



# Social Determinants of Health in Artificial Intelligence to Advance Health Equity

Division of Extramural Science Programs

Mary Elizabeth (Libbey) Bowen, PhD

Karen Huss, PhD, RN, ANP-BC, FAAANI, FAHA

Leigh Willis, PhD, MPH

05/23/2024



National Institute  
of Nursing Research

# Concept Team



Libbey Bowen, PhD



Karen Huss, PhD, RN,  
ANP-BC, FAANA,  
FAHA



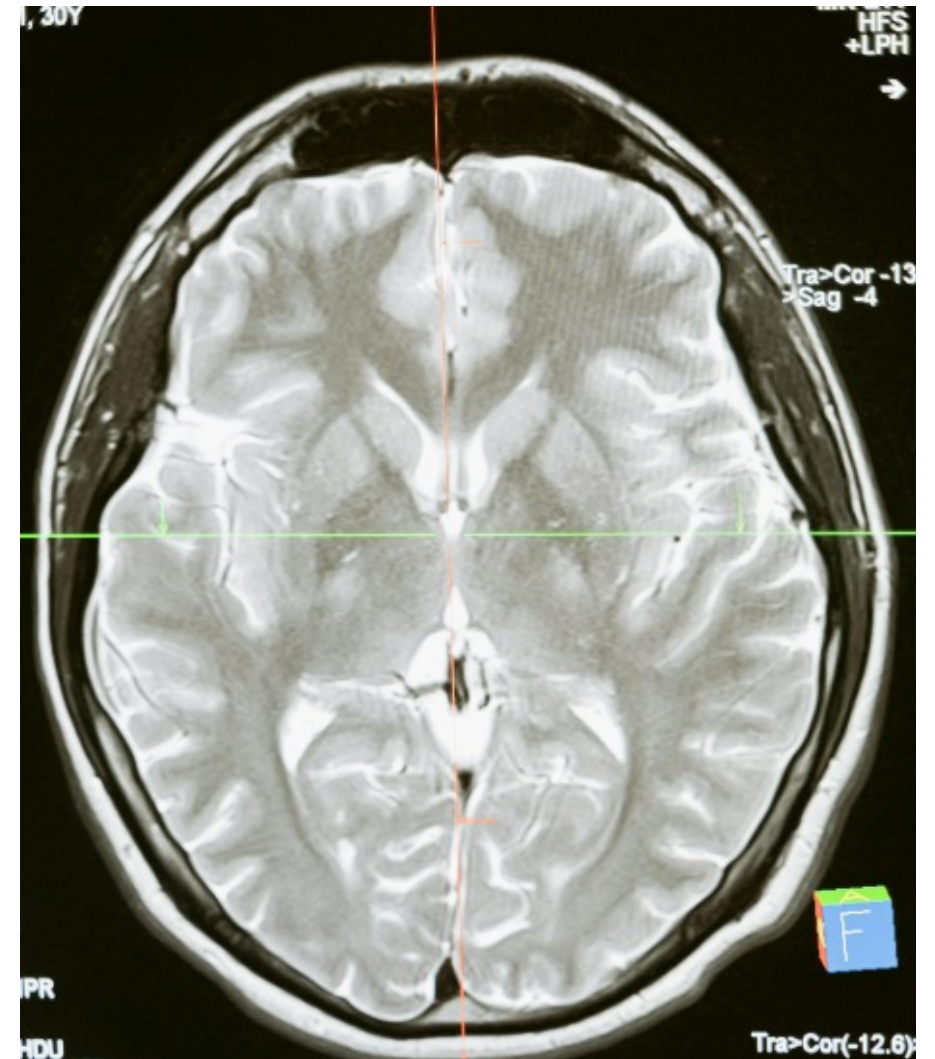
Leigh Willis, PhD

# Artificial Intelligence and Health

Artificial intelligence (AI) is the design and study of computer programs to be intelligent and includes a wide range of techniques.

AI is increasingly used in health care applications and can provide substantial improvements in all areas of healthcare, from diagnostics to treatment.

There remain concerns about the use of AI in health.



# Social Determinants of Health Conceptualization

- Social Determinants of Health (SDOH) include the conditions in which people are born, live, learn, work, play, and age and the wider set of structural factors shaping the conditions of daily life
- SDOH have a significant impact on health outcomes





# Nursing Science and AI

- AI research must include inter/multidisciplinary team experts in health
- Nursing science conceptualizes health challenges within the context of people's lives and living conditions and is well-positioned to make important contributions to AI research



# Statement of the Problem

- AI research lacks inter/multidisciplinary team experts in health.
- Many AI systems lack representative, diverse data, and fail to examine how the inclusion of SDOH may affect results and model interpretation.
- Many AI systems do not include SDOH though research shows including SDOH significantly improves model fit, outcomes, and predictions.
- When SDOH are utilized in AI algorithms, data inputs rarely go beyond the inclusion of individual-level SDOH proxies such as race/ethnicity, gender, or age, which do not capture the wider set of structural factors shaping the conditions of daily life.

# Purpose

- To understand and address SDOH in AI models and systems and use SDOH to improve AI models and systems to reduce health inequalities and advance health equity





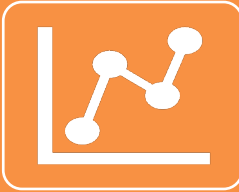
# Examples of Research to Address the Gaps



Research to understand how to use SDOH in AI to improve health outcomes and reduce disparities



Research utilizing inter/multi-disciplinary teams with health, SDOH and equity expertise to inform AI algorithm and system development and implementation to advance health equity and optimize health outcomes



Research to promote transparency in AI by providing information on SDOH inputs and other data characteristics



Research that provides for the continuous oversight of AI systems using SDOH





# THANK YOU!

[libbey.bowen@nih.gov](mailto:libbey.bowen@nih.gov)