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and receive CME credit for physicians



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Please sign in both for live sessions and when viewing recordings asynchronously. CME can be granted for live attendance; asynchronous attendance will still be counted for AOE membership requirements, but no CME can be granted.

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7/28/25 AOE Check-in

Accreditation Statement

- The School of Medicine of the University of North Carolina at Chapel Hill is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

Credit Statement

- The School of Medicine of the University of North Carolina at Chapel Hill designates this live activity for a maximum of 1.0 AMA PRA Category 1 Credit(s)[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Disclosure statement

- This activity has been planned and implemented under the sole supervision of the Course Director, Jen Martini in association with the UNC Office of Continuing Professional Development (CPD). The course director and CPD staff have no relevant financial relationships with ineligible companies as defined by the ACCME.

Presenters

- **Title:** Harnessing AI for Medical Education: Insights, Evidence, and a ChatGPT Standardized Patient Pilot
- **Speakers:** Bianca Allison, MD MPH
- The speakers have no relevant financial relationships with ineligible companies as defined by the ACCME.



Harnessing AI for Medical Education: Insights, Evidence, and a ChatGPT Standardized Patient Pilot

Bianca A. Allison MD MPH

Associate Professor, Department of Pediatrics

University of North Carolina School of Medicine

Learning Objectives

- Describe the current landscape of artificial intelligence applications in medical education, including key findings from recent systematic reviews and primary studies.
- Evaluate the feasibility, acceptability, and effectiveness of a custom ChatGPT-based standardized patient intervention, using pilot data and implementation insights.
- Demonstrate the design and functionality of an AI-driven standardized patient simulation, and discuss its potential role in clinical skills training and assessment.

Agenda

- Background on AI
- AI uses in medical education
 - Our ChatGPT simulation pilot study
- AAMC resources on AI in med ed



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Background on AI

What is AI?

- **AI (Artificial Intelligence)** → The broadest field that encompasses all intelligent systems.
- **Machine Learning (ML)** → A subset of AI where systems learn patterns from data without explicit programming.
- **Deep Learning (DL)** → A specialized approach within ML that uses neural networks to learn from large datasets.
- **Natural Language Processing (NLP)** → A branch of AI focused on understanding human language, often powered by deep learning.
- **Large Language Models (LLMs)** → A type of AI model built using deep learning techniques to process and generate language.

