

Virtual Patient: Vaccine Hesitancy

An AI-Powered Simulator for Mastering Immunization Counseling

Andrew Tang, PharmD

Ascension Columbia St. Mary's Hospital | PGY-1 Resident

November 5, 2025

The Critical Training Gap – Pipeline Visual

Current Training Methods

Path 1: Standardized Patients

- High Quality
- Prohibitively Expensive
- Logistically Unscalable

Path 2: Peer Role-Play

- Low Cost
- Unrealistic & Inconsistent
- No Objective Feedback

Results:
Student Unpreparedness

Students graduate unpracticed and lacking the confidence to apply the CASE method effectively

C: Corroborate

A: About Me

S: Science

E: Explain/Advise

Our Solution: A Hybrid AI Strategy

Phase 1: Development

Data Generation:

Use Claude's creativity to generate thousands of "Graded" CASE method conversations



Model Fine-Tuning:

Distill all above data into a small, fast, open-source model



Package for Offline Use:

"Patient" and "Grader" AI into a single, secure application

Phase 2: Testing & Deployment

Student Practice:

Students interact with the "Digital Patient" AI on their own device



Grading & Analysis:

Local "Grader AI" analyzes the chat log against the CASE method rubric



Instant Feedback: **Online**

Student to obtain their private report + option to **submit report** to faculty



How It Works: The Student Experience (Part 1)



John A. Doe - SIM PT
DOB: 01/01/1960
CC: Annual Physical Exam

Time Remaining: **08:03**

MONDAY - OCTOBER 13, 2025
ENCOUNTER: IMZ FOLLOW-UP

Message
(Today) PM 12:21

Hello Mr. Doe, this is Andrew from Pharmacy. You're due for your yearly flu shot, when would be a good time to schedule this vaccine?

NO THANKS. Past few times I've gotten it, it actually gave me the flu. I was sick for a week last year right after I got it. I'm not doing that again.

That sounds miserable, and I'm sorry you went through that. It's completely understandable why you wouldn't want to get it again. It's also true that some people can feel run-down or achy for a day or two after.



How It Works: The Student Experience (Part 2)

REPORT CARD

VACCINATION HESITANCY TRAINING

SUBJECT GRADING

CASE METHOD	GRADE	COMMENT
Corroborate	Acceptable	
About Me	Acceptable	
Science	Acceptable	
Explain / Advise	Needs Improvement	

CONFIDENCE

Overall ScoreNeeds Improvement

EMPATHY, RESPECT, PATIENT-CENTERED LEARNING

Overall ScoreNeeds Significant Improvement

Jumped to conclusions early without asking for clarification; no signs of showing empathy

Patient : John Doe

DOB: 01/01/1960

Provider : Andrew Tang, PharmD

Date : 10/13/2025

Time Spent: 8 min, 3 seconds

Monday, October 13, 2025

Enrolled Course
PHAR 1234

Course Instructor
Professor Jane Doe

CASE METHOD	GRADE
Corroborate	Acceptable
About Me	Acceptable
Science	Acceptable
Explain / Advise	Needs Improvement

Jumped to conclusions early without asking for clarification; no signs of showing empathy

Project Roadmap & Needs

Current Status

- ✓ Problem Validated
- ✓ Core Curriculum Secured
- ✓ CASE Method Rubric
- ✓ Architecture Defined

Next Steps

-  **Phase 1:** Recruit Core Technical Team
-  **Phase 2:** Develop Dataset (with Claude) & Fine-Tune Local Model
-  **Phase 3:** Build Prototype App & Educator Dashboard
-  **Phase 4:** Pilot with 1st Student Cohort

Resources & Risks

Resources Needed:

-  ML/AI Partner:
 - Experience with model fine-tuning & local deployment
-  Back-End Partner:
 - Build secure API & educator dashboard
-  UX/UI Partner:
 - Assist in designing the student simulation interface

Risks: Hardware constraints;

A Privacy-First, Scalable Framework for Healthcare Education

 Immediate Impact	 Scalable Impact	 Future Vision
<u>Concordia University - WI</u>	<u>Pharmacy Curriculum</u>	<u>Health Sciences Education</u>
✓ Students can practice and master the CASE method ✓ Faculty get a scalable, objective assessment tool ✓ PII* / FERPA* risk is addressed with a "privacy-by-design" hybrid model	 Project can be scaled as a tool for over 140 accredited colleges and schools of pharmacy in the US.	❖ This AI Framework can be adapted for: - o Nursing Students - o Medical Students - o Any IPE-based* difficult conversations

***PII – Personally Identifiable Information;** FERPA - Family Educational Rights And Privacy Act; **IPE – Interprofessional Education**

Join Us!

HOW YOU CAN HELP:

STUDENTS:

- Are you interested in AI/Machine Learning, Back-End, or UX Design?
- Let's chat about a high-impact portfolio project

FACULTY & ADVISORS:

- Have you managed a similar tech project? I'm seeking a 30-minute advising session.
- Do you know a subject-matter expert or previous project manager that I should reach out to?

Help us turn hesitancy into confidence!

References

1. American Pharmacists Association. (n.d.). APhA Immunization Center. Retrieved November 4, 2025, from <https://www.pharmacist.com/Practice/Patient-Care-Services/Immunizations>
2. Anthropic. (2024). *Claude 3* [Large language model]. <https://www.anthropic.com/claude>
3. Canva. (n.d.). Canva. Retrieved November 4, 2025, from <https://www.canva.com>
4. Centers for Disease Control and Prevention. (2024). *Epidemiology and prevention of vaccine-preventable diseases*. U.S. Department of Health & Human Services. <https://www.cdc.gov/pinkbook/hcp/table-of-contents/index.html>
5. Concordia University Wisconsin School of Pharmacy. (2017). *Rubric: Vaccine Hesitancy Communication* [Internal document]. Concordia University Wisconsin.
6. Jacobson, R. M., Van Etta, L., & Bahta, L. (2013). The C.A.S.E. approach: guidance for talking to vaccine-hesitant parents. *Minnesota medicine*, 96(4), 49–50.
7. Miro. (n.d.). Miro. Retrieved November 5, 2025, from <https://www.miro.com>

Thank You!

Let's Connect

Andrew Tang, PharmD

andrew.tang@cuw.edu

[linkedin.com/in/andrewtang-pharmd](https://www.linkedin.com/in/andrewtang-pharmd)

Faculty Advisors

Anne Graff LaDisa, Pharm.D., BCPS

Professor, Department of Pharmacy Practice

Anne.Ladisa@cuw.edu

Sarah Ray, PharmD, BCPS, FAPhA

Chair and Professor, Department of Pharmacy Practice

Sarah.Ray@cuw.edu

