Navigating Tomorrow's Nursing: AI, Social Media, and the Battle for Truth

Allina Health

Allina Health Critical Care Nursing Conference

Monday, April 16, 2024

Stephanie Edmonds, PhD, MPH, RN

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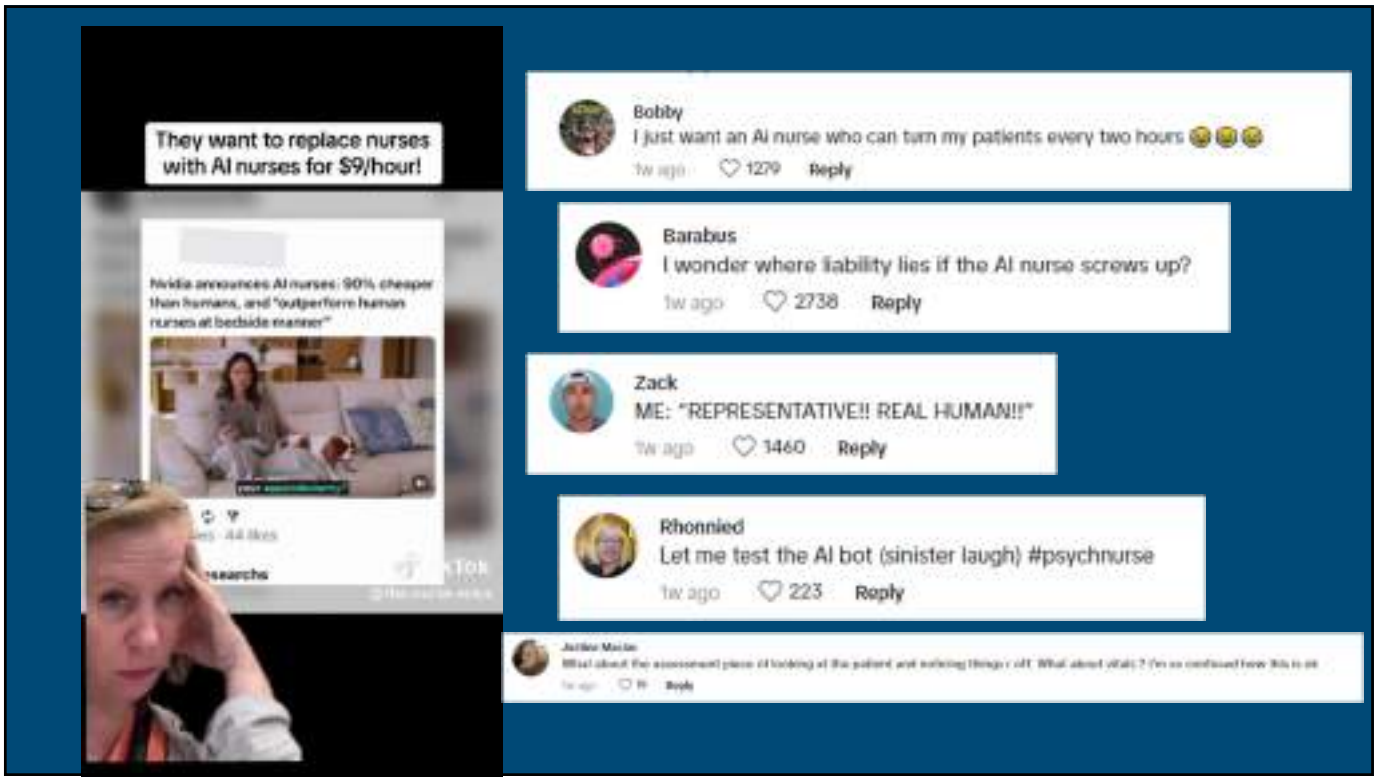

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Stephanie Edmonds, PhD, MPH, RN

- Nurse Scientist at Abbott Northwestern
- Expertise in:
  - Evidence-based practice and quality improvement
  - Implementation science
  - Communication and implicit bias
  - Patient engagement
  - Research methods
  - Reproductive health care

No conflicts of interest

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In this presentation, I aim for you to gain a better understanding of AI and its potential applications in the field of nursing.

