The Cost effectiveness of Cochlear Implants in UK adults

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BACKGROUND

- The UK National Institute for Health & Care Excellence (NICE) revised their criteria to increase access to cochlear implants (CIs) in March 2019. CI uptake is very low, with approximately 5% of people ≥18 years, within the NICE guidance, who could benefit from CI receiving one[1].
- Cochlear implants improve speech perception and comprehension, along with spatial awareness of sounds, leading to benefits[2-4] such as :

OBJECTIVE

To estimate the cost-effectiveness of unilateral cochlear implantation in UK adults aged ≥18 years with severe to profound sensorineural hearing loss.

METHOD

A Markov model with a lifetime horizon was used to investigate the benefits and costs of unilateral CIs versus hearing aids and no hearing aids using:

- A National Health Service (NHS) perspective
- A clinical pathway developed through consulting UK clinical experts
- Cost data sourced from the 2017/18 UK National Tariff Payment System and the 2018 Unit Costs of Health and Social Care
- Systematic literature review for economic evaluations and utilities
- £20,000 per QALY gained Incremental Cost Effectiveness Ratio (ICER) threshold.

A univariate sensitivity analysis and probabilistic sensitivity analysis was also undertaken to determine the impact of the model parameters on the ICER.

Figure 1. Markov model structure

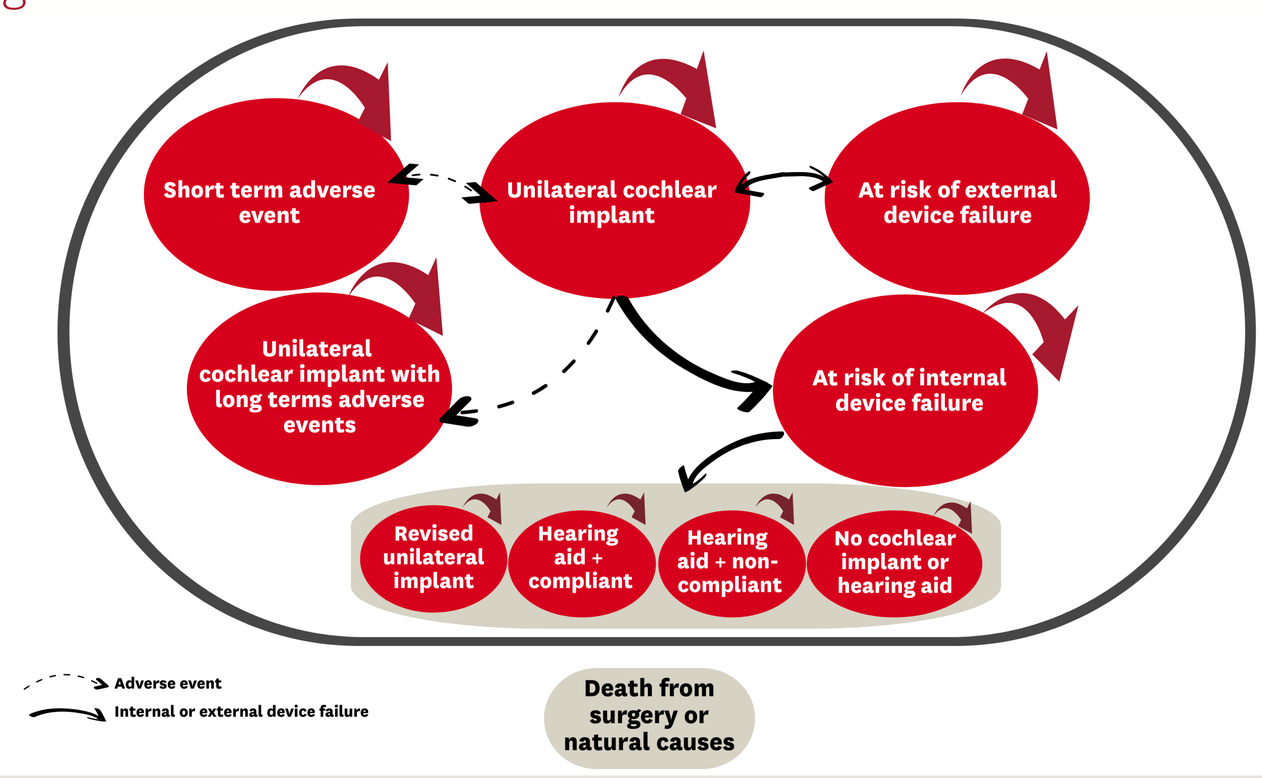
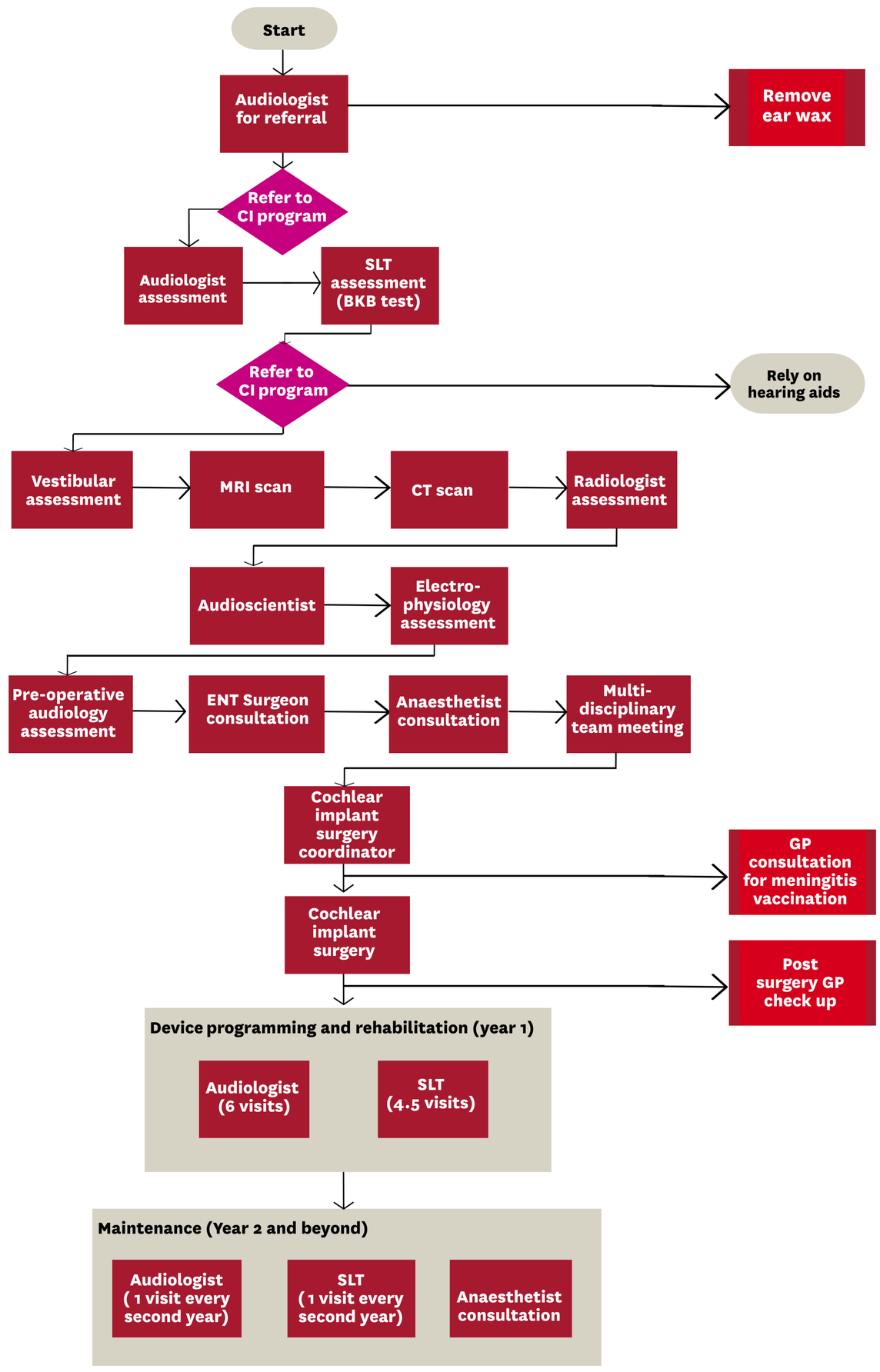


