



Defense Health Agency (DHA) Clinical Communities Speaker Series

SEPT 2023 CCSS: Innovation-Based Updates in Modern Health Care Practice

S01: Veterans Affairs (VA) Immersive Technology: Defining a New Reality in Health Care

Resource List

The [World Health Organization \(WHO\) guidance on Ethics & Governance of Artificial Intelligence for Health](#) (2021) is the product of eighteen months of deliberation amongst leading experts in ethics, digital technology, law, human rights, as well as experts from Ministries of Health. While new technologies that use artificial intelligence hold great promise to improve diagnosis, treatment, health research and drug development and to support governments carrying out public health functions, including surveillance and outbreak response, such technologies, according to the report, must put ethics and human rights at the heart of its design, deployment, and use. The report identifies the ethical challenges and risks with the use of artificial intelligence of health, six consensus principles to ensure AI works to the public benefit of all countries. It also contains a set of recommendations that can ensure the governance of artificial intelligence for health maximizes the promise of the technology and holds all stakeholders – in the public and private sector – accountable and responsive to the healthcare workers who will rely on these technologies and the communities and individuals whose health will be affected by its use.

[U.S. Food and Drug Administration \(FDA\)](#) (2023) recognizes the increased use of AI/ML throughout the drug development life cycle and across a range of therapeutic areas. In fact, FDA has seen a significant increase in the number of drug and biologic application submissions using AI/ML components over the past few years, with more than 100 submissions reported in 2021. These submissions traverse the landscape of drug development — from drug discovery and clinical research to post market safety surveillance and advanced pharmaceutical manufacturing.

AI offers many possibilities in the pharmaceutical industry, including but not limited to optimizing process design and process control, smart monitoring and maintenance, and trend monitoring to drive continuous improvement. FDA is committed to ensuring that drugs are safe and effective while facilitating innovations in their development. As part of this effort, FDA's Center for Drug Evaluation and Research (CDER), in collaboration with the Center for Biologics Evaluation and Research (CBER) and the Center for Devices and Radiological Health (CDRH), issued an initial discussion paper to communicate with a range of stakeholders and to explore relevant considerations for the use of AI/ML in the development of drugs and biological products.

According to the authors of [Artificial intelligence technologies and compassion in healthcare: A systematic scoping review](#) (2023), there is an association between AI technologies and compassion in healthcare and interest in this association has grown internationally over the last decade. In a range of healthcare contexts, AI technologies are being used to enhance empathetic awareness; empathetic response and relational behavior; communication skills; health coaching; therapeutic interventions; moral development learning; clinical knowledge and clinical assessment; healthcare quality assessment; therapeutic bond and therapeutic alliance; and to provide health information and advice. The findings inform a reconceptualization of compassion as a human-AI system of intelligent caring comprising six elements: (1) Awareness of suffering (e.g., pain, distress, risk, disadvantage); (2) Understanding the suffering (significance, context, rights, responsibilities etc.); (3) Connecting with the suffering (e.g., verbal, physical, signs and symbols); (4) Making a judgment about the suffering (the need to act); (5) Responding with an intention to alleviate the suffering; (6) Attention to the effect and outcomes of the response. These elements can operate at an individual (human or machine) and collective systems level (healthcare organizations or systems) as a cyclical system to alleviate different types of suffering.



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References

- Center for Drug Evaluation and Research. (2023). *Artificial Intelligence and machine learning for drug development*. U.S. Food and Drug Administration. <https://www.fda.gov/science-research/science-and-research-special-topics/artificial-intelligence-and-machine-learning-aiml-drug-development>
- Morrow, E., Zidar, T., Ross, F., Mason, C., Patel, K. D., Ream, M., & Stockley, R. (2023). Artificial intelligence technologies and compassion in healthcare: A systematic scoping review. *Frontiers in psychology, 13*, 971044. <https://doi.org/10.3389/fpsyg.2022.971044>
- World Health Organization. (2021). *Ethics and governance of artificial intelligence for health*. World Health Organization. <https://www.who.int/publications/i/item/9789240029200>