

## Project Title

Reducing Ad-Hoc Walk-In Patients and Increasing Staff's Productivity Via Artificial Intelligence and Workflow Enhancement

## Project Lead and Members

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## Organisation(s) Involved

Ng Teng Fong General Hospital

## Healthcare Family Group Involved in this Project

Allied Health

## Applicable Specialty or Discipline

Audiology

## Project Period

Start date: Jan 2022

Completed date: Jun 2023

## Aims

The QI project team was formed in July 2022 with the following aims:

1. Reduce the number of ad-hoc walk-in cases by 33% (not more than 80 patients / month).
2. Reduce the number of tiger text messages by 20% (300 messages / month)

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Lessons Learnt**

1. Patient education via verbal counselling or through the use of artificial intelligence (Chatbot) is effective in reducing ad-hoc walk-ins.
2. As part of spreading changes, the findings from the project were shared with colleagues from NUH and AH across the OneNUHS family.  
A key success factor was the buy-in from stakeholders from the start of the project.
3. The rationale and benefits of such projects should be communicated and wellunderstood by all stakeholders involved. This allows QI initiatives to be planned and implemented quickly.

## **Conclusion**

See poster appended/ below

## **Project Category**

Care Continuum

Outpatient Care, Specialist Outpatient Care

Technology

Digital Health, Chat Bots

## **Keywords**

Audiology Chatbots

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# REDUCING AD-HOC WALK-IN PATIENTS AND INCREASING STAFF'S PRODUCTIVITY VIA ARTIFICIAL INTELLIGENCE AND WORKFLOW ENHANCEMENT

**MEMBERS:** PNG SHERMAINE (AUDIOLOGY Co-leader), TAN AI MEI JOYCE (SPECIALITY OPERATIONS Co-leader) JASMINE LIEW JEK PENG (AUDIOLOGY), NEW SHI YOU (AUDIOLOGY), DIONG HUEY TING (AUDIOLOGY), LEE SI TING (AUDIOLOGY), TENG WEI LI ANDREW (AUDIOLOGY), ATALYA HANA CHRISTINA RAMLAN (SPECIALIST OUTPATIENT), NURSYAFIQAH BINTE RAWI (SPECIALIST OUTPATIENT), SITI ZAHIRAH BINTE ZAHID (SPECIALIST OUTPATIENT), SAI MUN LEO (INNOVATION OFFICE), XAVIER ZK TANG (INNOVATION OFFICE)

**SPONSORS:** DR. GARY LEE JEK CHONG (HEAD AUDIOLOGY)

- SAFETY
- QUALITY
- PATIENT EXPERIENCE
- PRODUCTIVITY
- COST

## AIMS

### Opportunity for Improvement

Many hearing aid patients who have problems with their hearing aids turn up ad-hoc at the audiology clinic seeking immediate assistance. Since January 2022, the audiology team observed a 2.7 fold increase in ad-hoc walk-in cases. With the increase in ad-hoc walk-in cases, the number of tiger text messages between audiologists and counter staffs also increased significantly.

This resulted in poor patient satisfaction when staffs needed to decline ad-hoc walk-in cases. It also resulted in reduced work productivity as audiologists needed to spend time checking on staff's availability to see the ad-hoc walk-in patients and counter staffs needed to constantly check in with the audiologists on updates.

