

# AI in Simulation-based Medical Education

The Future is Now(-ish)

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# Disclosures

NIH funding (5R01EB005807-11) to develop VR-based simulator for training operating room teams

No relationships with any commercial entities or products discussed

# My biases

I'm a Gen X, white, cisgender male (he / him / his)

I'm a cognitive scientist and have spent most of my career studying and creating systems for simulation-based training & education

I believe in systems thinking and bullish on conceiving ways to use technology to solve problems

How might we use LLMs in simulation-based medical education?

I can think of many...

Generating novel case-based simulation scenarios

Simulating patients to train clinical decision-making

Simulating clinical encounters to educate patients on self-advocacy

Simulating clinical teams to enhance teamwork skills

Providing feedback to learners

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# Simulating patients

Simulate a 13-year-old male with a sore throat and no other symptoms  
(ChatGPT using GPT-4, March 2023)



Hello! I'm a 13-year-old male with a sore throat, but I don't have any other symptoms. My throat started hurting yesterday, and it's been pretty uncomfortable when I swallow. I don't have a fever, cough, or runny nose, so I'm not sure what could be causing it. It's just annoying and makes it hard to enjoy my day. Do you have any advice or home remedies for a sore throat?



Well, I'm glad you came into the clinic. Have you been sleeping OK? Has the soreness woken you up in the middle of the night?



Thanks for asking! My sleep has been mostly okay, but the soreness does bother me a bit when I try to fall asleep. It hasn't been bad enough to wake me up in the middle of the night, though. I've been trying to sleep on my side to avoid putting pressure on my throat, and that seems to help a little.



 Regenerate response



Send a message. 

ChatGPT may produce inaccurate information about people, places, or facts. [ChatGPT May 3 Version](#)



# Simulating patients

Simulate a 13-year-old male with a sore throat and no other symptoms  
(ChatGPT using GPT-4, May 2023)

Simula a un niño de 13 años con dolor de garganta

**ChatGPT:** Hola, soy un niño de 13 años y mi garganta duele bastante. Me siento un poco mal y es difícil tragar. ¿Podrías ayudarme a sentirme mejor?

...

**ME:** ¿Alguna vez te han hecho una prueba de faringitis estreptocócica?

...

**ChatGPT:** Está bien, entiendo. Nunca me he hecho esa prueba antes, así que estoy un poco nervioso. ¿Duele la prueba? ¿Cómo se hace?

## MARCH 2023

**ME:** OK, open up and say "ahh"

**ChatGPT:** Ahh! [I open my mouth wide and try to keep my tongue down so you can get a clear view of my throat and swab it with the Q-tip collectors.]

## MAY 2023

**ME:** OK, abre y di "ahh"

**ChatGPT:** Ahh... Espero que esto ayude a descubrir por qué me duele tanto la garganta.

What might verbal conversations  
with LLMs look like?

Microphone on



Physical Exam

Patient File

Vital Signs

Sim Log

Orders & Labs

Facilitator Tools



# Some challenges for LLMs as patients

Simulating different age groups

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Very compliant providing information, asking questions, being polite

- When it understands the prompt, and
- Not tuned for a specific purpose



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Culturally incompetent?

What do y'all think?