# Towards a Participatory Design of a Digital Application to Support Future Al-Supported Colon Capsule **Endoscopy Services**

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SCHOOL: OF TECHNOLOGY



#### Future Al-Supported Colon Capsule Endoscopy

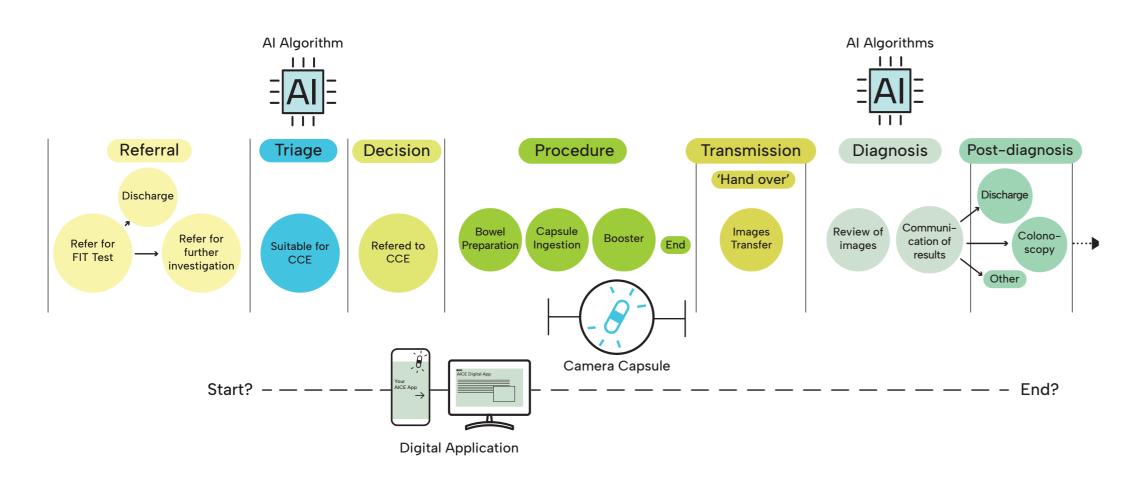


Figure 1 - Proposed AICE pathway

#### Some Findings from Interviews with AICE Team Researchers and Implementers Involved in CCE Pathway

How could the Al and future procured user-facing App interact with Healthcare Professionals and Citizens/Patients?