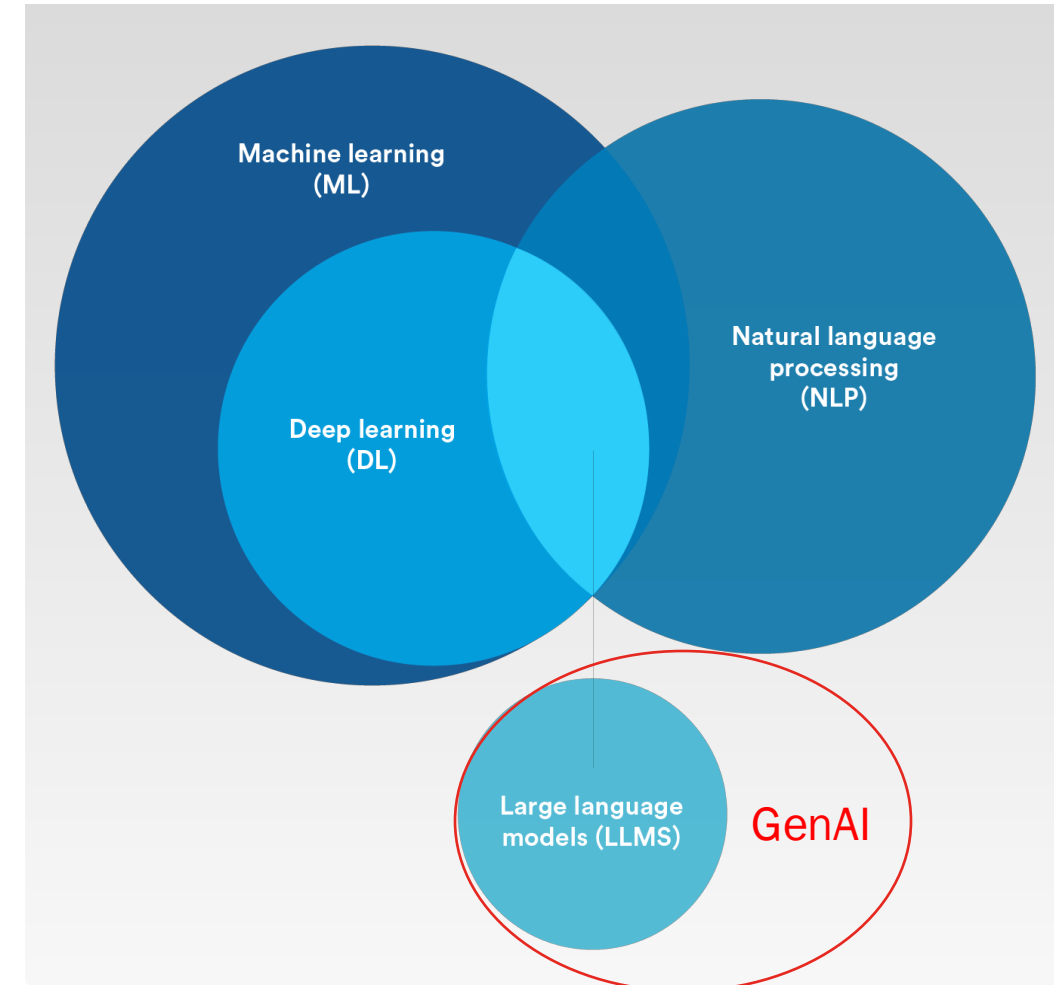


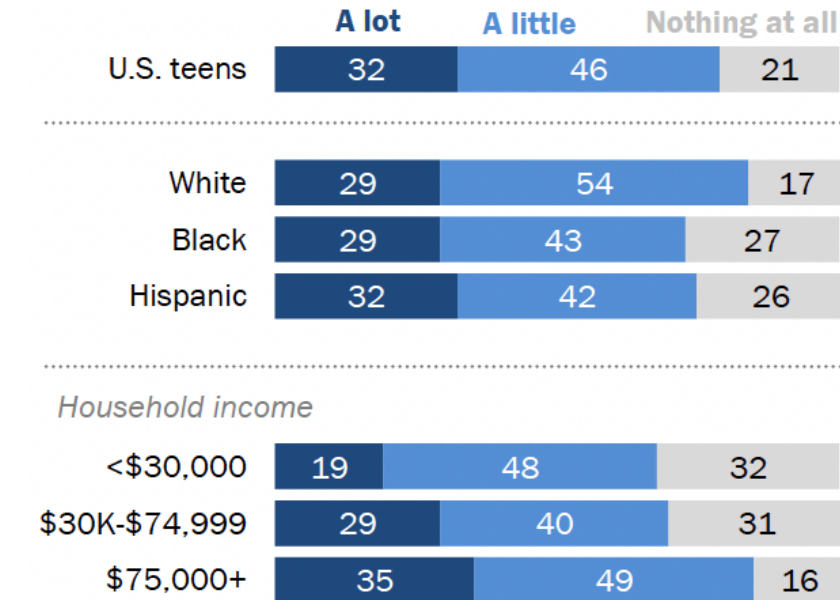
Image from: <https://www.genetec.com/blog/cybersecurity/the-implications-of-large-language-models-in-physical-security>

Youth have positive perceptions of AI

- Half of teens surveyed have used generative AI, but few (4%) use it frequently
- Most common uses are for getting information (53%) and brainstorming (51%)
- AI can help with homework and creative assignments, not just cheating
- Students bring their questions to generative AI, for better or worse

Teens from higher-income households are more likely to know about ChatGPT

% of U.S. teens ages 13 to 17 who say they have heard ___ about ChatGPT, an artificial intelligence (AI) program used to create text



Note: White and Black teens include those who report being only one race and are not Hispanic. Hispanic teens are of any race. Those who did not give an answer are not shown.

Source: Survey of U.S. teens conducted Sept. 18-Oct. 10, 2024.

PEW RESEARCH CENTER

Ways youth use AI

- Educational content and adaptive learning experiences
 - Examples: Duolingo, Mondly VR
- Virtual mentors and personalized coaching
 - Examples: HabitCoach.Ai, Nurvv Run
- Creative expression
 - DALL-E



How are those resolutions coming along?

uh... not so great

Don't worry, everyone falls off the horse sometimes...

On that note - did you drink your glass of water this morning?

I did! also remembered to floss.

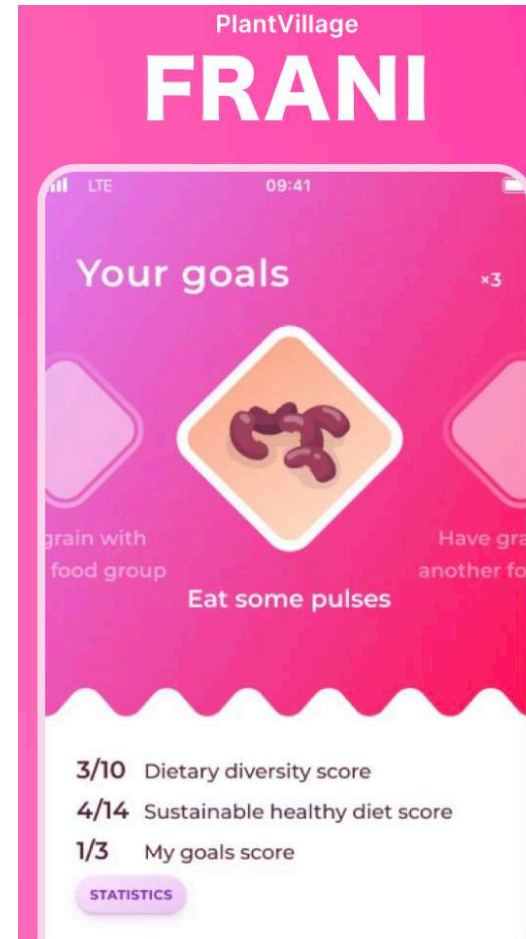
Great, looks like you nailed it today! Here's a summary:
Date: 01/01/23
✅ - Morning Water
✅ - Floss



