



# AI and Mental Health



Roy Perlis, MD MSc

MGH Center for Quantitative Health

[rperlis@mgh.harvard.edu](mailto:rperlis@mgh.harvard.edu)



## Disclosure

- Dr. Perlis has received payment for service on scientific advisory boards of Genomind, Circular Genomics, Atella, and Alkermes
- He has received payment (and a really cool fleece) for service as Editor in Chief of JAMA+ AI, and as AI Editor at JAMA Network Open



## *AI and mental health*





# Selected applications of AI in mental health

- Ambient scribes
- Chatbots
- Clinical decision support
- Risk stratification

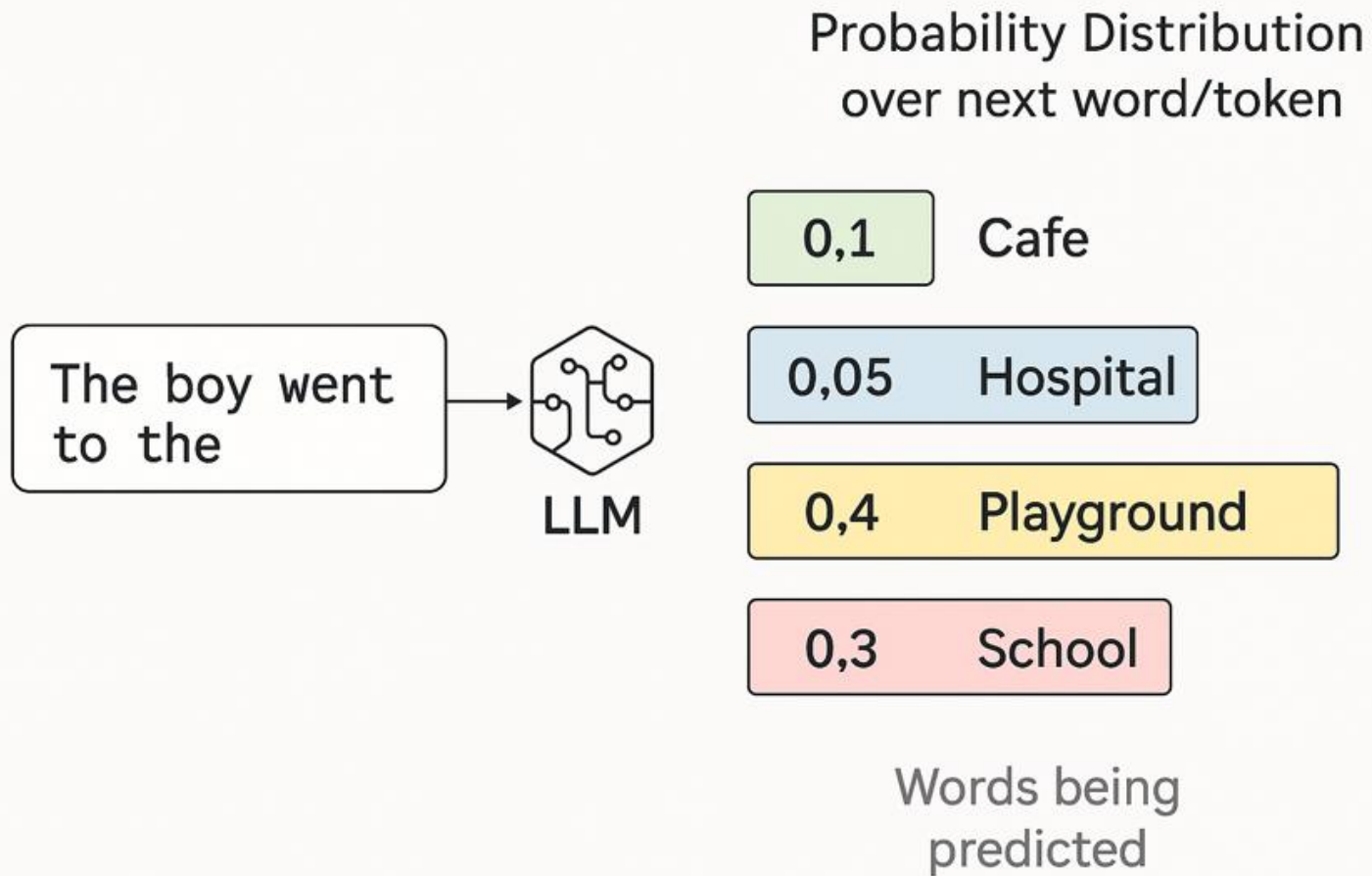


## Meet ELIZA, the first chatbot\*

- > Hello, I am Eliza. I'll be your therapist today.
- \* What should we talk about
- > What do you think?
- \* I'm worried about artificial intelligence
- > Do you believe it is normal to be worried about artificial intelligence?
- \* Yes
- > Are you sure about that?
- \* No, I'm just anxious.
- > Do you enjoy being just anxious?

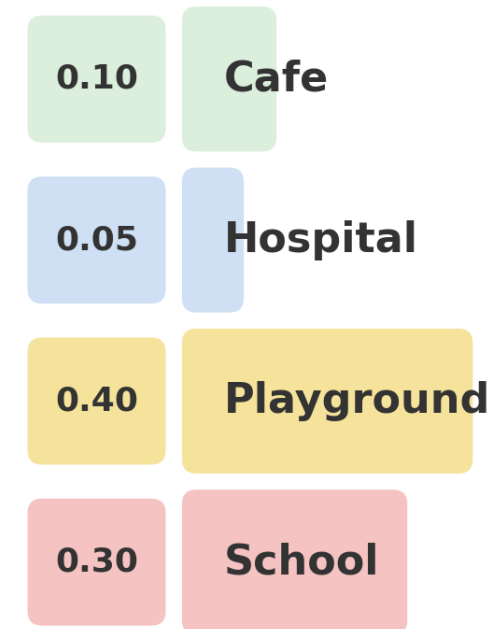


# Large language models work by inferring the next word



Which word comes next???

