

# How the Dragon's Den funding supported a speech recognition app as a communication aid for critical care patients with tracheostomies

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WELLCOME-WOLFSON  
INSTITUTE FOR  
EXPERIMENTAL MEDICINE

~14,000 UK  
patients receive  
a tracheostomy  
annually<sup>(1)</sup>



# Impact of sudden voicelessness



- Major source of morbidity:
  - Frustration, fear, panic <sup>(2)</sup>
- Negative psychological outcomes during recovery:<sup>(3)</sup>
  - Anxiety
  - Depression
  - PTSD

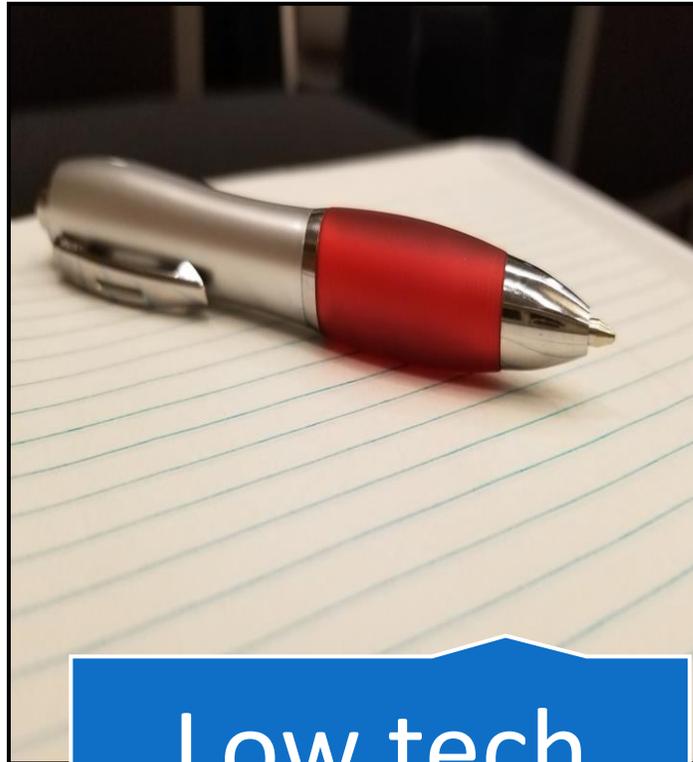
2. Guttormson et al. *Intensive and Critical Care Nursing*. 2015; 31 (3): 179-186.

3. Righy C et al. *Critical Care*. 2019; 23 (213): 1-13.

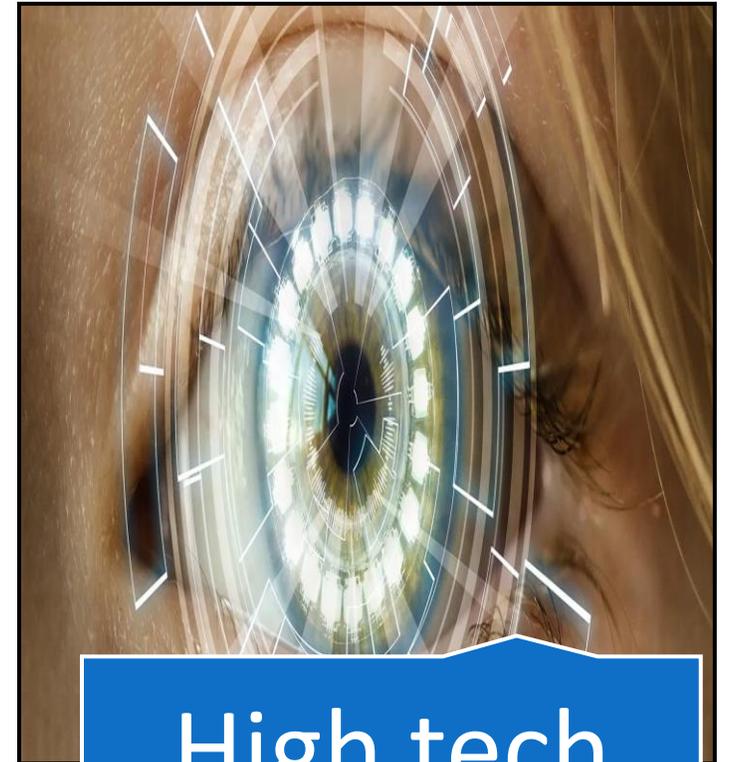
- Current strategies have limitations <sup>(4,5)</sup>



