



# Instant Hearing

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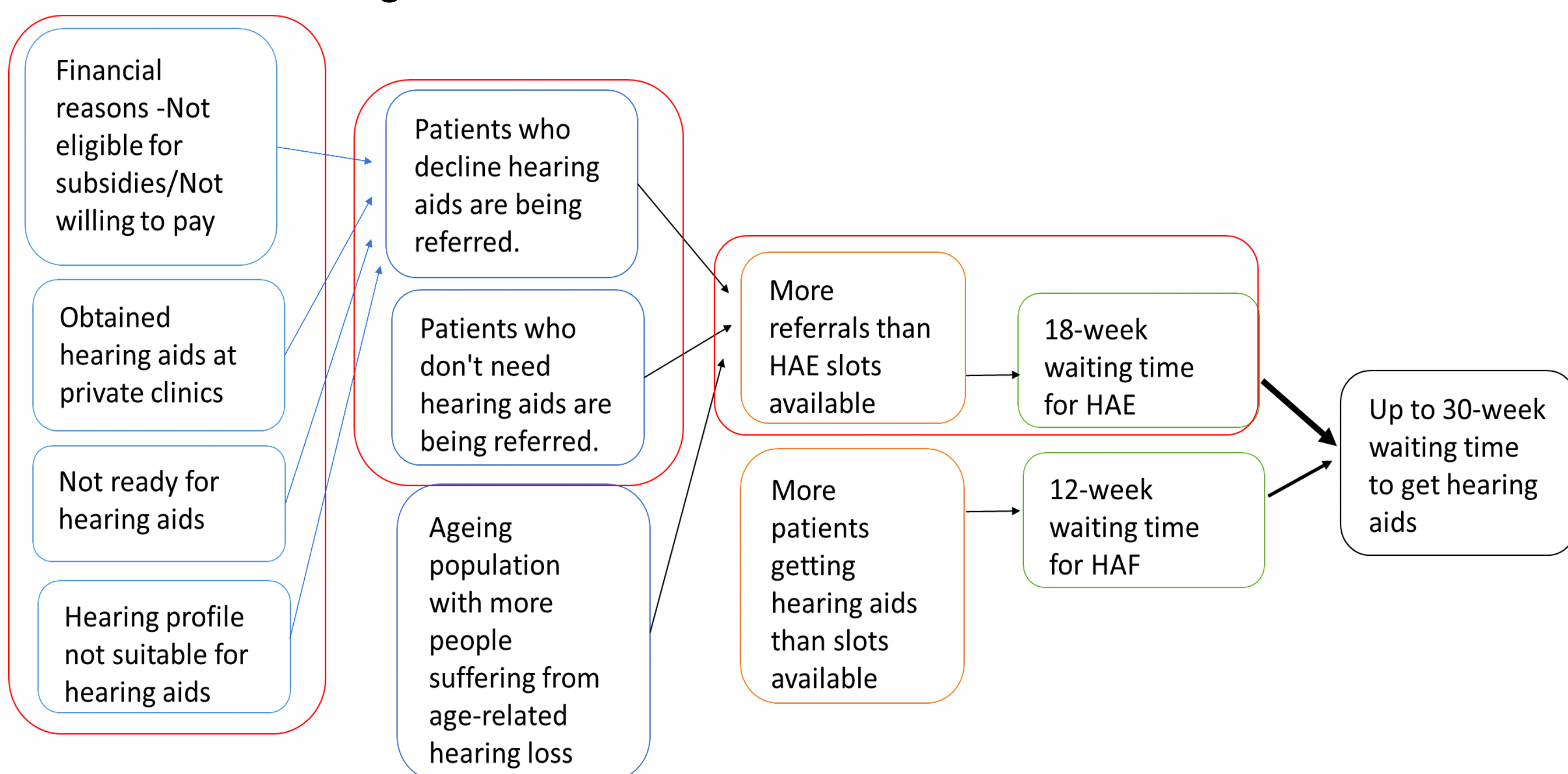
## Audiology Department