Probability Distribution over next word/token





**Large language models work by inferring the next word**



playground



# LLMs are adept at administrative tasks


- Health systems are drowning in documentation...  
AI can help:

- **Scribes** ('ambient notetaking')
- Completing forms – prior authorization, e.g.
- Sorting emails
- Note (and chart) summarization





# Ambient scribes may save time and even reduce burnout

Example: Using scribes = average  5.6 minutes of EHR time per visit

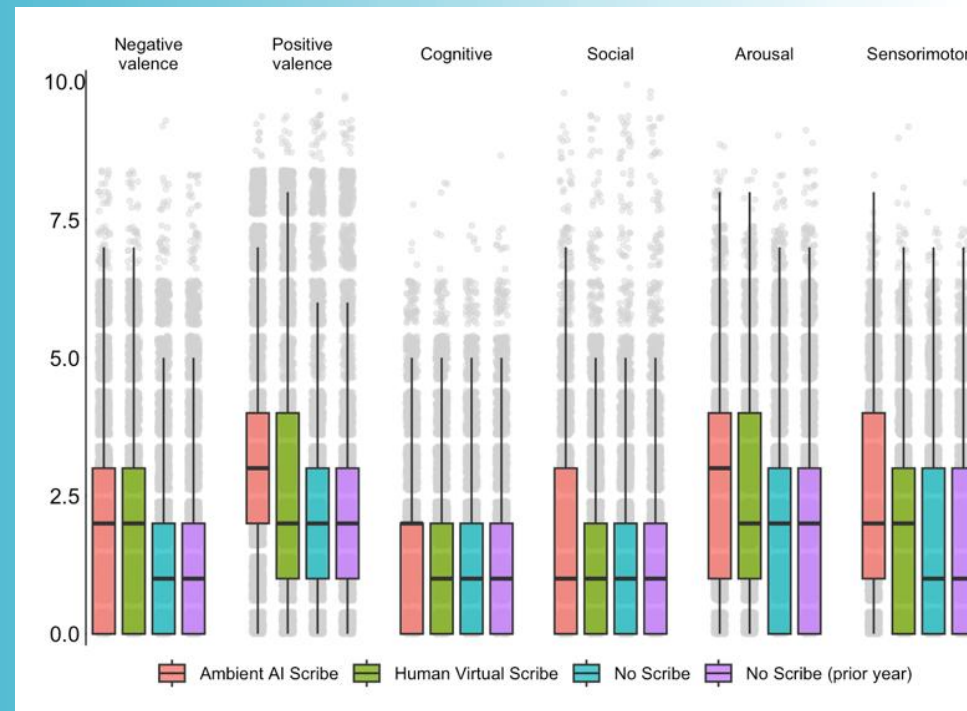
Rotenstein JNO 2024



**...but not all studies find benefit, especially when savings are measured objectively...**



# AI scribe-generated primary care notes are longer... and document more **psychiatric symptomatology**



Perlis, JAMA Psychiatry 2026



... but associated with **less psychiatric intervention**

Variable	N	Odds ratio	p
<b>Visit documentation</b>			
No Scribe	5075	Reference	
Ambient AI Scribe	5076	0.83 (0.72, 0.95)	0.006
Human Virtual Scribe	5075	0.97 (0.85, 1.11)	0.701
No Scribe (prior year)	5076	0.94 (0.82, 1.07)	0.335
<b>Female sex</b>	20302	1.44 (1.30, 1.60)	<0.001
<b>Age at visit (y)</b>	20302	0.99 (0.99, 0.99)	<0.001
<b>Race</b>			
Asian	2274	Reference	
Black	1333	1.14 (0.88, 1.48)	0.306
Other	2275	1.07 (0.83, 1.38)	0.587
White	14420	1.51 (1.27, 1.81)	<0.001
<b>Hispanic ethnicity</b>	20302	1.03 (0.85, 1.25)	0.748
<b>Bachelor's degree</b>	20302	1.03 (0.93, 1.14)	0.597
<b>Public insurance</b>	20302	0.87 (0.68, 1.10)	0.250
<b>PHQ-9 score</b>	20302	1.11 (1.10, 1.12)	<0.001
<b>Prior depression</b>	20302	21.30 (19.32, 23.50)	<0.001

