An early cost-effectiveness model for Tympa Health: A Digital Community-Based Approach for Streamlined Audiology Care

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Background

Hearing loss affects over 9 million UK individuals and is projected to impact 13 million by 2035. Current audiology services struggle to provide efficient, sustainable hearing care models, prompting new community-based approaches[1].

Tympa Health have developed a healthcare assessment device to address diagnoses challenges by combining three different diagnostic and treatment tools into a singular system, enabling faster access to hearing healthcare.

Objective

An early economic model was developed to assess the potential cost effectiveness of an audiology pathway using Tympa Health rather than the standard of care (SoC) pathway[2,3].

Methods

The economic model directly compared the Tympa Health strategy against SoC and followed a hypothetical 50-year-old cohort in the UK until death. Patients were evenly allocated between audiology and Ear, Nose and Throat (ENT) detection pathways and occupied one of four hearing problem states: true positive, false positive, true negative, or false negative. Tympa Health's sensitivity and specificity were assumed to be 70% and 80%, while for SoC both were assumed to be 95%[4]. All costs were sourced in accordance with the UK NHS perspective.

Results

The Tympa Health strategy was found to be dominant compared to SoC across all time horizons. For the UK population over 40 years, the Tympa Health strategy strongly dominated the SOC strategy. Compared to the SoC strategy, the Tympa Health strategy reduced patient progression from identification to assessment by 61.9%, and resulted in 2,783,411 fewer general practitioner (GP) visits, 936,482 fewer audiologist and 892,280 fewer ENT visits. Over a lifetime time horizon, the Tympa Health pathway dominated the SoC pathway, with an incremental cost of -£332,084,634 (-£830.21 per patient) and incremental QALYs of 2,545.59 (0.01 per patient)

Base case results across a lifetime horizon

Strategy	Total costs	Total QALYs	Incremental savings	Incremental QALYs	ICER
Tympa Health	£1,915.61	13.73	-£830.21	0.01	Dominant
SoC	£2,745.83	13.72			

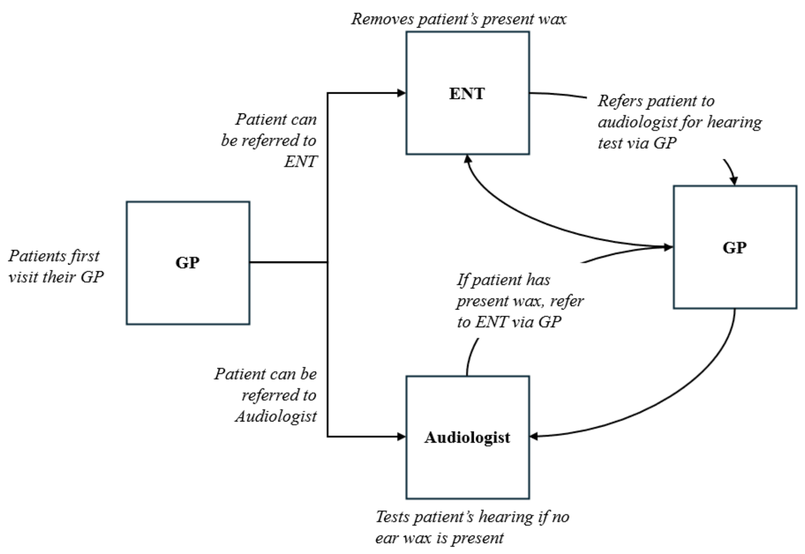
Limitations

It was not possible to base this analysis upon a randomised controlled trial (RCT), limiting the real-world inferences which could otherwise be drawn. Further all contact with nursing staff in our model was based on public sector NHS data and assumptions. Private sector options were not included.

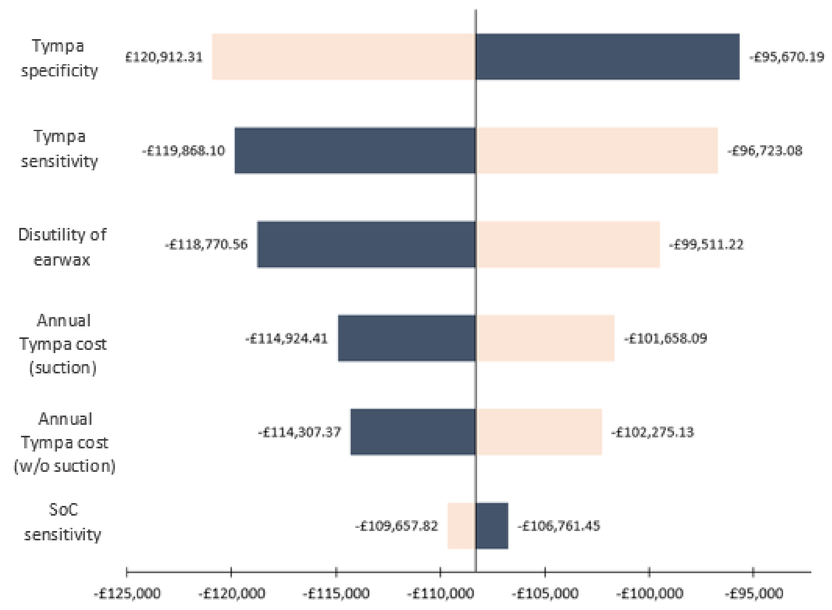
Conclusions

Our results demonstrate the cost-effectiveness of an audiology strategy that includes use of Tympa Health, through delivery of incremental savings and quality of life related improvements. Our findings provide valuable insights into the potential benefits of an audiology strategy that uses Tympa Health.

Standard of Care pathway



Deterministic sensitivity analysis output



Takeaway message

This study supports use of Tympa Health as the only fully comprehensive ear and hearing health solution, capable of seamless integration into pharmacies, care homes, and audiology clinics.

*Tympa Health Technologies Ltd

References

1, National Institute for Health and Care Excellence, 2019. Hearing loss in adults - Quality standard [QS185]. [online]; National Health Service South West London, 2023. NHS hearing health pilot in local pharmacies is a UK first. [online]; 3, Linssen, M., Anteunis, L. and Joore, M., 2015. The Cost-Effectiveness of Different Hearing Screening Strategies for 50- to 70-Year-Old Adults: A Markov Model. Value in Health, 18(5), pp.560-569; 4, Saunders GH, Walker A, Heal C, Ramdoo K. A Comparison of Hearing Thresholds, and the Resulting Prescribed Gain and Hearing Aid Outputs, Using Gold Standard Audiometry and the TympaHealth Hearing Assessment Tool. Am J Audiol. 2024 Sep 3;33(3):740-755. doi: 10.1044/2024_AJA-24-00002. Epub 2024 Jun 7. PMID: 38848255.

ISPOR Europe 2025 9-12 November Glasgow, Scotland