

Glue ear: A preliminary investigation assessing the feasibility and cost-effectiveness of hearing aids compared to grommet insertion

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Background

- Glue ear: a common symptom in children assessed across audiology in the UK
 - 80% of children will experience one episode before the age of 10
 - Peak prevalence at age of 2 and 5 years^[1]
- Self limiting condition
 - Resolves on its own
- Intervention required if persistent and causing hearing loss

NICE Guideline

- Suggests Grommet insertion and Hearing Aid (HA) provision appropriate for Glue ear

Grommet

- Effective in resolving hearing loss
- Associated risks
 - Infection
 - Perforation –leading to hearing loss
 - Requires GA
 - Recurrence after grommet extrusion
- Long back log after covid, due to cancellations

Hearing Aids

Air Conduction

- Fitted behind the ear with mould
- Requires regular monitoring
- Lower cost

Bone Conduction

- Fitted with band or adhesives
- No monitoring required
- Higher cost

Aim and Methods:

Retrospective study of otherwise healthy children with glue ear, managed with hearing aid

Acceptability of amplification

Tolerance or success of amplification

Along with cost of HA provision

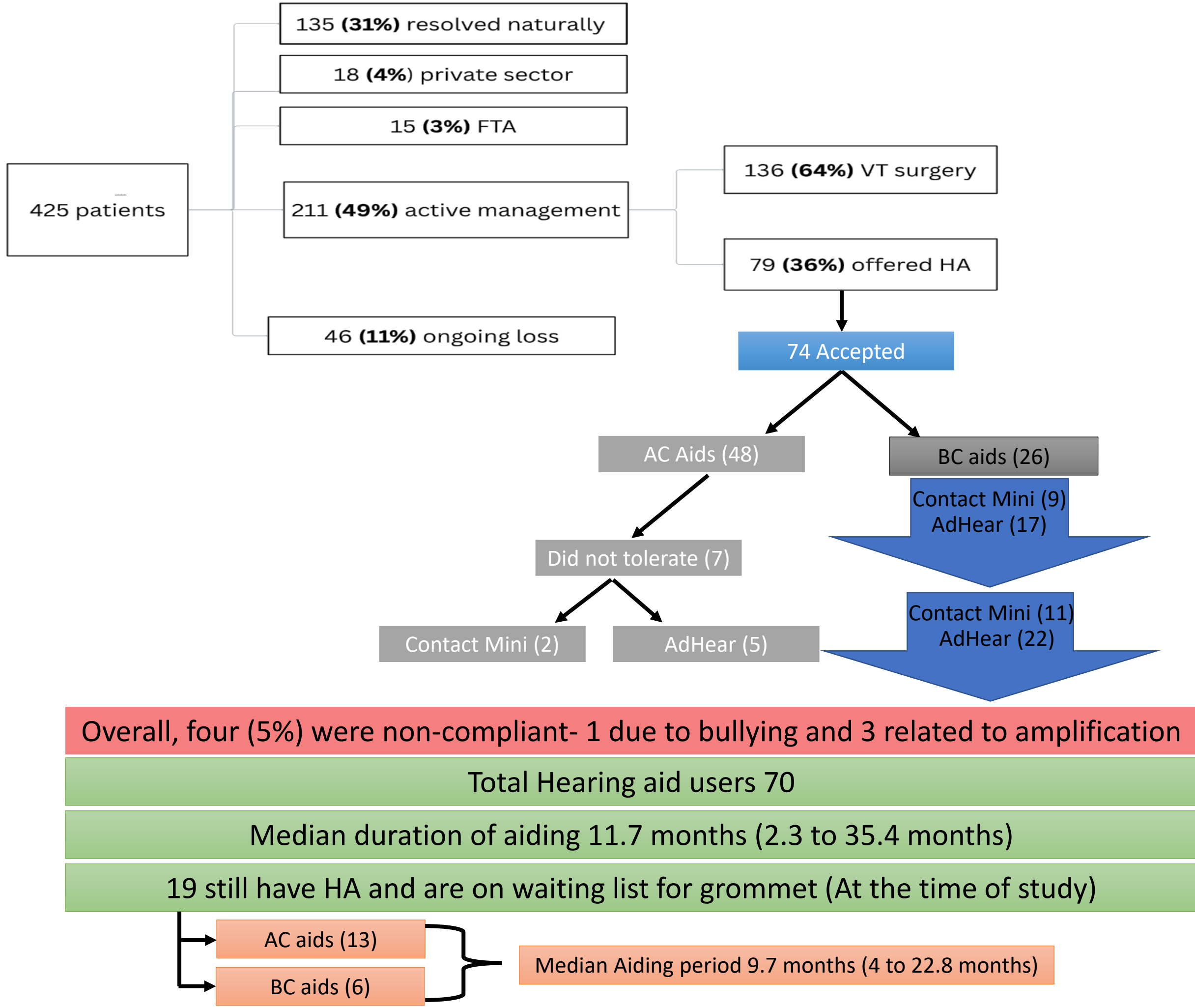
425 Children diagnosed with glue ear between 2019 and 2024