### Aims

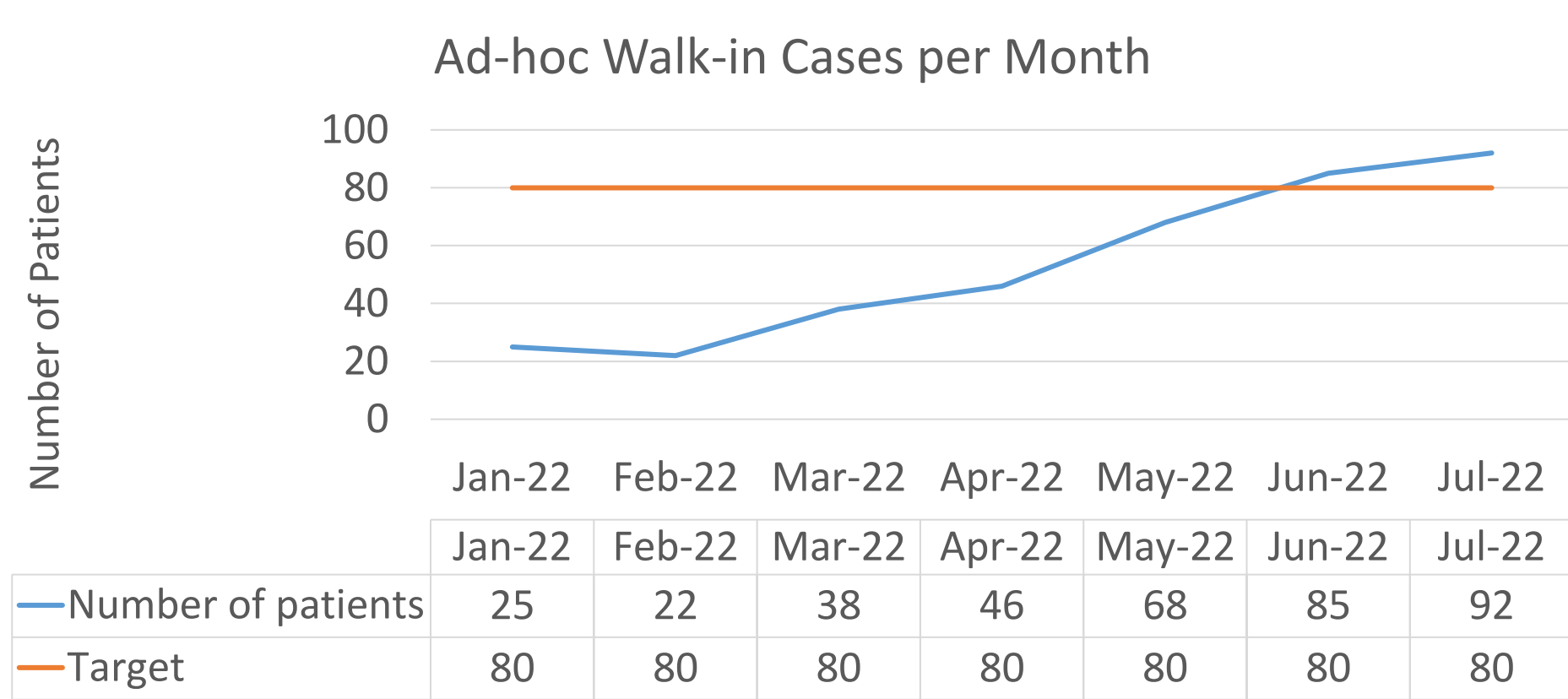
The QI project team was formed in July 2022 with the following aims:

- Reduce the number of ad-hoc walk-in cases by 33% (not more than 80 patients / month).
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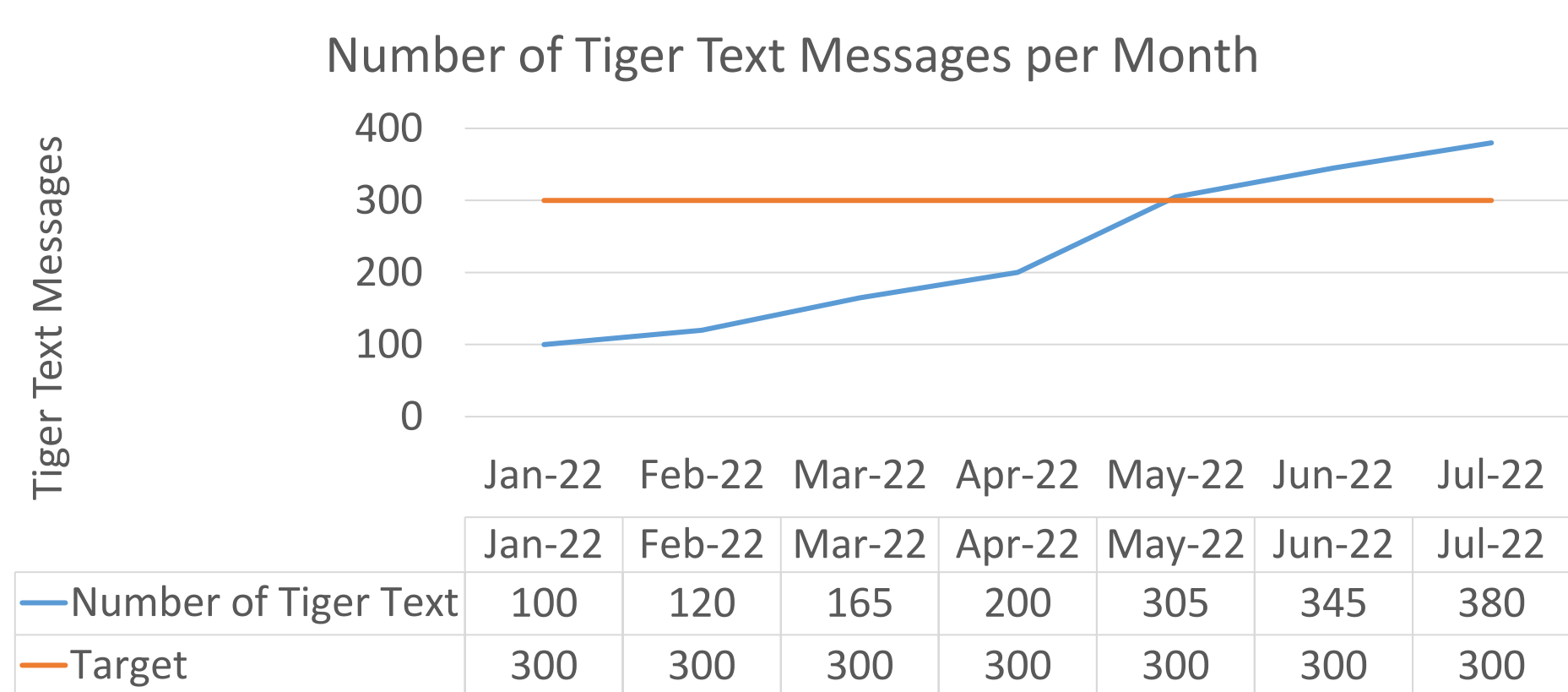
## Establish Measures

### Performance before Interventions

The number of ad-hoc walk-in patients increased steadily over the months, from 25 patients in January 2022 to 92 patients in July 2022.