Learning objectives

1. **Define artificial intelligence** (AI) and the common terms and applications behind AI technologies.
2. Explore the interconnectedness between **AI, social media platforms, and healthcare information** dissemination.
3. Explain the potential **applications of AI** in critical care nursing settings.
4. Identify **ethical and social concerns** surrounding the development and deployment of AI technologies in healthcare.

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What exactly is AI?

What are the common terms and applications of AI?

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Artificial Intelligence

"Artificial intelligence, or AI, is technology that enables computers and machines to simulate human intelligence and problem-solving capabilities."

IBM (n.d)

8

Machine Learning

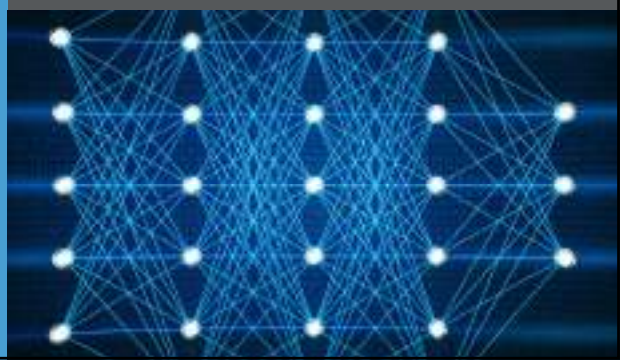
9

Neural Network

"a machine learning program, or model, that makes decisions in a manner similar to the human brain, by using processes that mimic the way biological neurons work together to identify phenomena, weigh options and arrive at conclusions."

IBM (n.d)

Neural networks learn from data and become powerful tools in AI. They help us quickly sort and understand information, like recognizing speech or images much faster than humans can.



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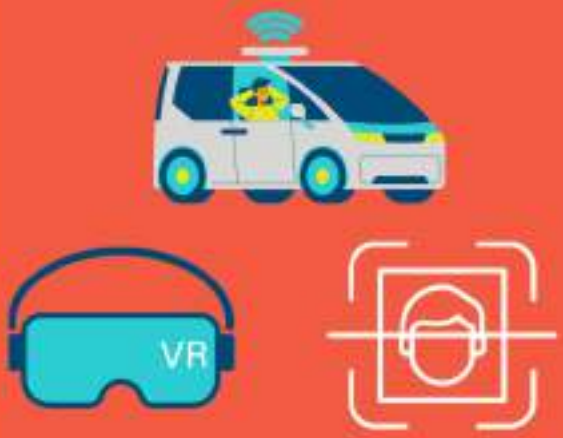
Common applications of AI

Natural Language Processing

Computer Vision



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Generative AI

Generative AI creates new content using data from various sources but cannot analyze or think critically. Humans are responsible for verifying the accuracy of the generated content.

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Beware of using ChatGPT and Co-Pilot for references. These are not super search engines. They are made to create. Sometimes these AI tools will create "AI hallucinations" where something will look like a real reference but it is made up and does not exist.

Allina Health Library Services
Carissa Tomlinson
Pam Barnard
Sarah Olson
Andrew Crow

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AI, Social Media, and Healthcare Information

How are they interconnected?

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Important terms

Infodemic: Too much information including false or misleading information in digital and physical environments during a disease outbreak.

Misinformation: The spread of false information without the intent to mislead.

Disinformation: Designed or spread with full knowledge of it being false (information has been manipulated), as part of an intention to deceive and cause harm.

World Health Organization, n.d.

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Misinformation on Twitter about COVID-19

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Why COVID misinformation was so bad for healthcare professionals

Misinformation about vaccines lead to about 318,000 COVID-19 deaths Jan 21-Apr 22

- Patients with more mental health issues
- Panic buying of supplies led to less for us
- Patients harmed due to wrong treatments or home remedies
- Having to correct misinformation
- Treating patients who avoided preventative measures (i.e. vaccination, isolation, masking etc.)
- Patients who mistrusted us

Malik et al., 2023
School of Public Health Brown University, 2023

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Videos, photos, or audio recordings that have been manipulated with AI to appear real.

