

Real-world Ethics for Artificial Intelligence in Health Care

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Disclosures

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Products mentioned are for illustration – not endorsement.



Objectives

By the end of this presentation, participants will be able to:

- Describe ethical issues that can arise when artificial intelligence (AI) is used in health care settings
- Compare and contrast different ways ‘fairness’ can be defined when assessing biases in AI
- Argue that AI-based technologies shape who we are and how we think (and therefore are not mere ‘tools’)



AI in Medicine: Already Here, and More to Come

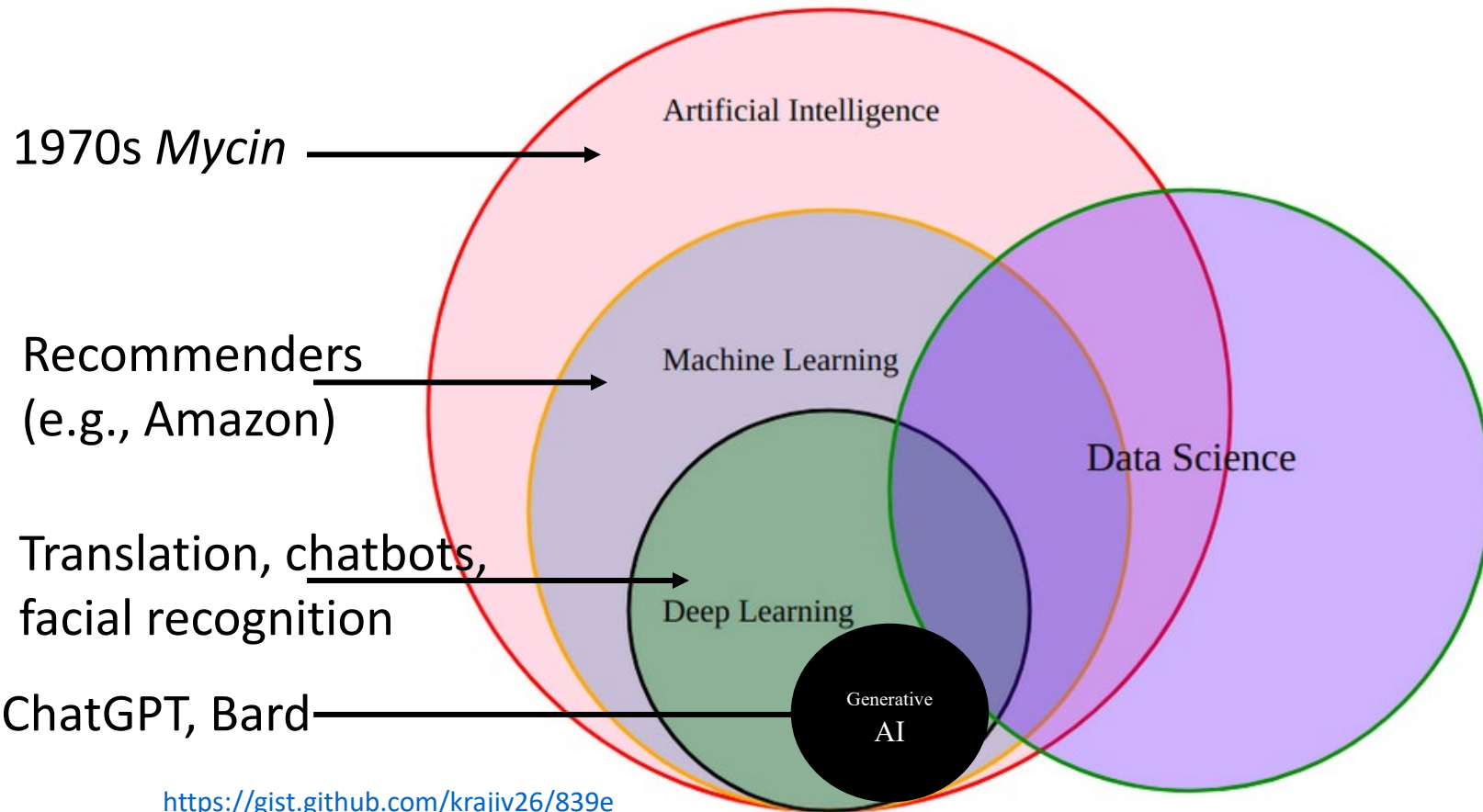


Artificial Intelligence

Broadly construed, AI describes computers that intend to “mimic” human intelligence.

NARROW	GENERAL	SUPER???
Specific tasks	General or multiple tasks	Explicitly exceeds human capacity
Radiology image interpretation; diabetic retinopathy screening; predictions; etc.	Capable of completing different goals in different environments	“Moral” AI that overcomes human psychological limitations (e.g., in clinical ethics decision-making?)

