

## **Project Title**

Voicebot: An Automated Pre-Operation Calling System for Day Surgery and Same Day Admission Patients

## **Project Lead and Members**

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- Dr Eileen Lew

## **Organisation(s) Involved**

KK Women's and Children's Hospital

## **Healthcare Family Group(s) Involved in this Project**

Healthcare Administration, Nursing

## **Applicable Specialty or Discipline**

Obstetrics And Gynaecology, Paediatrics

## **Project Period**

Start date: Oct 2021

Completed date: April 2022

## **Aim(s)**

A study was thus initiated to evaluate our Voicebot's accuracy, the impact on staff workload, as well as patient acceptance and satisfaction.

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Conclusion**

See poster appended/ below

## **Additional Information**

Singapore Healthcare Management (SHM) Congress 2023 – Merit Prize (Operations category)

## **Project Category**

Care & Process Redesign

Productivity, Manhour Saving, Value Based Care, Patient Satisfaction

## **Keywords**

Voicebot, Automated Calling System

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KK Women's and Children's Hospital  
SingHealth

# Voicebot: An Automated Pre-Operation Calling System for Day Surgery and Same Day Admission Patients

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## Introduction

Preoperative screening and triaging is a labour intensive and repetitive task, taking away valuable nursing time. At KK Women's and Children's Hospital (KKH) Major Operating Theatre and Day Surgery, a total of 6 preoperative nurses are required to spend 32 hours daily, making telephone calls and documenting responses for approximately 10,400 patients a year.

Our team proposed and after receiving funding, developed and trained a voicebot to do this task.

## Aim

A study was thus initiated to evaluate our Voicebot's accuracy, the impact on staff workload, as well as patient acceptance and satisfaction.

## Methodology

Training and Testing of Voicebot  
(October –December 2021)

Two datasets consisting of 803 calls from over 30 volunteers were used to train and fine-tune the voicebot's medical library, nuances and frequently asked questions (FAQ).



Validating the acceptance, accuracy of Voicebot  
(April 2022)

14 Obstetric and Gynaecology (O&G) patients and 12 paediatric caregivers were recruited and called in during the trial.

Patients were given SMS instructions to call this Voicebot one day before surgery to receive their preoperative information and instructions. They were followed up with a nurse call to verify the accuracy of information given. A questionnaire was sent to gather feedback after their surgery. 7 patient calls were excluded from one of the call days due to errors in authentication.