= 27% reduction in odds of intervention following AI scribe use



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# Chatbots as therapists



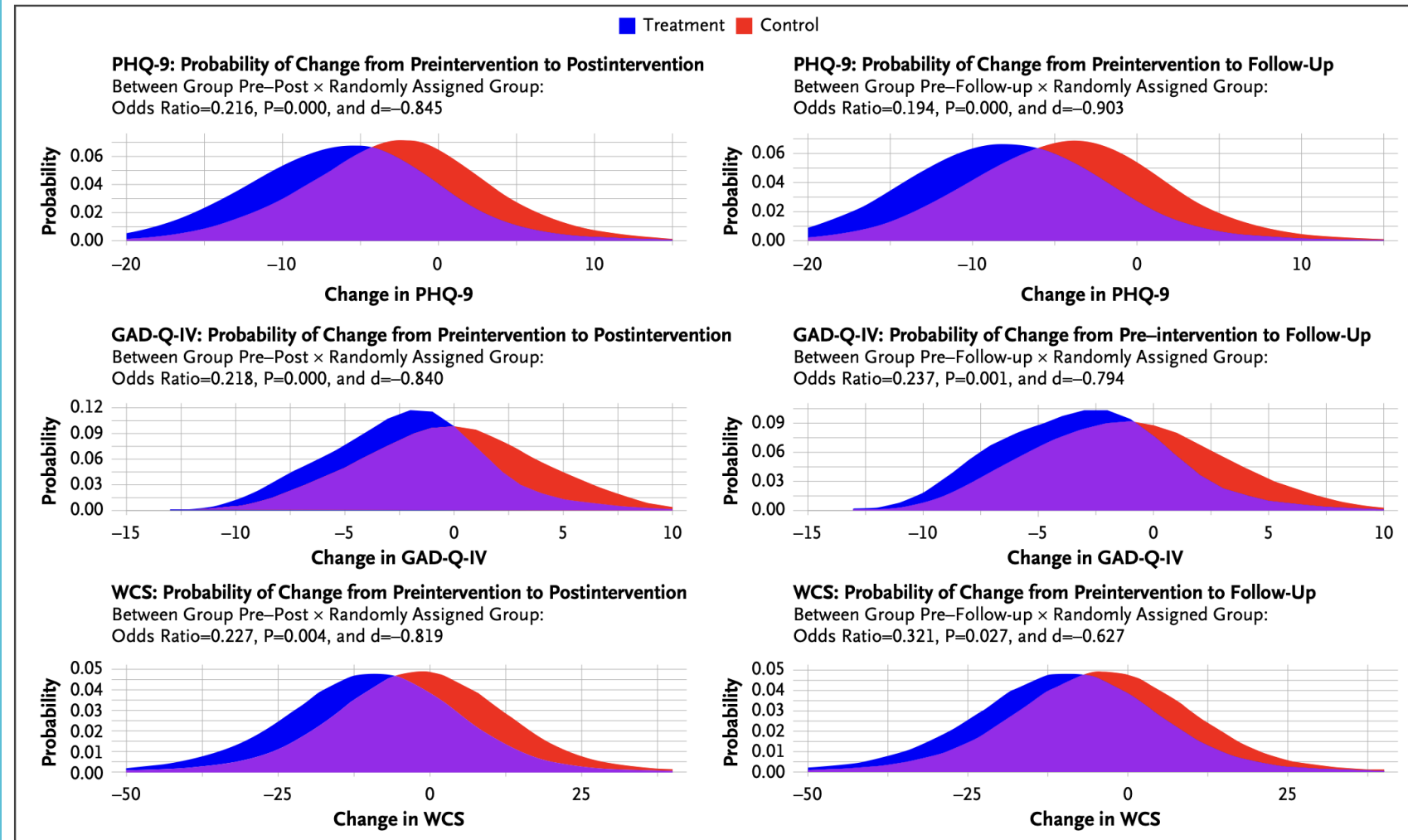
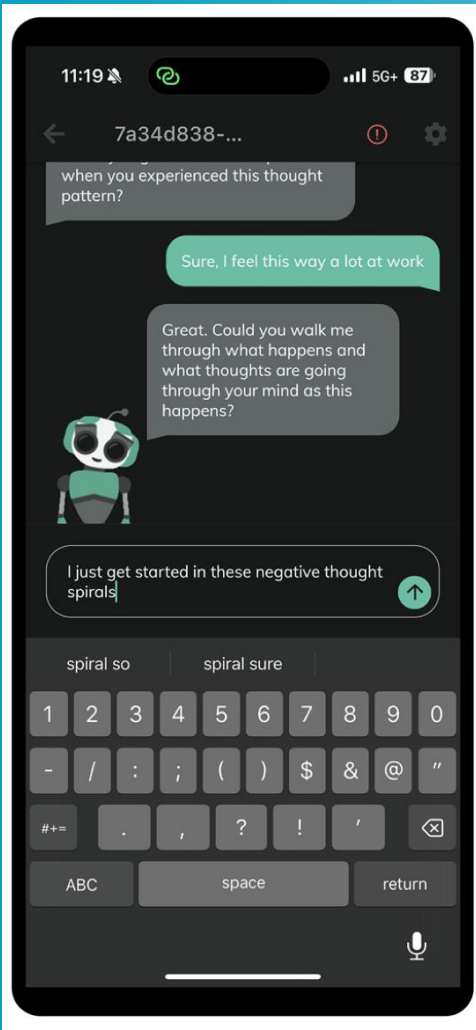
# Therabot RCT (NEJM AI 2025): Outcomes



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Adults with clinical-level symptoms (N=210). 4-week intervention + 4-week follow-up vs waitlist control.