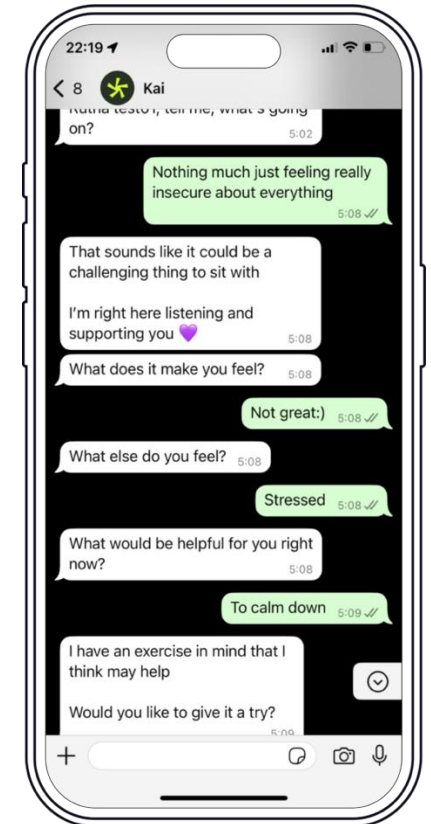
Ways youth use AI: preventive health



INSPIRE



Kai.ai



Uses of AI in healthcare provision

> Eur J Pediatr. 2024 Dec 14;184(1):83. doi: 10.1007/s00431-024-05846-3.

Artificial intelligence in the care of children and adolescents with chronic diseases: a systematic review

Janna-Lina Kerth # ¹, Maurus Hagemeister # ², Anne C Bischops ², Lisa Reinhart ², Juergen Dukart ^{3 4}, Bert Heinrichs ^{3 5}, Simon B Eickhoff ^{3 4}, Thomas Meissner ²

Affiliations + expand

PMID: 39672974 PMCID: [PMC116454](#)

Review > Nutrients. 2020 Aug 16;12(8):2466. doi: 10.3390/nu12082466.

Machine Learning Models to Predict Childhood and Adolescent Obesity: A Review

Gonzalo Colmenarejo ¹

Affiliations + expand

PMID: 32824342 PMCID: [PMC7469049](#) DOI: [10.3390/nu12082466](#)

Review > J Pediatr Surg. 2023 May;58(5):908-916. doi: 10.1016/j.jpedsurg.2023.01.020.

Epub 2023 Jan 19.

Use of machine learning in pediatric surgical clinical prediction tools: A systematic review

Amanda Bianco ¹, Zaid A M Al-Azzawi ¹, Elena Guadagno ², Esli Osmanliu ³, Jocelyn Gravel ⁴, ⁵

+ expand

DOI: [10.1016/j.jpedsurg.2023.01.020](#)

Review > Psychiatry Res. 2025 Jan;343:

Epub 2024 Nov 19.

Evaluating predictive artificial intelligence approaches used in mobile health platforms to forecast mental health symptoms among youth: a systematic review

Jamin Patel ¹, Caitlin Hung ², Tarun Reddy Katapally ³

Affiliations + expand

PMID: 39616981 DOI: [10.1016/j.psychres.2024.116277](#)

Free article

ur Respir Rev. 2024 Nov 13;33(174):240118. doi: 10.1183/16000617.0118-2024.

Predicting paediatric asthma exacerbations with machine learning: a systematic review with meta-analysis

Martina Votto ^{1 2}, Annalisa De Silvestri ³, Lorenzo Postiglione ¹, Maria De Filippo ^{4 2}, Sara Manti ⁵, Stefania La Grutta ⁶, Gian Luigi Marseglia ^{1 2}, Amelia Licari ^{1 2}

Affiliations + expand

PMID: 39537241 PMCID: [PMC11558535](#) DOI: [10.1183/16000617.0118-2024](#)



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AI uses in med ed

How often is AI being used in med ed?

- According to the 2023-2024 AAMC Curriculum SCOPE Survey of MD- and DO-granting schools in the United States and Canada, 77% of respondents said they covered AI in their curricula
- “The newest generation of medical students is conversant in [generative artificial intelligence] because they have used [AI] tools routinely as a part of their college education. Student expectations ... have outpaced faculty development and strategic implementation.”

<https://www.aamc.org/news/medical-schools-move-worrying-about-ai-teaching-it>

Triola, Marc M. MD; Rodman, Adam MD, MPH. Integrating Generative Artificial Intelligence Into Medical Education: Curriculum, Policy, and Governance Strategies. Academic Medicine 100(4):p 413-418, April 2025. | DOI: 10.1097/ACM.00000000000005963

Uses of AI in medical education

Editorial > JMIR Med Educ. 2023 Mar 6:9:e46885. doi: 10.2196/46885.