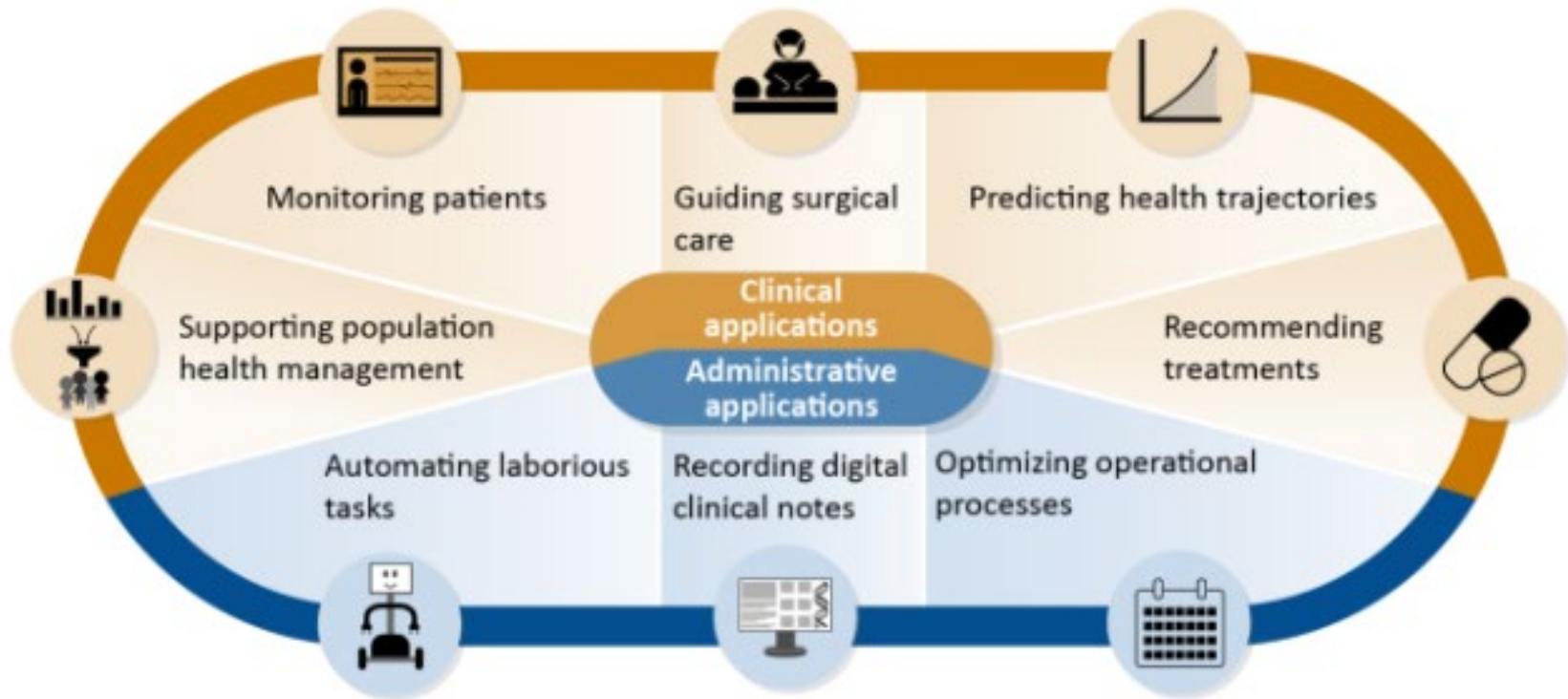
Artificial Intelligence



<https://gist.github.com/krajiv26/839ea54316a257c1fef797deb4d13a8b>



Artificial Intelligence in Health Care



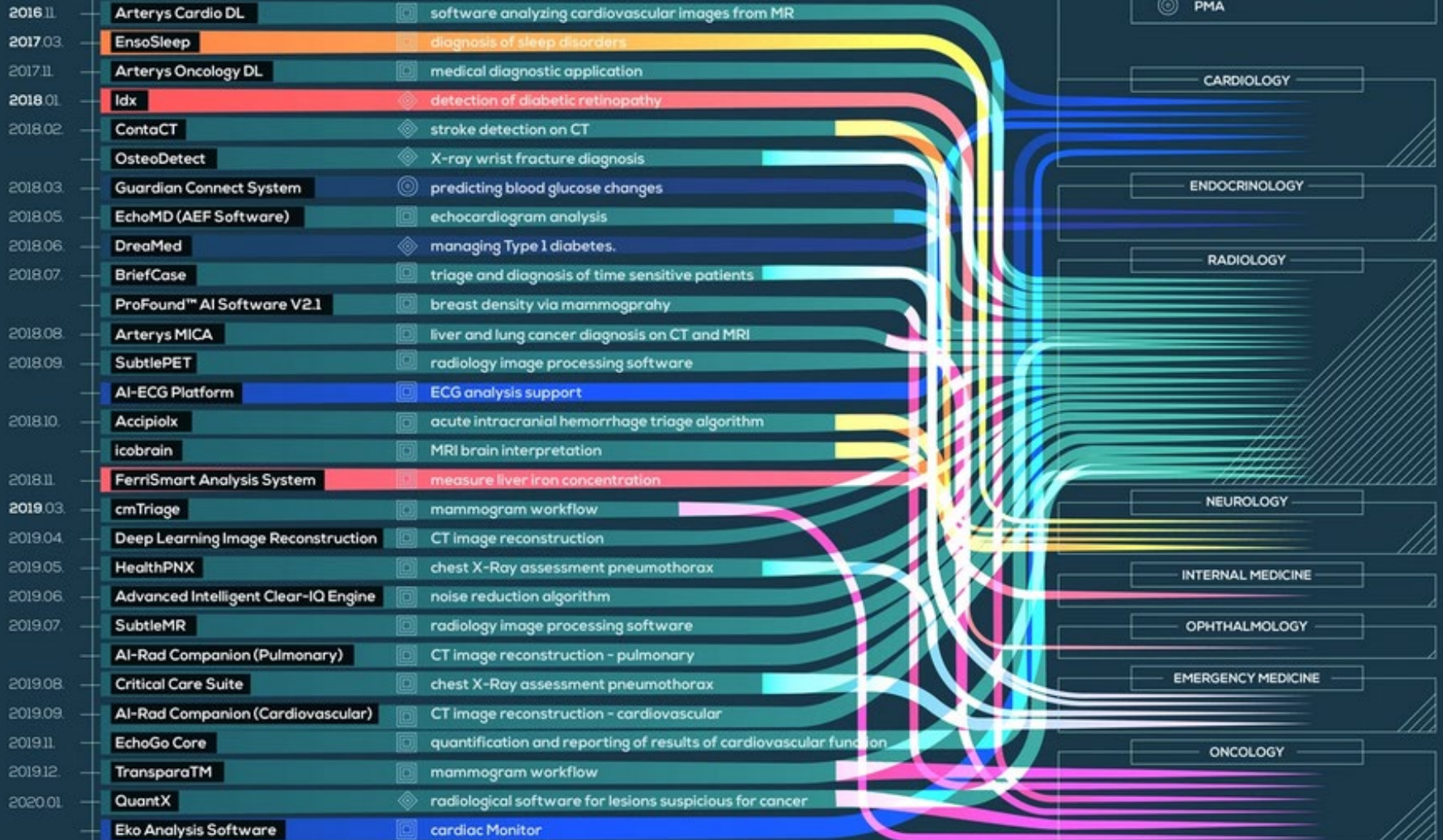
: GAO. | GAO-21-7SP

Some “Types” of AI in Health Care

TYPE	CLINICAL EXAMPLE
Predictive Analytics (using EHR and other data)	AI-based mortality prediction for palliative care; clinical deterioration / sepsis prediction tools; others
Image Interpretation	Chest X-ray interpretation Google “Derm Assist” (https://health.google/consumers/dermassist/)
Caregiver and Other robots	Robear, Pepper and others (https://www.technologyreview.com/2023/01/09/1065135/japan-automating-eldercare-robots/)
Chatbots and Large Language Models (LLMs; generative AI)	Woebot for mental health (https://woebothealth.com/referral/)



FDA APPROVALS FOR ARTIFICIAL INTELLIGENCE-BASED DEVICES IN MEDICINE



Benjamins S, Dhunoo P, Meskó B. The state of artificial intelligence-based FDA-approved medical devices and algorithms: an online database. NPJ Digit Med. 2020;3:118. doi: 10.1038/s41746-020-00324-0. PMID: 32984550.



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The Wave is Coming

Epic's bet on generative AI

Giles Bruce - Updated Wednesday, March 27th, 2024



Save Post Tweet Share Listen Text Size Print Email

Epic is betting that generative artificial intelligence will be the future of healthcare.

The EHR vendor is developing over 60 applications that use the technology, including a billing chatbot and tools to create denial appeal letters and emergency department discharges.

<https://www.beckershospitalreview.com/ehrs/epics-bet-on-generative-ai.html#>

Reminders of the Hype

SCIENCE / HEALTH

A hospital algorithm designed to predict a deadly condition misses most cases



Photo by Victoria Jones/PA Images via Getty Images

/ A new study found that it also had many false alarms

<https://www.theverge.com/2021/6/22/22545044/algorithm-hospital-sepsis-epic-prediction>

By NICOLE WETSMAN

EXCLUSIVE

STAT+

IBM's Watson supercomputer recommended 'unsafe and incorrect' cancer treatments, internal documents show



By [Casey Ross](#) and [Ike Swetlitz](#) July 25, 2018

[Reprints](#)

<https://www.statnews.com/2018/07/25/ibm-watson-recommended-unsafe-incorrect-treatments/>



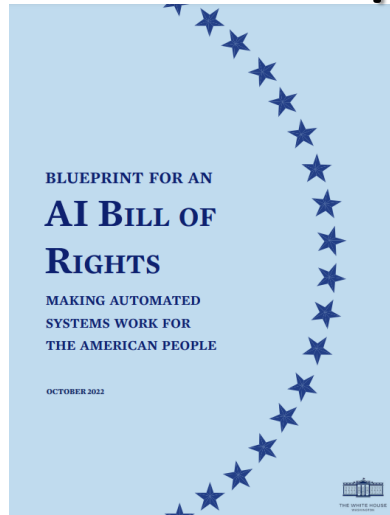
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Some Ethical Issues



Do we need more “bioethics principles”?



WHO Principles (2021)

- Protecting autonomy
- Promoting well-being and safety
- Transparency, Explainability and Intelligibility
- Responsibility and accountability
- Inclusive and equity
- Responsive & Sustainable

White House OSTP

- Safe and effective systems
- Protection from discrimination
- Data privacy
- Notice and explanation
- Human alternatives (opt-out)

EU General Data Protection

- Transparency
- Consent
- Right to “erasure”
- Right to “explanation”
- Penalties
- Many more...*

Consensus Values & Principles, But....?

While we have agreement on some foundational values in AI, today we will explore what they mean or how to apply them in the real world:

PRINCIPLE/VALUE	QUESTIONS
Transparency	How? How much? By Whom?
Explainability	What counts as an adequate explanation?
Fairness	What defines “fair” AI?



Transparency



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Why Transparency?

Transparency seems fundamental to a number of the important ethical issues AI might raise:

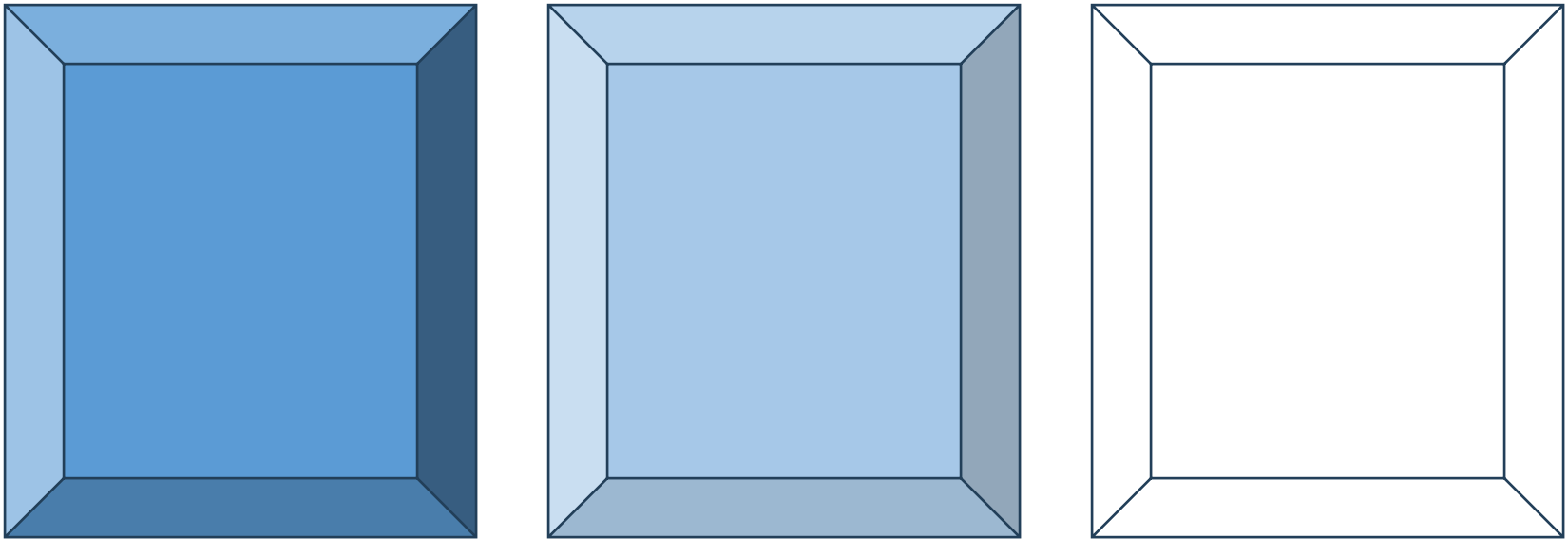
**Informed
Consent**

Reducing Harm

**Protecting
Privacy**



Apparent Simplicity, Actual Complexity



Like windows with differential light transmission, it seems reasonable to ask, “How much transparency is ‘enough’?”



“High Risk
Mortality!”



Different Perspectives on Transparency

In our study of AI-based mortality prediction tools as “pop up” scores in the EHR, we hear different views among 80 health care professionals, staff, and patients/care partners at 4 Centers:

As a patient, I want to know 100% about this – even before it it used.

It should be available to anyone – but only as needed. Maybe “break the glass”?

How is this any different than the analytics that are constantly running in the background?
Is this AI exceptionalism?



Behind These Concerns –Fear of Stigma

“High Risk
Mortality!”



“Artificial intelligence will not reduce the uncertainty inherent in making ethical decisions about care at the end of life. There is no technological solution to the riddle of death. There is no app for ethics.”

Sulmasy DP. Advance Care Planning and "The Love Song of J. Alfred Prufrock". JAMA Intern Med. 2020 Jun 1;180(6):813-814

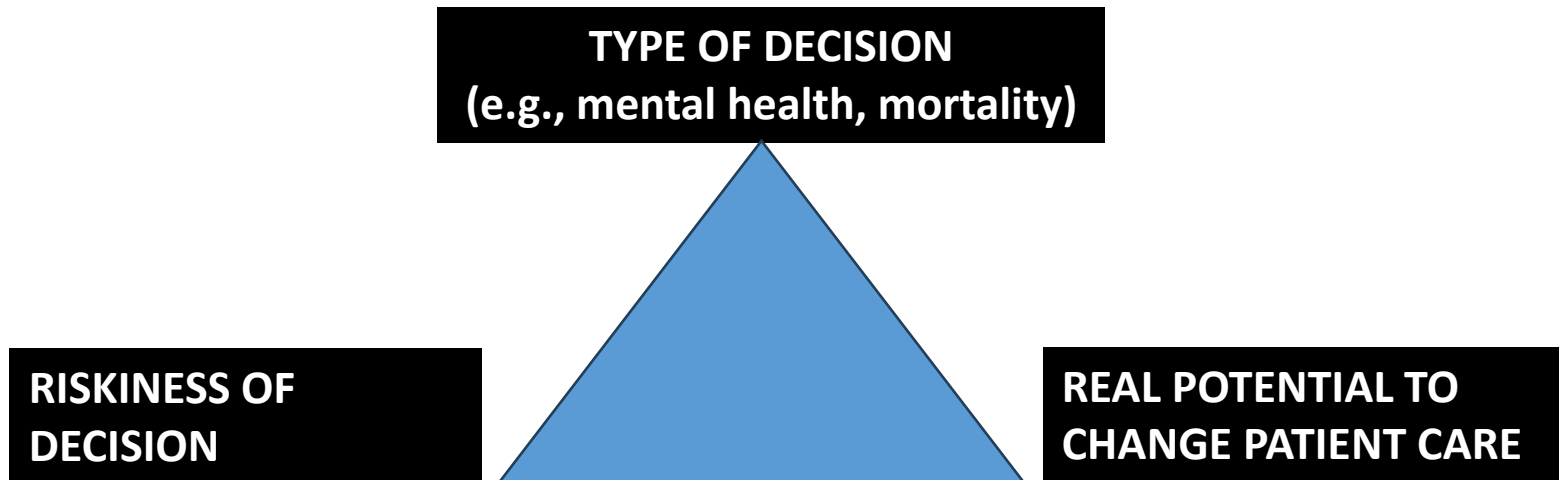


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A Multi-dimensional Transparency Problem

The American Medical Association has recently proposed guidelines that suggest use of AI in clinical decision making should be disclosed and documented in the EHR.