Unaided



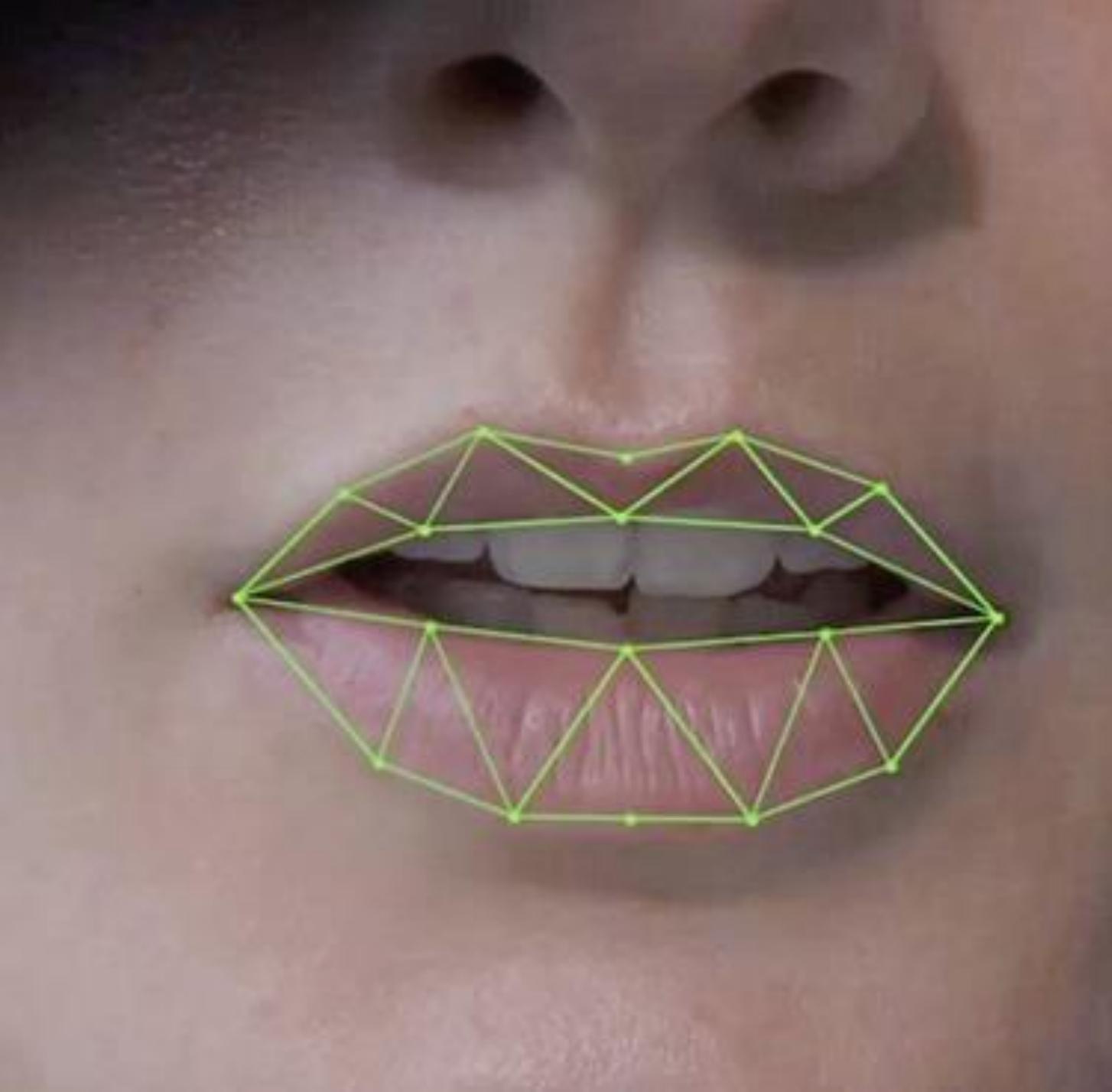
Low tech



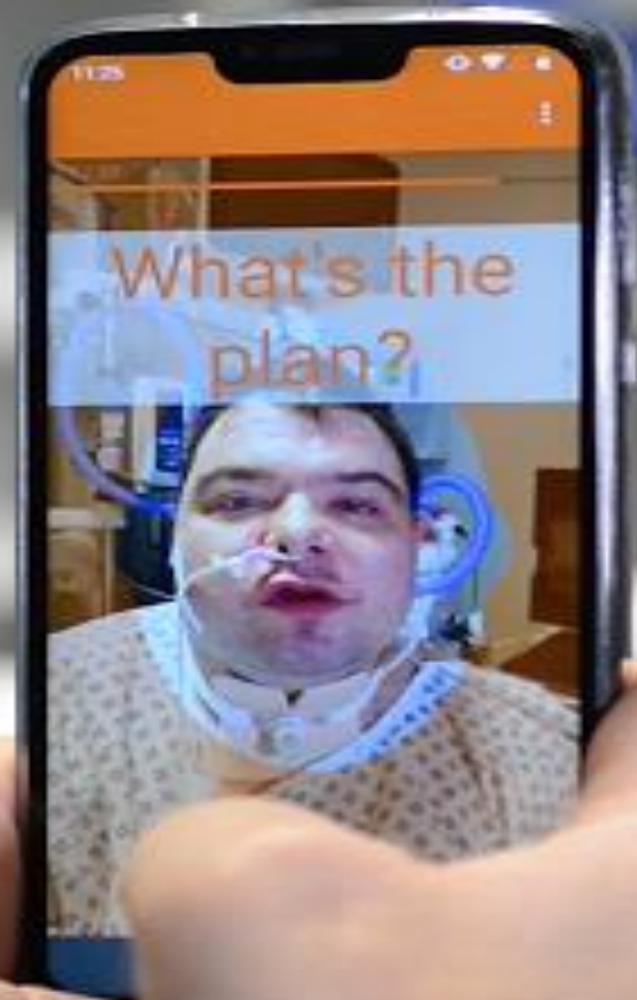
High tech

4. Ten Hoorn et al. *Critical Care*. 2016; 20 (333): 1-14.

5. Rose et al. *Cochrane Database of Systematic Reviews* 2021, 10. CD013379



Speech Recognition  
Application  
for the  
Voice Impaired

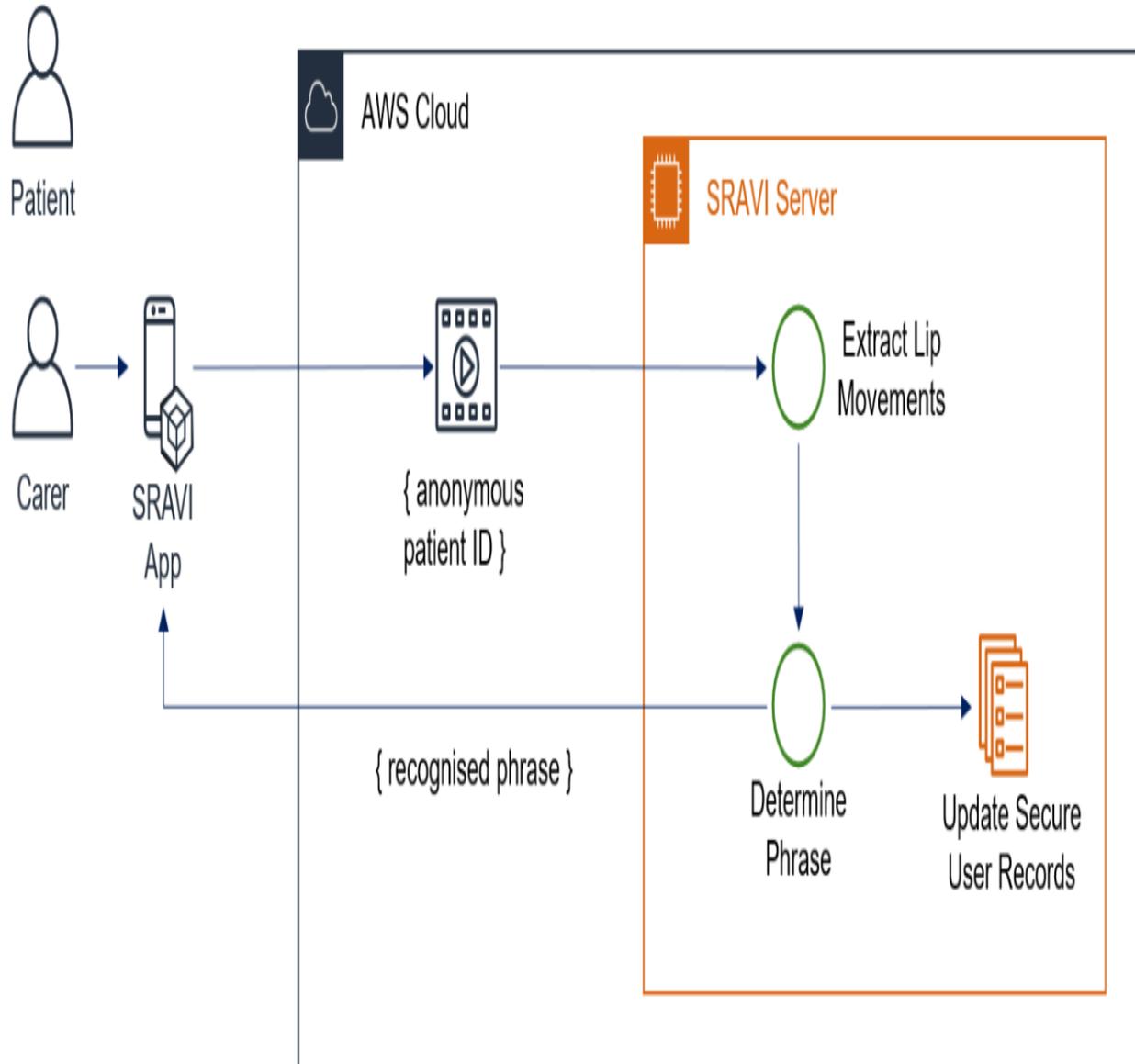


# Doctoral Fellowship

## Study Aim:

To establish feasibility and acceptability of SRAVI for acute and critical care patients with tracheostomies unable to communicate using verbal speech.

# Objectives



## Cohort Study:

- Proportion of phrases correctly identified
- Use of SRAVI above other aids

## Interviews

(patients, relatives & staff):

- To explore experience of using SRAVI.
- Questions derived from Theoretical Framework of Acceptability <sup>(6)</sup>

## HSC Trust Areas



- Recruitment of new tracheostomy patients at four sites:
  - 3 ICUs
  - 1 acute ward (head & neck cancer)
- Provide overview of SRAVI's feasibility in both critical & acute care