The Role of ChatGPT, Generative Language Models, and Artificial Intelligence in Medical Education: A Conversation With ChatGPT and a Call for Papers

Gunther Eysenbach ¹

Affiliations + expand

PMID: 36863937 PMCID: PMC10028514 DOI: 10.2196/46885

GE: *What is the role of generative language models in medical education?*

ChatGPT: Generative language models have several potential roles in medical education. Here are a few examples:

1. **Generating realistic patient case scenarios:** Language models can generate realistic patient case scenarios that medical students can use to practice their diagnostic and problem-solving skills. These scenarios can include patient history, symptoms, and laboratory results, allowing students to practice applying their knowledge to realistic situations.
2. **Providing personalized learning experiences:** Language models can analyze the performance of individual students and generate personalized learning materials that address their specific areas of weakness. For example, if a student struggles with a particular medical concept, the language model can generate additional resources or exercises to help them better understand it.
3. **Enhancing medical textbooks:** Language models can help enhance medical textbooks by generating additional explanations, examples, and visual aids. This can help make complex medical concepts more accessible to students and improve their overall understanding of the material.
4. **Generating summaries of medical research:** Language models can be trained to summarize medical research articles, making it easier for medical students to quickly understand the key findings and implications of a study. This can save students time and help them stay up-to-date with the latest research in their field.

GE: *Again, this DOI seems to be wrong. Do you have any explanation for why you keep making such mistakes? Which database are you using to match an article title to a DOI?*

ChatGPT: I apologize for the confusion. It's possible that I made a mistake while matching the article title to the DOI. As a language model, I don't use a specific database to match article titles to DOIs. Instead, I rely on the information that has been fed to me during my training process. In this case, it's possible that my training data did not include the correct DOI for the article in question. I will try my best to be more accurate in the future.

> J Educ Eval Health Prof. 2024;21:6. doi: 10.3352/jeehp.2024.21.6. Epub 2024 Mar 15.

Opportunities, challenges, and future directions of large language models, including ChatGPT in medical education: a systematic scoping review

Xiaojun Xu ¹, Yixiao Chen ¹, Jing Miao ¹

- "ChatGPT exhibits various potential applications in medical education, such as providing personalized learning plans and materials, creating clinical practice simulation scenarios, and assisting in writing articles."
- "Challenges associated with academic integrity, data accuracy, and potential harm to learning were also highlighted in the literature."
- "3 key research areas were proposed: cultivating the ability of medical students to use ChatGPT correctly, integrating ChatGPT into teaching activities and processes, and proposing standards for the use of AI by medical students."

Journal of Medical Education and Curricular Development

 Open access |    | Review article | First published online August 1, 2024

Generative AI in Undergraduate Medical Education: A Rapid Review

[Joshua Hale](#)  , [Seth Alexander](#) , [...], and [Kurt Gilliland](#)  [View all authors and affiliations](#)

[All Articles](#) | <https://doi.org/10.1177/23821205241266697>

- “This article investigates current literature on how generative AI is and could be used and implemented in undergraduate medical education (UME).”
- 41 articles: opinion pieces (9), case reports (8), letters to the editor (5), editorials (5), commentaries (3), research (7)
- “5 categories of uses for generative AI in UME: nonclinical learning assistant, content developer, virtual patient interaction, clinical decision-making tutor, and medical writing. The literature indicates generative AI tools’ greatest potential is for use as a virtual patient and clinical decision-making tutor.”

Quick caveat

- A lot is happening, but it hasn't yet been published...

University of Miami Miller School of Medicine: (1) Trains AI to draft MSPE summaries from narrative assessments *and* (2) to synthesize student course evaluations into actionable feedback for faculty.

UT Health San Antonio: Uses AI-simulated standardized patients to assess students' clinical skills and scores encounters using OSCE-style criteria.

University of Cincinnati College of Medicine: Built an AI system that generates USMLE-style practice questions and explanations from course content and analyzes student interactions/results to pinpoint where learners struggle for targeted remediation.

University of Minnesota Medical School: (1) Lets students conduct visits with AI-generated patients *and* (2) applies AI to evaluate recordings of encounters with human standardized patients.

Uses of AI in medical education

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Options out there



OPEN PEDIATRICS™

ABOUT CONTENT FAQ OP SCHOLAR LOGIN/REGISTER

We believe improving pediatric care begins with better access to peer-reviewed, expert-driven information

Explore our educational resources

VIDEOS SIMULATORS CONTINUING EDUCATION PODCASTS

Stanford | Clinical Mind AI

Clinical Mind AI is an innovative platform designed to improve clinical reasoning skills using artificial intelligence

Request a Demo

Experience how Clinical Mind AI can enhance clinical reasoning and health professions education

Request Demo Account



AI Patient Actor App

Thesen T, Alilonu NA, Stone S. AI patient actor: an open-access generative-AI app for communication training in health professions. Medical Science Educator. 2025 Feb;35(1):25-7.