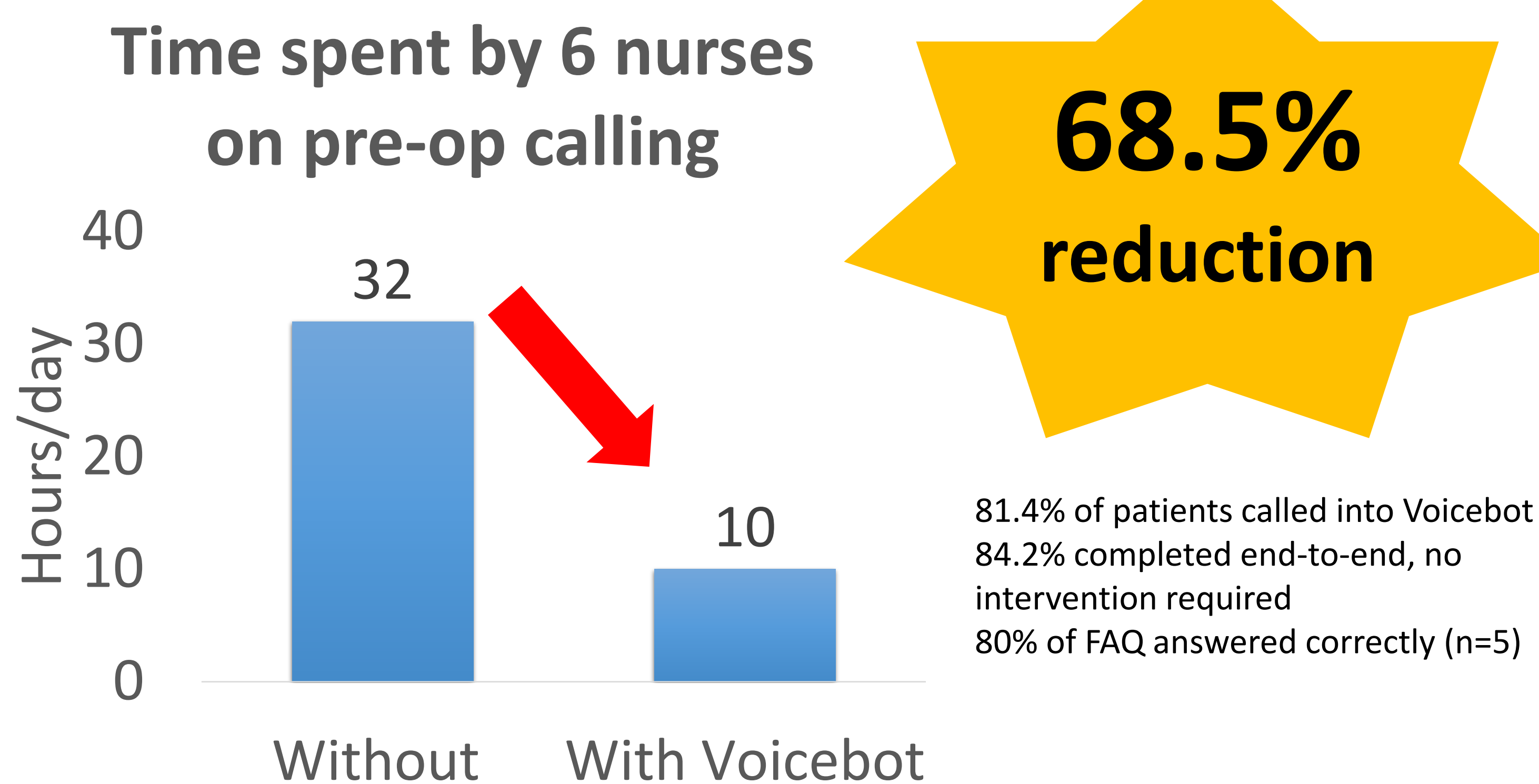
## Conclusion

Voicebot can **reduce KKH pre-op nursing workload by Two-Thirds** since most calls do not have medical complications and patient's FAQ are correctly answered. The **100% triage accuracy with high patient satisfaction and recommending** scores suggest high automation and acceptance potential by our patients.

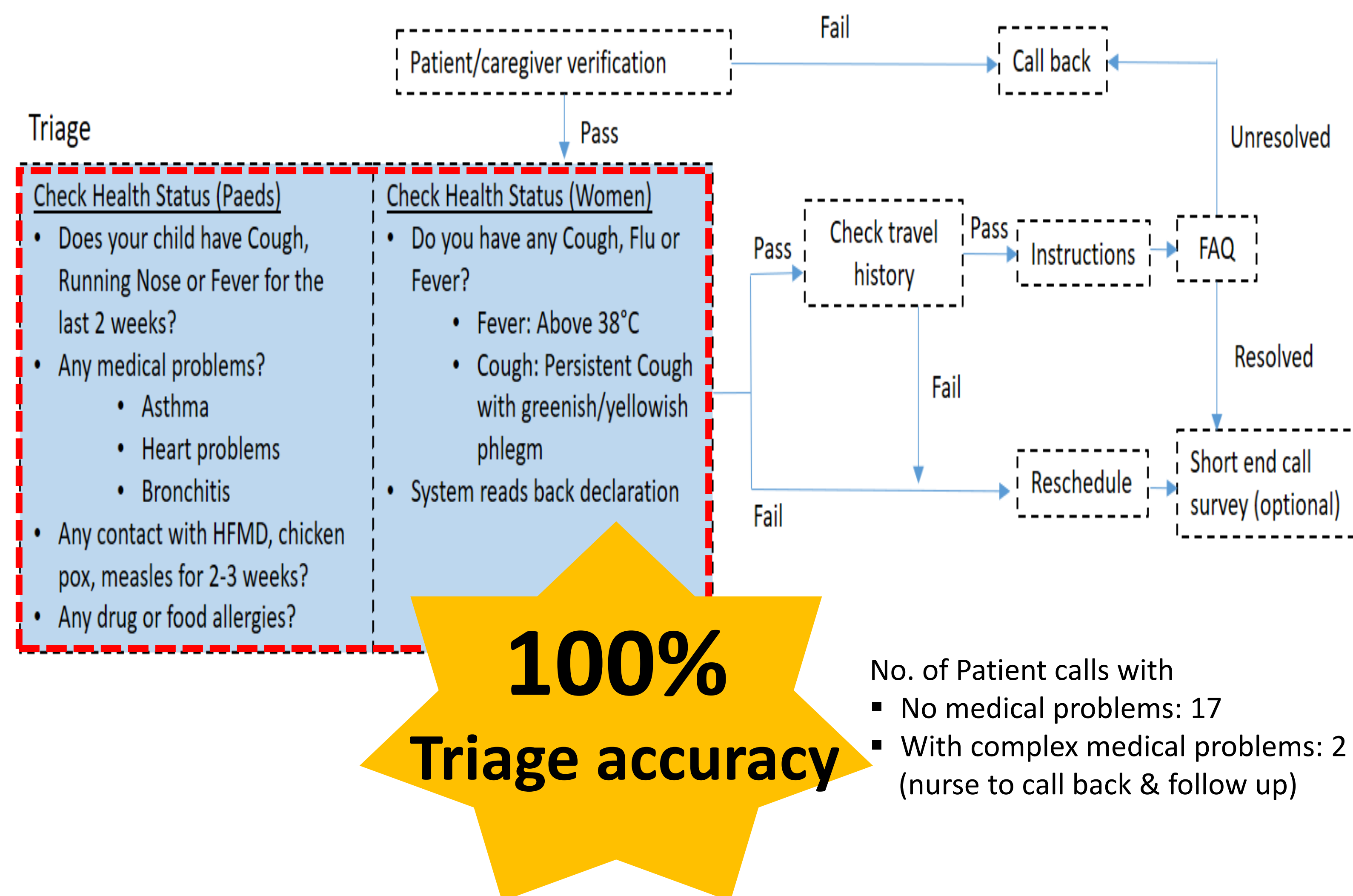
However, our main challenge lies in **recognising articulation and behavior of some elderly O&G users**. While it could be attributed to low technology familiarity, we acknowledged our training data lacked representation in this area, which can be further worked upon. We also considered other considerations like cost of solution, data privacy management and potential suspicion of "scam calls" but these can be managed in line with the high productivity benefits gained.

## Results

### 1. Workload reduction



### 2. Accurate triage



### 3. High Satisfaction & Recommendation from Paediatric Caregiver

Survey	O&G patient	Paediatric patient OR Caregiver	Overall
Response Rate	50%	77.7%	-
Satisfaction	40%	100%	75%
Recommend	20%	100%	76%