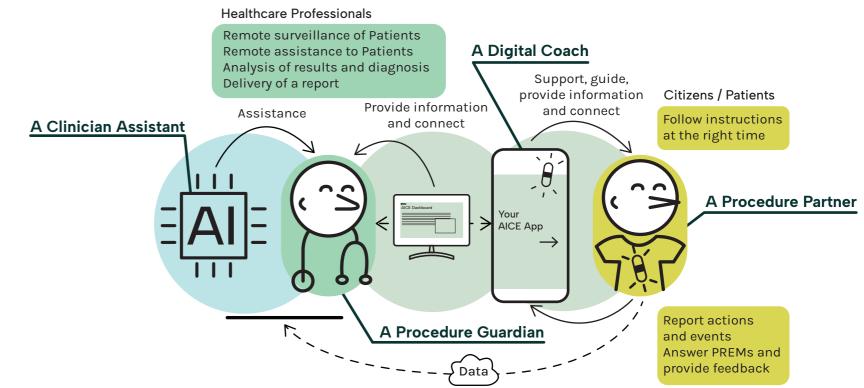


Figure 3 - Proposed roles and relationships in AICE

#### **Participatory Design Methods**

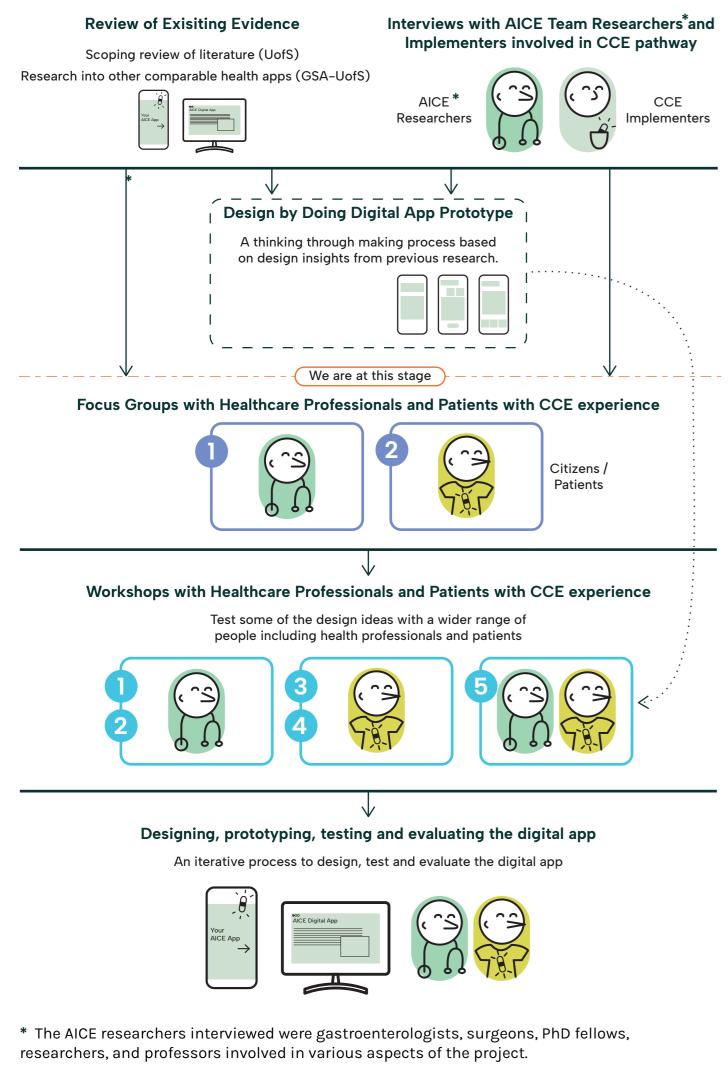
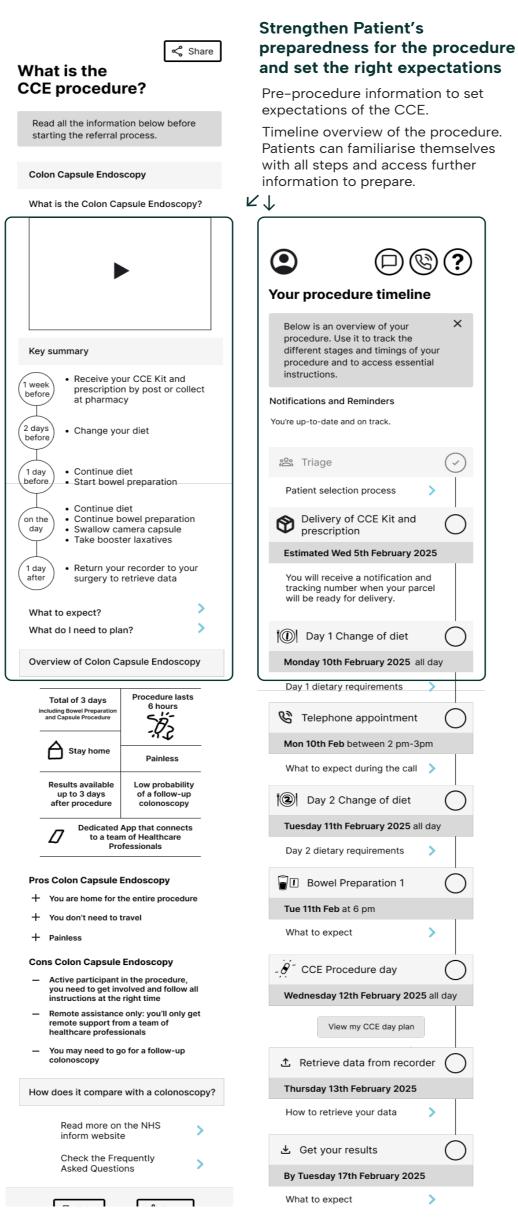
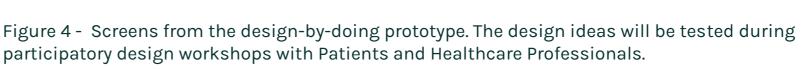


