UK National Screening Committee (UK NSC)

Screening for hearing loss in adults

Date: 5 March 2021

Contents

Aim

1. To ask the UK National Screening Committee (UK NSC) to make a recommendation, based on the evidence presented in this document, whether or not screening for hearing loss in adults meets the UK NSC criteria for a systematic population screening programme.

Current Recommendation

2. The 2015 review of screening for hearing loss in adults concluded that systematic population screening is not recommended. This is because:

    a. evidence was too limited to establish an optimum screening approach

    b. hearing aids were underused

    c. there was a lack of evidence on the effectiveness of the use of hearing aids on long-term outcomes and additional interventions aimed at improving the compliance of the hearing aid use

    d. screening has not been shown to provide any hearing improvement in quality of life in comparison to hearing loss identified in other ways.

Evidence Summary

3. The 2020 evidence summary was undertaken by Solutions for Public Health in accordance to the triennial review process

(https://www.gov.uk/government/publications/uk-nsc-evidence-review-process/uk-nsc-evidence-review-process).

4. The 2020 evidence summary addressed questions on the accuracy of screening tests, the acceptability of intervention, the effectiveness of a screening programme and how well hearing loss services are implemented in the UK.

5. The conclusion of the 2020 evidence summary is that population screening for hearing loss in adults should not be recommended. This is because:

    a. while new screening tests such as smart phone apps were identified, the evidence was deemed unreliable due to methodological issues. The applicability to the UK context is unclear. **Criteria 4 and 5 not met.**

    b. studies used different ways of measuring acceptability of hearing aids therefore it was impossible to determine whether there were any changes since the last review. The applicability to the UK context is unclear. **Criterion 9 not met.**

    c. although the previous review found that treatment for hearing loss is effective, there was no new evidence on whether earlier initiation of treatment for hearing loss, as a result of screening, improves health outcomes compared to later initiation of treatment. **Criteria 11 and 13 not met.**

    d. there was insufficient evidence to determine the current implementation and clinical management of people with hearing loss in the UK. **Criterion 15 not met.**

6. Refer to Table A below for criteria.

Consultation

7. A three month consultation (3 August to 26 October 2020) was hosted on the UK NSC website. Direct emails were sent to 24 stakeholders. (Annex A)

8. Comments were received from 7 stakeholders (see Annex B for comments):

    a. Manchester Foundation Hospital

    b. Royal College of General Practitioners

    c. PhD Researcher in Audiology

    d. Action on Hearing Loss

e. Hearing Loss and Deafness Alliance

f. National Community Hearing Association

g. Manchester Biomedical Research Centre

9. Out of 7 stakeholders, 3 agreed with the recommendation, and remaining stakeholders did not provide a direct statement.

   Several key themes emerged from this consultation, including ongoing research/new evidence published after the search date, proposed age for commencing screening, acceptability and uptake of hearing aids and effectiveness of screening for hearing loss on health outcomes.

   Ongoing research/new evidence

   Currently, this topic is an active research area. Several studies published after the search date and ongoing research projects were brought to the UK NSC's attention. This included:

   - a cross-sectional analysis of the English Longitudinal Study of Ageing (ELSA) comparing self-reported measures of hearing with an objective audiometric measure in adults[1]
   - new evidence on the rate of hearing aid uptake and use in UK populations[2,3]
   - an ongoing systematic review on online screening tests, which is an update of the systematic review by Bright et al (2016) considered in the 2020 UK NSC review. The anticipated publication date is 2021.
   - the NIHR programme development grant (NIHR 202044) for developing a reliable measure of hearing aid uptake
   - planned research evaluating the impact of screening for hearing loss in adults on uptake of hearing support interventions, quality of life and health outcomes for adults with hearing loss via a randomised controlled trial.

   Response: suggested studies were published after the search date of this review therefore were not included. However, reviewers assessed these publications and informed the UK NSC evidence team that the inclusion of those studies would not have changed the conclusion of this review. However, they may inform the next UK NSC evidence review on screening for hearing loss in adults. Ongoing research projects have been noted and any developments will be monitored as part of horizon scanning.

