

Practice Listening and Understanding Speech (PLUS): Feasibility of providing auditory-cognitive training alongside hearing aids in the NHS

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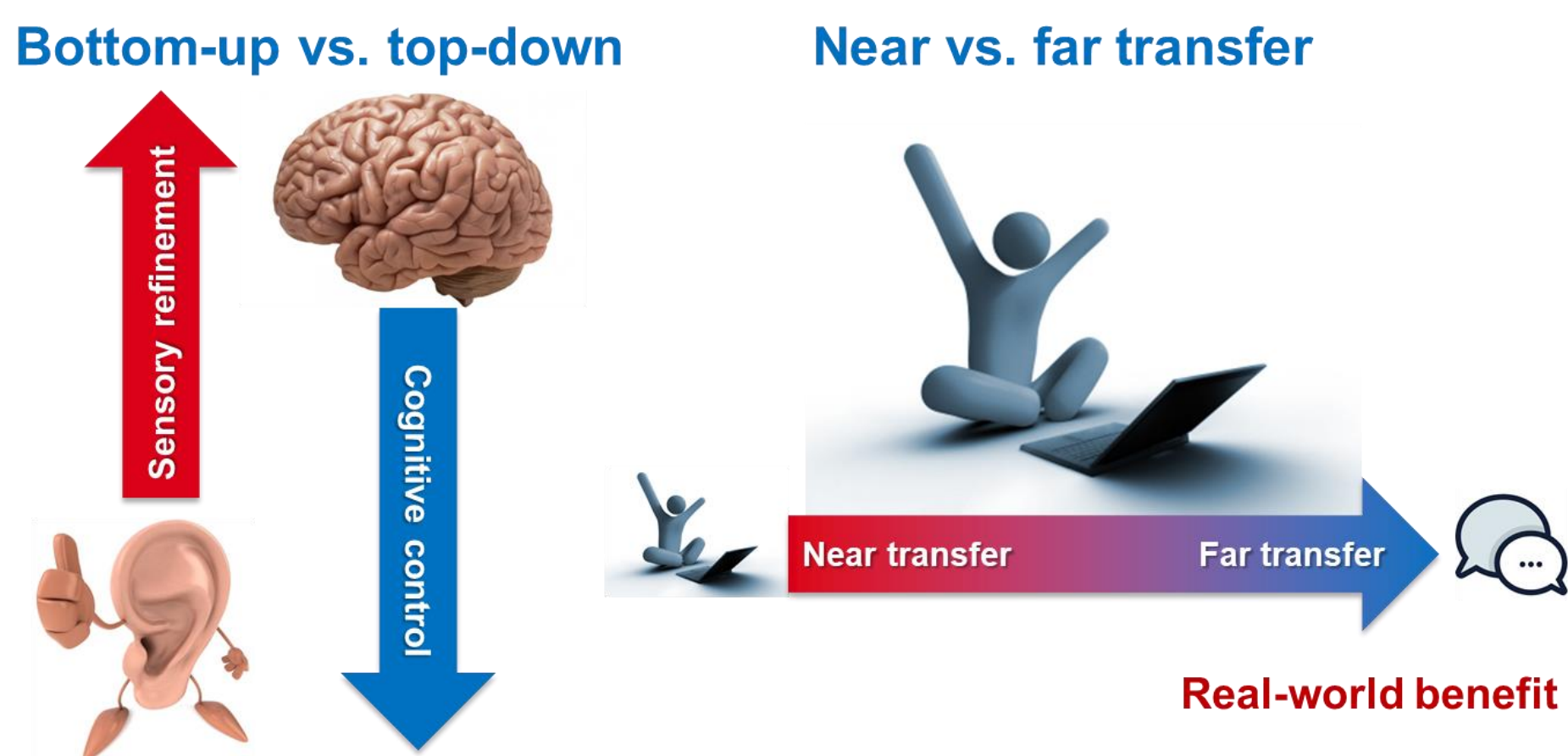
1. Background

Auditory training (AT): teaching the brain to listen through active engagement with sounds.
Cognitive training (CT): mental exercises designed to improve core cognitive abilities.

For people with hearing loss (PHL) and hearing aid (HA) users, AT & CT interventions aim to improve real-world listening through the development of auditory and cognitive skills.