### Problem

The project aims to address the significant waiting time for patients at Changi General Hospital (CGH) to receive hearing aids after their Ear Nose Throat (ENT) appointment. From August 2022 to July 2023, patients referred for hearing aids endure an average waiting period of up to 30 weeks before they obtain their hearing aids. This prolonged wait is unacceptable due to the negative impacts of extended auditory deprivation, including social isolation and high risks of cognitive decline in hearing impaired seniors as shown by an increasing body of literature. The primary goal of this project is to improve early hearing aid intervention for patients in need.

### Problem analysis

The team conducted a focus group discussion and root cause analysis as shown in the cause-and-effect diagram below:



**Figure 1.** Cause-and-Effect diagram \*HAE=Hearing Aid Evaluation, HAF=Hearing Aid Fitting  
As the waiting time for Hearing Aid evaluation (HAE) is significantly more than that for Hearing Aid Fitting (HAF), our team decided to focus on reducing that for HAE. Based on the pareto principle, we will be focusing on the causes circled in red.

### Mission statement

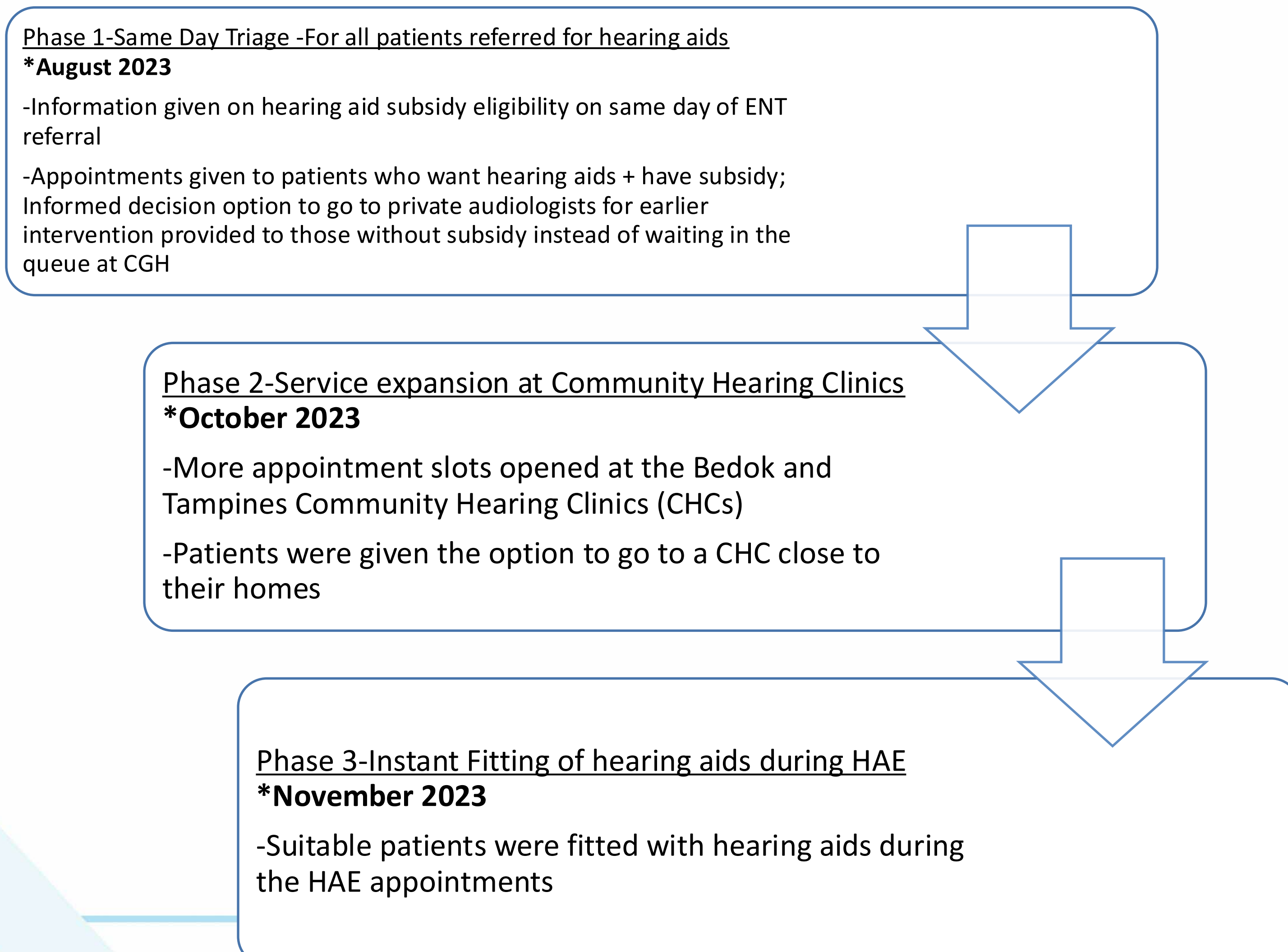
To reduce the average waiting time for hearing aid evaluation (HAE) by 50% from 18 weeks to 9 weeks in the period August 2023 to May 2024 for patients in need of hearing aids.

