

Enhancing the Informed Consent Process of Complex Surgical Procedures

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Aim

1. Improve patient's understanding and retention of key information and complications for complex surgical procedures,
2. Achieve high patient satisfaction, and
3. Reduce consultation time

Background

Informed consent is a critical component of patient care. Studies show that patients often sign consent documents without fully understanding the risks, benefits and potential complications. A local study published by KTPH showed that the recall of key information of surgery on the day of surgery is sub-optimal, ranging from 19-62.5% for simple surgical procedures¹. This lack of understanding is expected to be even lower with complex surgical procedures, such as Breast Reconstruction.

Current problems:

- 1. Difficulty for patients to understand.** Existing patient education materials using 2D pamphlets are not sufficient for patients to visualise actual outcomes. This makes it difficult for clinicians to manage expectations, and this may lead to complaints and medico-legal suits.
- 2. Cognitive overload with long consultation time.** Due to the many options, clinic consultation can take more than an hour. Patients face cognitive overload with little time to process the information before signing consent. This is further exacerbated by the emotional toll of a breast cancer diagnosis, which can hinder a patient's ability to retain crucial information.

Team Members

Name	Designation	Department
Dr Jolie Hwee	Consultant and Head of Service (Plastic Surgery)	General Surgery
Dr Clement Chia	Senior Consultant and Head of Service (Breast Surgery)	General Surgery
Sadaiyappan Vimala	Senior Executive	Clinical Research Unit
Dev Bahl	Technological Partner	MAGES Studio
Dr Sreenivasulu Reddy Mogali	Anatomy and Pedagogical Expert	Lee Kong Chian School of Medicine
Dr Kenneth Lim	Augmented Reality and Pedagogical Expert	National Institute of Education

Onward 2026



SP2: ↑
Elective load



Nurtures Clinician Innovators and AI-readiness



Reduces consultation and waiting time



Step towards establishing Yishun Health as an Academic Health Centre



Positive patient experience can impact key performance index such as Patient Experience Survey indicators



In line with our vision to add years of healthy life, breast reconstruction has been shown to provide patients with breast cancer substantial psychological, social, emotional and functional benefits.