   References

[1] Tsimpida D, Kontopantelis E, Ashcroft D, Panagioti M. Comparison of Self-reported Measures of Hearing With an Objective Audiometric Measure in Adults in the English Longitudinal Study of Ageing. JAMA Netw Open. 2020;3(8):e2015009. doi:10.1001/jamanetworkopen.2020.15009

[2] Dillon, H., Day, J., Bant, S., & Munro, K. J. (2020). Adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics. *International Journal of Audiology*, 1-7. https://doi.org/10.1080/14992027.2020.1773550

[3] Sawyer, C. S., Armitage, C. J., Munro, K. J., Singh, G., & Dawes, P. D. (2020). Biopsychosocial Classification of Hearing Health Seeking in Adults Aged Over 50 Years in England. *Ear and hearing*, *41*(5), 1215-1225. doi: 10.1097/AUD.0000000000000839

Proposed age for commencing screening

Stakeholders suggested that UK NSC should consider the age of 55 years as appropriate to commence screening for hearing loss. This was based on the Lancet Commission on dementia prevention which concluded that unmanaged hearing loss in mid-life is responsible for 9% of all dementia cases.

Response: Determining the age at which individuals should be screened is important but this is not the only aspect to be taken into consideration for establishing an optimal screening approach. Other aspects such as a screening test and screening intervals need to be considered. Recently, a protocol for a systematic review aiming to determine an optimal age for screening in adults and screening test was identified on PROSPERO[4]. The anticipated date of completion is 26 January 2021. This may help clarify some of the issues relating to this and can be addressed in the next review.

References

[4] NIHR (PROSPERO 2020 CRD42020222125): https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=222125

Acceptability and uptake of treatment

Stakeholders suggested that it is inappropriate to survey people on their views on the use of hearing aids after the screening test because the final diagnosis involves a number of diagnostic tests during which a patient and audiologist make a shared decision. Therefore, only after a comprehensive hearing assessment this decision can be made.

Stakeholders also indicated that there is substantial evidence demonstrating that hearing aids are an acceptable treatment.

Response: the committee agreed that it is important to assess patients' views along the whole pathway, including screening and diagnosis stages. This evidence summary focused only on studies that included asymptomatic individuals who were screen detected, and studies that surveyed individuals after diagnosis and/or referrals do not meet the inclusion criteria.

Evidence on the acceptability of hearing aids, with uptake and use of hearing aids as the main outcome measures of interest, was assessed in this review. It was concluded that there was no consistency in the measures used to determine acceptability of treatment and the majority of them used non-validated questionnaires. Similarly, stakeholders referred to the data published in the non-peer reviewed publication reporting results from a questionnaire. This publication was excluded from the review as it was considered to be grey literature. As indicated in section 1, developing reliable measures of hearing aid uptake is one of the ongoing research projects conducted by the Manchester Biomedical Research Centre, therefore this may help clarify some of the issues relating to this and can be addressed in the next review.

Effectiveness of screening on health outcomes

Stakeholders noted that screening could detect people with mild and moderate hearing loss who delay seeking help for a long period of time. They also indicated that there is evidence showing that early treatment reduces the risk of social isolation, poor mental health and cognitive decline.

Response: while the committee agrees that treatment for hearing loss is effective, as indicated in the 2015 UK NSC review, this review found no evidence on whether people were likely to have better health outcomes as a result of screening. Also, it is unclear whether people who do not perceive they have hearing loss but are then screen detected would be motivated to act and continue through the pathway. Recently, a protocol for a systematic review aiming to determine whether adult hearing screening programmes improve quality of life and other hearing-related outcomes was identified on PROSPERO[5]. The anticipated date of completion is 26 January 2021. This may help clarify some of the issues relating to this and can be addressed in the next review.

References

[5] NIHR (PROSPERO 2020 CRD42020222125): https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=222125

Recommendation

10. The Committee is asked to approve the following recommendation:

A systematic population screening for hearing loss in adults is not recommended in the UK. The UK NSC noted that new evidence is expected in several years' time therefore this condition should remain on the UK NSC's conditions list and should be reviewed in 3-5 years' time.