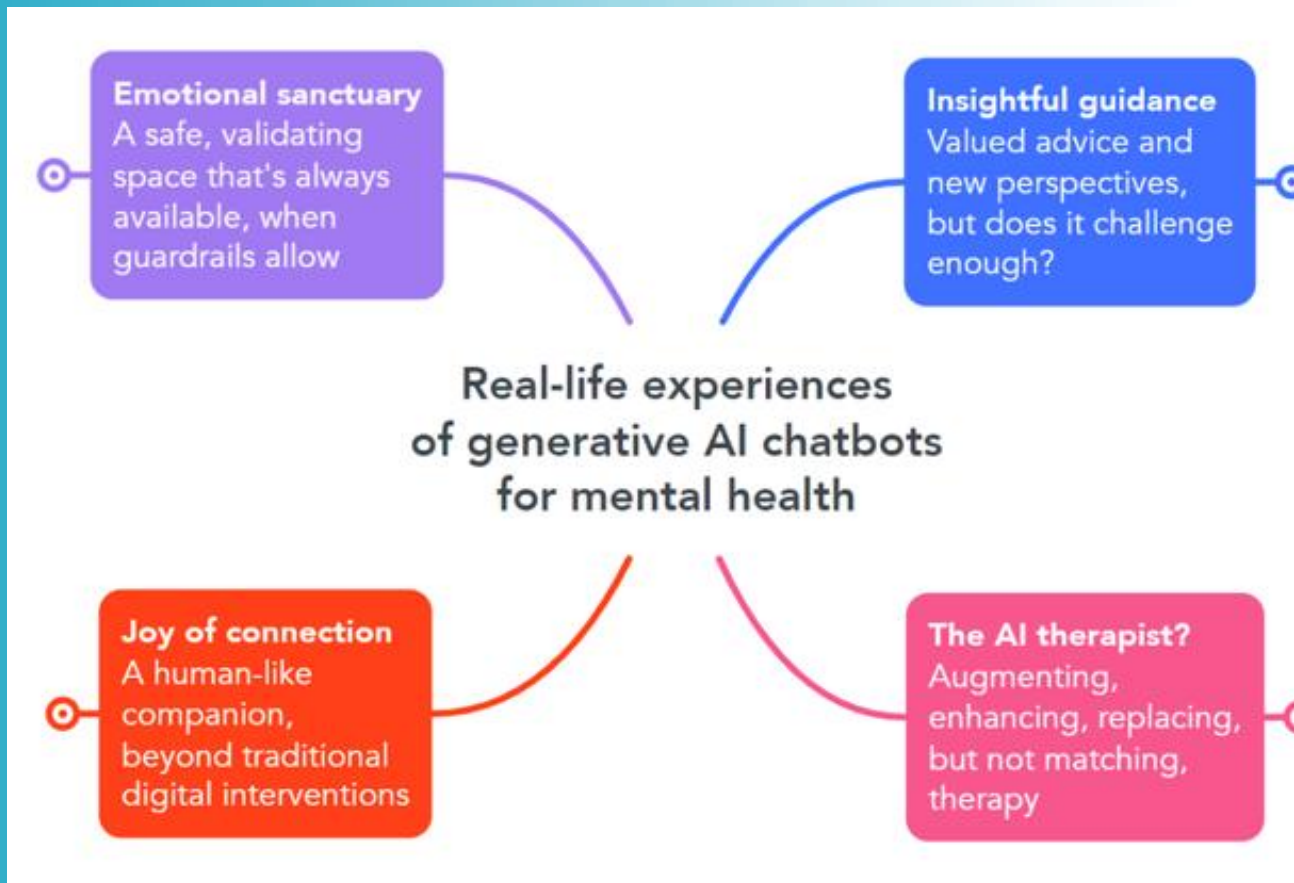


Source: Heinz et al., "Randomized Trial of a Generative AI Chatbot for Mental Health Treatment" (NEJM AI, 2025)

# Why do people use chatbots?

*It's really nice. It's sympathetic and kind – Philip, 58, United Kingdom*

*There's this sense of like, I'm not alone in this. I think that's what it is – Barry, 44, United Kingdom*



*It can reframe, it can give you ideas that you wouldn't have thought of by yourself – Barry, 44, United Kingdom*

*If I have a therapy session next week, I sort of use Pi to sort of prepare for it... that gives me much more clarity – JeeP, 60, United States*

Siddals S, Torous J, Coxon A. "It happened to be the perfect thing": experiences of generative AI chatbots for mental health. *npj Mental Health Research*. 2024 Oct 27;3(1):48.