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Some Research on Health Misinformation and AI

nature > scientific reports > articles > article

Article | Open access | Published: 10 August 2023

Deepfakes and scientific knowledge dissemination

Christopher Doss, Jared Mondschein, Dule Shu, Tal Wolfson, Denise Kopecky, Valerie A. Fitton-Kane, Lance Bush & Conrad Tucker

Scientific Reports 13, Article number: 13429 (2023) | Cite this article

7541 Accesses | 2 Citations | 59 Altmetric | Metrics

27%-50% of participants were unable to correctly identify a deepfake video

Using generative AI, 2 people were able to generate 102 distinct blog posts of misinformation in 65 minutes

Special Communication

November 13, 2023

Health Disinformation Use Case Highlighting the Urgent Need for Artificial Intelligence Vigilance

Weapons of Mass Disinformation

Bradley D. Menz, BPharm(Hons)[1]; Nataresh D. Modi, BPharm(Hons)[1]; Michael J. Sorich, PhD[1]; et al

Author Affiliations | Article Information

JAMA Intern Med. 2024;184(1):92-96. doi:10.1001/jamainternmed.2023.5947

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Social Media and Information Sharing for Healthcare Professionals

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Critical Care Nursing Microlearnings on TikTok

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Applications of AI

How might AI be used Critical Care nursing

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AI in the ICU

- AI needs lots of high-quality data to work well.
- ICUs collect tons of data through vitals, lab tests, continuous patient monitoring
- With AI, data can be used to make better decisions on diagnosis and treatments of patients.

Chris Lovejoy, 2019

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Predictions

Observational Study > Crit Care Med. 2018 Apr;46(4):547-553.
doi: 10.1097/CCM.0000000000002936.

An Interpretable Machine Learning Model for Accurate Prediction of Sepsis in the ICU

Shamim Nemati, Andre Holder, Fereshteh Razmi, Matthew D Stanley, Gari D Clifford, Timothy G Buchman

Affiliations + expand
PMID: 29286945 PMCID: PMC5851825 DOI: 10.1097/CCM.0000000000002936

Artificial Intelligence Sepsis Expert can accurately predict the onset of sepsis in an ICU patient 4-12 hours prior to clinical recognition.

AI can be used to predict the onset of severe sepsis using physiomarkers in critically ill children. May detect severe sepsis as early as 8 hours prior to a real-time electronic severe sepsis screening algorithm.

Observational Study > Pediatr Crit Care Med. 2018 Oct;19(10):e495-e503.

Applying Artificial Intelligence to Identify Physiomarkers Predicting Severe Sepsis in the PICU

Affiliations + expand

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Decision Support

J Pers Med. 2022 May; 12(5): 661.
Published online 2022 Apr 20.

Guiding Efficient, Effective, and Patient-Oriented Electrolyte Replacement in Critical Care: An Artificial Intelligence Reinforcement Learning Approach

Cristian Baicus, Academic Editor

Author information Article notes Copyright and License information PMC Disclaimer

"Reduced excess electrolyte replacements and improved the safety, precision, efficacy, and cost of each electrolyte repletion event."

Front Med (Lausanne). 2022; 9: 935366.
Published online 2022 Nov 18.

An artificial intelligence system to predict the optimal timing for mechanical ventilation weaning for intensive care unit patients: A two-stage prediction approach

Their AI models could shorten the patients' intubation time by 21 hours

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New Types of Data

Effect of a wearable patient sensor on care delivery for preventing pressure injuries in acutely ill adults: A pragmatic randomized clinical trial (LS-HAPI study)

David Pickham [1], Nic Berte [2], Mike Pihulic [3], Andra Valdez [4], Barbara Mayer [5], Manisha Desai [6]

Affiliations + expand

PMID: 29331656 DOI: 10.1016/j.ijnurstu.2017.12.012

Patients with the wearable sensor were significantly less likely to develop a pressure injury and were more likely to be turned