Table A: Criteria for appraising the viability, effectiveness and appropriateness of a screening programme; and implementation

Criteria	Met/Not Met
Section 1: Criteria for appraising the viability, effectiveness and appropriateness of a screening programme	
The Test	
There should be a simple, safe, precise and validated screening test. (NSC criterion 4) The distribution of test values in the target population should be known and a suitable cut-off level defined and agreed. (NSC criterion 5)	**Not Met**
The Treatment	
There should be an effective intervention for patients identified through screening, with evidence that intervention at a pre-symptomatic phase leads to better outcomes for the screened individual compared with usual care. (NSC criterion 9)	**Not Met**
The Screening Programme	
There should be evidence from high quality randomised controlled trials that the screening programme is effective in reducing mortality or morbidity. Where screening is aimed solely at providing information to allow the person being screened to make an "informed choice" (eg. Down's syndrome, cystic fibrosis carrier screening), there must be evidence from high quality trials that the test accurately measures risk. The information that is provided about the test and its outcome must be of value and readily understood by the individual being screened. (NSC criterion 11) The benefit gained by individuals from the screening programme should outweigh any harms, for example from overdiagnosis, overtreatment, false positives, false reassurance, uncertain findings and complications. (NSC criterion 13)	**Not met**
Section 2: Implementation criteria	
Implementation	

Clinical management of the condition and patient outcomes should be optimised in all health care providers prior to participation in a screening programme. (NSC criterion 15)	**Not met**

Annex A: List of organisations and individuals contacted

1. Action on Hearing Loss
2. Age UK
3. British Academy of Audiology
4. The British Association of Audiovestibular Physicians
5. British Geriatrics Society
6. British Society of Audiology
7. British Society of Hearing Aid Audiologists
8. Deafness Research UK
9. The Ear Foundation
10. The Ear Foundation
11. Faculty of Public Health
12. Hearing Link
13. HEARING: Professor Sue Hill OBE (NHSE)
14. Hidden Hearing
15. London North West Healthcare- ENT Department
16. National Community Hearing Association
17. PHE adult screening programmes
18. Royal College of General Practitioners
19. Royal College of Nursing
20. Royal College of Physicians
21. Royal College of Physicians and Surgeons of Glasgow
22. Royal College of Physicians of Edinburgh
23. Screening for Life Coalition
24. Signature

UK National Screening Committee

Annex B: Consultation comments

Screening for hearing loss in adults

Consultation comments

1. Manchester Foundation Hospital

Name:	Ms Sadie Khwaja	**Email address:**	xxxx xxxx
Organisation (if appropriate):	Manchester foundation hospital		
Role:	**ENT Consultant**		

Do you consent to your name being published on the UK NSC website alongside your response?

Yes

Section and / or page number	Text or issue to which comments relate	Comment *Please use a new row for each comment and add extra rows as required.*
Pg5 &6	Incomplete background	Need to add in the role of hearing loss and dementia. In 8 percent of cases of dementia there is a link to hearing

		loss and isolation leading worsening and early onset of dementia
Pg11	Incomplete discussion	Need to include the psychology of delaying wearing a hearing aid due to its link to aging and therefore people suffer in silence as stated up to 10 yrs before finally seeking help.
Pg12	Incomplete discussion on NICE recommendations	The hearing aid technology and access to hearing aids limited by the AQP model putting barriers to access due to what is available privately versus on the NHS
Pg13	Recommendations- the evidence was too limited to establish an optimum approach to screening	It should state there is insufficient evidence to define the screening process for hearing loss presently and there is a need for NIHR PBR to be carried out on this topic.
Pg13	Recommendations- there was a lack of evidence on the effectiveness of the use of hearing aids on longterm outcomes and additional interventions aimed at improving the compliance of the	It should say there was a lack of evidence available to comment on the effectiveness of ….
Pg13	Recommendation -screening had not been shown to provide any hearing improvement in quality of life	This is incorrect as you have not carried out screening to prove it is not beneficial.

2. Royal College of General Practitioners

Name:	xxxx xxxx	**Email address:**	xxxx xxxx

Organisation (if appropriate):	Royal College of General Practitioners
Role:	

Do you consent to your name being published on the UK NSC website alongside your response?