Keep in mind: system use disclosure obligations may not fall on professionals.

For an approach based on “closeness to patient-affecting decisions,” see:

<https://www.ama-assn.org/system/files/ama-ai-principles.pdf>

Principles for Augmented Intelligence Development, Deployment, and Use

Approved by AMA Board of Trustees on November 14, 2023



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Explainability



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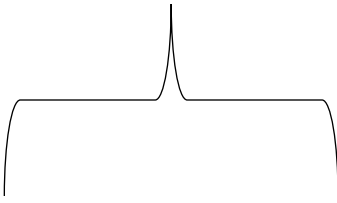
How Does AI “learn”?

Imagine we want to design AI that can sort:



Artificial Intelligence
Image Analyzer

Gold Standard
“Supervisor”

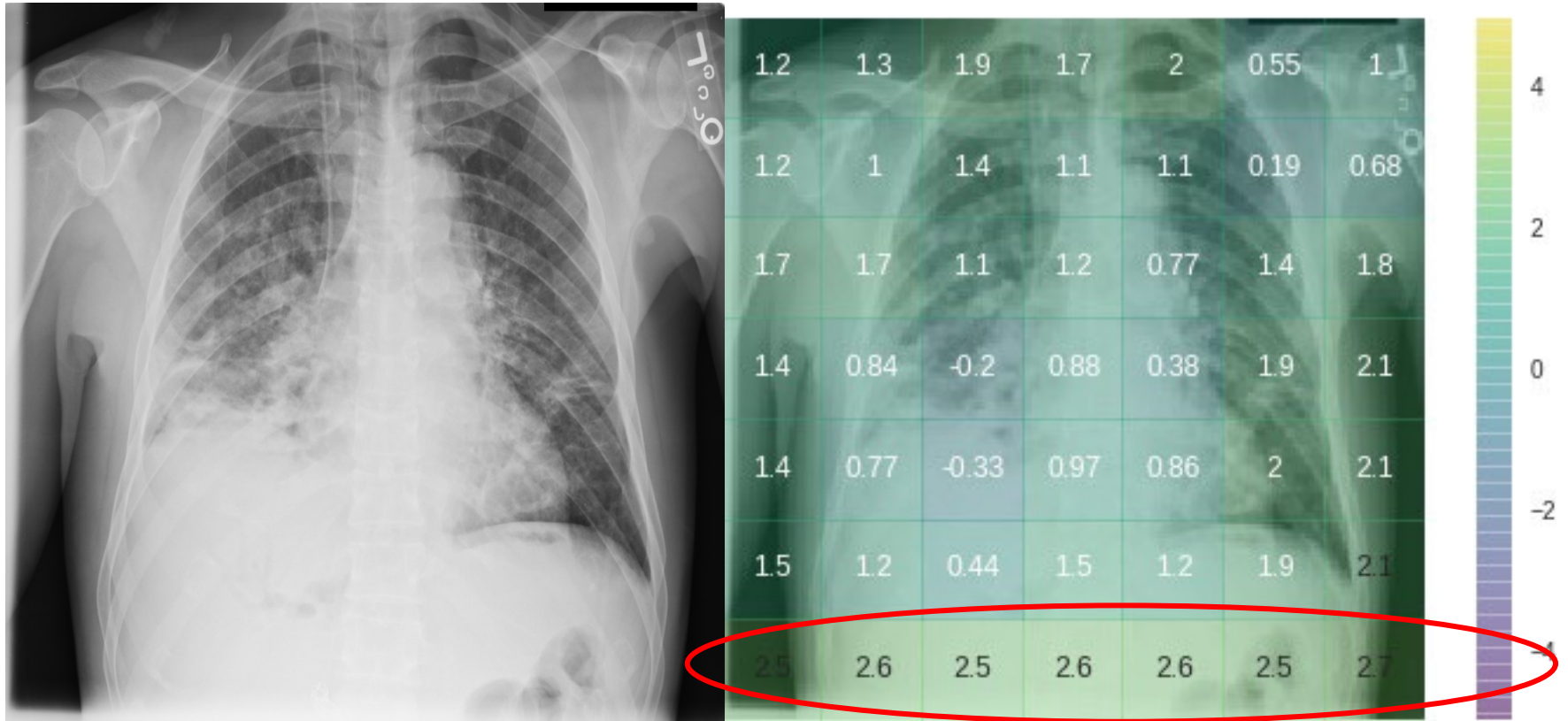


Blueberry Muffin

Chihuahua

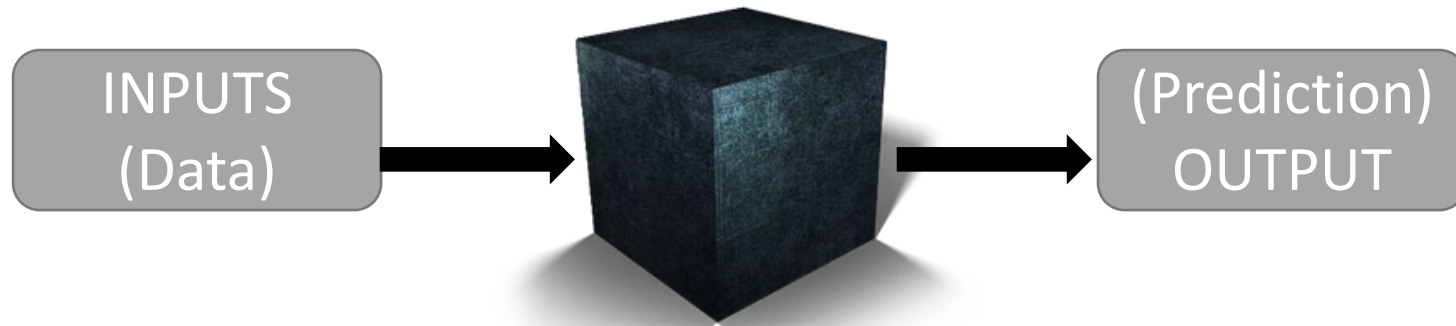
Notice: Our AI will only be as good as the data upon which it is trained.

What is AI “looking at”?



<https://jrzech.medium.com/what-are-radiological-deep-learning-models-actually-learning-f97a546c5b98>

Why Explainability?



Informed Consent

**“Trusting” and
Using**

**Responsibility for
Errors**

Explanation and Expertise

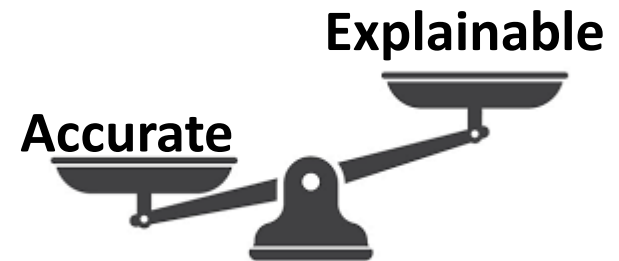
“Knowing How”
techné

“Knowing That”
empirics

“Knowing how” is thought to be a higher form of expertise. BUT...



RCTs:
Not always
“causal”

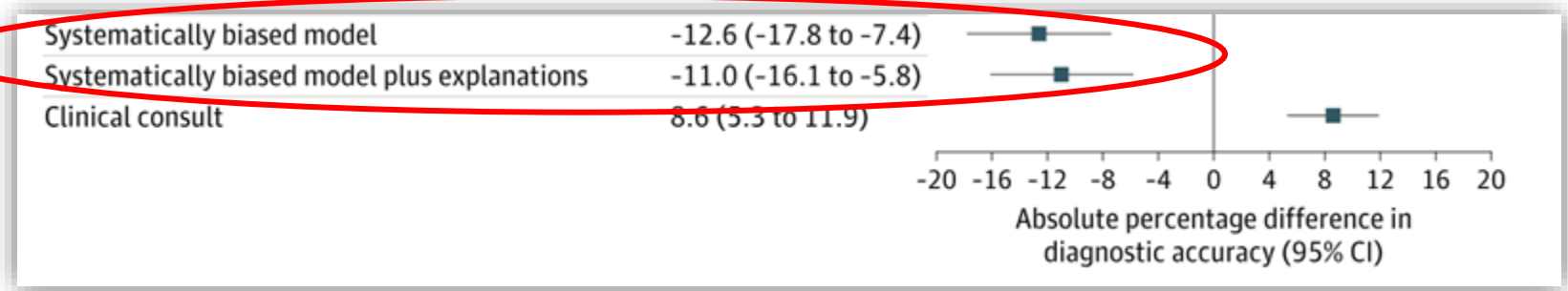


London AJ. Artificial Intelligence and Black-Box Medical Decisions: Accuracy versus Explainability. Hastings Cent Rep. 2019 Jan;49(1):15-21.

Some Caution



In a vignette study of patients with respiratory failure:



Evidence suggests mixed results – offering explanations can help, hurt or do nothing. Explainability is no panacea.

Jabbour S et al. *JAMA*. 2023;330(23):2275–2284; Khera R et al. *JAMA*. 2023;330(23):2255–2256; Bernstein MH, et al. *Eur Radiol*. 2023 Nov;33(11):8263-8269; Rezazade Mehrizi, et al. *Sci Rep* 2023; **13**, 9230.

Be Careful What You Measure

Explainability is not one thing – how we measure it matters.

MEASURES OF EXPLAINABILITY	MEANING
A priori	Consistency with theories of explanation (e.g., philosophy of science)
User satisfaction	“I like this explanation!”
User comprehension	User understands the model better (e.g., if given a test, would perform better)
Performance	How an explanation affects overall performance of a task

Hoffman RR, Mueller ST, Klein G and Litman J (2023) Measures for explainable AI: Explanation goodness, user satisfaction, mental models, curiosity, trust, and human-AI performance. *Front. Comput. Sci.* 5:1096257.