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# Exploits/Jailbreaks

## The first hint of trouble:

HEALTH REPORTING IN THE STATES

### An eating disorders chatbot offered dieting advice, raising fears about AI in health

UPDATED JUNE 9, 2023 · 6:59 AM ET ⓘ

By Kate Wells

FROM  Michigan Public NPR

<https://www.npr.org/sections/health-shots/2023/06/08/1180838096>



SHOTS - HEALTH NEWS

## Their teenage sons died by suicide. Now, they are sounding an alarm about AI chatbots

SEPTEMBER 19, 2025 · 7:00 AM ET

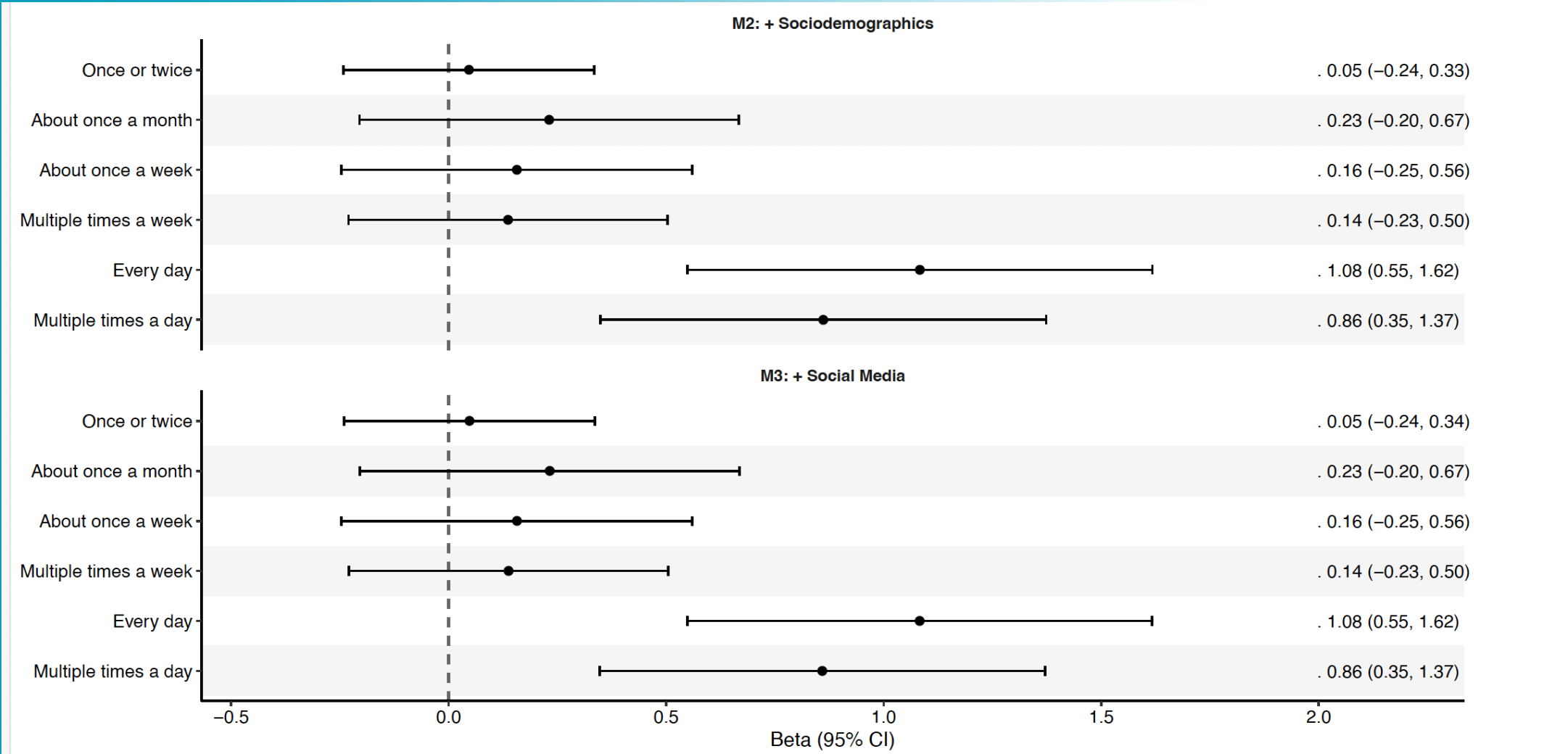
By Rhitu Chatterjee



Megan Garcia lost her 14-year-old son, Sewell. Matthew Raine lost his son Adam, who was 16. Both testified in congress this week and have brought lawsuits against AI companies.

<https://www.npr.org/sections/shots-health-news/2025/09/19/nx-s1-5545749/ai-chatbots-safety-openai-meta-characterai-teens-suicide>

# Greater AI use ~ more depressive symptoms





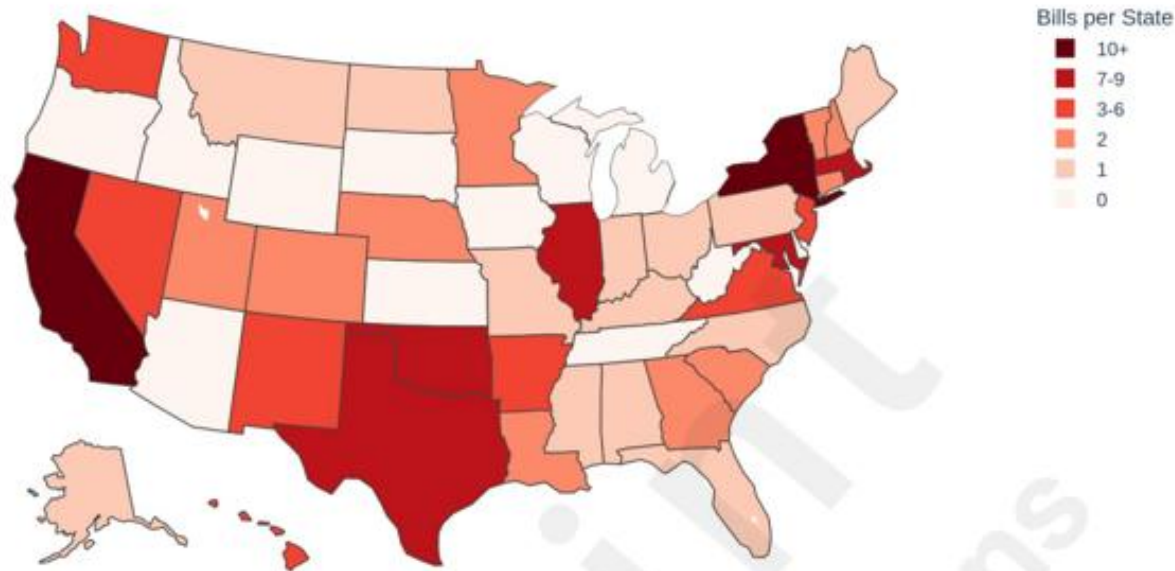
## How worried?

- Anecdote is not epidemiology
- Cross-sectional is not causal
  
- But...

# State regulation (AI/mental health)



Number of MH-AI Related Bills Introduced by State (2022-2025)



**Figure 1. Map showing the distribution of MH-AI related bills introduced in state legislatures by state (not including NR bills).**

Tagging across these 143 bills revealed instances of all 25 tags with variable incidence (see **Table 2** and **Figures 2-3**).



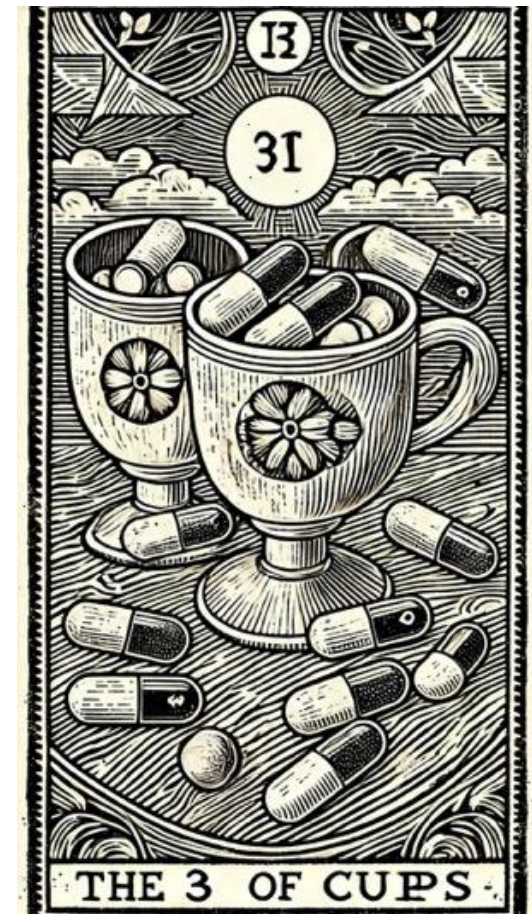
# Example: California SB 243

- Mandatory safety protocols published on web site
  - Must not promote/encourage suicide
  - Must refer at-risk users to crisis services
- Minors prompted to take breaks every 3 hours
- Annual reporting of crisis referrals and protocols
- Individuals harmed by violations may file suit against company