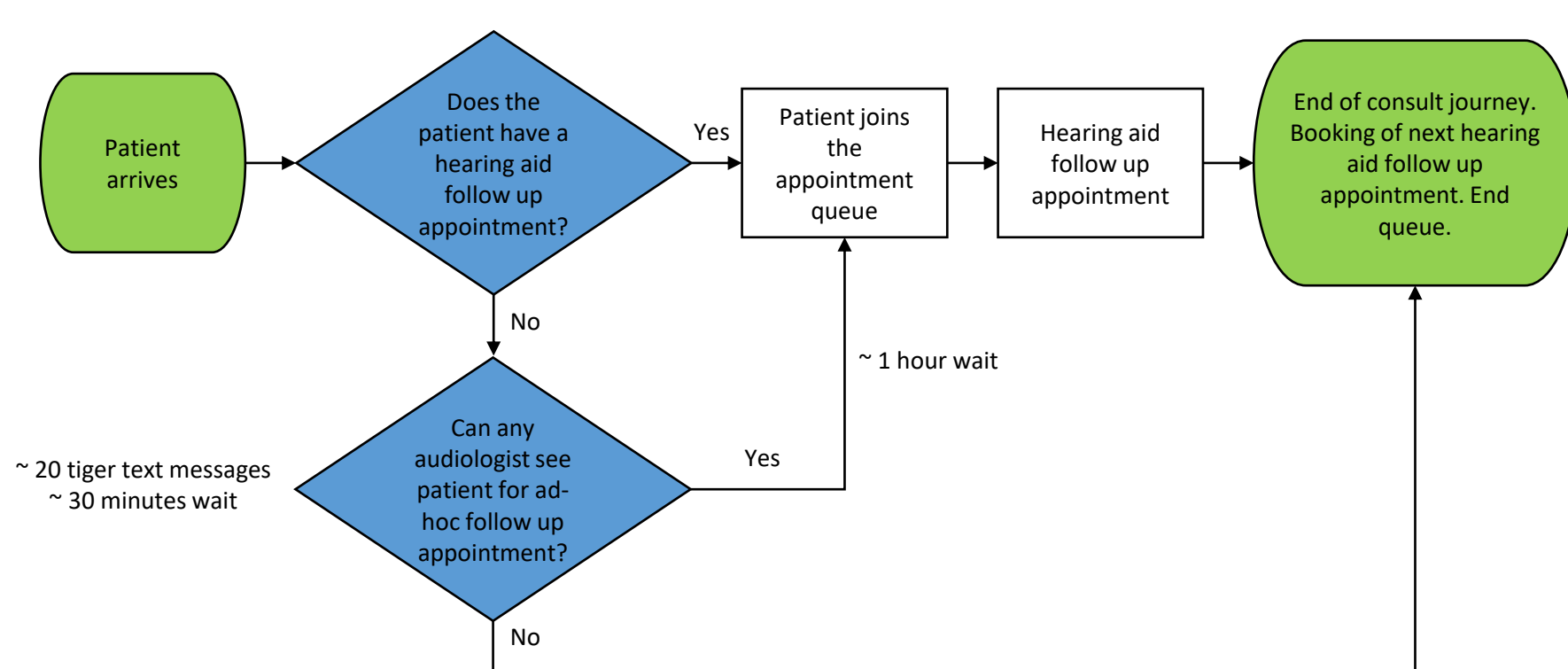


As the number of ad-hoc walk-in patients increased, the number of tiger text messages between audiologists and counter staffs increased by almost 4 times.



## Analyse Problem

### Current Process Mapping



The existing clinic workflow requires a great amount of communication between staffs to confirm if patients can be seen ad-hoc. About 20 tiger text messages are sent each day with a wait time of at least 30 minutes before patients know whether they can be seen. If patients can be seen ad-hoc, they will need to wait at least 1 hour before they can be attended to.

### Possible Root Causes

1. Patients are unaware that they need an appointment to see an audiologist.
2. No dedicated audiologist assigned to see ad-hoc walk-in cases.
3. Lack of support channel for patients when hearing aids are faulty.