Record from Glue ear caseload

On surgery waiting list

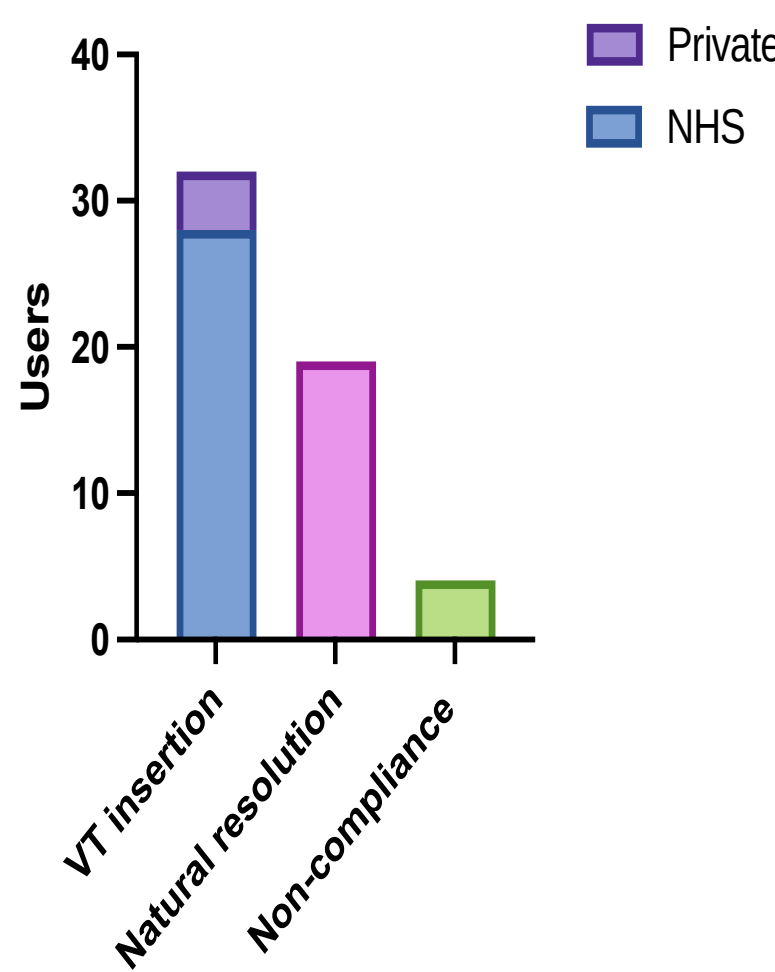
Referred to Audiology for HA consideration