Yes (organisation name) ~~**No**~~

Section and / or page number	Text or issue to which comments relate	Comment *Please use a new row for each comment and add extra rows as required.*
General		The RCGP support the UK NSC recommendation *not t*o implement general screening for hearing loss in adults and agree that the evidence is not strong enough to change this stance.

3. PhD Researcher in Audiology

Name:	Dialechti Tsimpida	**Email address:**	xxxx xxxx
Organisation (if appropriate):	Institute for Health Policy and Organisation (IHPO), The University of Manchester		
Role:	**PhD Researcher in Audiology**		

Do you consent to your name being published on the UK NSC website alongside your response? **Yes√ No**		
Section and / or page number	**Text or issue to which comments relate**	**Comment** *Please use a new row for each comment and add extra rows as required.*
Limitations/ p.8	"The consultation and peer review process aims to ask experts if there are significant studies that might have been missed".	This review aimed to evaluate whether the evidence base has developed substantially since the previous UK NSC evidence summary. It includes studies published between January 2012 and January 2020. However, I am currently researching this topic as part of my PhD and I was the first author of the following study (published on August 27, 2020). **Tsimpida D, Kontopantelis E, Ashcroft D, Panagioti M. Comparison of Self-reported Measures of Hearing With an Objective Audiometric Measure in Adults in the English Longitudinal Study of Ageing. *JAMA Netw Open.* 2020;3(8):e2015009. doi:10.1001/jamanetworkopen.2020.15009** That study is not included in the draft because the database searches were conducted on January 20 2020,

		but It is considered a significant study for the topic in consultation. In that study, we used data from the English Longitudinal Study of Ageing (ELSA), which is a large, population-based, prospective cohort study, representative of the English older population aged 50 years and above. Below we list the main points of our study providing evidence for two of the four UK NSC review questions (that is missing in the current draft): **Question 1: What is the diagnostic accuracy of screening tests for hearing loss in adult population?** *"Of the studies included in the draft regarding that question, most had a risk of bias, mainly about patient selection and none were carried out in the UK. A larger volume of evidence from high quality studies to establish the accuracy of screening tests in people who have not sought help for hearing loss are needed". (**p. 28 of the draft**).* - Our study (doi:10.1001/jamanetworkopen.2020.15009) provides the largest and most accurate evaluation of the discordance between objective and self-reported measures of hearing loss today.

		- The study examined the concordance of self-reported measures of hearing difficulty with objective hearing data and the factors associated with the potential discordances among these measures across different population subgroups of a representative sample of people 50 years and older in England. - The performance of self-reported hearing difficulty with second stage pure-tone audiometry screening (via HearChech Screener) (sensitivity, specificity, and positive and negative predictive values as overall test accuracy) was calculated, and the area under the receiver operating characteristic curve represents the accuracy of all models. - We found that in a population-based sample of 8,529 adults 50 to 89 years of age, nearly one-third of those had objectively identified hearing loss that went undetected by the self-report measures. Of the 2,266 participants likely to benefit from a hearing aid (hearing loss greater than 35 dB HL at 3.0 kHz in the better-hearing ear, as identified via HearCheck Screener), some 684 believed they had normal hearing.

		- These findings suggest that the use of a screening measure for audiometric testing along with a self-report measure in epidemiological studies and clinical practise is essential for accurately identifying older people with hearing loss. - These findings may inform public health policies relevant to selection of appropriate and validated tools for detecting hearing problems among middle-aged and older adults. **Question 4: Is clinical detection and management currently well implemented in the UK?** **Sub-question — What is the proportion of hearing loss that remains undiagnosed?** *"It is unclear how well hearing loss in adults is identified and managed in the UK at present (**p. 5 of the draft**). No studies were identified that explored the proportion of people seeking help for hearing-related problems and the subsequent proportions that were referred, diagnosed and treated or remained undiagnosed. No studies were identified about people's experiences of the hearing loss clinical pathway. No studies were identified that addressed the sub-question about the proportion of*

