

Artificial Intelligence (AI) & Data Science Working Group

Recommendations to the NACNR

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NINR's Interest in AI & Data Science



Conditions of Daily Life

• How does AI intersect with the wide set of social and economic factors shaping conditions of daily life?

Bealth For All

• How is AI influencing upstream factors critical to health for all?



Research and Training

- What AI research and training should NINR support?
- What are the topics ideally suited to our scientific perspective?
- What are the big questions that aren't being addressed right now that nursing science can take on and the science that can be used to answer those questions?



About the Working Group



Background and Charge

- Established under NACNR in September 2024
- Comprised of experts in data science and AI in health research and related fields, from both within and outside of the nursing science community
- Charged with recommending future directions for NINR-supported science and training around data science and AI
- Asked to assess pressing research questions and training needs and opportunities in the nursing science field.
- Recommend areas of research and training where nursing science can potentially have the biggest impact





Process

- Met 3 times between September-October 2024
- Agreed on a working definition of
- Discussed pressing research questions and training needs and opportunities in the nursing science field
- Formed 4 priority research recommendations, 7 additional research recommendations, and 2 priority training recommendations.



Working Group's Definition of AI

The science of making machines do things that would require intelligence if done by humans.



Working Group Members

Name	Affiliation
Patricia Stone, PhD, MPH, MSN, BSN, FAAN, FAPIC (Co-Chair)	Columbia University School of Nursing
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Jing Wang, PhD, MPH, RN, FAAN	Florida State University College of Nursing
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Soroush Saghafian, PhD, MS, MS	Harvard Kennedy School
Michael Cary, PhD, RN	Duke University School of Nursing
George Demiris PhD, FACMI	University of Pennsylvania
Mollie R. Cummins, PhD, RN, FAAN, FACMI	University of Utah College of Nursing





Priority Research Recommendations (In order of priority)





NINR should support nurses and other interdisciplinary scientists to lead Al research agendas -addressing differences in health and disease distribution and conditions of daily life. To meet this goal, NINR should support research that:

- Leverages AI tools to develop health interventions that address the unique needs of individuals across a variety of backgrounds.
- Applies AI tools to address conditions of daily life, identifying effective methodologies and data collection strategies to minimize differences in outcomes.
- Develops AI driven strategies, integrating conditions of daily life and identifies and mitigates differences in health for all and tests these innovations while ensuring that all populations are adequately represented.



NINR should promote research, systems, and organizational level initiatives to improve digital infrastructure, ensuring equal access to AI technologies. To meet this goal, NINR should support research that:

- Develops and tests systems and organizational level interventions that decrease differences in digital access and promote adoption of AI technologies while exploring how health systems in rural/urban areas (RUAs) can leverage these tools to address conditions of daily life, reduce differences in care, and improve health outcomes for all.
- Identifies and addresses system level challenges—such as infrastructure, workforce capacity, and internet connectivity—that hinder the adoption of AI-enabled clinical decision support tools in RUAs and develop strategies to improve equitable access to these technologies.
- Examines innovative approaches and best practices for implementing AI-based healthcare solutions in RUAs, focusing on developing digital infrastructure and strategies to promote sustainable, equitable, and inclusive access to AI tools and applications.
- Designs and adapts AI technologies that support individuals in RUAs with varying levels of digital health literacy and varying degrees of digital access.



NINR should encourage the engagement of patients, families, and communities in all stages of AI algorithm development and evaluation to ensure acceptability and use of the design and improve model accuracy. To meet this goal, NINR should support research that:

- Develops and tests methods and models to meaningfully engage patients, families, and communities in AI innovation, focusing on building trust in AI systems, examining how early participation of community stakeholders influences the long-term success and efficacy of AI-driven healthcare solutions, and establish systematic frameworks to facilitate this engagement.
- Develops, implements, and evaluates strategies to engage patients, families, clinicians, and communities in the co-design and evaluation of AI tools, with a focus on building trust and ensuring transparency in the performance, limitations, and fairness. Such collaboration should promote health interventions tailored to local populations and improve the accuracy and fairness of predictive health models. Achieving this can be done by embedding user-centered design principles and clinical decision support into AI innovation.



NINR should encourage nurses and interdisciplinary scientists to use a perspective that accounts for conditions of daily life in AI data analysis to mitigate bias and minimize differences in health and disease distribution. To meet this goal, NINR should support research that:

 Establishes or enhances governance structures and related models—such as theoretical, clinical, and ethical frameworks—by systematically integrating a conditions of daily life perspective into AI algorithms, ensuring continuous monitoring and reduction of health and disease distribution differences.

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- Designs and validates AI models incorporating conditions of daily life, including identifying specific strategies to integrate such factors into these models. These efforts aim to improve fairness, performance, and bias mitigation while contributing to more accurate outcomes across a variety of patient populations.
- Innovates methods to assimilate and integrate conditions of daily life data with nursing data, incorporating multi-modal and a wide range of real-world data sources.





Training Recommendations (tied for priority)





Training Recommendation 1

Develop targeted AI training programs to advance nurse scientists' competency in conducting AI-focused research through a lens that acknowledges conditions of daily life that result in differences in health and disease distribution and include dedicated, formal education in informatics, clinical decision support, and AI. To meet this goal, NINR should invest in training programs that:

 Increase awareness and competency in areas such as AI literacy, ethical AI use, bias mitigation, data interpretation, and clinical applications of AI tools.



Training Recommendation 2

NINR should encourage <u>all</u> training programs to provide students with a foundational education in AI to prepare them for its integration into nursing science and practice. To meet this goal, NINR should invest in training programs that:

- Provide formal education in informatics, clinical decision support, and AI.
- Build AI education upon foundational informatics education, incorporating training on sources of bias in AI and strategies for preventing and addressing bias.





Additional Research Recommendations





Additional Research Recommendations

- 1. NINR should facilitate partnerships between nurse scientists and industry to develop innovative, patient-centered AI technologies.
- 2. NINR should support the development and adoption of standardized nursing data structures to facilitate large-scale data harmonization and integration into national health analyses.
- 3. NINR should facilitate a systematic approach to integrating Al applications in nursing, including clinical decision support (CDS), patient education, documentation, and predictive analytics.
- 4. NINR should prioritize research on identifying and mitigating biases in Al tools to promote healthcare outcomes for all peoples.



Additional Research Recommendations, continued

- 5. NINR should support the development of standardized frameworks for bias assessment and continuous monitoring of AI algorithms in healthcare.
- 6. NINR should foster nurses' critical evaluation of AI-generated data to ensure professional judgment is upheld in patient care.
- 7. NINR should support research approaches that produce enduring, adaptable solutions to keep pace with rapid AI advancements in healthcare.





THANK YOU!