## Possible Solutions

### Solution 1 (July 2022)

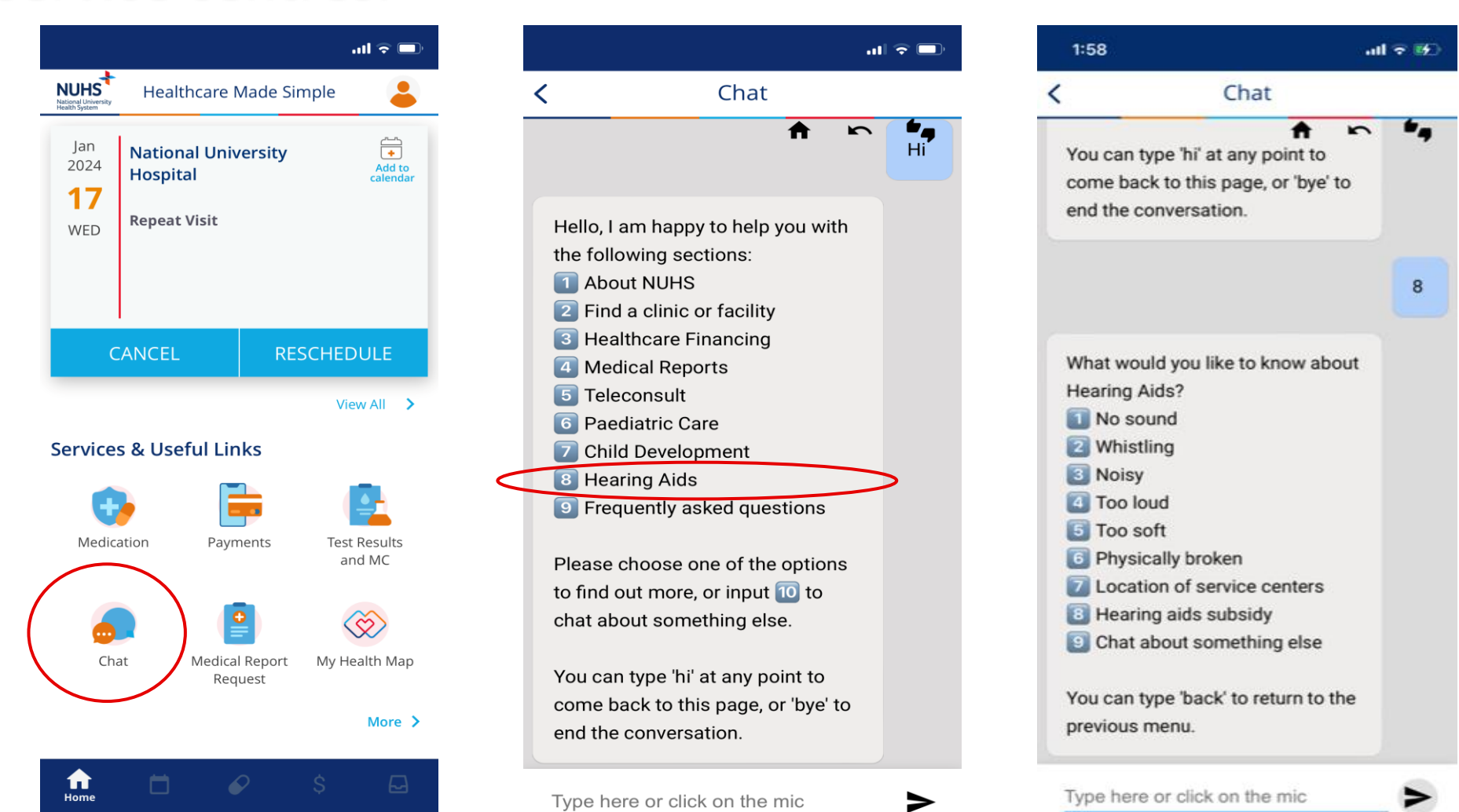
Patient education by audiologists during hearing aid appointments that hearing aid adjustments or repair checks are strictly by appointment only.

### Solution 2 (October 2022)

2 audiologists assigned each day to attend to ad-hoc walk-in cases. 1 audiologist scheduled for 12PM slot while another scheduled for 5PM slot. A maximum of 2 patients can be booked in for each time slot.