<https://www.openpediatrics.org/>
<https://clinicalmindai.stanford.edu/>
<https://geiselmed.dartmouth.edu/thesen/patient-actor-app/>

AI as standardized patient

> [JMIR Med Educ.](#) 2024 Sep 23;10:e58753. doi: 10.2196/58753.

Enhancing Medical Interview Skills Through AI-Simulated Patient Interactions: Nonrandomized Controlled Trial

Akira Yamamoto ¹, Masahide Koda ², Hiroko Ogawa ³ ⁴, Tomoko Miyoshi ⁴ ⁵,
Yoshinobu Maeda ¹, Fumio Otsuka ⁴, Hideo Ino ⁵

> [JMIR Med Educ.](#) 2024 Aug 16;10:e59213. doi: 10.2196/59213.

A Language Model-Powered Simulated Patient With Automated Feedback for History Taking: Prospective Study

Friederike Holderried ¹, Christian Stegemann-Philipps ¹, Anne Herrmann-Werner ¹,
Teresa Festl-Wietek ¹, Martin Holderried ², Carsten Eickhoff ³, Moritz Mahling ¹ ²

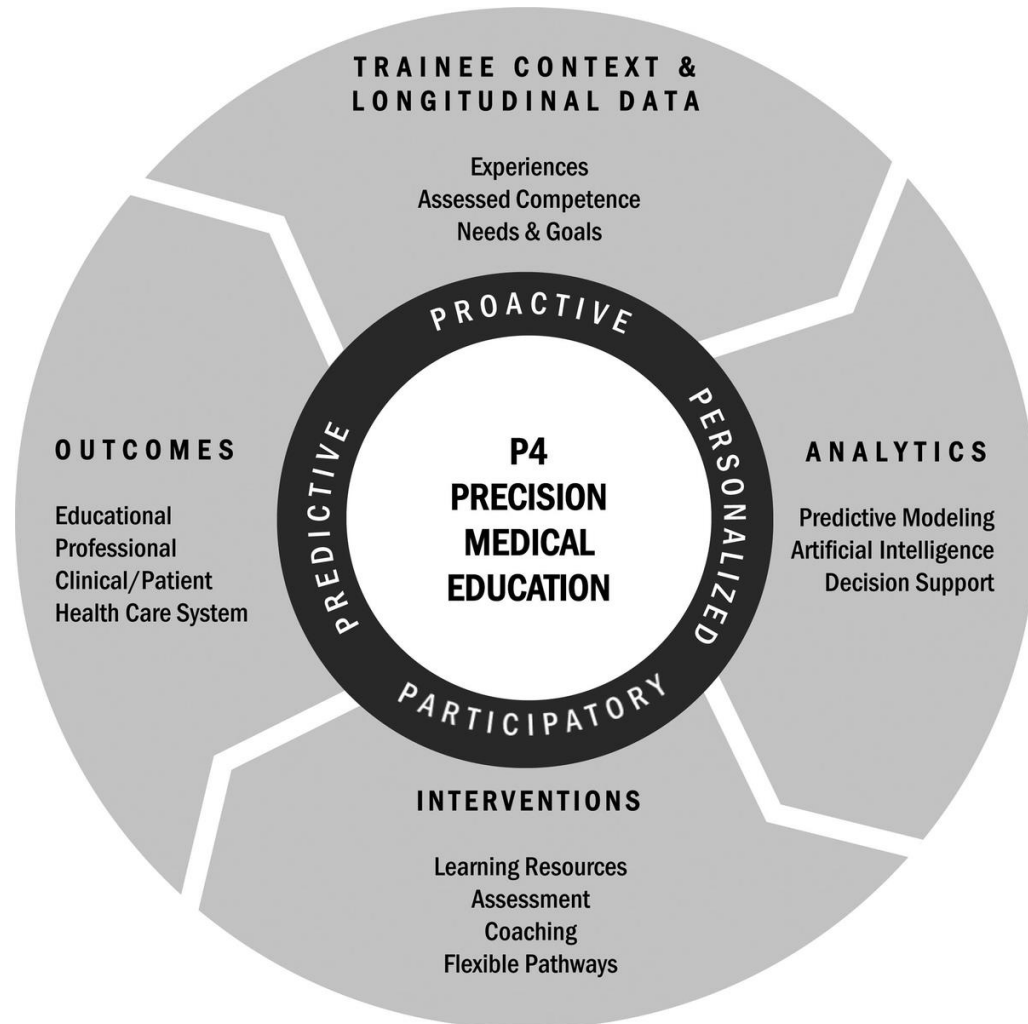
What else can AI do?