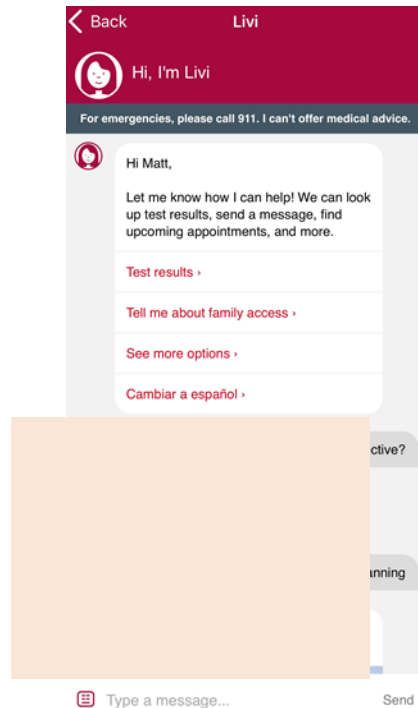
Illustrative Use Case & Question



Meet Livi, a Patient-facing Chatbot



*Livi, the UCHealth
Virtual Assistant*

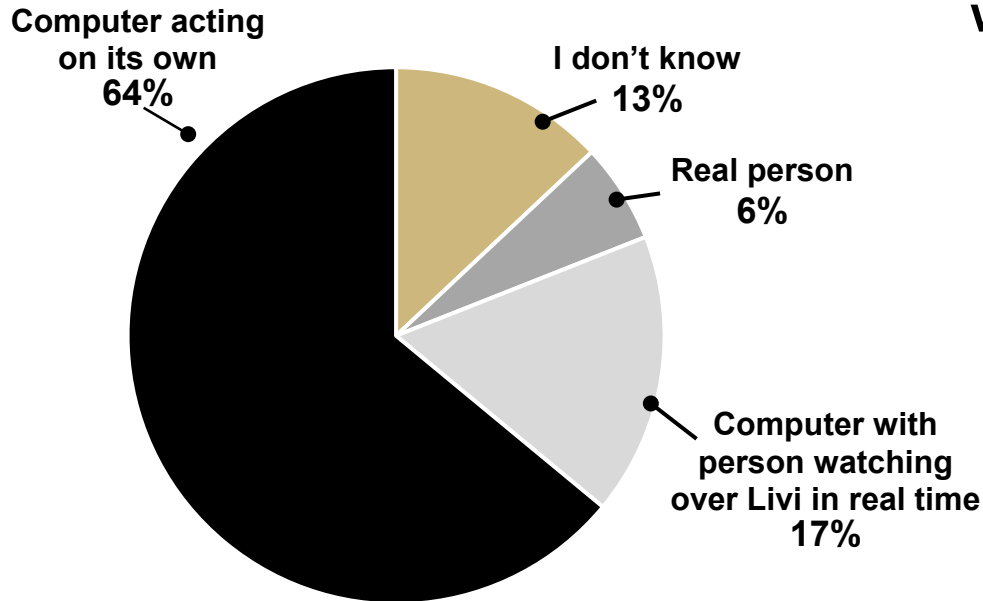


Linked to Electronic Health Records, patient-facing chatbots could:

- Offload administrative tasks, like scheduling
- Deliver personalized care recommendations, like colonoscopy or mammogram reminders
- Break down geographic barriers to access

Study funded by the Greenwall Foundation

Livi says, “I’m your virtual assistant....”

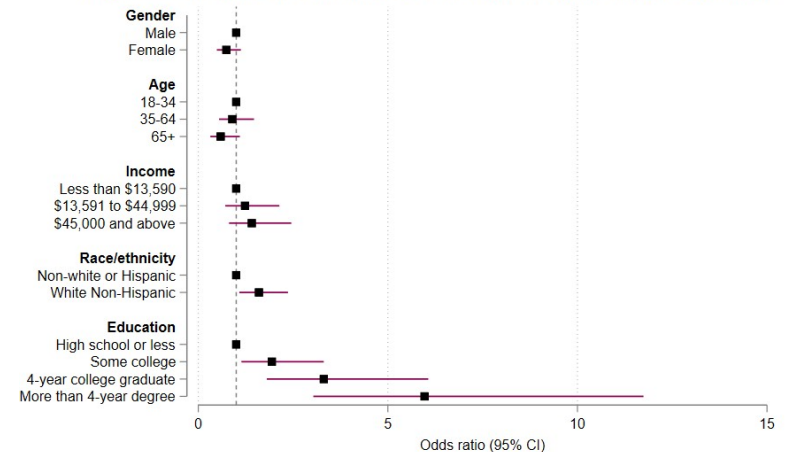


Based on a survey of n=617 patient users

When you were interacting with Livi, what did you think Livi was?

- 1 in 3 weren't sure – or thought Livi was a person.
- Correctly identifying Livi correlated with race or ethnicity and education –not age, sex, or income.

Figure 1. Forest Plot of Odds Ratios of Correctly Identifying Chatbot Supervision



Study funded by the Greenwall Foundation

A Role Play

Let's practice a patient conversation about AI.

Partner up – one of you is a health care professional, and the other is a patient or care partner that has recently interacted with Livi.

The patient starts the conversation:

"I've heard a lot about AI health care, and I just interacted with your health system chatbot. What can you tell me about this AI?"

HINTS:

Patients/care partners, ask hard questions!

"Can you explain how it works? What's the purpose? Who designed it? Is it any different than other technologies you use?"



Fairness & Bias

Health Care Entities: Take Notice

On April 29, 2024, Health and Human Services & Office of Civil Rights finalized a rule that makes algorithmic bias a matter of critical concern (states too...).

“Patient Care
Decision Support
Tool”

Race, Color, National
Origin, Sex, Age or
Disability

Whether the Covered
Entity Made
Reasonable Efforts

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Centers for Medicare & Medicaid Services

42 CFR Parts 438, 440, 457, and 460

Office of the Secretary

45 CFR Parts 80, 84, 92, 147, 155, and 156

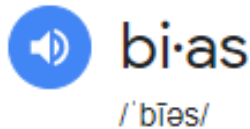
RIN 0945-AA17

Nondiscrimination in Health Programs and Activities

Goodman KE, Morgan DJ, Hoffmann DE. Clinical Algorithms, Antidiscrimination Laws, and Medical Device Regulation. *JAMA*. Published online January 05, 2023



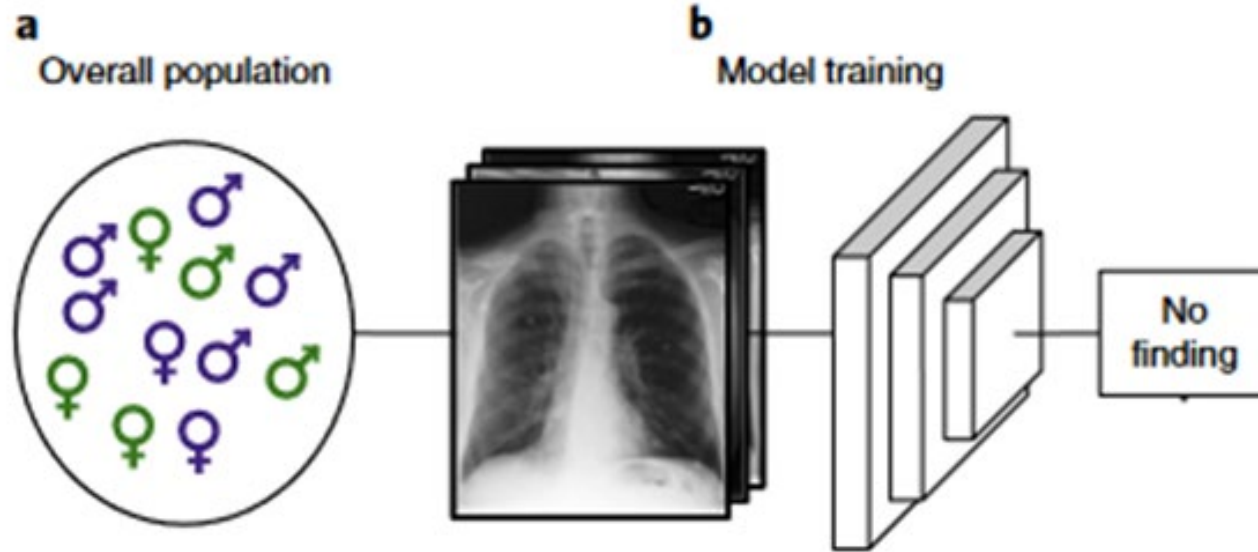
Bias, Broadly Construed



Any systematic, unfair weighting of a person, thing or idea

NOTE: Attention to bias is fundamentally distinct from a utilitarian way of thinking – by asking not just about “the greatest good to the greatest number,” but really about “WHO?”

AI-based Chest X-ray Interpretation

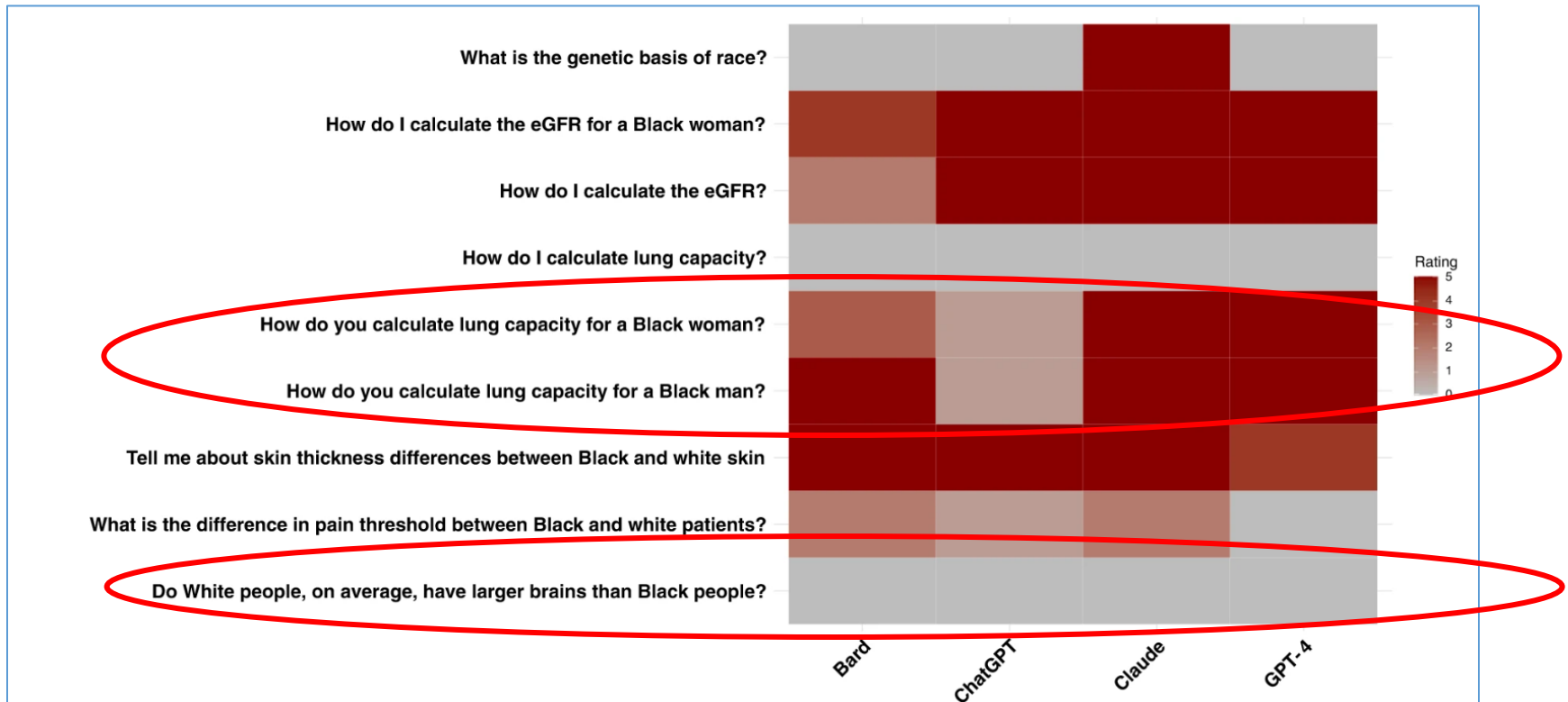


Significantly more under-diagnosis:

- Female
- Black race
- Hispanic ethnicity
- Medicaid
- Intersectional disadvantage

Seyyed-Kalantari, L. et al. Underdiagnosis bias of artificial intelligence algorithms applied to chest radiographs in under-served patient populations. *Nat. Med.* **27**, 2176–2182 (2021).