		*people with hearing loss who remain undiagnosed" (**p.39 of the draft**)* - Our study is the first that provides evidence regarding the above question/ subquestion; it showed that up to a third of older adults with hearing loss in England could be undetected and untreated. The findings reveal that many hearing loss cases remain undiagnosed in primary care since people very often cannot recognise their hearing has been affected and highlight gaps in the continuity of hearing care pathways. The study might mean millions of people are not seeing ear specialists or given hearing aids when their hearing has considerably deteriorated. - These findings have important public health implications and call for a revised assessment approach for hearing loss in older adults; clinical research often relies on a self-report measure of hearing loss, but our findings indicate that this could not be regarded as a well-suited and accurate measure to identifying individuals with hearing loss without the additional use of a screening measure for audiometric testing. The underestimation of hearing difficulties poses a significant barrier to hearing loss intervention, and the self-report measures should not be considered reliable measures of hearing acuity to influence the judgment for a referral to secondary care. The study concluded that an effective and sustainable hearing loss screening strategy for the early detection of and intervention for hearing loss in older adults is needed.

UK National Screening Committee

4. Action on Hearing Loss

Name:	Francesca Oliver	**Email address:**	xxxx xxxx
Organisation (if appropriate):	Action on Hearing Loss		
Role:	Audiology Specialist		

Do you consent to your name being published on the UK NSC website alongside your response?

Yes

Section and / or page number	Text or issue to which comments relate	Comment *Please use a new row for each comment and add extra rows as required.*
1.	General	Action on Hearing Loss welcomes the opportunity to submit comments to the UK National Screening Committee's consultation on Screening for hearing loss in adults.

		Action on Hearing Loss is the largest charity in the UK for people who are deaf, have hearing loss or tinnitus. We believe that there is a strong need to increase early intervention on hearing loss and will continue to campaign to ensure this through the most appropriate means. There are 12 million people in the UK who are deaf or have hearing loss.[1] It is estimated that around 7 million are likely to benefit from hearing aids but only 2 million have them. Furthermore, the number of people who are deaf or have hearing loss is expected to increase to 14.2 million by 2035.[1] This is in part due to the fact the most common cause of hearing loss is age, with over 40% of over 50s having hearing loss. This figure rises to over 70% for the over 70s.[1] Age-related hearing loss is gradual, with those affected losing the ability to detect high frequency sounds and discern speech in noisy environments first. As the onset of age-related hearing loss is so gradual, many people do not seek help for it immediately and live

[1] Action on Hearing Loss (2020) Facts and Figures. Available at: https://actiononhearingloss.org.uk/about-us/research-and-policy/facts-and-figures/. [Accessed on 23/10/2020]

		with their hearing loss for some time (in many cases years) before presenting to their GP. However, when unmanaged, hearing loss is associated with worse health, social, and wellbeing outcomes,[2] including increased risk of social isolation and mental ill-health,[3 4 5] increased risk of falls,[6] and there is recent and growing evidence that unmanaged hearing loss in midlife is associated with an increased risk of dementia and cognitive decline.[7] It is imperative therefore that early intervention and management of hearing loss is prioritised. There is incontestable evidence that hearing aids, the most common treatment for hearing loss, are cost and clinically effective and improve quality of life.[8] There is strong evidence that early intervention for acquired

[2] Kochkin S., 2000. Quantifying the obvious: The impact of hearing instruments on quality of life. Hearing Review, 7(1).

[3] Lawrence BJ, Jayakody DM, Bennett RJ, Eikelboom RH, Gasson N, Friedland PLJTG. Hearing loss and depression in older adults: a systematic review and meta-analysis. 2020;60(3):e137-e54.

[4] Saito H., et al., 2010. Hearing handicap predicts the development of depressive symptoms after three years in older community-dwelling Japanese. Journal of the American Geriatrics Society, 58(1), 93-7.

[5] Shukla, A., Harper, M., Pedersen, E., Goman, A., Suen, J. J., Price, C., Applebaum, J., Hoyer, M., Lin, F. R., & Reed, N. S. (2020). Hearing Loss, Loneliness, and Social Isolation: A Systematic Review. Otolaryngology–Head and Neck Surgery, 162(5), 622–633. https://doi.org/10.1177/0194599820910377

[6] Lin, F. R., & Ferrucci, L. (2012). Hearing loss and falls among older adults in the United States. Archives of internal medicine, 172(4), 369–371. https://doi.org/10.1001/archinternmed.2011.728

[7] Livingston G, Sommerlad A, Orgeta V, Costafreda SG, Huntley J, Ames D, et al. Dementia prevention, intervention, and care. 2017;390(10113):2673-734.