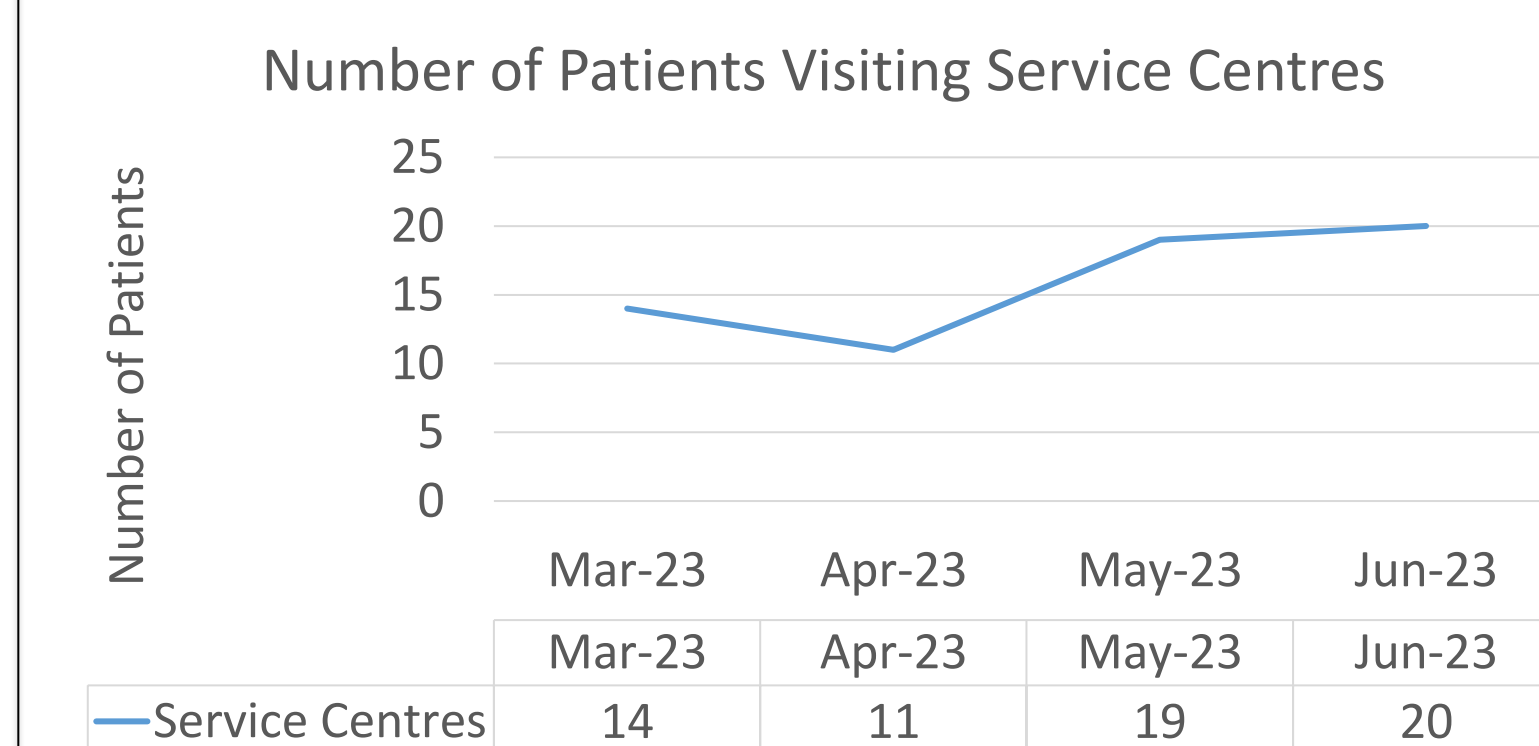
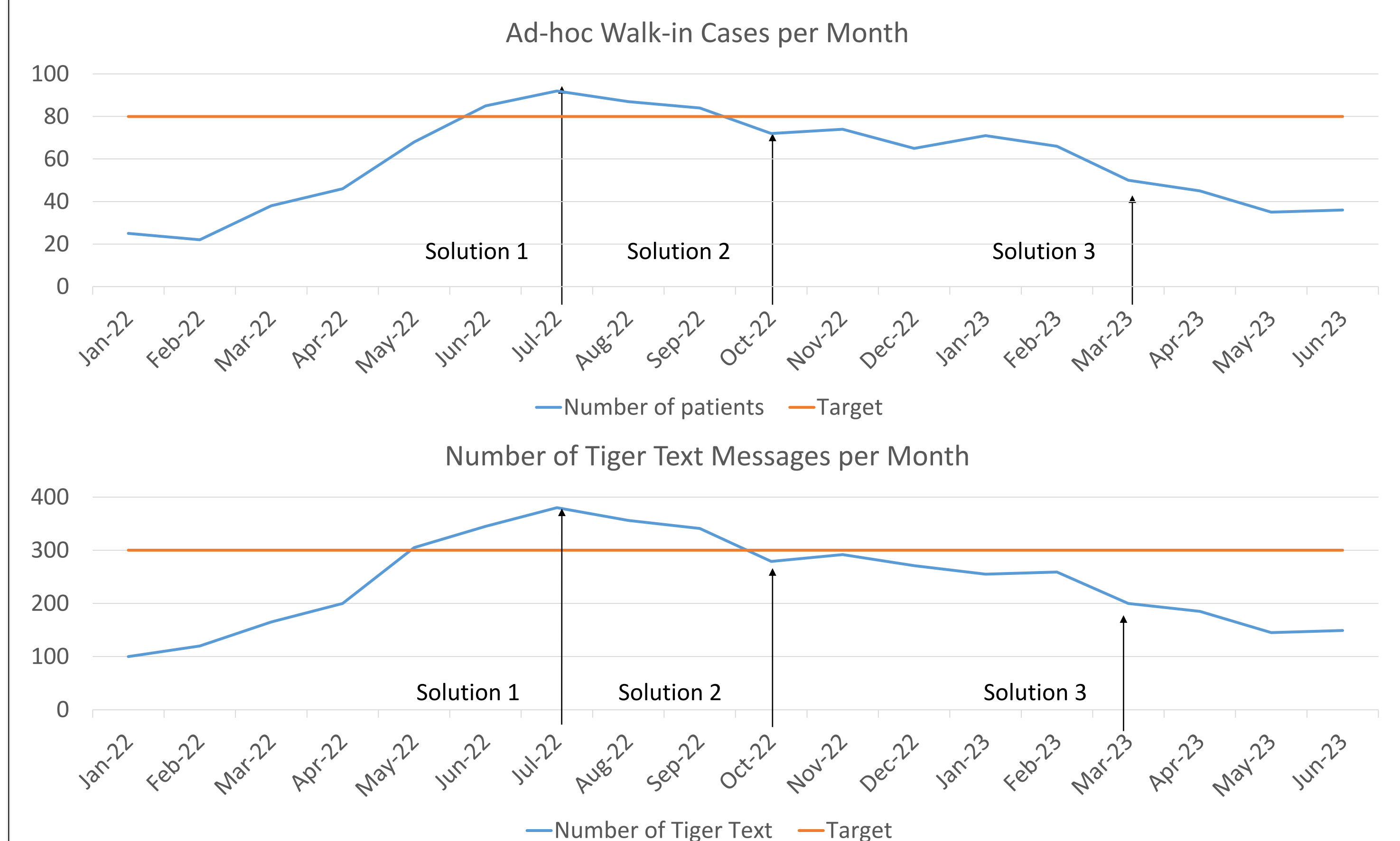
### Solution 3 (March 2023)

Development of the Audiology Chatbot to provide a support channel for patients when their hearing aids are faulty. Most of the problems can be easily fixed through patient education and troubleshooting while some problems can be referred to the hearing aid manufacturer's service centres.



## Test & Implement Changes

Within 1 year of implementation of solution 1, 2 and 3, the overall number of ad-hoc walk-in patients and tiger text messages reduced by 54% and 55% respectively.



Data obtained from hearing aid manufacturer's service centres also showed an increasing trend in number of patients going directly to the service centres for assistance since March 2023.

## Spread Changes, Learning Points

- Patient education via verbal counselling or through the use of artificial intelligence (Chatbot) is effective in reducing ad-hoc walk-ins.
- As part of spreading changes, the findings from the project were shared with colleagues from NUH and AH across the OneNUHS family.
- A key success factor was the buy-in from stakeholders from the start of the project. The rationale and benefits of such projects should be communicated and well-understood by all stakeholders involved. This allows QI initiatives to be planned and implemented quickly.