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Personalized learning



ABRIDGE | **UNC HEALTH**SM



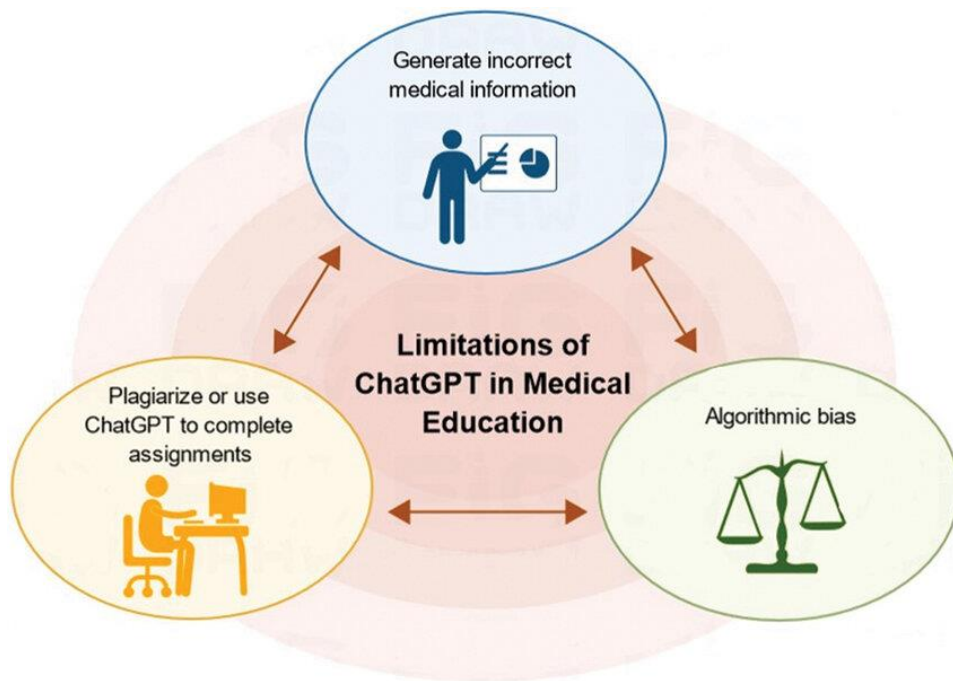
UNC HEALTH  **AVA** AI Virtual Assistant

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Enhancing medical education



GE: *Ok, let's assume I am a medical student trying to explain to a patient the role of insulin and glucose.*

ChatGPT: Sure! Here's an example of how you might explain the role of insulin and glucose to a patient:

"Hello! I'm here to talk to you about your diabetes and how insulin and glucose work in your body. Glucose is a type of sugar that comes from the food you eat. Insulin is a hormone that is produced by your pancreas and helps your body use and store glucose.

In patients with diabetes, there is a problem with how insulin and glucose work together. With type 1 diabetes, the pancreas does not produce enough insulin, which means that glucose can build up in your blood and cause problems. With type 2 diabetes, your body becomes resistant to insulin, which means that your cells do not respond as well to insulin as they should. This can also lead to high blood sugar levels.

The medication that you've been prescribed is designed to help your body use insulin more effectively, which can lower your blood sugar levels. It's important to take your medication as prescribed and make lifestyle changes, like eating a healthy diet and getting regular exercise, to help manage your diabetes.

Do you have any questions about how insulin and glucose work in your body, or how your medication can help manage your diabetes?"

Enhancing medical education

NotebookLM



Power study

Upload lecture recordings, textbook chapters, and research papers. Ask NotebookLM to explain complex concepts in simple terms, provide real-world examples, and reinforce your understanding.

Learn faster and deeper.



Organize your thinking

Upload your source material and let NotebookLM create a polished presentation outline, complete with key talking points and supporting evidence.

Present with confidence.



Spark new ideas

Upload brainstorming notes, market research, and competitor research. Ask NotebookLM to identify trends, generate new product ideas, and uncover hidden opportunities.

Unlock your creative potential.

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Summarizing medical evidence

OpenEvidence®

Ask a medical question...



Deep Consult



Write a Patient Handout

Ask about Drug Side Effects

Ask about Guidelines

What is pelvic congestion syndrome treatment?

Finished thinking

Practice Guideline

The **treatment options for pelvic congestion syndrome** include endovascular interventions such as **embolization** (using coils, glue, or sclerotherapy) and **foam sclerotherapy**. The American College of Radiology recommends these minimally invasive procedures for women with chronic pelvic pain and pelvic-origin lower extremity varicose veins due to pelvic venous disorders. Foam sclerotherapy is often performed in conjunction with embolization, using agents such as sodium tetradecyl sulfate or polidocanol. In high-flow pelvic varices, stop-flow techniques with balloon occlusion may be used to optimize sclerosant delivery and efficacy.

The rationale for these recommendations is based on evidence showing that embolization and sclerotherapy provide substantial and sustained pain relief in approximately 75% of women, with low rates of repeat intervention and minimal impact on menstruation, ovarian reserve, or fertility. Transient post-procedural pain is common, and the risk of coil migration is less than 2%. These interventions are supported by clinical outcomes demonstrating significant symptomatic

References

1. ACR Appropriateness Criteria® Lower Extremity Chronic Venous Disease.

Rochon PJ, Reghunathan A, Kapoor BS, et al.

Journal of the American College of Radiology : JACR. 2023;20(11S):S481-S500. doi:10.1016/j.jacr.2023.08.011.

[Practice Guideline](#)

2. Comprehensive Overview of the Venous Disorder Known as Pelvic Congestion Syndrome.

Bałaszczek K, Toborek M, Pietura R.

