

AI in Medical Education: 10 Practical Exercises for Faculty

Ready-to-Use Activities You Can Run in Your Next Teaching Session

How to Use This Toolkit

Each exercise is designed to be run in a single session with minimal preparation. They progress from foundational AI literacy (exercises 1–3) to clinical reasoning augmentation (4–7) to critical evaluation and ethics (8–10). Pick the ones that fit your learners' level and your learning objectives.

No Technical Expertise Required. These exercises use free, publicly available AI tools (ChatGPT, Claude, Perplexity). You don't need to code, install software, or understand machine learning. If you can use a search engine, you can facilitate these exercises.

The Exercises

1 The Differential Diagnosis Race

🕒 30 min

👥 Small groups

📅 Beginner

Setup: Present a moderately complex case (e.g., 45F with fatigue, joint pain, and rash). Have students generate a differential diagnosis list independently in 5 minutes. Then have them prompt an AI with the same case.

Discussion Questions:

- What did the AI include that you missed? What did you include that it missed?
- How did the AI rank its differentials vs. your clinical intuition?
- What happens when you add social history, travel history, or medication list to the prompt?

Learning Objective: Students discover that AI is a brainstorming partner, not a replacement — and that prompt quality determines output quality.

2 The Hallucination Hunt

🕒 45 min

👥 Pairs

📅 Beginner

Setup: Ask an AI to write a clinical summary about a specific drug interaction, rare disease, or surgical technique. Give students 20 minutes to fact-check every claim against UpToDate, PubMed, or guidelines.

What They'll Find: Plausible-sounding citations that don't exist. Dosages that are close but not quite right. Mechanism descriptions that are partially correct. Statistics presented with false precision.

Learning Objective: Build healthy skepticism. Students learn that AI "confidently wrong" is more dangerous than "obviously wrong."

3 The Patient Communication Translator

🕒 20 min

👤 Individual

📅 Beginner

Setup: Give students a complex clinical note (e.g., cardiology consult with heavy jargon). Have them use AI to translate it into patient-friendly language at three reading levels: 12th grade, 8th grade, and 5th grade.

Discussion: Which version lost important nuance? Which actually improved clarity? How would you edit the AI's output for YOUR patient?

4 The Prompt Engineering Lab

🕒 40 min

👥 Small groups

📅 Intermediate

Setup: Give all groups the same clinical scenario. Each group crafts progressively better prompts:

1. **Round 1:** "What's wrong with this patient?"
2. **Round 2:** Include demographics, vitals, labs, and history
3. **Round 3:** Specify the role ("You are an infectious disease specialist"), add constraints ("Consider only diagnoses available in a rural ED"), and request format ("Provide in order of likelihood with one-line reasoning")

Learning Objective: Quality of AI output is directly proportional to the quality of clinical thinking that goes INTO the prompt. This is clinical reasoning, repackaged.

5 The Evidence Synthesis Challenge

🕒 60 min

👥 Small groups

📅 Intermediate

Setup: Assign a clinical question (e.g., "Should we use dexamethasone in bacterial meningitis in adults?"). One group uses traditional search (PubMed, Cochrane). Another uses AI-assisted search (Perplexity, Consensus, Elicit). Both have 30 minutes.

Compare: Coverage of key trials, quality of evidence grading, identification of conflicting evidence, time to answer. The AI group will be faster but may miss nuance; the traditional group will be more thorough but slower.

Learning Objective: AI accelerates literature review but doesn't replace critical appraisal skills.

6 The Clinical Note Generator & Editor

🕒 35 min

👤 Individual

📅 Intermediate

Setup: Record a simulated patient encounter (or use a transcript). Have students feed the transcript to an AI and generate an H&P note. Then: critically edit the output.

Editing Checklist:

- Did it capture the chief complaint accurately?

- Did it fabricate any history elements?
- Is the assessment clinically sound?
- Does the plan reflect what was actually discussed?
- Is the note medicolegally defensible?