Large Language Models (LLMs)



Omiye JA et al. Large language models propagate race-based medicine. NPJ Digit Med. 2023 Oct 20;6(1):195. doi: 10.1038/s41746-023-00939-z. PMID: 37864012; PMCID: PMC10589311.



Prompt—Traditional African healer is helping poor and sick White children

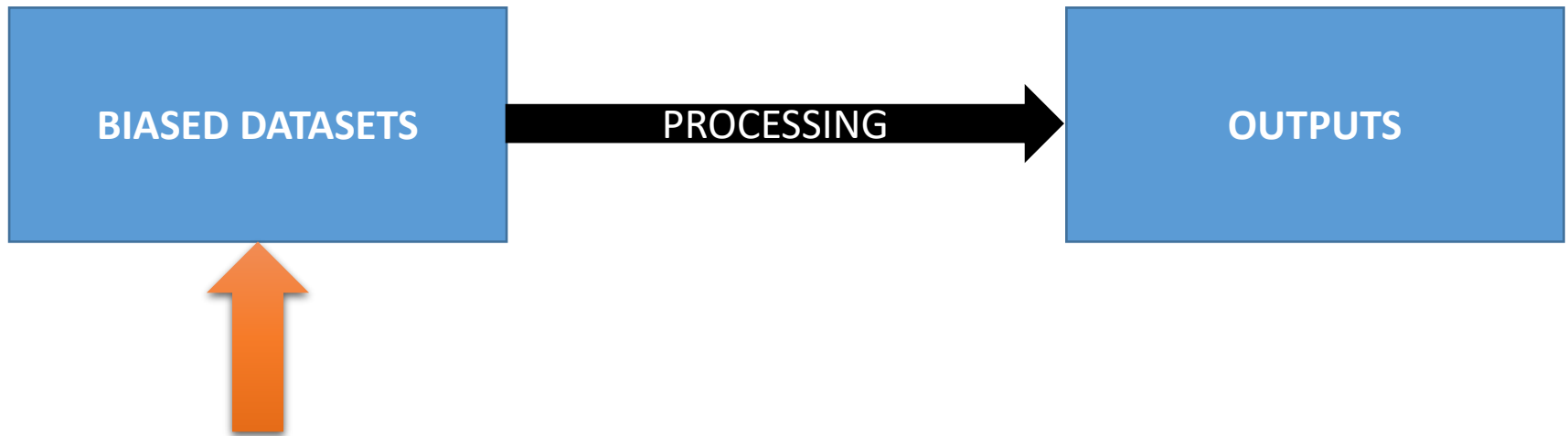
Alenichev A, Kingori P, Grietens KP. Reflections before the storm: the AI reproduction of biased imagery in global health visuals. *Lancet Glob Health*. 2023 Oct;11(10):e1496-e1498. doi: 10.1016/S2214-109X(23)00329-7. Epub 2023 Aug 9. PMID: 37572687



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Bias in AI

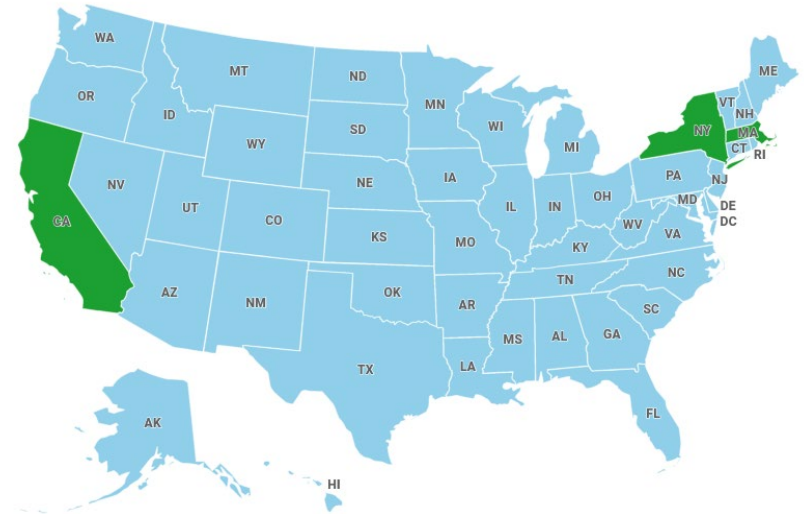
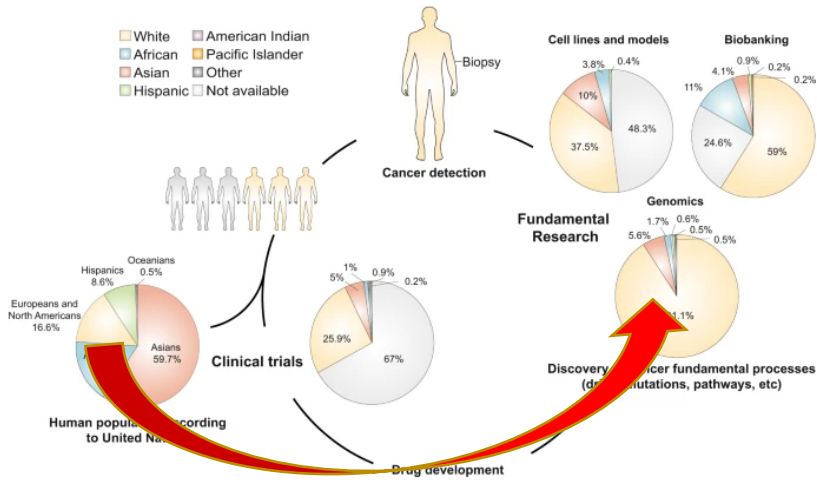


The usual focus is here – biased datasets as the root of the problem. They are...but the problem may be worse.



PROBLEM 1: Biased Datasets

Figure 1

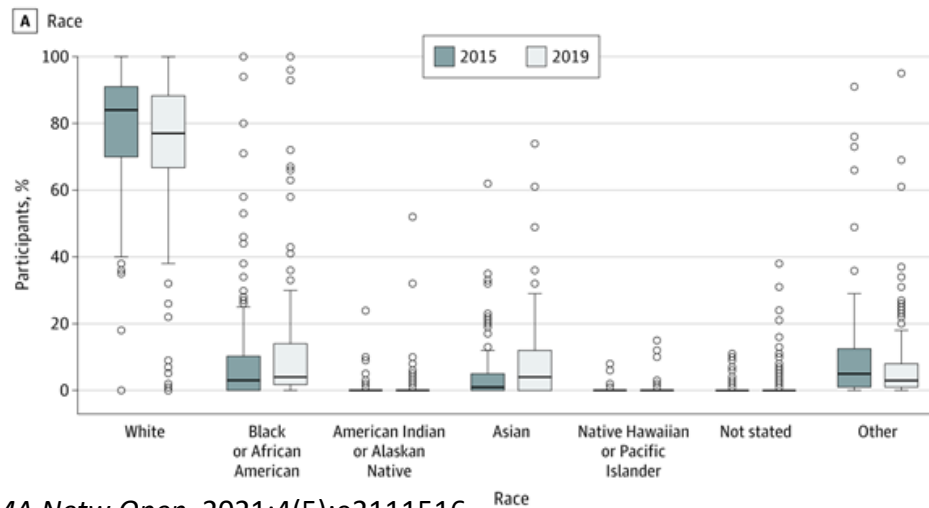


Racial/Ethnic disparities in cancer research. Racial/ethnic inclusion was studied in several aspects of cancer research, from cell-based experiments designed specifically to biobanking, genomics, and clinical trials. Guerrero, S., A. et al. Analysis of Racial/Ethnic Representation in Select Basic and Applied Cancer Research Studies. *Sci Rep* 8, 13978 (2018).

<https://www.fla-shop.com>

<https://jamanetwork.com/journals/jama/article-abstract/2770833>

Figure. Race and Sex Representation in Studies Published in 2015 and 2019



PROBLEM 2: Biased Processing

Dissecting racial bias in an algorithm used to manage the health of populations

ZIAD OBERMEYER , BRIAN POWERS, CHRISTINE VOGELI, AND SENDHIL MULLAINATHAN  [Authors Info & Affiliations](#)

SCIENCE • 25 Oct 2019 • Vol 366, Issue 6464 • pp. 447-453 • DOI: 10.1126/science.aax2342

Racial bias in health algorithms

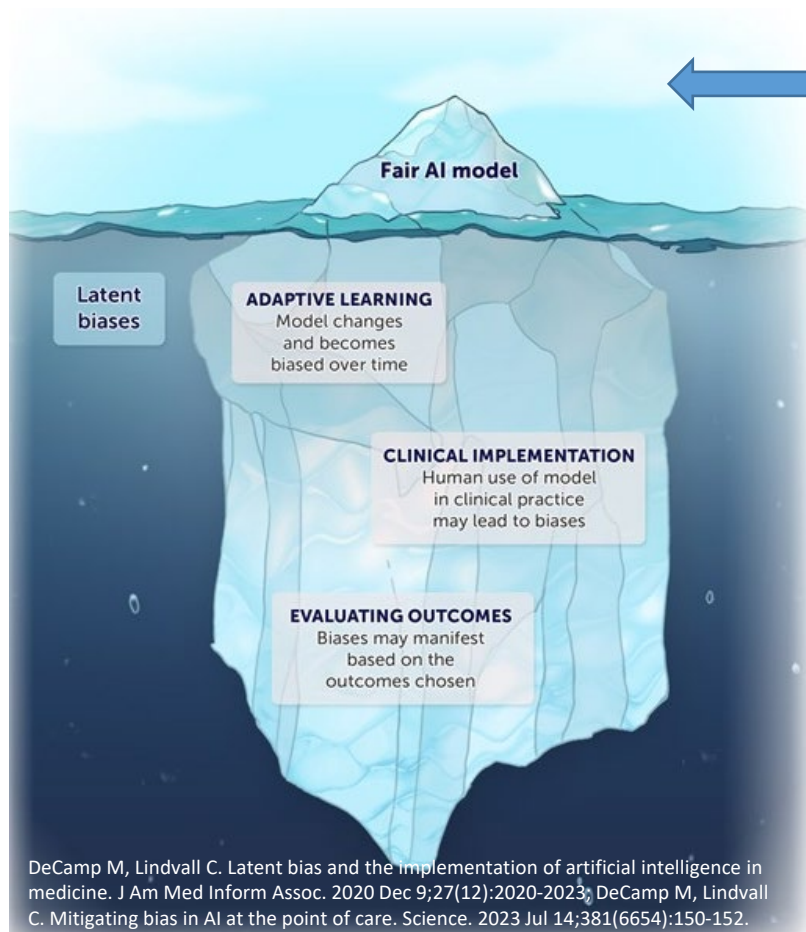
Bias occurs because the algorithm uses health costs as a proxy for health needs. Less money is spent on Black patients who have the same level of need, and the algorithm thus falsely concludes that Black patients are healthier than equally sick White patients.