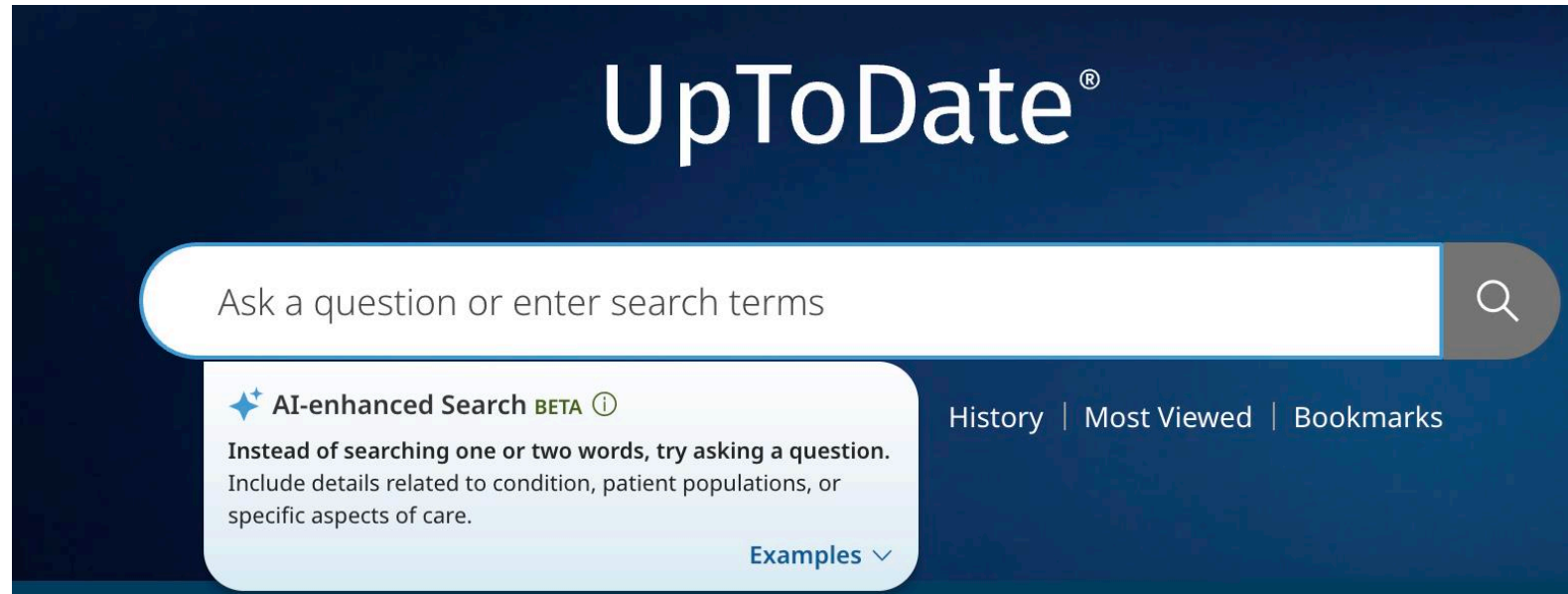
Annals of Medicine. 2022;54(1):22-36. doi:10.1080/07853890.2021.2014556.

3. Effectiveness of Embolization or Sclerotherapy of Pelvic Veins for Reducing Chronic Pelvic Pain: A Systematic Review.

Daniels JP, Champaneria R, Shah L, et al.



Journal of Vascular and Interventional Radiology : JVIR. 2016;27(10):1478-1486.e8. doi:10.1016/j.jvir.2016.04.016.

Summarizing medical evidence



Showing results for **what is the main treatment for pelvic congestion syndrome?**

AI Suggested Results BETA ⓘ

Are suggested results helpful?  

These passages are excerpts from UpToDate. They are not generated by AI. Click 'Read More' below to view the passage within the source content.

- **Symptomatic** – For most patients with symptoms related to pelvic venous disorder (PeVD), such as pain and/or fatigue, we start with a trial of compression stockings and/or nonsteroidal anti-inflammatory drugs (NSAIDs) as first-line treatments rather than observation or invasive therapies. For patients with continued symptoms, a trial of progestin therapy can be added as well. (See '[Symptomatic patients](#)' above.)

The risks of compression stockings and medical therapy are low, particularly when compared with the risks of invasive procedures and surgery, and these interventions are helpful to many. ...

[Read More](#) 

SOURCE: [Pelvic venous disorder in females: Management](#) > [Summary and recommendations](#)



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AAMC Resources

AI in Medical Education



AI FOR MEDICAL EDUCATION

Incorporating AI into the work you do

LEARNING &
NETWORKING

CRITICAL
RESOURCES

COMMUNITY
COLLABORATIONS

Teaching AI best practices to learners,
faculty, and staff

AI IN MEDICAL EDUCATION

AI in Medical Education



Learning and Networking

Explore opportunities to learn from experts, share your experiences, and connect with peers. Come together with the academic medicine community to innovate and advance thinking and practice.