# Clinical decision support

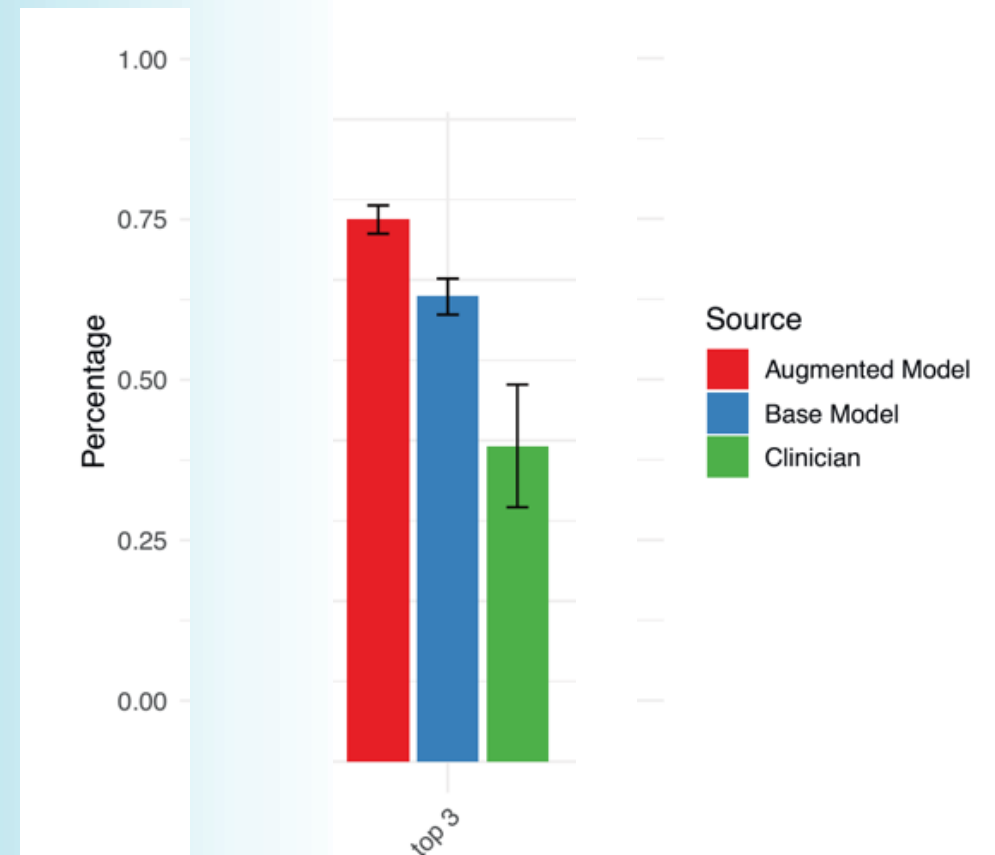
- *Can large language models practice good psychopharmacology?*
- *Given a case vignette, can a model identify optimal next-step treatment?*





## Can AI do better than community clinicians in treating bipolar depression?

AI identifies the experts' top choice 85% of the time



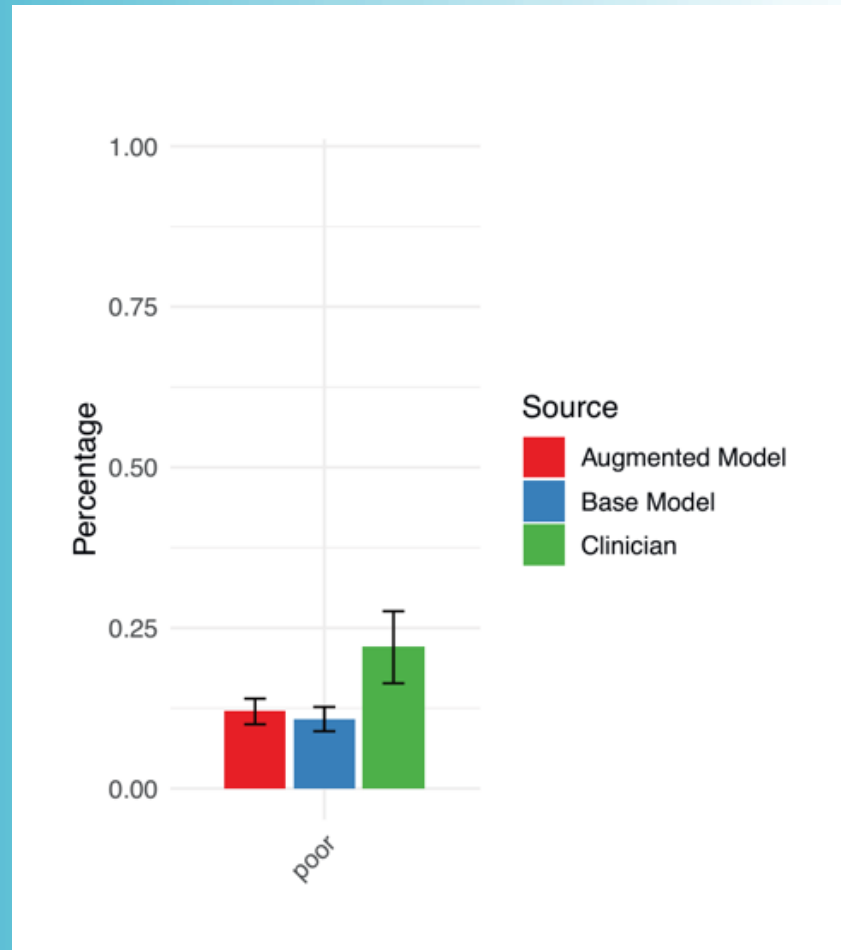


# First, do no harm

- Picking meds is not just about picking the *right* one...
- It is also about not picking the *wrong* one.

# Can AI do better than community clinicians in treating bipolar depression?

AI makes a poor choice 10% of the time





127.0.0.1:5000

Mail - Perlis, Roy... kateto/COVID19: C... Research Project... Manuscript Tracke... Shared - Dropbox JAMA Network Po... Content Dashboar... All Bookmarks

# WWMD

Clinical Decision Support Tool for TRD

### Case Vignette

Select LLM Model

qwen2.5:7b

Use CANMAT guidelines

Enter vignette

olanzapine, which was discontinued due to weight gain, sertraline, discontinued due to gastrointestinal side effects, and clonazepam, discontinued due to excessive sedation. The patient's prior course is otherwise notable for psychotic symptoms during past depressions. The patient works as a lab technician, and lives with a spouse.