Figure 2 - AICE methods

### Design-By-Doing Digital App Protoype





#### Booster 1 **Essential questions/** ability assessment Now for 30 mintues The following questionnaire evaluates Important: How to take your your ability to perform the Colon Capsule Procedure at home without Prepare 500 ml of Phospho-soda Measure 30 ml of the Phospho-soda The information gathered will tailor the using the measuring cup provided and mix in 500 ml of water procedure to your circumstances. We ask this information to guarantee your safety and provide the best care Drink 500 ml over 30 minutes 1/8 Can a person in your household care for around 1 glass every 15 mins you during the procedure? Use the drink tracker below to record your booster 1 process. 2/8 Are you likely to be alone during the procedure? Yes No First glass 3/8 Do you have difficulties swallowing pills? Second glass | | 4/8 Are you likely to refuse to swallow the Done Please confirm electronic device? The capsule is the size of a large vitamin pill (32mm x 12mm). Continue drinking clear liquids like Yes No I am not sure 5/8 Are you likely to feel distressed when the Please reply to questions below Question 1 Yes Consider the Patient's environment and Question 2: locations factors Yes No An ability questionnaire to adapt the procedure to each patient. you pass the capsule. You do not need to take any more medicines-For example, a mandatory phone the test will be finished. call with a nurse is added if a patient lives alone. help the capsule travel through your Test the patient's ability to follow all instructions, swallow a Camera O End of procedure Capsule and assess anxiety. by 8.30 pm What to expect at the end Request a phone call You can request a phone call to assist you or ask questions, Alternatively you can send us a message or check the frequently asked **Empower Patients to** Depending on your request, we aim to call you in the next hour after receiving your complete the procedure as instructed Step-by-step instructions and information to increase patient Questions for reporting the patient's experience in the app. ← A reachable team of Clinicians Are you experiencing any of the symptoms and Nurses through the App ■ Breathing much faster than normal Patients can message and request a High and sudden abdominal pain call back directly in the digital app. Drowsiness, confusion or feeling terrified A filter system directs the query to a So faint or dizzy you can't stand unaided relevant professional.

A frequently asked question assists

with general queries.

participatory design workshops with Patients and Healthcare Professionals.

## **Summary Abstract**

The AI-Supported Image Analysis in Large Bowel Camera Capsule Endoscopy (AICE) project, funded by Horizon Europe and UK Research and Innovation, aims to develop an Alassisted patient pathway for Colon Capsule Endoscopy (CCE). The AICE pathway will enhance comfort and efficiency, improve patient

compliance, and identify those best suited for CCE, leading to earlier detection of bowel pathology and better outcomes.

The University of Strathclyde and Glasgow School of Art are developing a user-facing digital app to enhance the patient experience during the AICE pathway. Patients may prefer CCE as it can be

performed outside hospitals and reduces travel.

Interviews with AICE Team researchers and CCE implementers informed participatory design preparation and an initial prototype created using a "design through doing" approach. The prototype will serve as a prompt for participatory design

workshops involving both patients with prior CCE experience and healthcare professionals delivering CCE. Future workshops and focus groups will generate and test design ideas with a wider range of people.

The user-facing app will support and empower patients to prepare and manage their procedures, including facilitating healthcare professional care. The research aims to inform remote procedure delivery, establish principles for patient professionalisation, and create a digital app adaptable to various contexts and patient needs. It will also explore the role of Al algorithms and patients' relationship with them.

Temperature less than 36°C or more

■ None of the above



Figure 5 - A patch may soon replace the current belt recorder, capturing images from the camera capsule inside the body. It would sync with the digital app for realtime data and notifications.