Figure 2. Pathway for resource use associated with unilateral cochlear implantation



Note: Does not include resource use associated with sound processor replacement, explantation and re-implantation and adverse events.

CI	Cochlear Implant	**GP**	General Practitioner
CT	Computed Tomography	**MRI**	Magnetic Resonance Imaging
ENT	Ear, Nose and Throat Specialist	**SLT**	Speech and Language Therapist

Source: MUCHE

RESULTS

- The ICER was estimated to be £11,988 per quality adjusted life year (QALY) gained for people who received some hearing aid benefit before their CI, and £10,535 per QALY gained for those who received no hearing aid benefit.
- Univariate sensitivity analysis indicated the most sensitive parameters were: the proportion of people eligible for a CI, discount rate, surgery and device costs, processor upgrade costs, audiologist costs post surgery and utility increments associated with a unilateral CI.
- Cost effectiveness acceptability curves (CEACs) show that a unilateral CI has an 89.9 per cent likelihood of being cost effective when compared to a hearing aid, and a 94.9 per cent likelihood of being cost effective when compared to no hearing aid, when using a £20,000 per QALY gained threshold.

CONCLUSION

- Unilateral Cochlear Implants continue to be a cost-effective intervention for adults meeting the criteria of cochlear implantation in the UK setting.
- Emerging research suggests there may be potential additional benefits of gains in productivity and the reduced risk and delayed onset of dementia through better hearing.

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