Result

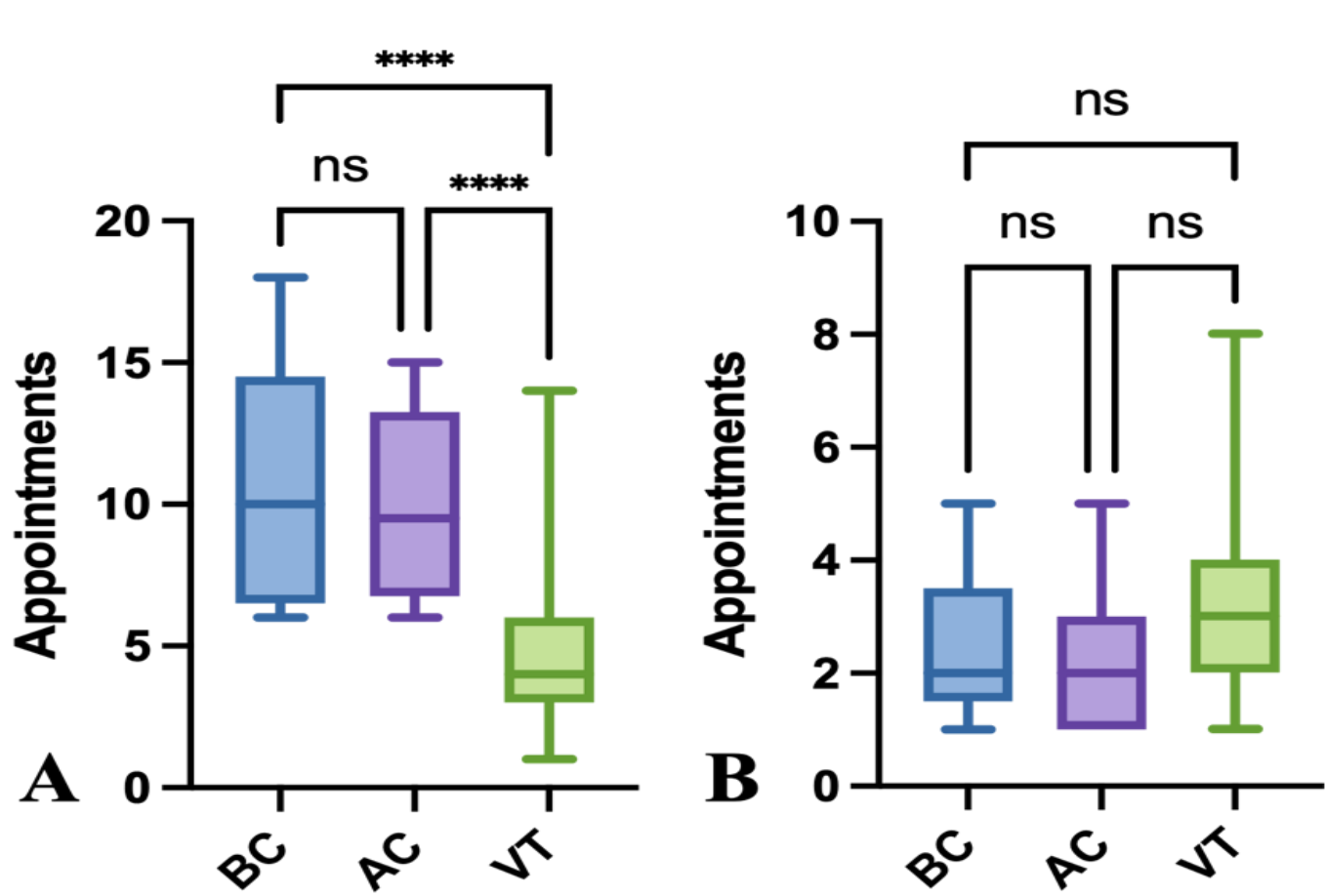


Flow chart of distribution of patients seen in the GEHA (Glue Ear Hearing Aid) clinic.

Results



Bar diagram showing different completion of pathway and HA withdrawal reason



Comparison of appointment required for each cohort (A) audiological for HA fitted and (B) ENT appointment

Of all the HA users

- 4% of children opted to get their grommet surgery done privately, due to long wait time.
- 27% still with amplification
- 27% had natural resolution
- 5% were non complaint
- 27% received grommet

- For those managed with HA, number of appointment required did not vary much with type of hearing aid (10), but had fewer ENT (3) appointment, as they were getting monitored through audiology.
- For those managed with grommet, the overall appointments (2) were less irrespective of the aid used prior to grommet insertion.