### Solution

Using the IHI 72 change concept, our team brainstormed based on the category of, "Eliminating waste and improving workflow". Some changes considered were:

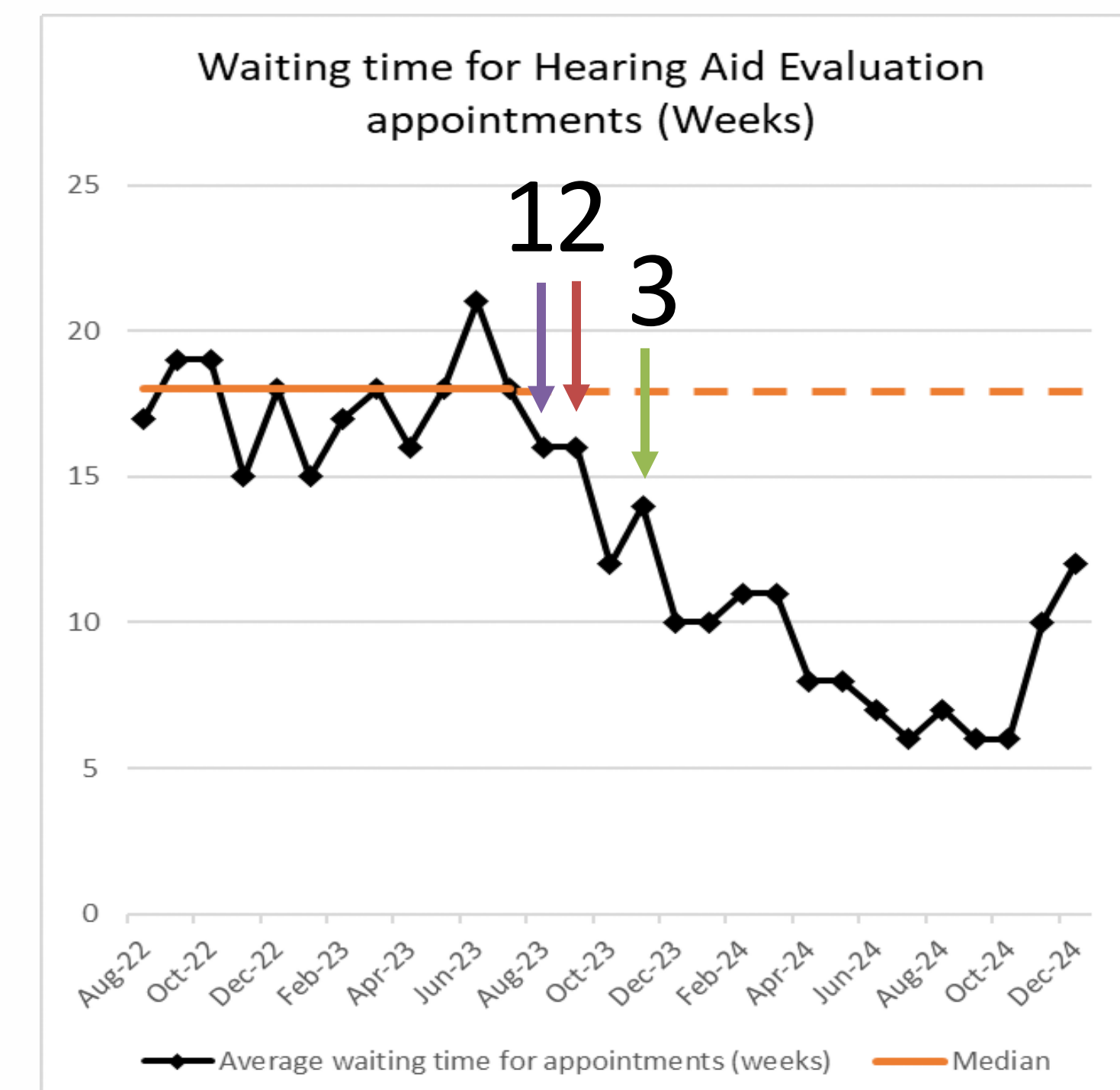
- Increasing the number of HAE slots through service expansion
- Improving patients' access to information for more informed decisions
- Standardizing hearing aid prices to reduce billing errors and administration time
- More prescriptive approach when recommending hearing aids to reduce the time taken for HAE
- Instant fitting - significant change in clinical practice by keeping stocks of hearing aids to fit patients during HAE

