients. It allows students to try new skills in low-stakes but realistic environments, integrate different competencies in a well-structured clinical setting, and experience a range of situations that are important but occur relatively infrequently in practice. For these reasons and others, the NMC currently allows up to 600 hours of simulated practice learning to count towards the 2,300 practice learning hours nursing students have to complete.

Beyond building practical and procedural competencies, simulation also helps students develop communication skills. This is an area receiving particular attention, with evidence that nursing students frequently struggle with their communication, both with patients and interprofessionally (Dodson et al., 2023). But the training of communication skills is expensive either in time or in money: Staff are arm-twisted into

roleplaying patients; budgets for professional actors only allow students to have short practice interactions, or watch others doing the same; peer roleplays can feel uncomfortable and unconvincing.

Generative AI is increasingly being used to help build students' communication skills at scale. Simulated practice takes a variety of forms – from task trainers or manikins to virtual reality – but AI is being used in many of these areas where communication is important. Blackframe.ai (https://blackframe.ai/) uses AI to process students' spoken protocols as they conduct procedures on task trainer body parts, giving feedback on missed steps and general communication skills. More comprehensively tools such as SimConverse (https://www.simconverse.com/) provide AI-driven roleplay scenarios, allowing students to try out different approaches to specific communication needs and receive feedback on their performance.

At City St George's, we have built our own chatbots for simulated activities across a range of health sciences and other disciplines. Around 2,000 students have taken part in interactions: Speech and Language Therapy students simulated calling a patient's school and had a verbal conversation with an AI teacher; medical students practiced history-taking from an AI parent before their Paediatrics CCA; and nursing students called an AI patient to complete a pre-admission questionnaire. We have also used chatbots in interprofessional learning, where students from different areas of nursing and other disciplines discuss how to handle a complex case, and then talk to the AI patient about their treatment options (Reimers & Myers 2024).

Elsewhere, chatbots have been used in nursing training both for undergraduates and practitioners returning to advanced study. They have supported roleplaying exercises

with difficult patients (e.g. Reed 2025), and having challenging conversations (e.g., Wasserstrom 2025).

Student Perceptions

Feedback from students tends to be very positive. Students enjoy the novelty of the activities, though that is something that may fade over time. More importantly they find them useful, they help build confidence, and some of the specifics – being able to have a go in a low-stakes environment, and being able to restart and practice different approaches.

Ethical Issues

There are of course many important ethical considerations around the use of generative AI in teaching and elsewhere. These include environmental, social and economic concerns. These are not just abstract issues – they affect students' willingness to engage with AI activities: Although the majority of students report using AI in their studies one way or another, a minority are reluctant to engage with any activities involving generative AI, on ethical grounds.

But for roleplays there are additional specific issues. One concern is around the authenticity and diversity of the types of interactions that students get to practice. AI systems are – partly by design, partly by nature – conservative. If you've ever spoken with a UK-English speaking chatbot, you'll have probably heard a reply in a clear standard southern British accent. Chatbots by their nature produce eloquent speech, with perfect word choice and a wide-ranging vocabulary. The knowledge that chatbots can draw on represents a breadth of insight and experience that many people do not

have access to. There is a risk that we end up training our students how to interact with articulate, middle-class, native-English speaking, neurotypical patients.

Some of these issues can be handled by careful design and prompting. Chatbots can be built to speak with different accents, although there is a risk that they end up sounding like poorly acted caricatures. (There are interesting developments in allowing people to record their own voice to be used in chatbot responses, which opens up the potential for co-creation of voices and characters with users.) Specific prompting can be given so that chatbots will respond confused with technical or complex language. Instructions about fluency, sentence length and similar can help make simulations more realistic (for history taking activities, we provide our chatbots with a range of irrelevant information that they are encouraged to offer; they are given instructions to digress and avoid talking about the important issues).

Risk and Potential

Ultimately, these issues really come down to how chatbots will be deployed in training. If cash-strapped universities try to economise by replacing actors with chatbots, then the issues above could significantly undermine student learning. But if chatbots can be used to augment current provision, for example letting students practice scenarios at home before or after working with actors, or approach emotionally challenging situations in a less threatening way, then there is significant potential for improving student skills and confidence, even with imperfect AI characters.

Despite their limitations, chatbot-mediated roleplays can support authentic empathic engagement. In the first interprofessional scenario that I sat in on, a midwifery student said of the AI patient she was trying to help: “I just want to give her a hug”. When I sat

next to a young male manikin in one of our sim wards and chatted about how he had sustained his head injury, I felt moved as the character – relayed by an AI-connected speaker in the pillow – finally trusted me enough to reveal what had actually happened. If done thoughtfully, as part of a wider curriculum designed to augment current simulation provision, then there is much potential for building students' breadth and depth of communication skills, not to mention their empathy and confidence.

Beyond Formal Training

Although I have largely talked about bespoke scalable solutions for training, there are more informal ways of using chatbots for roleplays. These are the kinds of self-generated activities that individuals can use without the need for a broader training infrastructure. Students use their personal ChatGPT accounts to make roleplays to prepare for vivas or job interviews – asking the chatbot to act as a senior figure in academia or the NHS, and to ask relevant questions. Some upload their CV or presentation slides to guide the interview. Others practice negotiation or difficult conversations before going into a meeting.

Anyone with a ChatGPT account can set up any scenario to practice. If you have the 'plus' subscription (currently £20 a month), you can even have the conversation in full verbal mode. Now obviously it will be more helpful in some areas than others: Practicing history taking might not be very useful as you'll know all the details (although I've had some success where I've asked the AI to come up with an underlying disease appropriate for a particular context and related set of signs and symptoms, and then asked questions to try to determine the root cause). More helpful can be setting up a scenario where communication and interpersonal skills are important. For example, it

could be breaking bad news, or handling difficult patients. It could also be preparing for an uncomfortable conversation with a manager or a job interview. One advantage of these systems, and something students often comment on, is that you can never be completely sure what it is going to do next, just like real patients, and each time you run a simulation it is different. So repeated practice does not feel repetitive.

Box: Creating your own roleplay chatbots

It's relatively easy to use tools like ChatGPT to set up roleplaying scenarios, and indeed this has been the approach taken in some of the research covered above.

Go to your preferred chatbot (such as https://chatgpt.com/, https://claude.ai/ or https://gemini.google.com/), and log in or create an account (most have free versions that allow enough functionality to run roleplays). Then just give it a prompt that explains what you want it to do. This is more of an art than a science, but we've found that three components are important:

- General setting and character: Act as [e.g. a patient in a roleplay scenario to help me as a practicing nurse practice breaking bad news. You have been called by the nurse following discharge from hospital and the conversation starts with you picking up the phone…]
- Background info: Role information [e.g., You are Halima Begum, a 35-year-old woman living in South London with husband and 4-year-old son. You were recently hospitalized for … Currently you are feeling tired and sore, and are concerned about a regular pain you are experiencing …]

- Communication instructions [e.g., You're a South Londoner. You are not confident talking to professionals in authority. You are really worried about your test results. Speak in short sentences. React emotionally....]

And of course, never include any personal information – about yourself, colleagues, or patients. Never put genuine case histories into chatbots even when anonymised. Treat what you put into ChatGPT and similar as if it were something that people would be able to view publicly (there have been some notable cases of this inadvertently happening).

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