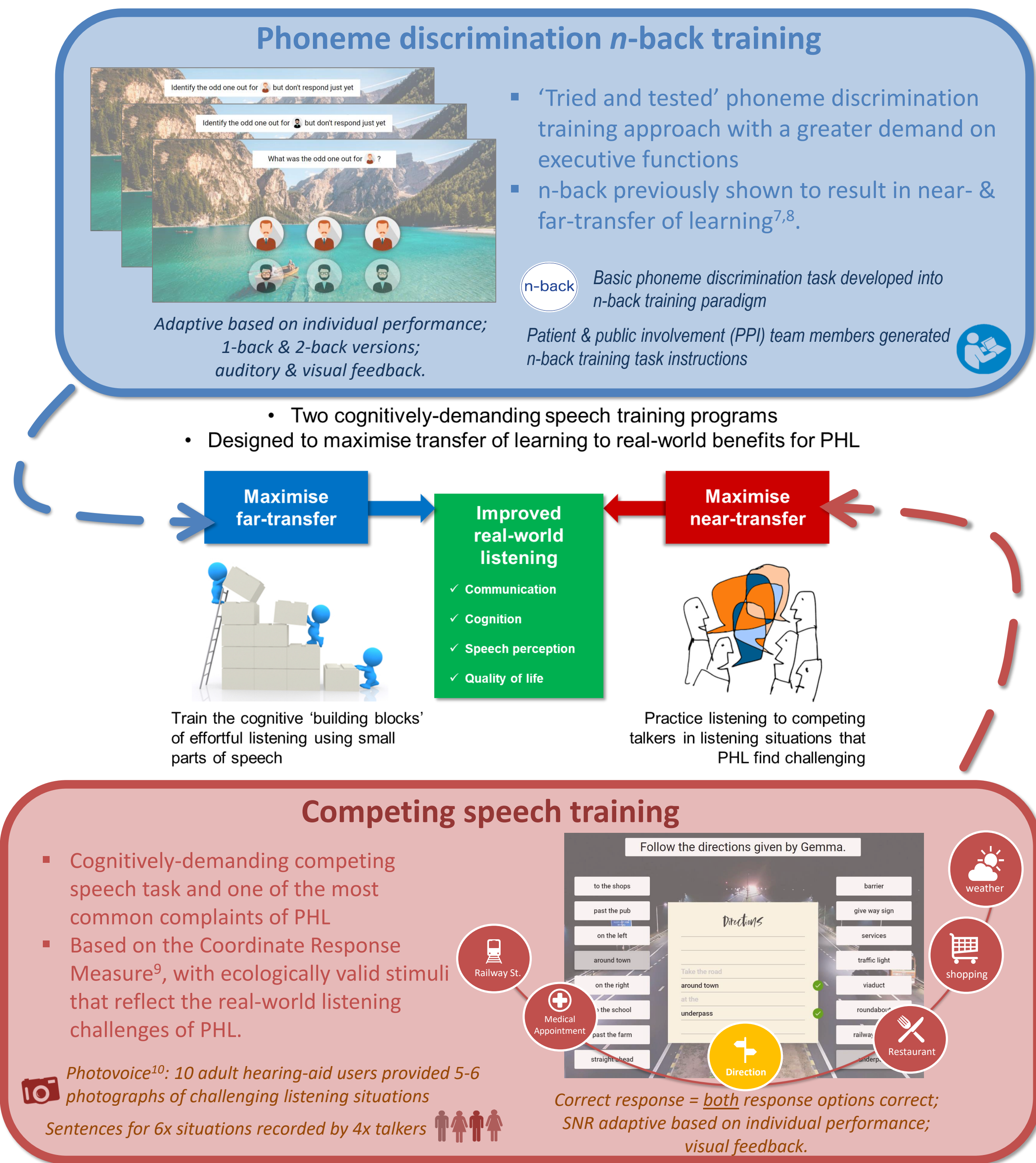
Evidence from literature and our own research shows that for PHL:

- AT results in on-task learning, but evidence for transfer is mixed¹.
- Phoneme discrimination AT transfers to complex, but not simple outcomes that tax top-down cognitive control (executive functions)^{2,3}.
- CT that targets improvements in working memory capacity (Cogmed RM) does not transfer to improvements in untrained outcomes^{4,5}.
- A combined auditory-cognitive training approach may offer the greatest benefits to real-world listening^{5,6}.



Research Aim
 To assess whether a multicentre randomised controlled trial of intervention effectiveness and cost-effectiveness is feasible.

