

# CardMedic - Disaster Innovation: Breaking Through the PPE Barrier and Improving Communication Between Frontline Healthcare Staff and COVID-19 Patients

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## Introduction

The **global societal need for clear communication in healthcare has been severely disrupted** in the pandemic. The use of **PPE (Personal Protective Equipment)** generates a significant **communication barrier, risks patient safety, experience and quality of care**, and puts **physical and emotional strain** on healthcare staff.

The pandemic has also **exacerbated existing health inequalities** and highlighted a **huge gap in service provision** to meet the needs of patients with communication challenges including visual, cognitive and hearing impairment, language barriers, educational backgrounds and capacities.

**CardMedic is a unique award-winning website and mobile application**, designed to **bridge this gap in service provision** through **improving communication** between frontline healthcare staff and patients, no matter the barrier – whether that is visual, hearing or cognitive impairment, language barriers, or PPE. It comprises a **multi-lingual A-Z list of flashcards** replicating clinical conversations around common healthcare topics. It features **read-aloud** functionality, an **in-built translation** tool and is being converted to **British Sign Language** and **EasyRead English**.



From concept to launch in 72 hours and founded by an NHS anaesthetic trainee, it has had **>42,000 users in >120 countries and >11,500 app downloads** since April 2020, with a range of post-pandemic use-cases. It has been endorsed by **NICE, ORCHA** and **Patient Safety Learning**.

## Methods

A **rapid in-pandemic pilot service evaluation assessed the efficacy of CardMedic** at supporting communication between healthcare staff in PPE and patients. The study was **ethically approved** by the University of Brighton (UoB) and co-designed with the UoB, BSUH NHS Trust and CardMedic.

**Ten** physically well non-medical hospital staff were recruited as **simulated patients** and completed a pre-study self-reported stress scale. The **simulation** occurred in an **anaesthetic room** with background theatre noises. Participants were **asked a set of medical questions** (“AMPLE” history) by a healthcare worker in PPE (Power Hood with mouth visible), **twice**: the first time **verbally** and the second time **verbally supported by the CardMedic flashcard**. After each, the patient recorded their **confidence** in understanding; completed the Spielberger State-Trait **Anxiety** Inventory (STAI-6); answered 3 questions on the perceived **stress** scale; and partook in a semi-structured **interview**.

## Results

**Confidence in understanding the healthcare worker in PPE was 25% higher** when **CardMedic** flashcards were used, improving by 28% to 95%. The **STAI-6 anxiety scale was inconclusive**: a notable decrease in state anxiety in 3 cases and increase in 1 case. A dyslexic patient reported reduced confidence and feeling “stressed” and “overwhelmed”, but not anxious.



**Qualitative results** showed eyesight, noise/light levels and speaking English as a foreign language, all influenced simulated patient experience of flashcard-supported communication.

## Discussion



This pilot evaluation demonstrated **flashcards reinforce clear communication through the PPE barrier**. Results are likely significantly higher among patients with differing abilities and capacities. Using CardMedic helped researchers **establish patient trust and increase patient safety** through **reducing miscommunication**. Furthermore, using CardMedic prompted healthcare staff to consider a **patient communication-needs assessment**.

The impact on the patient-clinician relationship of being culturally (un)informed, unable to understand accents and pronounce names, was emphasised; an important finding that **speaks to the experiences of Black Asian and Minority Ethnic patients and clinicians**.

## Support & Traction