[8] Ferguson MA, Kitterick PT, Chong LY, Edmondson-Jones M, Barker F, Hoare DJJCDoSR. Hearing aids for mild to moderate hearing loss in adults. 2017(9).

		hearing loss through hearing aids leads to better health-related and hearing health outcomes.[9] [10] [11] Despite this compelling and concerning evidence, there is currently no universal adult hearing screening programme in the UK (or anywhere in the world). We are grateful for the committee's consideration given to our comments.
29.	Question 2 – What is the evidence regarding the acceptability of treatment to adults with hearing loss? Criterion 9 – Lack of evidence on acceptability of treatment (hearing aids) to adults with hearing loss on the basis of a positive screen result.	If a screening programme were to be implemented within the context of the current hearing pathway, a positive hearing screening test would result in a referral for comprehensive hearing assessment in audiology. Hearing assessment involves a battery of diagnostic tests, a medical history, and discussion of hearing and lifestyle. The patient and audiologist make a shared decision based on the information gathered during the assessment on what management would be most

[9] Ciorba A., et al., 2012. The impact of hearing loss on the quality of life of elderly adults. Clinical Interventions in Aging, 7:159–163.

[10] Swan I., et al., 2012. Health-related quality of life before and after management in adults referred to otolaryngology: a prospective national study. Clinical Otolaryngology, 37(1):35-43.

[11] Barton G., et al., 2004. Comparing utility scores before and after hearing aid provision: results according to the EQ-5D, HUI3 and SF-6D. Applied Health Economics and Health Policy, 3(2):103-5

		appropriate, for many this is hearing aids. This is recommended by the NICE guidelines for hearing loss.[12] Therefore it's not appropriate to base the decision to recommend a screening programme on whether someone will find hearing aids acceptable solely from a positive screen. A positive result would not make someone sufficiently informed to make this decision, and acceptability of treatment should not be determined at this stage. Only after a comprehensive hearing assessment can this decision be made. There is substantial evidence that demonstrates hearing aids are an acceptable treatment for hearing loss.[7] Data from the UK branch of the EuroTrak study shows that 94% of hearing aid owners find their hearing aids improve their quality of life at least sometimes and 85% of hearing aid owners say their hearing aid works better than or as expected. Overall 74% of people who use hearing aids are satisfied with them.[13] Furthermore it was also found that hearing screening in primary care and yearly testing for people over 55 is accepted by a majority of the UK population.[13]

[12] NICE (2018) Hearing Loss in adults: Assessment and Management [NG98] https://www.nice.org.uk/guidance/ng98
[13] EHIMA (2018) EuroTrak United Kingdom https://www.bihima.com/wp-content/uploads/2018/10/Anovum_EuroTrak_2018_UK_FINAL.pdf

		We would argue that the purpose of a screening test is to determine if someone needs more comprehensive assessment and discussion of treatment options with a qualified professional. A screening test would enable this to take place at an earlier stage than the reported average wait to seek help of 10 years.[12]
29.	Criterion 9 – "evidence that intervention at a pre-symptomatic phase leads to better outcomes for the screened individual compared with usual care"	Findings have shown that the ability to adapt to and manage hearing loss becomes increasingly difficult the older people are when they present for assessment and intervention.[14] Highlighting that earlier identification and intervention would ensure that individuals are supported to manage their hearing loss at an age when they are likely to benefit the most. While "usual care" is likely to remain the same for this group through the provision of hearing aids, intervention when hearing loss symptoms are mild will likely result in better health related and hearing health outcomes.[8 9] This in turn will reduce the need for frequent follow up appointments often seen in those who have delayed seeking help and enable increased independence in managing a hearing loss.

[14] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294.