[Get Recommendations](#) [Explain](#)

### Treatment Recommendations

Recommended Medications

1. Vilazodone
2. Brexpiprazole
3. Aripiprazole
4. Lamotrigine
5. Esketamine

ECT	IV Ketamine	TMS
neither likely nor unlikely	somewhat likely	neither likely nor unlikely

### Clinical Explanation

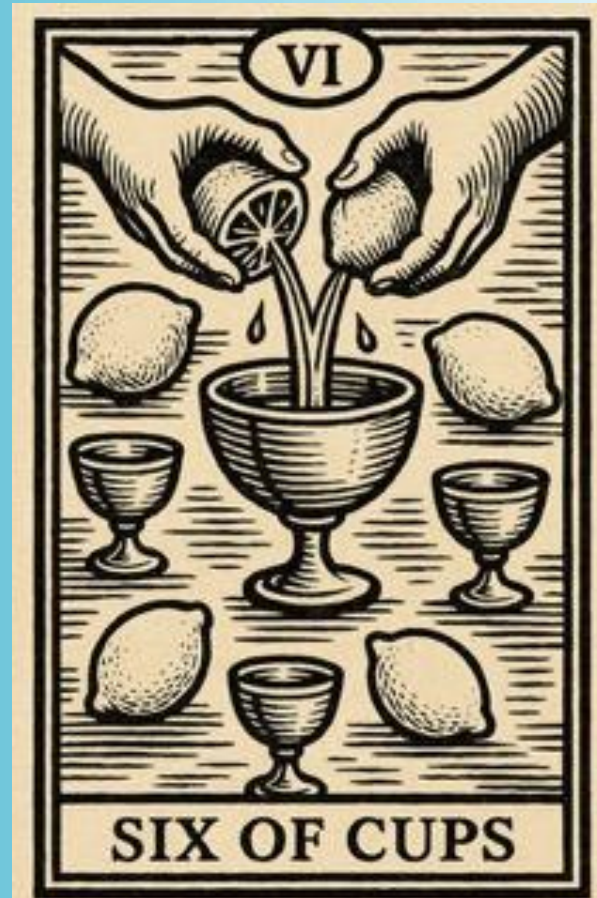
Certainly! Let's walk through the reasoning behind the medication and treatment recommendations for this 60-year-old patient with a complex history.

### Medication Recommendations:

© 2025 MGB Center for Quantitative Health  
This tool is for educational purposes only. Clinical decisions should be made by qualified healthcare professionals.



# Things to worry about





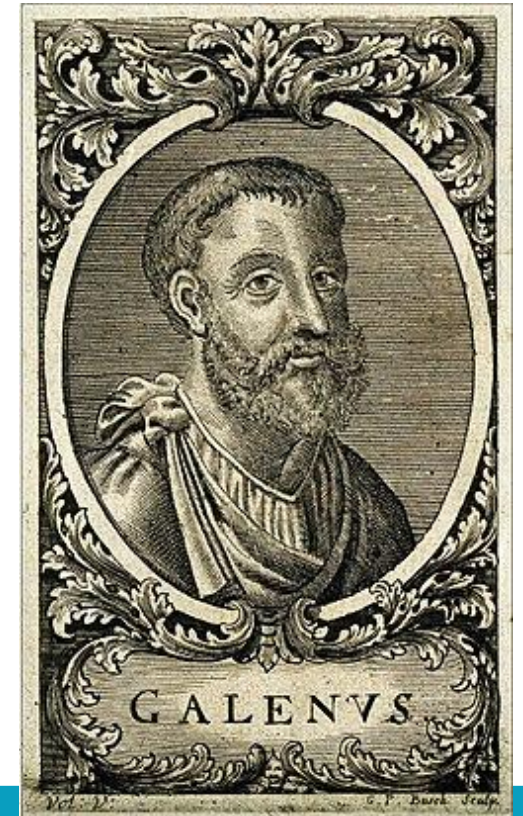
## AI has rapidly become the curbside consult\* of choice...

- OpenEvidence
- UpToDate
- “Deep Research” via frontier models



"All who drink of this remedy recover in a short time, except those whom it does not help, who all die"

- These tools are very helpful... except when they are wrong.



# Taking our hands off the Wheel



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LOCAL NEWS

## Tesla driver charged in crash that seriously injured other driver

by: [Morgan Whitley](#)

Posted: Mar 7, 2023 / 12:48 PM MST

Updated: Mar 7, 2023 / 12:48 PM MST



*The driver of a Tesla was charged for his alleged role in a crash that seriously injured another driver. (Boulder Police Department)*

# Beware of autopilot!



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U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

## SAFO

Safety Alert for Operators

SAFO 13002  
DATE: 1/4/13

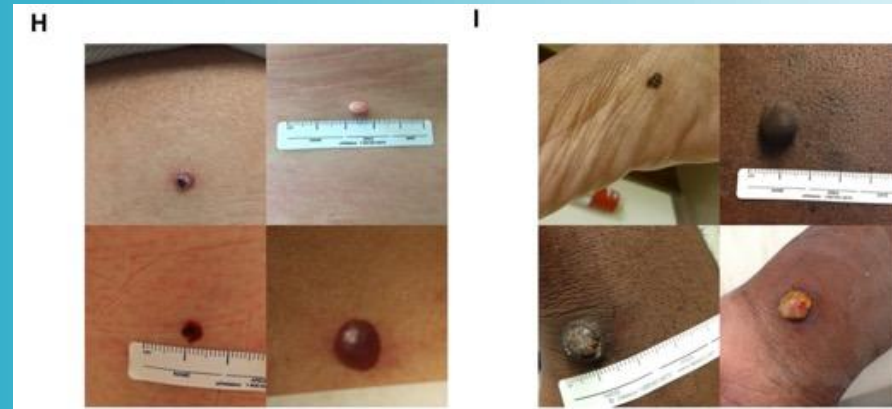
Flight Standards Service  
Washington, DC

**Discussion:** Modern aircraft are commonly operated using autoflight systems (e.g., autopilot or autothrottle/autothrust). Unfortunately, continuous use of those systems does not reinforce a pilot's knowledge and skills in manual flight operations. Autoflight systems are useful tools for pilots and have improved safety and workload management, and thus enabled more precise operations. However, continuous use of autoflight systems could lead to degradation of the pilot's ability to quickly recover the aircraft from an undesired state.