Conclusion

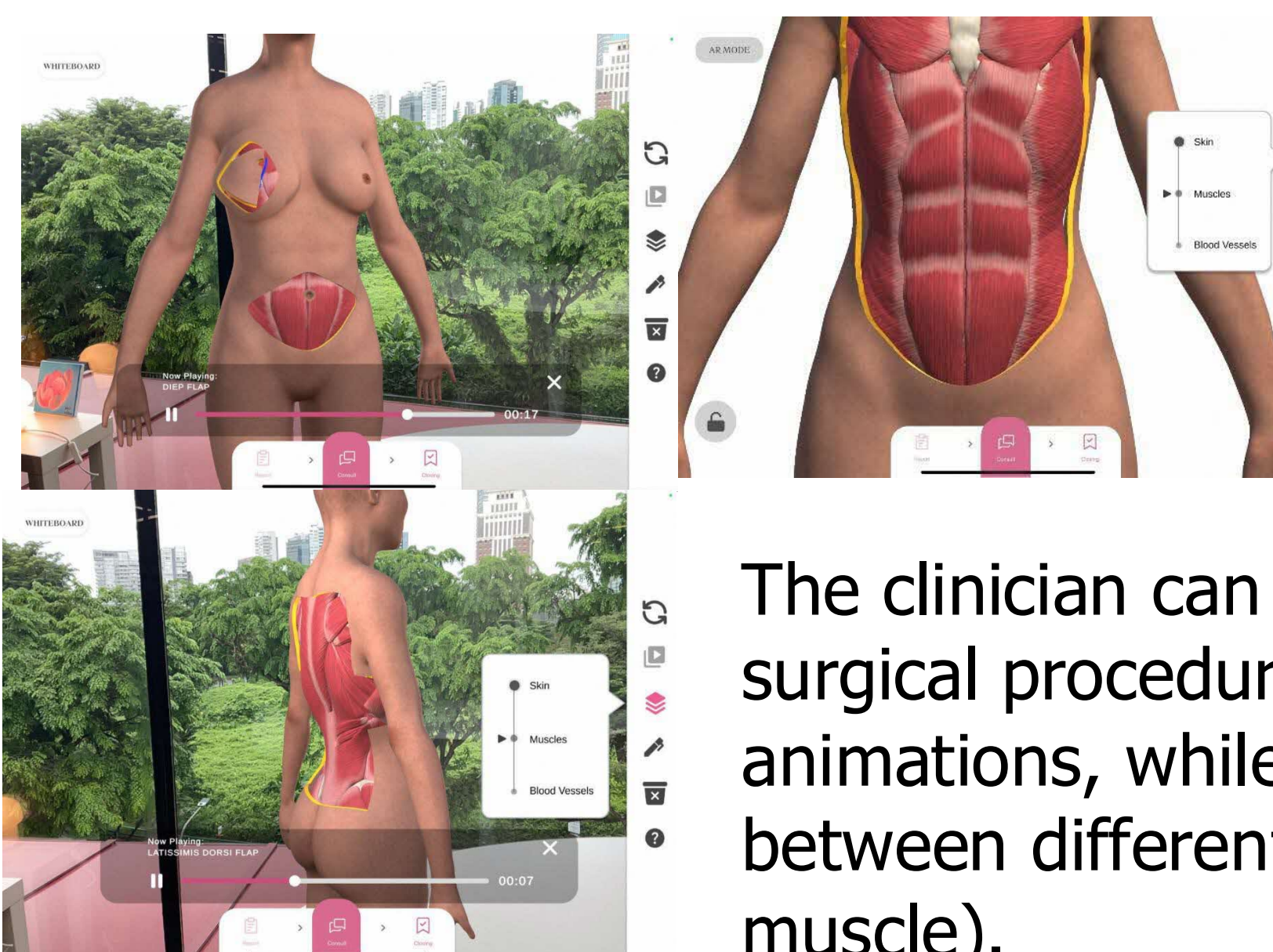
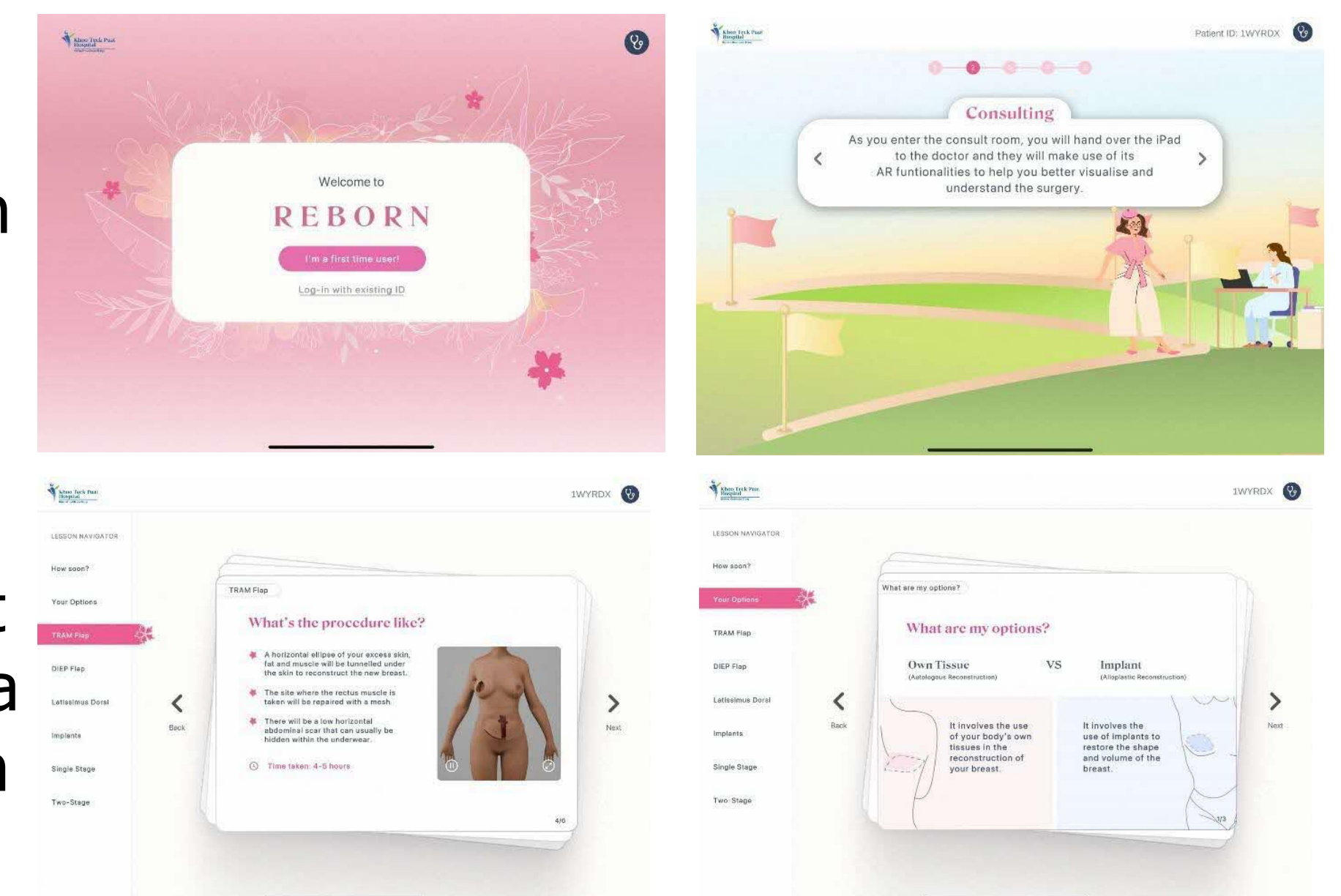
REBORN has achieved success in enhancing patient education and reducing consultation timing for breast reconstruction procedures. By addressing key pain points in the informed consent process, the project has also demonstrated its potential to streamline clinical workflows. The reduction in consultation time highlights the dual benefit of improving patient experience while enhancing clinic efficiency.