By utilizing the prioritization matrix, our team decided to implement a combination of the suggested changes in phases as shown below:



### Outcome

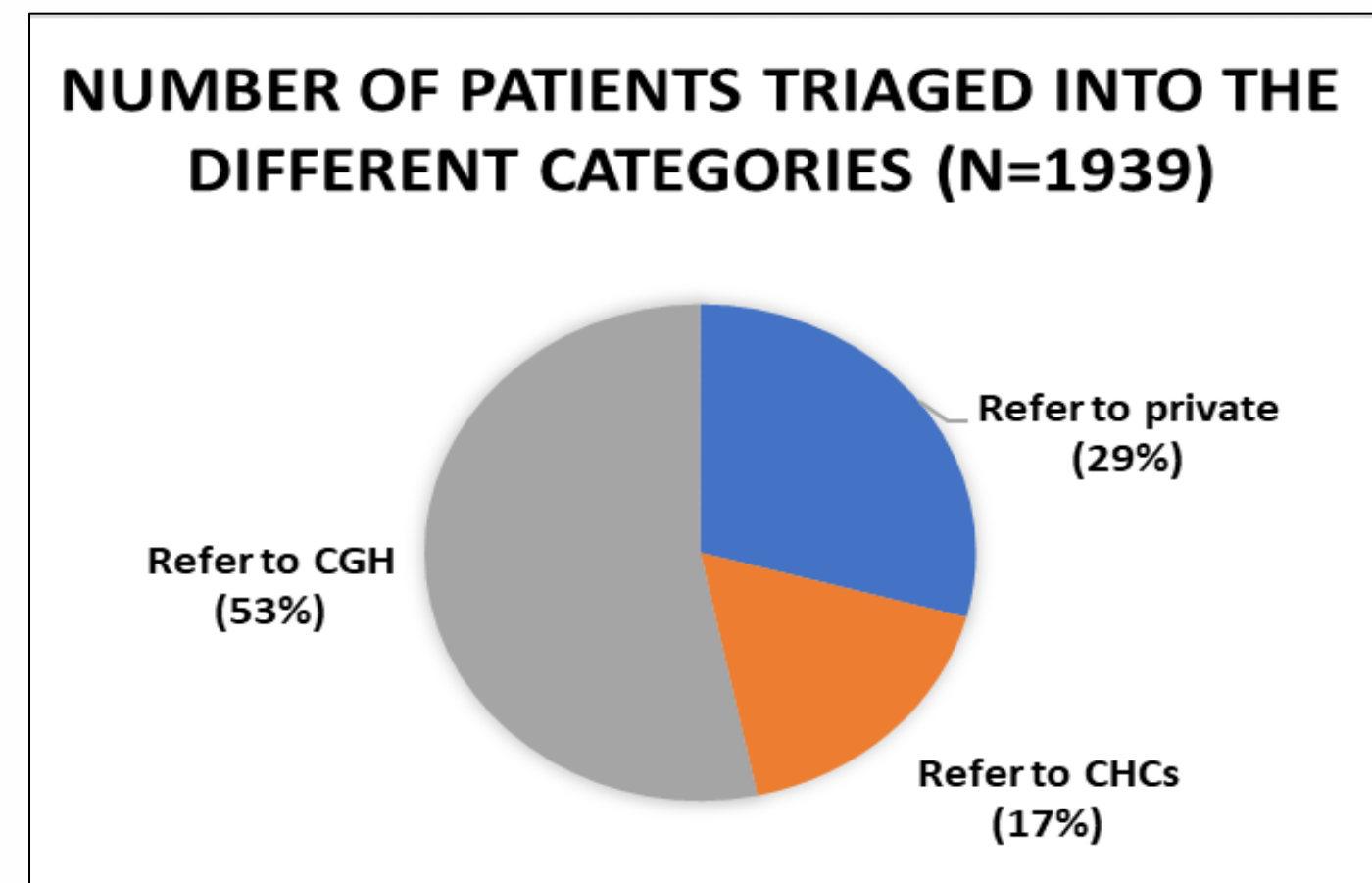
**Outcome measure:** Waiting time for HAE appointment