AI in Academic Medicine Webinar Series

Explore critical concepts, the current landscape, and practical strategies drawn from various perspectives and institutions. Interspersed with these webinars are community conversations calls, which offer an opportunity for extended discussion about the implications of AI implementation.

REGISTER NOW ▶

AI Skill Building for Medical Educators Webinar Series

This dynamic 10-session series is designed specifically for medical educators seeking to confidently engage with AI. From foundational concepts and ethical considerations to hands-on strategies for curriculum design and scholarly work, this series will equip participants with practical competencies for responsible and effective AI use.

AI in Health Professions Education Virtual Community

Join this virtual forum to share ideas and insights, ask questions, and develop professionally with colleagues across the global health professions education community.

JOIN THE COMMUNITY ▶

Community Collaborations

Learn more about how the academic medicine community is working together around the globe to support each other and develop best practices.

International Advisory Committee for Artificial Intelligence

To provide guidance and best practices for the health professions education community, the AAMC is collaborating with AMEE, IAMSE, APMEN, and AAHCI to convene this committee with the goal of providing guidance and best practices for the global community.

AI in Medical Education



Critical Resources

Explore timely, high-quality resources to guide your thinking and practice around integrating AI across medical education.



Principles for the Responsible Use of Artificial Intelligence in and for Medical Education

These seven principles provide foundational guidance and key issues to consider as institutions look to integrate AI into medical education by (1) supporting learners along their developmental continuum to responsibly integrate AI into their practice and (2) building and incorporating AI into medical education tasks, processes, and systems.

[LEARN MORE ▶](#)



Artificial Intelligence Resources for Admission and Selection Processes

These AI resources support medical schools and residency and fellowship programs in their admission and selection processes by recommending when institutions should implement AI, how to evaluate possible vendors, and defining key AI terminology.

[LEARN MORE ▶](#)

International Advisory Committee for Artificial Intelligence Vision and Integration Frameworks



Principles to Guide the Use of AI in Medical School Admissions and Residency Selection

Medical schools and residency programs can advance toward more efficient, effective, fair, and informed admissions and selection processes by thoughtfully applying AI. To help institutions leverage AI tools to streamline their operations and promote equal opportunities for all, the AAMC – with a multidisciplinary technical advisory committee – developed six key principles to guide the design and use of AI-based selection systems.

[LEARN MORE ▶](#)

Advancing AI Across Academic Medicine Resource Collection

This collection includes timely, freely accessible resources designed to help medical schools, academic health systems, and teaching hospitals effectively integrate AI into their educational environments. [Explore the collection.](#)

To enhance and expand this collection, the AAMC invites submissions of practical resources to advance the responsible use of AI across academic medicine. **All submissions are due by August 15 at 11:59 pm PT.** [Learn more.](#)

A Focus on Medical Education Principles

The AAMC has developed a framework to support integrating AI into medical education. This framework examines AI's transformative potential through two essential pillars:

- **AI in medical education: supporting learners along their developmental continuum to responsibly integrate AI into practice.** This pillar focuses on threading AI into the curriculum to prepare learners for the use of AI in the delivery of high-quality health care and to ensure educators and staff are appropriately prepared to teach and facilitate learning of AI-enabled, patient-centered care.
- **AI for medical education: building and incorporating AI into our tasks, processes, and systems.** This pillar focuses on how AI is used to optimize the medical education process for learners, including using AI to improve assessment of learning outcomes and educational effectiveness while maintaining a commitment to equity and ethical considerations (e.g., [Principles for Responsible AI in Medical School and Residency Selection](https://www.aamc.org/about-us/mission-areas/medical-education/principles-ai-use)).

1. Maintain Human-Centered Focus
2. Ensure Ethical and Transparent Use
3. Provide Equal Access to AI
4. Foster Education, Training, and Continuing Professional Development
5. Develop Curricula Through Interdisciplinary Collaboration
6. Protect Data Privacy
7. Monitor and Evaluate

Guidance at UNC for educators



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

AI @ UNC

Pathways ▾ Guidelines ▾ Get Involved ▾ Metrics AI Acceleration

Teaching Generative AI Usage Guidance

1. Balance quality and timeliness
2. You are 100% responsible
3. The use of AI should be open and documented
4. Adjust teaching practices
5. Select AI tools
6. Ensure that AI use is inclusive
7. Facilitate and encourage critical thinking
8. Emphasize human skills
9. Specify AI policies for your course
10. Avoid entering confidential or personal data into AI tools
11. Stay informed

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Key Scholarship and Data

The [Artificial Intelligence and Academic Medicine collection](#) features articles on this evolving topic published in the journal *Academic Medicine*.

The *MedEdPORTAL* [AI education collection](#) call for submissions seeks fully developed innovations that have been implemented and evaluated.

AI is rapidly entering medical school curricula, with a drastic increase from 2023 to 2024, according to [a new Data Snapshot](#) of Curriculum SCOPE Survey data. These data also identify that tools and policies are still needed to support AI's integration.

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*Note: AI was not used in the creation of these slides 😊