# Dragons Den Funding

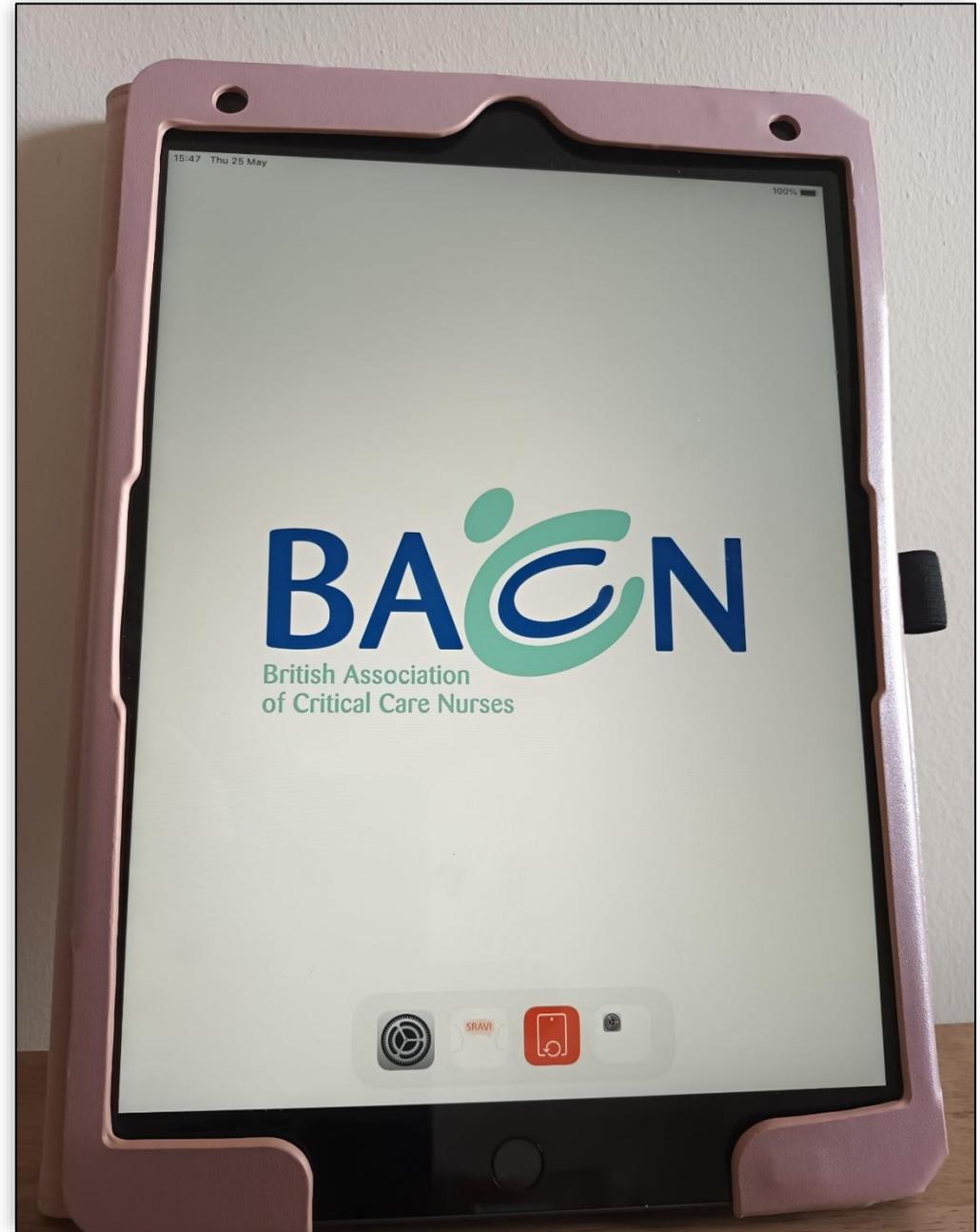
Purchase of additional devices



Enrolment of additional sites



Support faster recruitment



# Patient Screening & Recruitment

Commenced January 2023

Commenced August 2023



- Challenges around introduction of new IT into hospital setting
  - Cyber Security risk assessment
  - Additional assurances on device management

# Staff Initial Views

Staff interviews: n= 18

## Challenges

- Phrases not recognised
  - Local dialect
- Patients not wanting to see themselves
- Patients too weak to hold device

## Opportunities

- Iterative development of phrase list
  - Personalised lists
- Positive attitudes towards embracing new technology
- Easy to navigate, especially for relatives



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