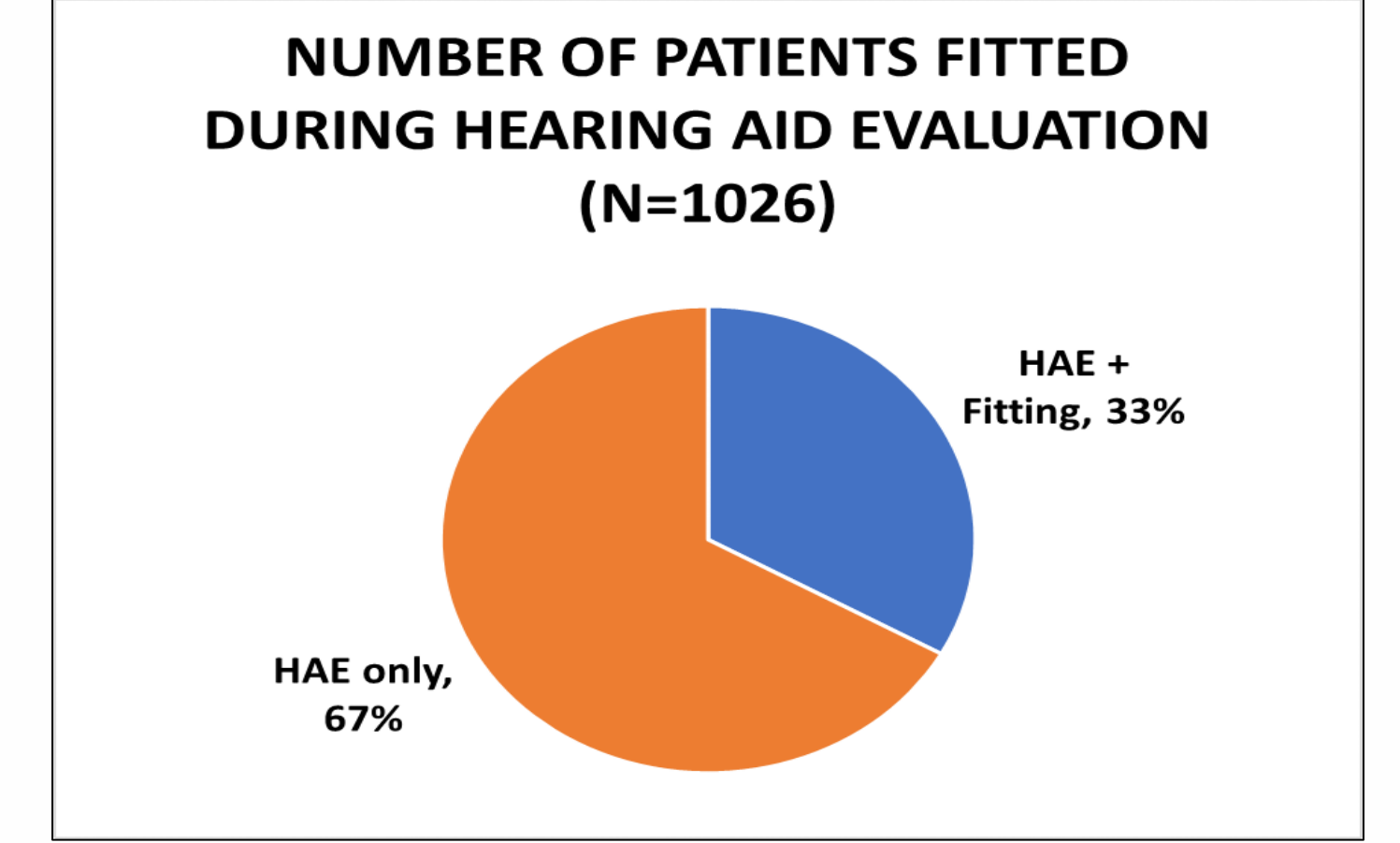
**Figure 2.** Average waiting time for HAE appointments from August 2022 to December 2024. Arrows indicate implementation of different phases.