Interventions / Implementation

REBORN (**R**edefining **E**ducation for **B**reast **O**ncology **R**econstruction), an end-to-end learning intervention that utilises flipped classroom, micromodules, Augmented Reality (AR) visualisations and spaced education to improve understanding and retention of key information for patients was developed.

1. Pre-Consultation

The tablet is first introduced to the patient in the waiting room. The application (app) introduces the patient to a Journey Overview and presents the various breast reconstruction options via a flipped classroom approach with 3D animations. At the end, patients can indicate their surgical preference.



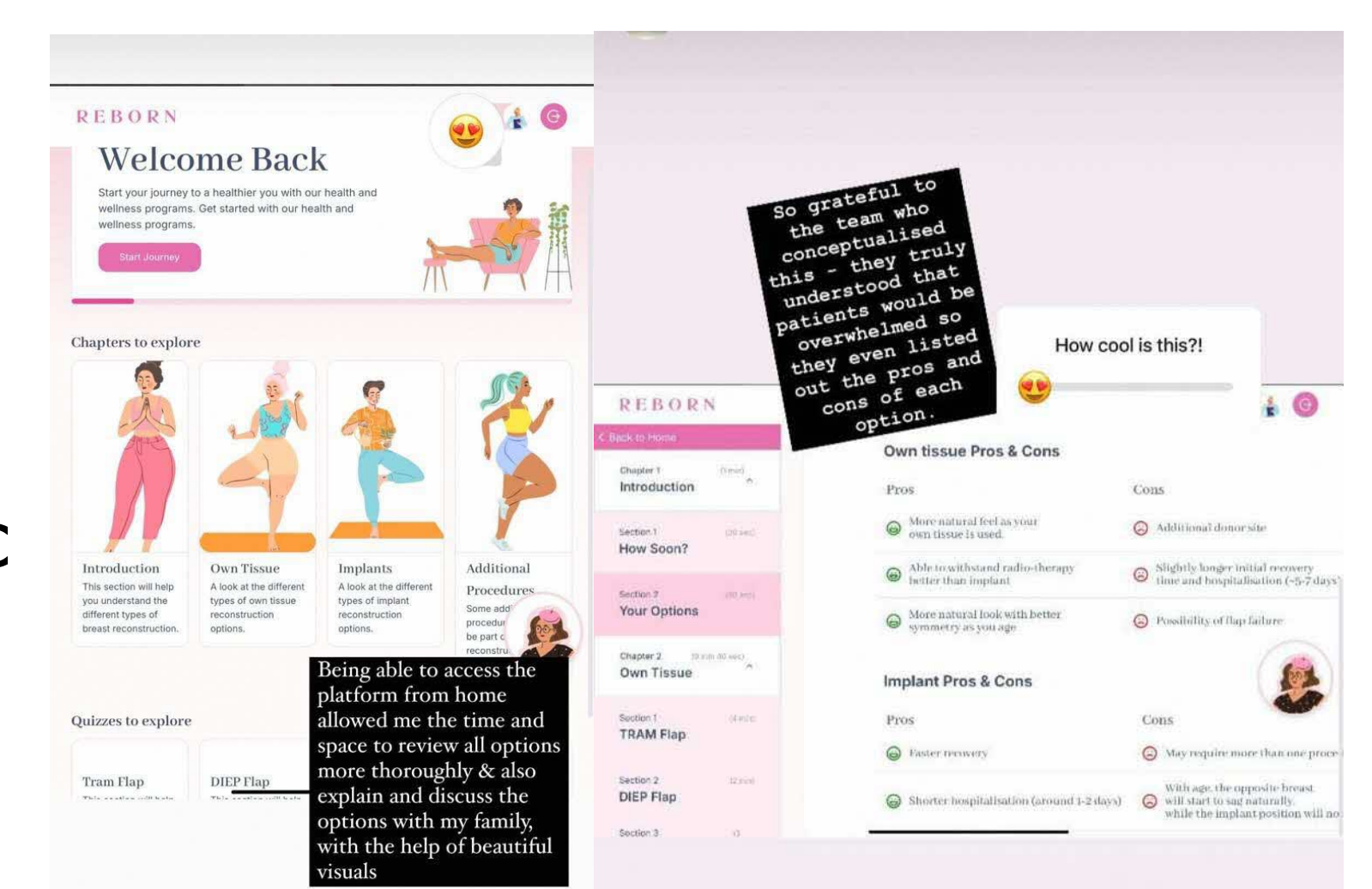
2. Consultation

Within the same app, the clinician enters Doctor mode to view the patient's learning report, highlighting their overall understanding.

The clinician can use the app to explain the surgical procedures using the AR mode and animations, while annotating and toggling between different anatomical layers (skin and muscle).

2. Home-Based Learning (HBL)

The HBL content covers more topics not previously covered including post-operative recovery and care. It also contains periodic quizzes to improve content recall. Patients can show these information regarding their surgery to family members. Within the website, patients can interact with the AI-powered chatbox to clarify queries. Data analytics allow doctors to view the patients' overall understanding.



Patient who shared her positive experience on social media using REBORN during home-based learning

Results & Outcomes

REBORN has been integrated into clinical use since July 2024 with positive results. 9 patients were recruited in the pilot study:

- 1. Improved understanding and empowerment.** Patients reported that REBORN, particularly the AR visualisations helped grasp complex procedures better, allowing them to feel more confident and empowered when making decisions.
- 2. Engagement and usability.** Patients appreciated the interactive features such as the flipped classroom and clinicians found the animations helpful in facilitating the consultation.
- 3. Emotional support.** The ability to revisit information in the comfort of their home with family support provided patients with emotional reassurance.
- 4. Reduced consultation time.** There was a 20% reduction in average consultation time (from 50 to 40 minutes), thereby enhancing the efficiency of patient care. There was also a reduced need for repeat visits to clarify information, translating to cost savings for patients.

References:

¹Chia CLK, Chan KS, Ng MJM, et al. Assessing the adequacy of informed consent for elective surgery by student-administered interview. ANZ J Surg. 2019 Jun;89(6):677-682.