Using sensors they were able to differentiate delirious and non-delirious patients

Article | Open access | Published: 29 May 2019

Intelligent ICU for Autonomous Patient Monitoring Using Pervasive Sensing and Deep Learning

Anis Davoudi, Kumar Rohit Malhotra, Benjamin Shickel, Scott Siegel, Seth Williams, Matthew Ruppert, Emel Bihorac, Tezcan Ozrazgat-Baslanti, Patrick J. Tighe, Azra Bihorac & Parisa Rashidi

Scientific Reports 9, Article number: 8020 (2019) | Cite this article

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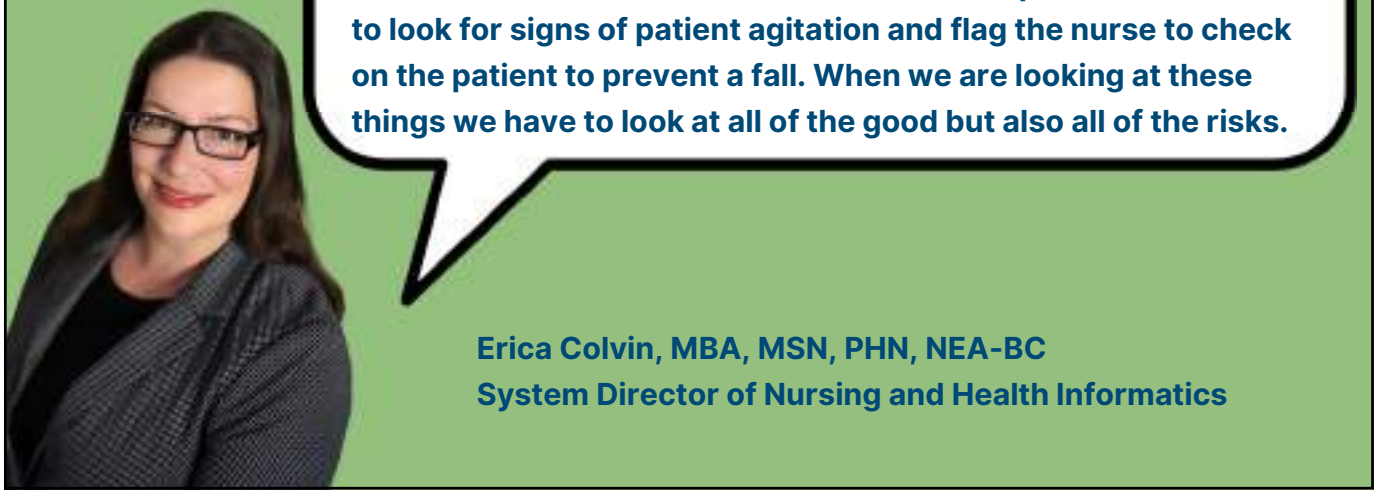