Discussion

Strength and weaknesses

Large cohort of children with Glue ear managed non-surgically with hearing aids.

Analysis of acceptability of HA to parent and children

- For a considerable length of time for which HA was used

Analysis and reporting of increase in Audiology Caseload

- Increase in appointment for monitoring, fitting and reviewing.

We have not looked into the compliance of HA use

- Data logging

We have not also looked if the HA had impact on

- Spoken language development/improvement
- Improved educational outcome
- These can be topics for future studies

Cost Analysis

Higher cost of managing glue ear exclusively through audiology.

High cost of BC HA requiring less follow up

Lower cost of AC HA requiring frequent follow up

The study utilizes estimate for illustration purpose; real world cost will be dependant on the decision regarding follow up appointment.

HA Cost analysis

- Appt for Paediatric audiology £130
- AC HA (with mould) - £108
- Contact Mini - £1000
- AdHear - £1500

Grommet Cost Analysis

- Grommet with adenoids - £1226
- Grommet alone- £899

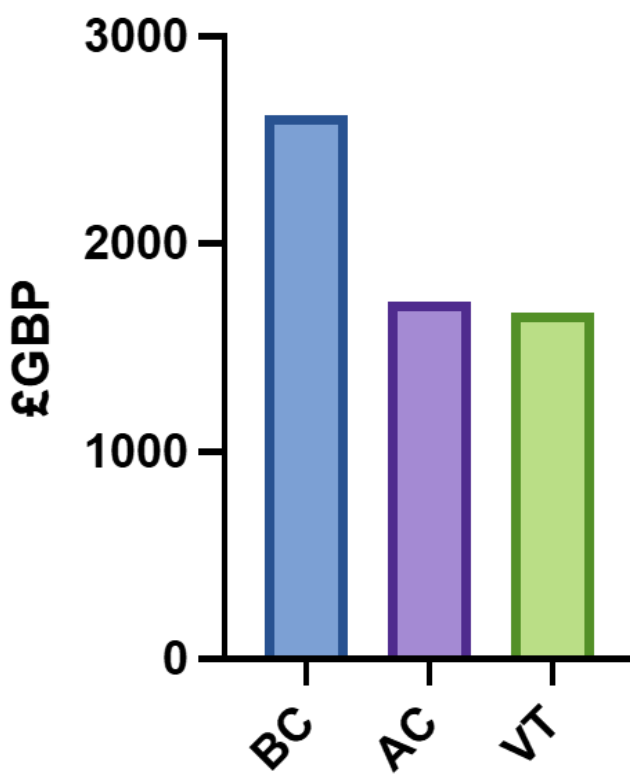
Overall cost of managing with HA only will cost

- £1826.14 for AC HA
- £2624.5 for BC HA

Factoring the cost of HA with 2 ENT appt and 10 Audiology review/follow up appt

On average management with grommet will cost £1669, which includes

- Cost for grommet
- Day care cost
- 3 ENT appointment and
- 20% of children requiring second set



Estimates of the cost of each management option.

- Managing Glue Ear with hearing aids alone would cost,
 - £1826.4 for air conduction aids and
 - £2624.5 for bone conduction aids.
- The average cost managing children with grommet surgery would be around £1669.

Conclusions

- Grommet surgery remains the standard of care for persistent glue ear
- HAs are a viable management strategy either as an alternative to surgery, or a bridge to surgery when waiting times are long.
- Consideration should be given to increased cost and the requirement for regular audiology follow-up.
 - Especially when the Paediatric Audiology is going through a difficult phase with limited resources and funding
- The regular follow up required for glue ear increases the wait time for overall audiology department.

Limitation & Future Direction

- Since, this study only looked at compliance and not the outcome with HA for Glue ear. Future research can be focus on assessing the long-term effectiveness of HAs in speech and educational development, as well as their cost-effectiveness compared to surgical intervention.

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