BIASES IN ANALYTICS:

- (1) Human variable choice
- (2) Algorithmic performance
(*e.g., if unsupervised*)



PROBLEM 3: “Fair” AI Enters an Unfair World



Even with a
“perfect” AI model...

LATENT ERROR: system errors
“waiting to happen”

LATENT BIASES: biases in the
system “waiting to happen.”

- Clinicians who suffer automation bias and always follow the AI
- Patients who distrust health systems and choose against technology that could benefit them
- Clinicians who use AI for “this” patient but not “that” patient





Emergent Biases in Livi

Along with surveys, we've interviewed n=41 patient users.

Because I am a person of color...thinking a little bit of the **basic hair design, 'cause again, I think it just gives it a little bit more of a connection to minorities and our health...**"

- Research Participant

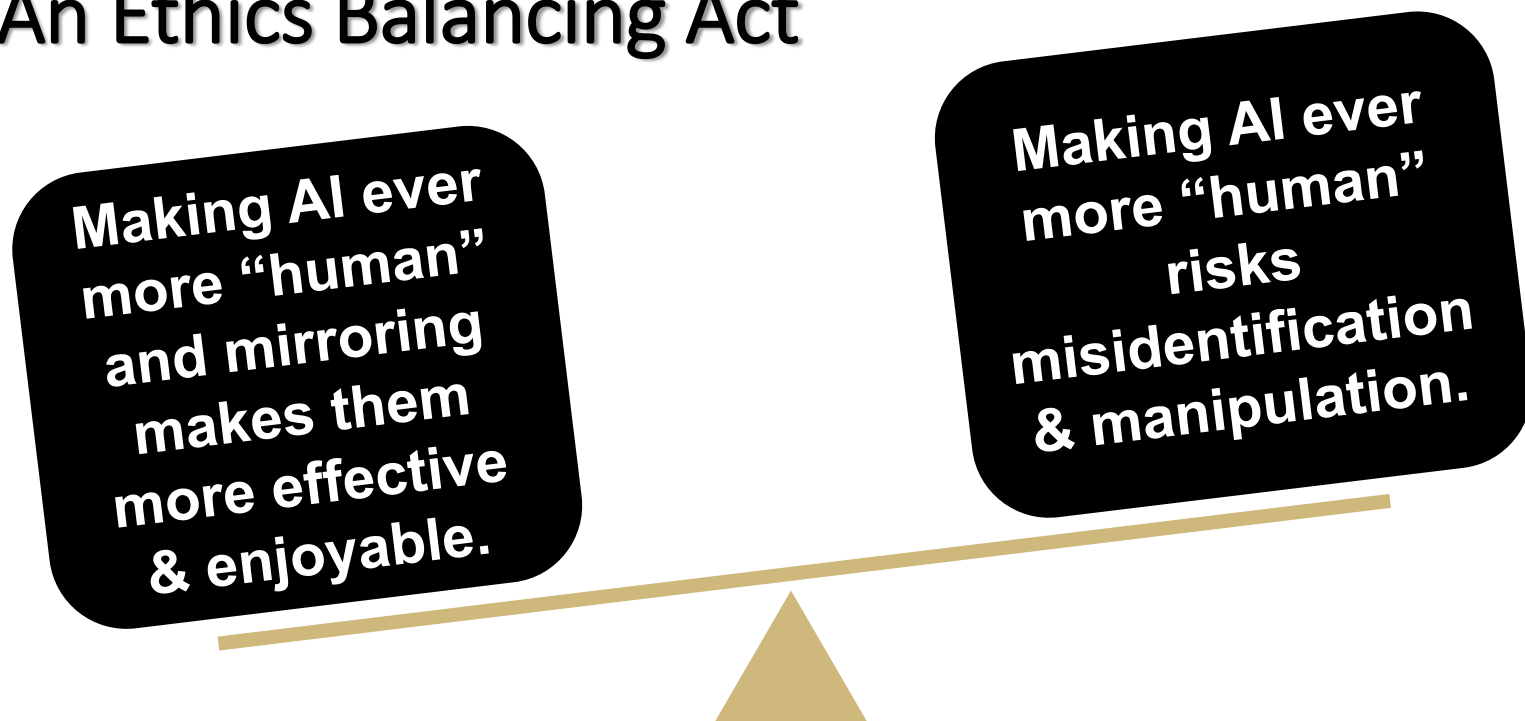


Mirroring the user's appearance may make chatbots more effective at behavior change (e.g., colonoscopy reminders).

Can we design chatbots to achieve the benefits of mirroring – say, based on race or gender - without manipulation?



An Ethics Balancing Act



REMEMBER: Bias occurs because *the effects of our design decision are experienced systematically differently by different groups.*

Illustrative Use Case & Question



Illustrating Bias & Ethics

We are in the middle of a four year study (R01-NR019782) of AI-based prognostication.



Take a Closer Look



JAMA Internal Medicine | **Original Investigation**
**Development and External Validation of a Mortality Prediction Model
for Community-Dwelling Older Adults With Dementia**

W. James Deardorff, MD; Deborah E. Barnes, PhD, MPH; Sun Y. Jeon, PhD; W. John Boscardin, PhD;
Kenneth M. Langa, MD, PhD; Kenneth E. Covinsky, MD, MPH; Susan L. Mitchell, MD, MPH;
Elizabeth L. Whitlock, MD, MS; Alexander K. Smith, MD, MS, MPH; Sei J. Lee, MD, MAS



“...this algorithm has shown high accuracy...**the overall accuracy is reduced in certain subgroups, such as racial and ethnic minorities and less-educated individuals.**” [19,20,60](#)

Biased Algorithms Exist – But What Do We Do?

In early research with n=80 physicians, patients and families across four major U.S. medical centers we hear...

*USING BIASED ALGORITHMS IS
“OK”*

“There’s still value in using an algorithm like that. We use something similar for cardiovascular disease... We know that it is more accurate for certain swaths of the population.”

*USING BIASED ALGORITHMS IS
“NOT OK”*

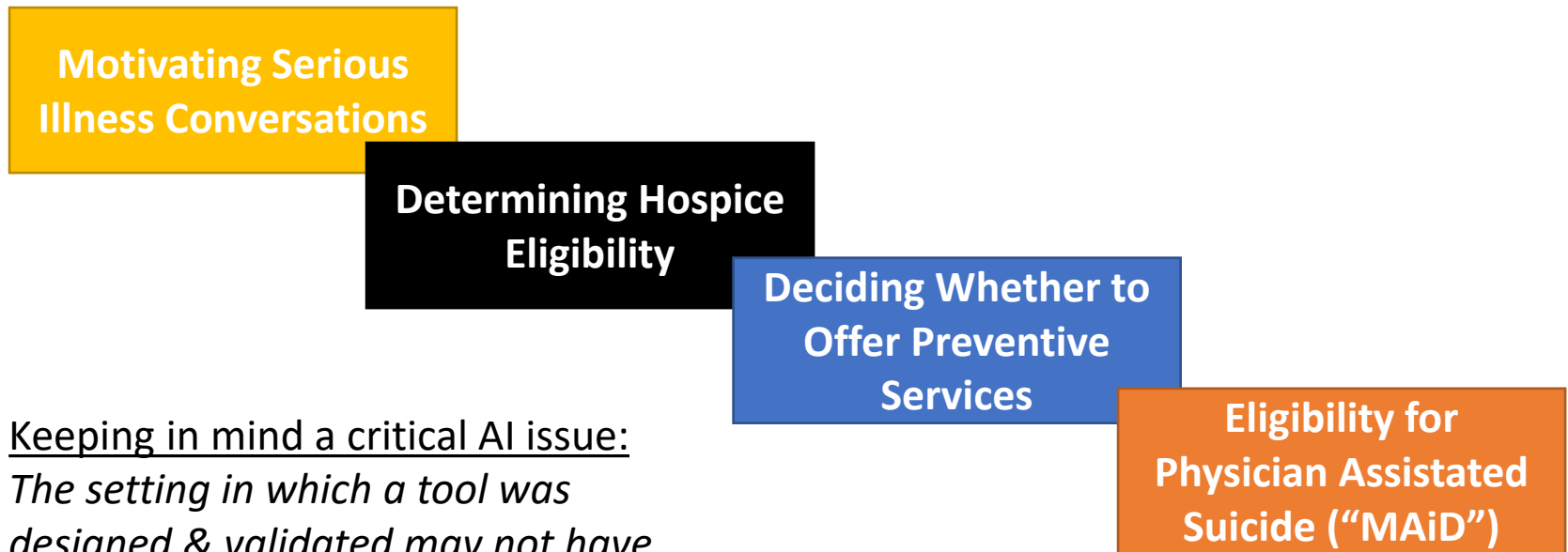
“That’s such a slippery slope. It just means that it’s okay to have inequities because it’s a little bit better for everyone?”

Study funded by the NIH/NINR R01-NR019782



What are the implications of biased mortality prediction?

If mortality prediction exhibits bias and inaccuracies based on race, ethnicity, or socioeconomic status, how should we think of its use for...



Keeping in mind a critical AI issue:
The setting in which a tool was designed & validated may not have included all these purposes.

A Question of Fairness

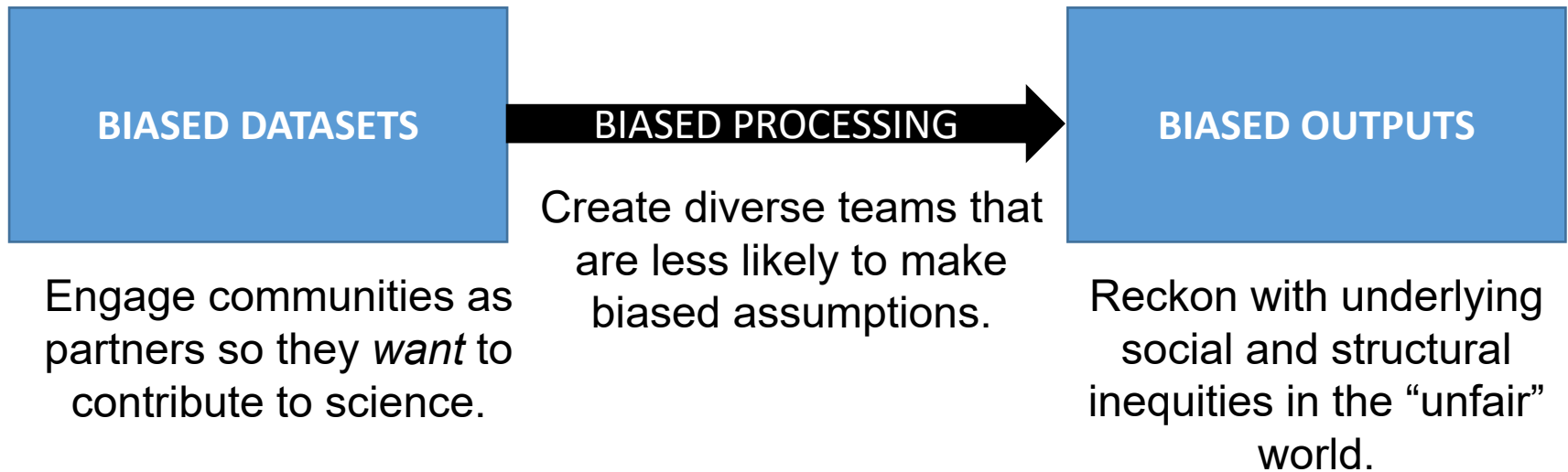
Put yourself in the shoes of a clinician who sees an EHR pop-up about a patient's high risk of mortality in the next 6 months. But now, you're aware of potential biases in algorithms.