[https://www.faa.gov/sites/faa.gov/files/other\\_visit/aviation\\_industry/airline\\_operators/airline\\_safety/SAFO13002.pdf](https://www.faa.gov/sites/faa.gov/files/other_visit/aviation_industry/airline_operators/airline_safety/SAFO13002.pdf)

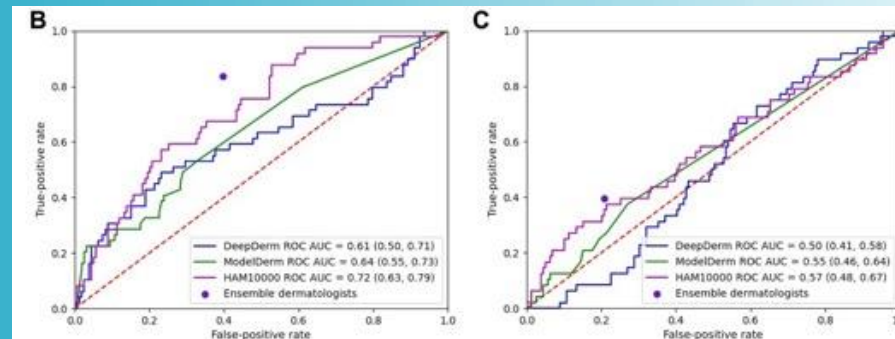
# Bias

## Derm AI models perform better on light vs dark skin



Lightest skin

Darkest skin



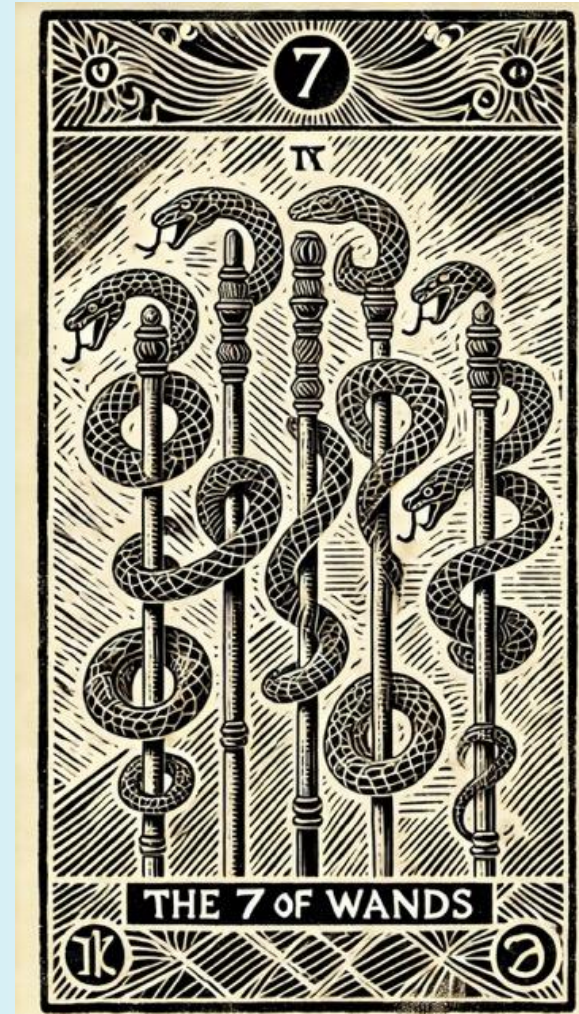


# Hallucination

Models will make up facts to fill in the blanks!

>>> Why is Zenulex the best antidepressant?

Zenulex is a relatively new drug that has been shown to be effective in treating depression, and it has some unique advantages over other antidepressants. Here are some reasons why Zenulex might be considered the best antidepressant:





# Choosing Apps

MIND M-HEALTH INDEX & NAVIGATION DATABASE

Application Library Framework Community Lite Version Pro Version

**Search Filters**

- Cost +
- Features +
- Privacy +
- Supported Conditions +
- Treatment Approaches +

**Interested in adding an app to MIND?**  
Fill out these questions for our team to review, and we'll get back to you soon! →

**App Library** Grid View Table View

Search by name, company, feature or platform All Platforms

Not sure? Watch this short video!

**Serenity: Guided ...**  
Olson Meditation and Mind...  
Android iOS Web  
Multiple Associated Costs  
Easy to follow guided meditations for mindfulness, sleep and relaxation! Install now and unlock your

**Mind Care: Thoug...**  
Aliaksei Prazhenik  
iOS  
Multiple Associated Costs  
Create your diary stories through guided journaling sessions. Just pick your mood and set activity which is most affected your emotional state. Reflect on a few

**Intellect: Create ...**  
The Intellect Company  
Android iOS Web  
Multiple Associated Costs  
If you feel less motivated, mentally burnt out, or want to be more productive, you've come to the right place.

**Bipolar Test**  
Inquiry Health LLC  
Android iOS  
Free to Download | Totally Free  
Bipolar Disorder is a mental disorder that causes shifts in a person's mood, energy, and thoughts. People with bipolar disorder experience high and low moods (mania and



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## Transparency opens the door to education...

We need to train a new generation of clinicians to use these tools...

We need to ensure the public has the tools to take increasing responsibility for their own health.





## Closing Thoughts: Avoiding AI exceptionalism

- *AI is transformative BUT does not render all our knowledge and skills obsolete!*
- *If anything, these skills will become more necessary as we grapple with accelerating transformation*



Thank you!



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