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Ethical and Social Concerns

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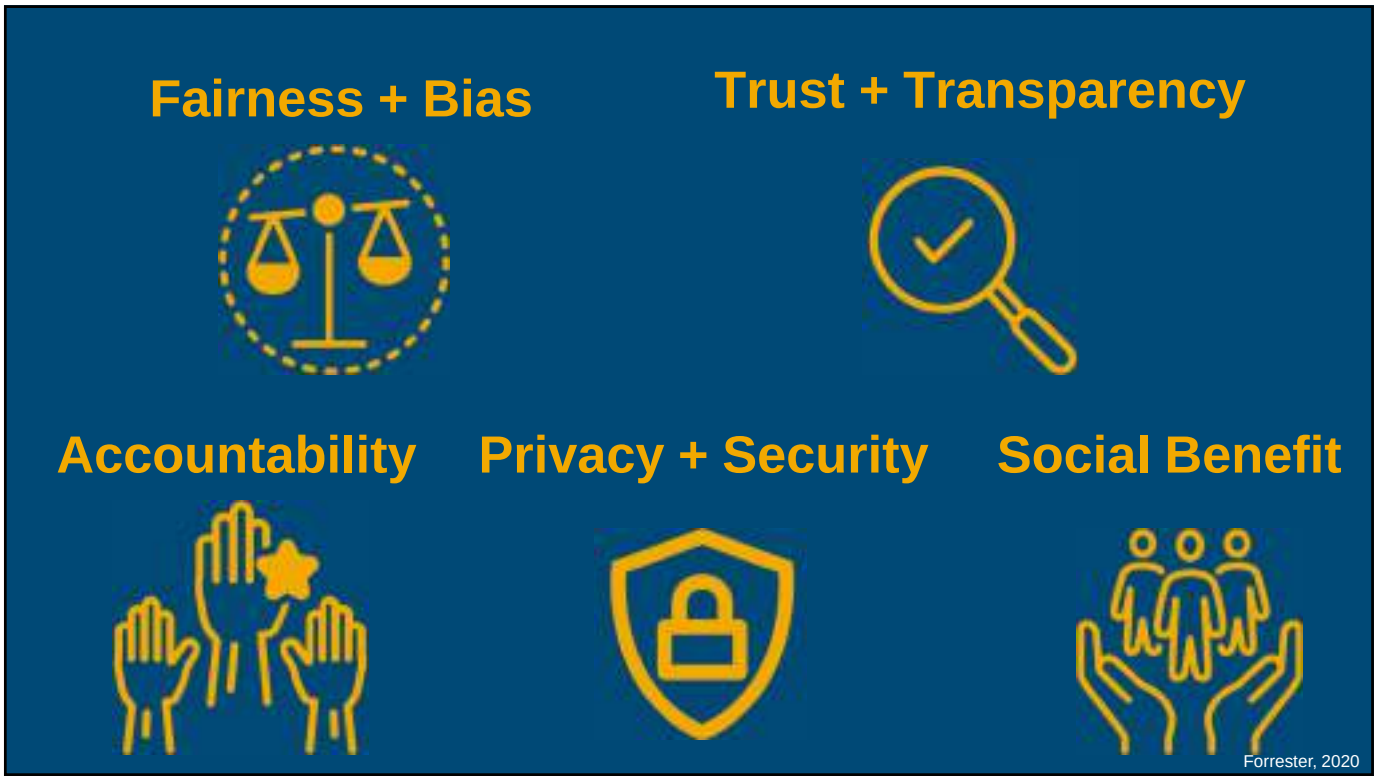
Fairness + Bias
Trust + Transparency
Accountability
Privacy + Security
Social Benefit
Forrester, 2020