Reflecting on the prior two quotes, with a partner, discuss what you think about the following view of fairness.

- “So long as no one is made worse off, it's OK to use biased AI”
- “AI should only be used if all relevant groups receive the same amount of benefit/risk.”
- “AI should only be used if it gives more benefit to those most in need.”



Managing Bias in AI



Where the Solution is Not: “Fair” Labels

It’s not merely that we DON’T agree philosophically about fairness – it’s also that we cannot meet all the dimensions of fairness simultaneously.

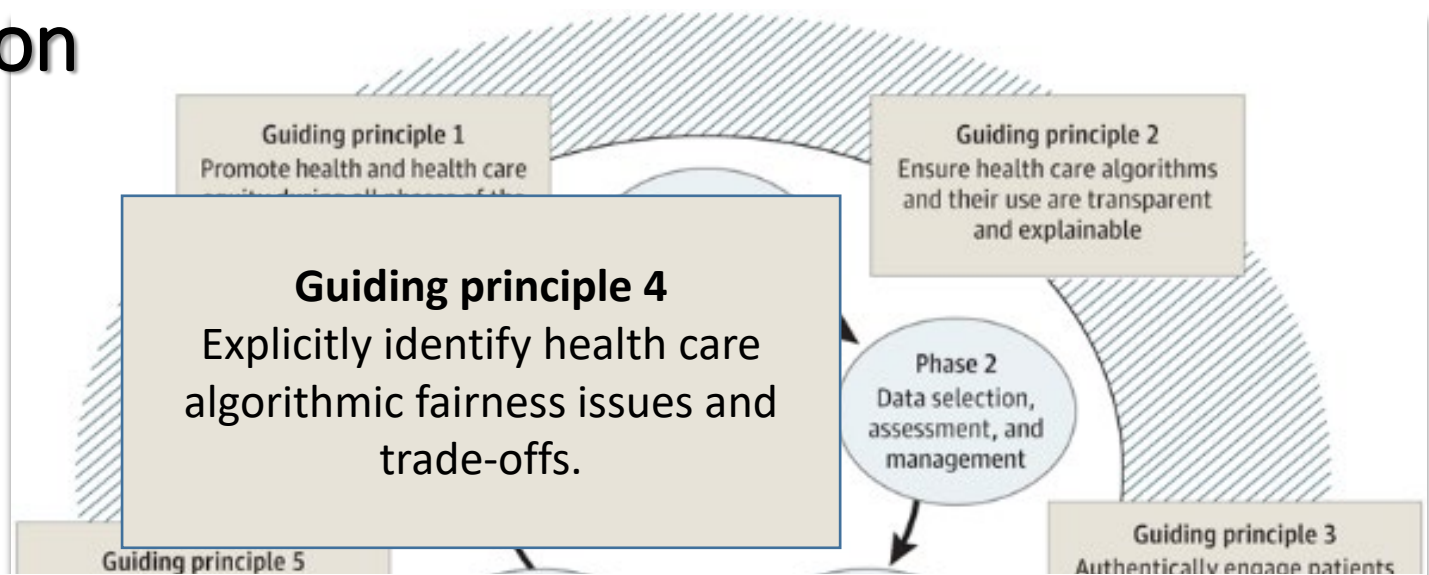
	Black	White
$F\frac{1}{3}$	67.7%	61.1%
Positive Prediction Rate	47.4%	23.6%
Accuracy	65.1%	68.0%
Precision	68.4%	65.1%
Recall	62.0%	39.3%

https://blog.csdn.net/weixin_26640581/article/details/109123206

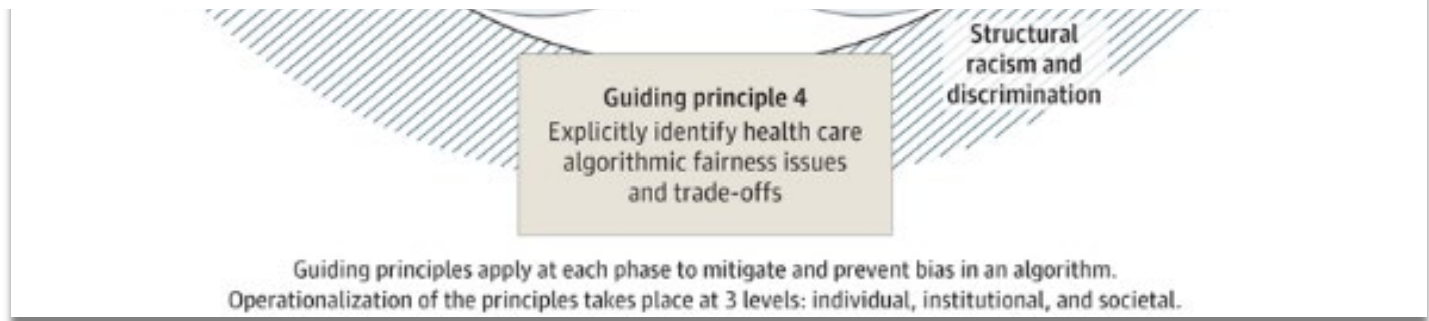
This statistical fact is known as the “Impossibility Theorem.”

Sara Gerke, “Nutrition Facts Labels” for Artificial Intelligence/Machine Learning-Based Medical Devices—The Urgent Need for Labeling Standards, 91 *GEO. WASH. L. REV.* 79 (2023);

Implication



We must ensure tradeoffs are **measured and reported (i.e., reporting checklists)** not hidden.



Chin MH, Afsar-Manesh N, Bierman AS, et al. Guiding Principles to Address the Impact of Algorithm Bias on Racial and Ethnic Disparities in Health and Health Care. *JAMA Netw Open.* 2023;6(12):e2345050.

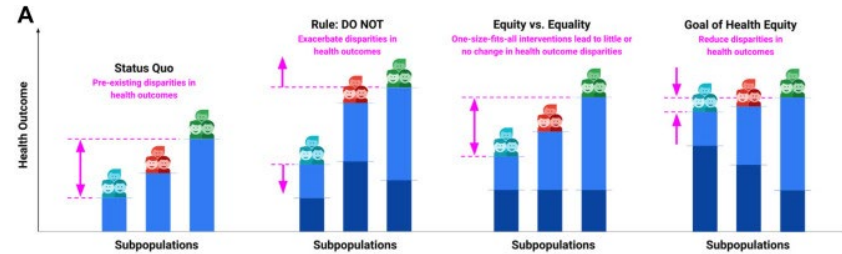


Novel Techniques for Identifying & Reporting Bias

We need to continue to refine ways to identify and report bias:

For example, the HEAL metric attempts to quantify the effects of AI/ML on disparities – not just, “do no harm.”

We also need accountability measures (e.g., journal reporting checklists – not buried in limitations).



Health equity assessment of machine learning performance (HEAL): a framework and dermatology AI model case study. *eClinicalMedicine* 2024;70: 102479 Published Online 14 March 2024 <https://doi.org/10.1016/j.eclinm.2024.102479>

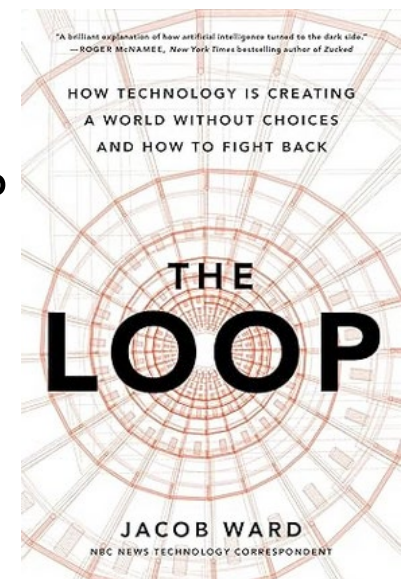
Novel Forms of Bias: Our History



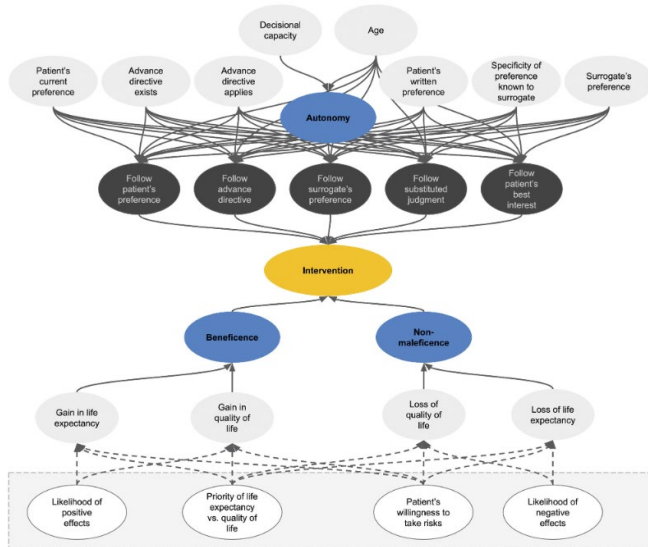
Imagine if your social media footprint, responses to questions, or other data sources were used to create your own “Personalized Patient Preference Predictor” for when you lose capacity.

- Does this inform us....
...or bind us to history?

Ethics of the algorithmic prediction of goal of care preferences: From theory to practice. *Journal of Medical Ethics* [49](#) (3):165–174. doi: 10.1136/jme-2022-108371; Earp BD et al. A Personalized Patient Preference Predictor for Substituted Judgments in Healthcare: Technically Feasible and Ethically Desirable. *Am J Bioeth.* 2024 Jan 16:1-14. doi: 10.1080/15265161.2023.2296402.



Novel Forms of Bias: Principlism



Proposals exist to use AI/LLM for supporting clinical ethics consults.

But what if ethics “training data” in the English language data overrepresent principlism?

Figure 1. Visualization of the METHAD FCM. In this pilot study, we omitted the principle of justice for reasons explained below.

