

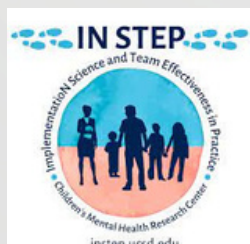
# Leveraging AI with implementation science methods to advance patient engagement and health equity

## Key Takeaways:

- Effectiveness and equity of AI is an implementation problem not a technology problem. Implementation Science methods are well suited to address the problems of replicability and bias in AI interventions
- Use of AI can enhance the robustness of our implementation outcomes and our contextual assessments
- AI presents an opportunity to greatly enhance patient engagement and health equity through novel and automated means of data capture and analysis of underrepresented communities
- Integration of AI into implementation science methods can improve the rapidity, sustainability, and generalizability of our work
- A multidisciplinary approach is necessary. Finding the right partners within AI, clinical informatics, and health system is essential.

## Useful Resource Texts

- Obermeyer Z, Powers B, Vogeli C, Mullainathan S. Dissecting racial bias in an algorithm used to manage the health of populations. Science. 2019 Oct 25;366(6464):447-453. doi: 10.1126/science.aax2342. PMID: 31649194.



**Anna Maw, MD,  
MS**

anna.maw@  
cuanschutz.edu



**Katy E. Trinkley,  
PharmD, PhD,  
BCACP, FCCP**

katy.trinkley@  
cuanschutz.edu



**Foster Goss, DO,  
MMSc, FACEP,  
ABPM-CI**

foster.goss@  
cuanschutz.edu

**Useful Resource Texts, continued**

- R. Agarwal, M. Bjarnadottir, L. Rhue, M. Dugas, K. Crowley, J. Clark, G. Gao, Addressing algorithmic bias and the perpetuation of health inequities: An AI bias aware framework, *Health Policy and Technology*, Vol 12, Issue 1, 2023
- Trinkley KE, An R, Maw AM, Glasgow RE, Brownson RC. Leveraging artificial intelligence to advance implementation science: potential opportunities and cautions. *Implement Sci*. 2024 Feb 21;19(1):17. doi: 10.1186/s13012-024-01346-y. PMID: 38383393; PMCID: PMC10880216.
- Maw AM, Trinkley KE, Glasgow RE. The Role of Pragmatic Implementation Science Methods in Achieving Equitable and Effective Use of Artificial Intelligence in Healthcare. *J Gen Intern Med*. 2024 May;39(7):1242-1244. doi: 10.1007/s11606-023-08580-y. Epub 2024 Jan 3. PMID: 38172408; PMCID: PMC11116336.
- Glasgow RE, Battaglia C, McCreight M, Ayele R, Maw AM, Fort MP, Holtrop JS, Gomes RN, Rabin BA. Use of the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework to guide iterative adaptations: Applications, lessons learned, and future directions. *Front Health Serv*. 2022 Oct 17;2:959565. doi: 10.3389/frhs.2022.959565. PMID: 36925843; PMCID: PMC10012751.
- Skivington K, Matthews L, Simpson SA, Craig P, Baird J, Blazeby JM, Boyd KA, Craig N, French DP, McIntosh E, Petticrew M, Rycroft-Malone J, White M, Moore L. A new framework for developing and evaluating complex interventions: update of Medical Research Council guidance. *BMJ*. 2021 Sep 30;374:n2061. doi: 10.1136/bmj.n2061. PMID: 34593508; PMCID: PMC8482308.
- Beam AL, Manrai AK, Ghassemi M. Challenges to the Reproducibility of Machine Learning Models in Health Care. *JAMA*. 2020 Jan 28;323(4):305-306. doi: 10.1001/jama.2019.20866. PMID: 31904799; PMCID: PMC7335677.
- Maw AM, Morris MA, Glasgow RE, Barnard J, Ho PM, Ortiz-Lopez C, Fleshner M, Kramer HR, Grimm E, Ytell K, Gardner T, Huebschmann AG. Using Iterative RE-AIM to enhance hospitalist adoption of lung ultrasound in the management of patients with COVID-19: an implementation pilot study. *Implement Sci Commun*. 2022 Aug 12;3(1):89. doi: 10.1186/s43058-022-00334-x. PMID: 35962441; PMCID: PMC9372925.