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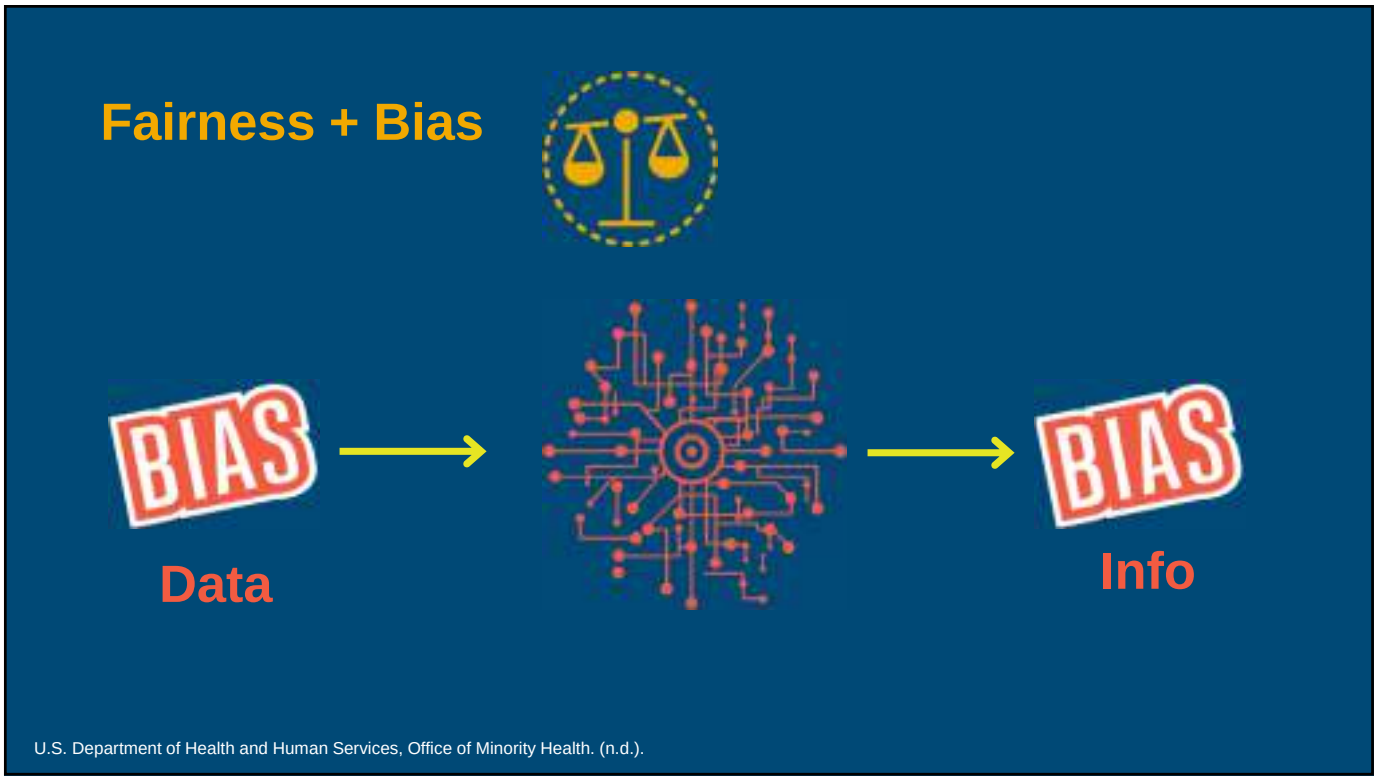
Fairness + Bias
BIAS
Data
BIAS
Info
U.S. Department of Health and Human Services, Office of Minority Health. (n.d.).