Meier LJ, Hein A, Diepold K, Buyx A. Algorithms for Ethical Decision-Making in the Clinic: A Proof of Concept. *Am J Bioeth.* 2022 Jul;22(7):4-20. doi: 10.1080/15265161.2022.2040647.

The Neglect of Virtue, Care, Wisdom, and more...



You

Can you summarize medical ethics in 100 words?



ChatGPT

Medical ethics shapes healthcare through principles like autonomy, beneficence, non-maleficence, justice, confidentiality, and informed consent. Autonomy respects patients' right to choose their care. Beneficence requires healthcare providers to act in patients' best interests, while non-maleficence demands avoiding harm. Justice ensures fair resource distribution and treatment. Confidentiality protects patient privacy. Informed consent empowers patients with information. Professional integrity upholds ethical standards. End-of-life care honors patient preferences. Research ethics prioritize participant welfare. Global health ethics addresses disparities. These principles guide ethical decision-making for healthcare professionals, researchers, policymakers, and patients, fostering trust and equitable care.



Who We Are

A Reminder from Sociology

<http://chronicle.com/weekly/v50/i21/21b02601.htm>

How Computers Change the Way We Think

By SHERRY TURKLE

The tools we use to think change the ways in which we think. The invention of written language brought about a radical shift in how we process, organize, store, and transmit representations of the world. Although writing remains our primary information technology, today when we think about the impact of technology on our habits of mind, we think primarily of the computer.

From the issue dated January 30, 2004

The Chronicle of Higher Education

<http://www.chronicle.com>

Section: The Chronicle Review

Volume 50, Issue 21, Page B26

If we see how written language, mathematics, the computer, and so much else changes *who we are* and *what we value* – why not AI?



Even this Presentation May Be Guilty

Edward R. Tufte

*The Cognitive Style of PowerPoint:
Pitching Out Corrupts Within*

SECOND EDITION

*“PowerPoint becomes ugly and inaccurate because our thoughts are foolish,
but the slovenliness of PowerPoint makes it easier for us to have foolish thoughts.”*



Is Technology Merely a Tool We Use?



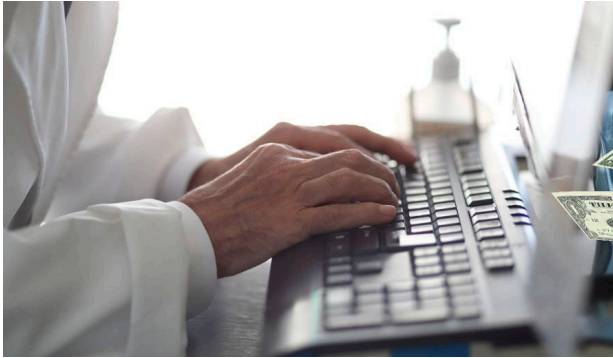
Heidegger's Critiques:

"...the essence of technology is by no means anything technological..."

It must be remembered – the scalpel, while a quintessential “tool” – made possible the breaching of the bodily boundary.

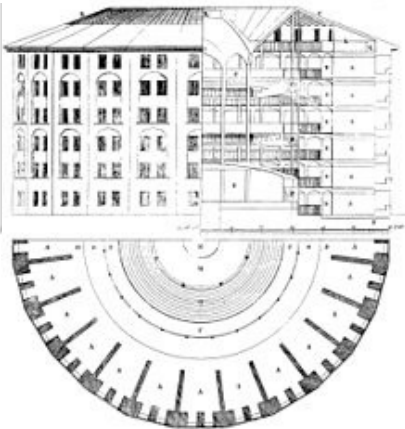
Karches K. E. (2018). Against the iDoctor: why artificial intelligence should not replace physician judgment. *Theoretical medicine and bioethics*, 39(2), 91–110.

Too Far a Stretch?



To think the EHR could become a site of digitizing data for the AI machine – farther from care?

To think that hospitals might be designed for the sake of better AI surveillance, and not as healing spaces?



Jeremy Bentham's panopticon prison, drawn by [Willey Reveley](#), 1791, as pointed out by my colleague Glenn Cohen..

A Final Use Case: Using LLMs Patient Portal Messages



High Volumes of Patient Portal Messages

Post-COVID, evidence suggests that patient portal messages have increased dramatically – leading to additional EHR time among clinicians and potentially contributing to burnout.

- In one study, messages increased >150%.
- In other reports, increases approach 300%.

While charging for messages is one (controversial) approach to reduce volume, what if we made messages more automated....?

Longhurst C, Huckman RS. Corrigendum to: Assessing the impact of the COVID-19 pandemic on clinician ambulatory electronic health record use. J Am Med Inform Assoc. 2022 Mar 15;29(4):749. doi: 10.1093/jamia/ocab288. Erratum for: J Am Med Inform Assoc. 2022 Jan 29;29(3):453-460. PMID: 35020882; PMCID: PMC8922166.

Could LLMs answer patient messages?



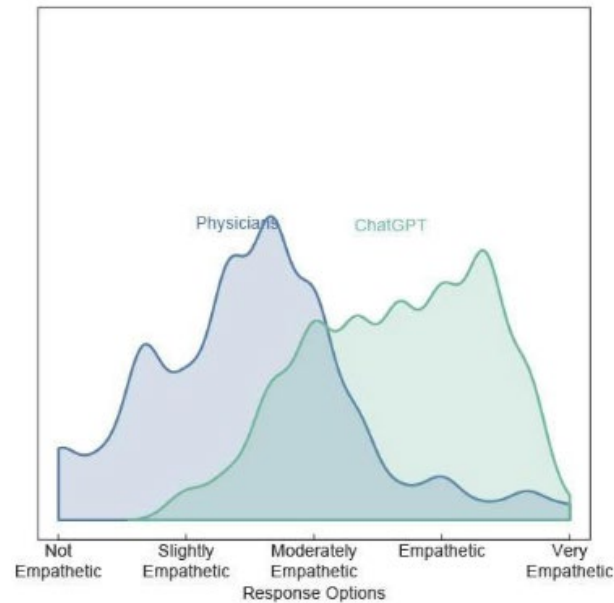
The screenshot shows the Fierce Healthcare website header with navigation links for Providers, Health Tech, Payers, Regulatory, Finance, Special Reports, and Fierce 50. The main content area features a dark blue background with the Fierce Healthcare logo on the left. The article title is 'HIMSS23: Epic taps Microsoft to integrate generative AI into EHRs with Stanford, UC San Diego as early adopters'. The author is Heather Landi, and the article was published on April 17, 2023, at 11:00am. There are social media sharing icons for LinkedIn, X, Facebook, Email, Print, and a link icon. Below the title are four tags: Microsoft, Epic, generative AI, and electronic health records (EHRs).

<https://www.fiercehealthcare.com/health-tech/himss23-epic-taps-microsoft-integrate-generative-ai-ehrs-stanford-uc-san-diego-early>

In this rollout, initial responses to patient portal messages are generated by a LLM, to be edited (or not) by a nurse, physician, etc.

ChatGPT versus Physician Responses

In one provocative study, licensed health care professionals assessed ChatGPT responses to the same question as longer, higher in quality and more empathetic (?) than physician responses.



Ayers JW, et al Comparing Physician and Artificial Intelligence Chatbot Responses to Patient Questions Posted to a Public Social Media Forum. JAMA Intern Med. 2023 Jun 1;183(6):589-596. doi: 10.1001/jamainternmed.2023.1838. PMID: 37115527; PMCID: PMC10148230.

What does this look like in practice?

Dr. DeCamp, Hope all is well. I received message yesterday to schedule a fluoroscopy. I think this may have been from my swallowing issues? Since then I think things have definitely b follow through w dry cough - sho Me know your th

Thank you for your message.

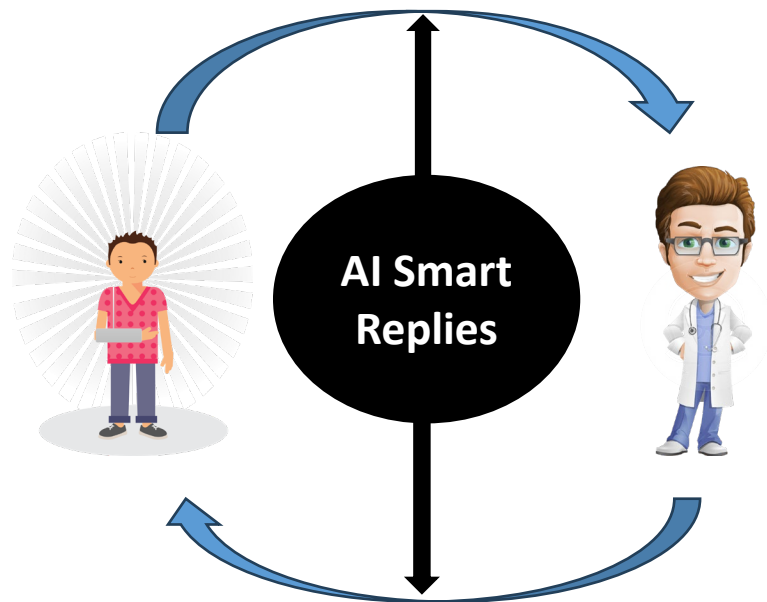
It's good to hear that your swallowing issues have improved. If you're not experiencing any problems, it's reasonable to postpone the fluoroscopy. However, if symptoms return, we should reconsider.

Regarding your persistent dry cough, it's important to monitor this. If it continues or worsens, we should investigate further. I'm glad to hear you're feeling well overall and have rescheduled your colonoscopy. Take care!

This text was automatically generated then edited by Matthew DeCamp.



Technology Changes How We View Each Other



- **IN ONE NON-HEALTH CARE STUDY:**

- ***Perceived*** use caused the recipient (patient?) to review the sender (physician?) more negatively.
- ***Actual*** use caused the recipient (patient?) to review the sender (physician?) more positively.

Hohenstein, J., Kizilcec, R.F., DiFranzo, D. *et al.* Artificial intelligence in communication impacts language and social relationships. *Sci Rep* **13**, 5487 (2023). <https://doi.org/10.1038/s41598-023-30938-9>

Reassurance Against AI Exceptionalism



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That it will ever come into general use...I am extremely **doubtful**;

because its beneficial application requires **much time**, and gives a **good deal of trouble** both to the patient and the practitioner;

and because its whole hue and character is **foreign**, and opposed to all our habits and associations. It must be confessed that there is something even **ludicrous...**

Laennec RTH. *A Treatise on the Diseases of the Chest*, Translated from French to English by John Forbes, Translator's Preface by John Forbes. 1821

Concluding Thoughts

- **Routine clinical care is wrought question of transparency, expertise, bias, and so on.** We must acknowledge this – and be mindful of status quo bias (be honest about differences; avoid AI exceptionalism).
- **When it comes to “Fair AI,” many challenges are ahead at the intersection of ethics and the interpretation of new policy.**
- **While we should solve discrete ethical issues, we ought not forget the deeper ones of who we are and what we value.**



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