Designing, evaluating and integrating AI decision support systems in healthcare

1. Welcome and Introduction (5 min)

* Introduce the objectives of the session and agenda
* Outline the desired outcomes

2. Background (10 min)

* Overview of decision support systems and research
* Demo of current apps
* Q&A

3. Quick fire ‘How Might we’ questions on mentimeter (10 min)

* Participants answer questions online

4. Interactive Breakout Session (45 min)

* Split in groups. 8 min to discuss and come up with ideas. Objective is to come up with 5 statements of the form: User – Need/Goal – Benefit/Insight
  + E.g., "As a doctor, I want the AI system to automatically integrate with our EHR, to enable real-time decision support as I don't have time to manually enter patient data."
* Each group presents their statements for 2 min. Then groups rotate topics.
* 3 topics:
  + Design
  + Clinical evaluation
  + Intergration and Infrastructure

5. Closing Remarks and Next Steps (10 min)

* Develop 3 SMART goals as a whole group. Identify key steps, responsible parties, and timelines.
* Discuss potential collaborative opportunities
* Conclude key points and next steps

Pre-reading material if the participants have time:

1. Randomised controlled trials evaluating artificial intelligence in clinical practice: a scoping review, The Lancet Digital Health, 2024, [LINK](https://www.thelancet.com/journals/landig/article/PIIS2589-7500(24)00047-5/fulltext?uuid=uuid%3A7e019d4a-a7a6-45e6-9f65-164cb77cdf7c)

2. Prospective, multi-site study of patient outcomes after implementation of the TREWS machine learning-based early warning system for sepsis, Nature Medicine, 2022, [LINK](https://www.nature.com/articles/s41591-022-01894-0)

3. Artificial intelligence (AI) and machine learning, NHS England, 2023, [LINK](https://www.england.nhs.uk/long-read/artificial-intelligence-ai-and-machine-learning/)

4. Reporting guidelines in medical artificial intelligence: a systematic review and meta-analysis, Communications Medicine, 2024, [LINK](https://www.nature.com/articles/s43856-024-00492-0),

5. TRIPOD+AI statement: updated guidance for reporting clinical prediction models that use regression or machine learning methods, The BMJ Research Methods and Reporting, 2023, [LINK](https://www.bmj.com/content/385/bmj-2023-078378),

6. Reporting guideline for the early stage clinical evaluation of decision support systems driven by artificial intelligence: DECIDE-AI, The BMJ Research Methods and Reporting, 2022 [LINK](https://www.bmj.com/content/377/bmj-2022-070904),

7. Software and artificial intelligence (AI) as a medical device, Medicines & Healthcare products Regulatory Agency, 2023, [LINK](https://www.gov.uk/government/publications/software-and-artificial-intelligence-ai-as-a-medical-device/software-and-artificial-intelligence-ai-as-a-medical-device),

8. Potential effectiveness and efficiency issues in usability evaluation within digital health: A systematic literature review, Journal of Systems and Software, 2024, [LINK](https://www.sciencedirect.com/science/article/pii/S0164121223002765).