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Trust + Transparency

Data →  → Info

Black Box

Forbes Technology Council, 2023

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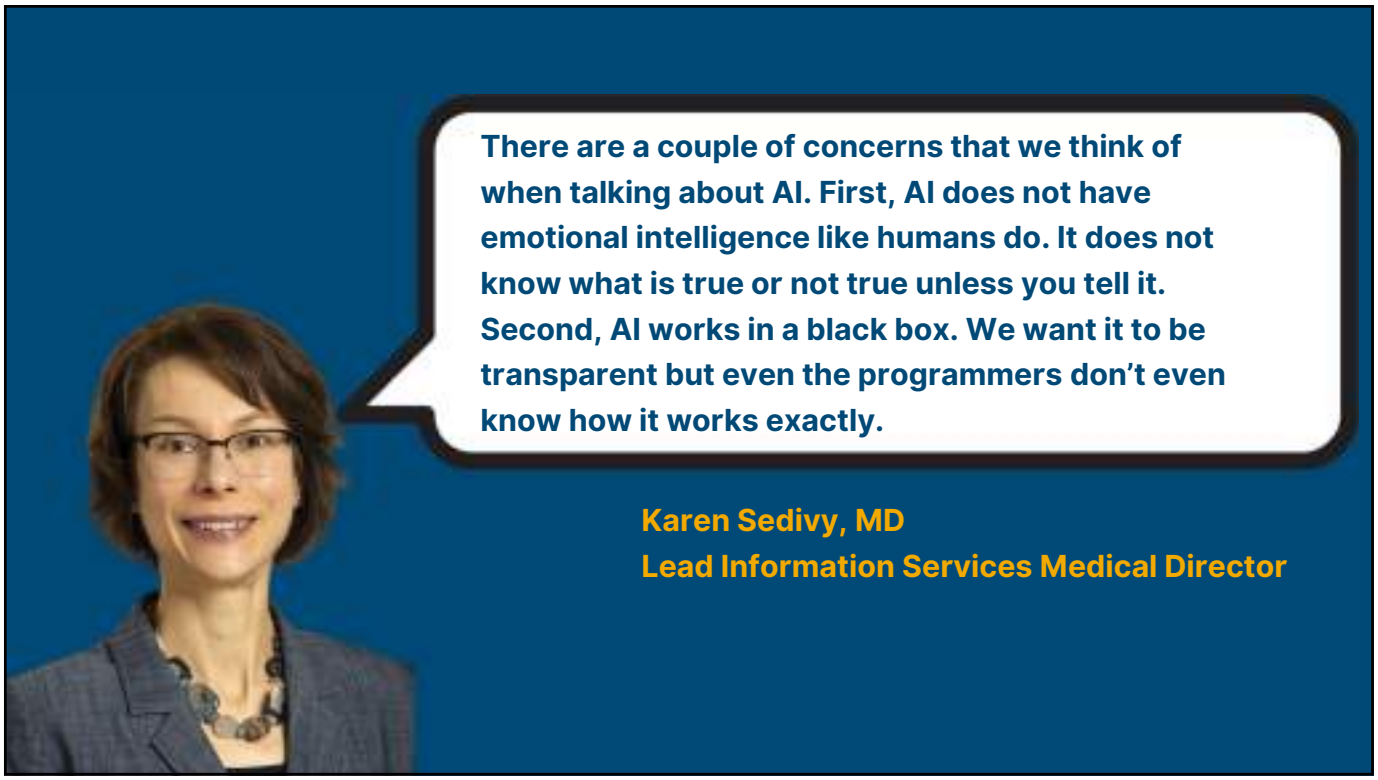

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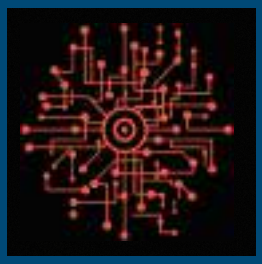
Accountability



Data → Info → HARM

Habli et al., 2020

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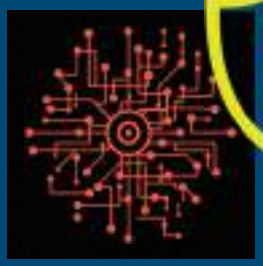
Privacy + Security



Data → Info

Thomson Reuters, 2023

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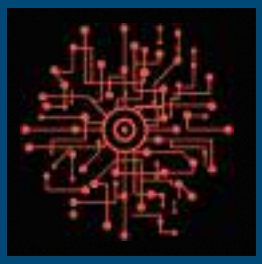
Social Benefit

Data →  → Improved Outcomes

The White House, 2023

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As AI enters healthcare, we will need to have a willingness to "go there" and think of our roles a bit differently. We might have to give up some things that we are doing now. There are a lack of nurses and everyday we are overburdened with tasks that AI technology might be able to relieve for us.

Dr. Dre Carpenter, DNP, RN
Senior Vice President, System Chief Nursing Executive

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In Summary

AI is a way of processing a lot of data faster than the human brain can

We must use our human critical thinking skills when seeing information on social media and things generated by AI

AI is already being considered for use in critical care to improve patient care and work processes

We need to be very cautious when incorporating AI into healthcare

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Acknowledgements

Hannah Christophersen, BSN, RN
Nursing Professional Development Educator & Allina Health's *Social Media Influencer*

Dr. Dre Carpenter, DNP, RN
Senior Vice President, System Chief Nursing Executive

Erica Colvin, MBA, MSN, PHN, NEA-BC
System Director of Nursing and Health Informatics

Karen Sedivy, MD
Lead Information Services Medical Director

Carissa Tomlinson, MLIS
Pam Barnard
Sarah Olson, MLIS
Andrew Crow
Allina Health Library Services

Sharon Wahl, RN, CCNS, CCRN
CVICU Clinical Nurse Specialist

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