- ✓ Significant reduction in average waiting time by 56% for HAE appointments from 18 weeks in July 2023 to 8 weeks in May 2024, exceeding our target of 50%!
- ✓ Results sustained until December 2024
- ✓ Small increase in waiting time for appointments in November and December 2024 due to staff attrition

**Process measures:** Number of patients triaged; Number of patients who were fitted during HAE



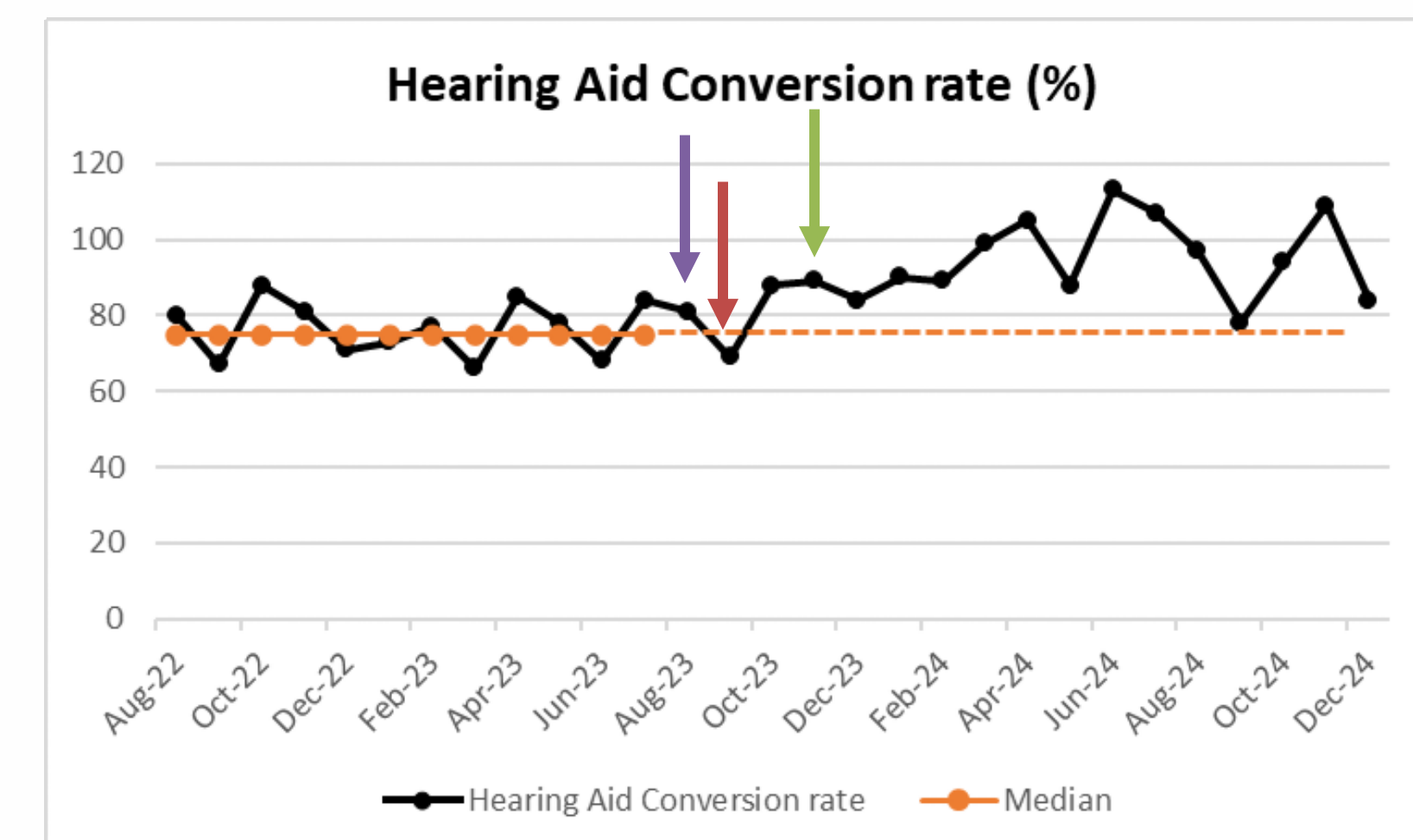
**Figure 3.** Triage outcomes (August 2023 to December 2024)



**Figure 4.** Percentage of HAE patients fitted during HAE

- ✓ 1939 patients were triaged since the service started and 53% were given appointments at CGH thereby reducing the demand on HAE slots in the clinic.
- ✓ Out of 1026 patients seen for HAE, 339 (33%) were instant fitted. This reduced the time for patients to be fitted with hearing aids and freed up slots for patients to be seen earlier.

**Balance measure:** Hearing aid conversion rate during HAE i.e. patients who got hearing aids



**Figure 5.** Hearing Aid Conversion rate from August 2022 to December 2024. Arrows indicate implementation of different phases.

- ✓ Since implementation of changes, the percentage of HAE patients who got hearing aids increased steadily (average 95% in 2024) above the median for the preceding 12 months.
- ✓ This indicates increased productivity during the HAE appointments.

### Conclusion

- ✓ Measures effectively reduced the waiting time by 56% for HAE from 18 weeks to 8 weeks, exceeding the target set.
- ✓ Same day triage improves health equity since patients in need of additional financial assistance are identified and can be seen earlier in the hospital.
- ✓ Measures increased productivity during HAE appointments as indicated by increased average hearing aid conversion rate (increased 24% from 77% in 2023 to 95% in 2024)
- ✓ Patients were intervened with hearing aids earlier which reduces the risk of cognitive decline in seniors.
- ✓ Patients instant fitted with hearing aids enjoyed significant time and cost savings since they did not have to come for another fitting appointment.
- ✓ Revenue earned was brought forward by an average of 8 weeks when patients were fitted during HAE.