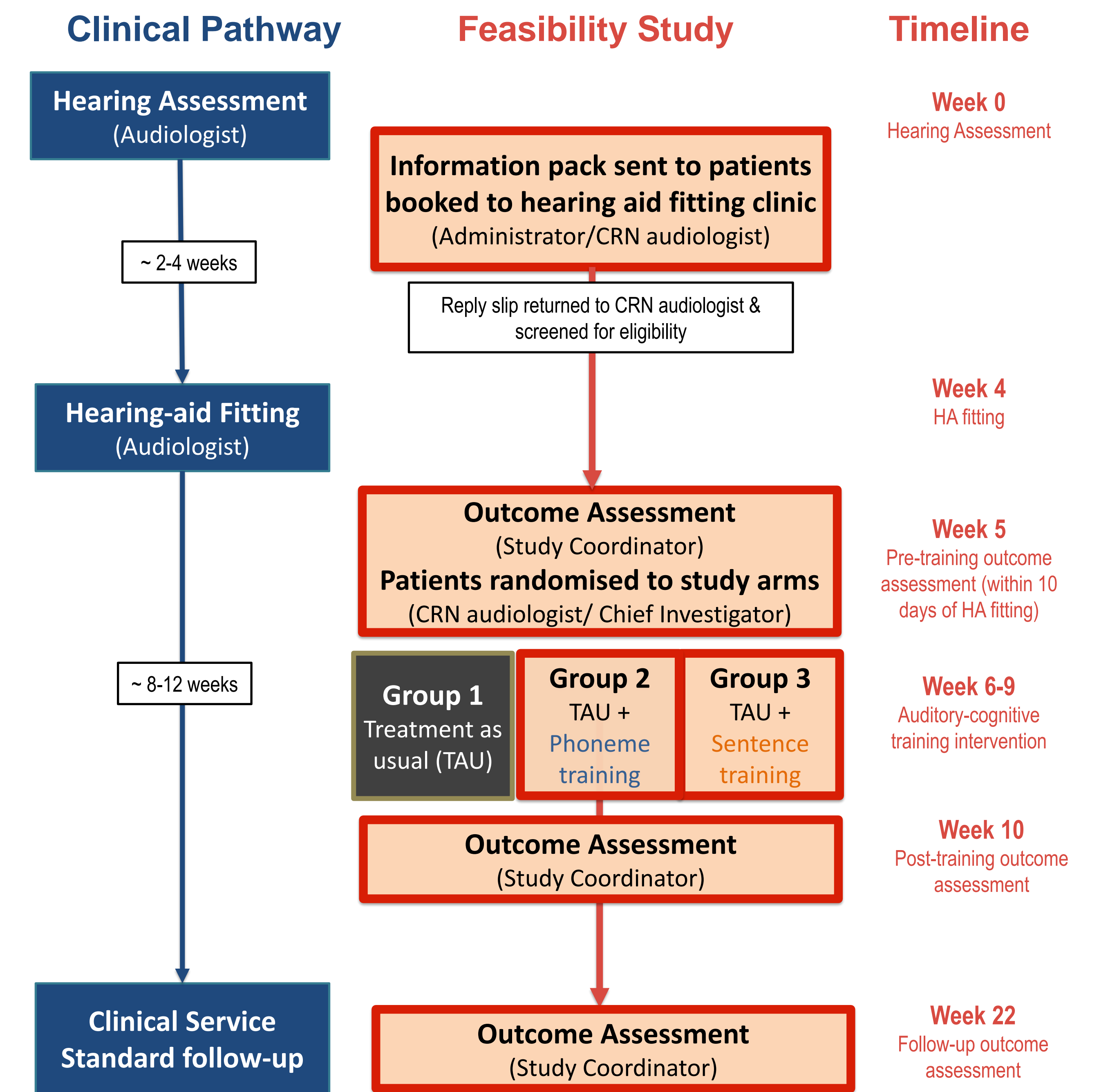
2. Auditory-cognitive training (ACT)



3. Feasibility Study of 105 new adult HA users

The feasibility study has been designed to assess:

- What is the best way to provide ACT interventions to NHS audiology patients, and what does it cost?
 - To collect quality of life data and identify any resources or costs associated with the delivery of the training interventions from a health (NHS) and social care perspective, from which to calculate cost-utility of the interventions in the anticipated randomised controlled trial.
- What are the important rates required to inform a future pragmatic randomised controlled trial of ACT efficacy?
 - Patient recruitment & attrition rates; patient attrition rates at a 12-week post-intervention outcome assessment; the completeness of all outcome measures at all assessment timepoints.
- What do patients and clinicians think about the ACT interventions and the trial processes?
 - Semi-structure interviews with patients and audiologists about recruitment procedures, study burden, and acceptability of outcome measures (patient only).
- How long does data collection take?
 - Time taken to achieve the required numbers of patients per group ; time taken to collect all study and outcome measure data.



Study Setting

Nottingham University Hospitals NHS Trust will be the study recruitment site. All in-person assessments will take place on NUH premises in facilities suitable for the assessment of hearing and cognition. Participants will also be informed of the study via Sherwood Forest Hospitals NHS Foundation Trust (Audiology department), who will act as a Participant Identification Centre.

Inclusion criteria

- ✓ Are 18 years of age or over
- ✓ Recommended 1 or 2 hearing aid(s) for the first time
- ✓ Have good understanding of written and spoken English
- ✓ Internet access at home (training interventions will be home-delivered via the internet)

Next Step

If feasible, apply for funds to conduct a full-scale randomised controlled trial.

Reference

1. Henshaw & Ferguson (2013), PLoS One; 2. Ferguson et al. (2014), Ear & Hearing; 3. Henshaw & Ferguson (2014), ISAAR; 4. Henshaw & Ferguson (2013), Trials; 5. Ferguson & Henshaw (2015), Frontiers in Psychology; 6. Lawrence et al. (2018), Trends in Hearing; 7. Jaeggi et al. (2010), Intelligence; 8. Soveri et al. (2017), Psychonomic Bulletin & Review; 9. Bolia et al. (2000), JASA; 10. Wang et al. (1997), Health Education & Behaviour