

# Exploring how patients use a connected Internet-Of-Things system (A4A+) with off-the-shelf CE-marked devices to support asthma self-management? A mixed method study

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## Introduction

- Traditionally, clinicians support patients to plan their self-management strategies during face-to-face consultations. In the COVID pandemic, patients have had to rely on remote consultations to help them to live with their conditions. The Internet-of-Things can support remote self-management for asthma.



## Methods

- We interviewed a maximum variation sample of patients recruited via social media and explored their usage on the system.
- Thematic analysis used the BJ Fogg behavioural model.
- Descriptive analysis of their usage data stored in our database and Google Firebase enabled triangulation of findings.

## An IoT connected system, A4A+

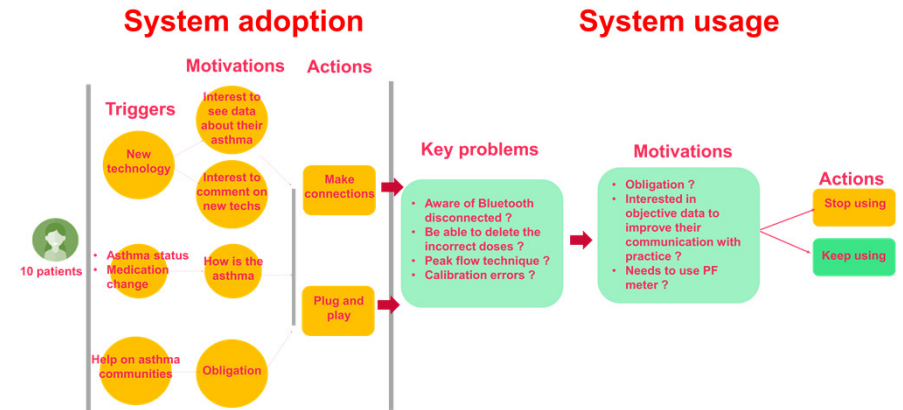
A4A+ collected data from smart devices (smart-inhaler, smart-watch, smart peak flow meter). Data were collated on an app and could be shared with practices in the form of a pdf which could be attached to patients' records in DOCMAN.



## Results

- We interviewed **10 asthma patients** (range of age/gender/asthma experience/action plan ownership/Apple/Android user/technological competences) before and after using A4A+ for one month during December 2020-February 2021.
- 9533 self-management data-points** (asthma symptoms, PEFR, inhaler usage, exercise intensity, heart rate, sleeping pattern, body/air temperature) were collected.
- We interviewed one patient's asthma nurse and three GPs on acceptability of the system and their views on the report format.

## Emerging themes



- Patients felt 'positive', found it 'easy' to use the system and chose to use devices they thought were "accurate".
- Monitoring adjustments to medication, having asthma (or COVID) symptoms triggered and motivated them to adopt the system.
- Most patients chose to monitor their reliever inhaler rather than the preventer. Clinicians want to have an overall asthma score/status and reliever usage on the report.

## Limitations

Participants did not include patients without technological experience. However, globally people are increasingly familiar with digital communication. We reached data saturation in the qualitative analysis. The findings provide insight on patients' adoption and usage on a connected system in real life setting.

## Conclusions

Accelerated by COVID, a connected IoT system such as A4A+ could enable digital approaches to care by providing on-going self-management data to support remote consultation. However, building trust in devices and providing timely technology support for patients are needed to maintain patients' motivation to use the system.

## Questions?



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