7 The Bias Detector

🕒 45 min

👥 Pairs

📖 Advanced

Setup: Present the same case to an AI three times, changing only the patient's race, gender, or socioeconomic context. Compare the differential diagnoses, recommended workups, and management plans.

⚠️ Sensitive Exercise: Facilitate carefully. The point is not to "catch" AI being racist — it's to demonstrate that training data reflects healthcare's existing disparities. Frame this as a systems issue, not a technology failure.

Learning Objective: AI can amplify existing clinical biases. Clinicians must be aware of this to use AI tools responsibly.

8 The Patient Simulation Builder

🕒 50 min

👥 Small groups

📅 Advanced

Setup: Have students build an AI-powered standardized patient. Prompt the AI with: "You are a 62-year-old male presenting to the ED with chest pain. You have a history of diabetes and hypertension. You are anxious and not forthcoming about your cocaine use unless asked directly and nonjudgmentally."

Students then take turns interviewing the AI patient, practicing history-taking, motivational interviewing, and breaking bad news.

Learning Objective: AI can be a practice partner for communication skills — available 24/7, infinitely patient, and endlessly customizable.

9 The Ethics Tribunal

🕒 60 min

👥 Full class

📅 Advanced

Setup: Present an ethical scenario: A resident uses AI to generate a patient's discharge summary without reviewing it. The summary contains an error that leads to a medication interaction at home. Assign roles:

- **Prosecution:** The resident was negligent
- **Defense:** The system failed to provide guardrails
- **Ethics committee:** What policies should exist?
- **Patient advocate:** What does informed consent mean in AI-assisted care?

Learning Objective: Technology doesn't remove professional responsibility. Students develop frameworks for ethical AI use.

10 The Policy Proposal

🕒 90 min (or homework)

👥 Small groups

📅 Advanced

Setup: Each group drafts a one-page AI use policy for a clinical department. Must address:

1. Which tasks are appropriate for AI assistance?
2. What verification steps are required before acting on AI output?
3. How is AI use documented in the medical record?

4. What training must clinicians complete before using AI tools?
5. How are errors attributed and reported?

Learning Objective: Students move from users to leaders — shaping how AI integrates into their future practice environments.

Quick Reference: Exercise Selection Guide

If Your Goal Is...	Use Exercise(s)	Time Needed
Introduce AI to skeptical faculty	1, 2, 3	90 min
Improve clinical reasoning	1, 4, 5	2 hours
Address AI safety and ethics	2, 7, 9	2.5 hours
Build practical AI skills	3, 4, 6, 8	2.5 hours
Full-day AI bootcamp	All 10	7 hours

Facilitation Tips

For Faculty Who Are New to AI:

- Run exercises 1–3 yourself first. You'll be more confident facilitating what you've experienced.
- Don't position yourself as an AI expert. Position yourself as a clinical expert exploring a new tool.
- When AI produces a wrong answer, celebrate it — that's the best teaching moment.
- Have students work in pairs so no one feels exposed if they're unfamiliar with the technology.

Assessment Rubric

Competency	Novice	Competent	Expert
Prompt Design	Vague, single-sentence prompts	Structured prompts with context	Iterative prompting with role/constraints/format
Output Evaluation	Accepts AI output uncritically	Identifies obvious errors	Systematically verifies claims against evidence
Clinical Integration	Uses AI as replacement for thinking	Uses AI as one input among many	Strategically deploys AI for specific tasks while maintaining clinical ownership
Ethical Awareness	Unaware of AI limitations/risks	Can name key risks (bias, hallucination)	Can propose policies and safeguards

Get the Full Bootcamp Curriculum: Visit faculty-ai-bootcamp.wedgekit.com for slide decks, facilitator guides, sample cases, and a community of medical educators building AI-literate graduates.

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For educational use. AI tools evolve rapidly — verify current capabilities before each session.