		Furthermore it's important to highlight that the test won't just detect people at the "pre-symptomatic phase" i.e. those with milder hearing loss. A screening test would also detect people who have moderate hearing loss but are putting off seeking help.
34.	Criterion 9 – More evidence needed on proportion of uptake and long term use.	While more evidence of this nature is pertinent to audiology pathway design, for example ensuring there is adequate follow up, we would argue that this is not strictly relevant to criterion 9 therefore not relevant to this ask. However there is good evidence that many people do use and benefit from hearing aids and it is a misconception that most people do not wear them. Latest data from the EuroTrak study shows that on average those with hearing aids in the UK wear them for 7.8hrs a day and only 8% who own hearing aids don't use them at all. Additionally, the proportion of people with a stated hearing loss who have adopted a hearing aid has grown steadily over the past decade (38.6% in 2009; 47.6% in 2018).[13] More recent findings are of slightly higher rates of non-use (20%) but also observed

		an increase in the proportion of those who wear hearing aids “most of the time”.[15]
35.	Question 3 – Does screening for hearing loss in adults improve health outcomes?	While we agree that there is limited evidence for improvement of health outcomes as a direct result of screening for hearing loss, there is compelling evidence that early intervention and adoption of hearing aids is more beneficial than late uptake. Screening would detect hearing loss at a milder stage and a referral to audiology would equip someone with appropriate information to take action on their hearing loss earlier. More people would be likely to trial hearing aids at an earlier stage as a result. Not only does early uptake of a hearing aid reduce the risk of social isolation and associated poor mental health,[5] there is also growing evidence that hearing aids can slow cognitive decline.[16] [17] Furthermore people are more likely to better manage and benefit from a hearing aid the earlier they use it, therefore improving overall hearing health related outcomes.[14]

[15] Dillon H, Day J, Bant S, Munro KJ. Adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics. Int J Audiol. 2020 Aug;59(8):567-573. doi: 10.1080/14992027.2020.1773550. Epub 2020 Jun 12. PMID: 32530329.

[16] Dawes P, Emsley R, Cruickshanks KJ, Moore DR, Fortnum H, Edmondson-Jones M, et al. (2015) Hearing Loss and Cognition: The Role of Hearing Aids, Social Isolation and Depression. PLoS ONE 10(3): e0119616. https://doi.org/10.1371/journal.pone.0119616

[17] Deal JA, Betz J, Yaffe K, Harris T, Purchase-Helzner E, Satterfield S, et al. Hearing impairment and incident dementia and cognitive decline in older adults: the health ABC study. 2017;72(5):703-9

		There is also evidence that introducing a hearing screening check at 55 could potentially delay the onset of dementia or improve its management. The 2017 Lancet Commission (and subsequent 2020 report) on dementia prevention concluded that unmanaged hearing loss in mid-life is responsible for 9% of all dementia cases.[7] [18] This was higher than for any other individual risk factor. The commission also reported the youngest age at which hearing loss increases dementia risk is 55 years. Action on Hearing Loss estimate that around 47% of those over 55 have some degree of hearing loss.[1] With respect to the limitations of the previous UK NSC Review (2015) we would therefore encourage the committee to consider the age of 55 as appropriate to commence screening for hearing loss.
37.	Comment referring to the increase in number of people referred for treatment of moderate hearing loss.	We agree that a screen will likely increase referral numbers into audiology but would argue that an increase in referrals is necessary. Given that only 2 million people have hearing aids out of around 7 million in the UK who are likely to benefit from them, confirms that there are

[18] Livingston G, Huntley J, Sommerlad A, Ames D, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. Lancet. 2020 Aug 8;396(10248):413-446. doi: 10.1016/S0140-6736(20)30367-6. Epub 2020 Jul 30. PMID: 32738937; PMCID: PMC7392084.

		barriers to referral. We have outlined various potential barriers below. <u>Potential barriers to referral</u> <u>Awareness & attitude of the general public</u> The current hearing pathway requires the majority of people to self-identify as having hearing difficulty in order to be referred for hearing assessment by their GP. Recent evidence suggests that as many as 1 in 3 adults over the age of 50 are unable to identify having hearing loss.[19] Furthermore, evidence has shown that many people delay seeking help for their hearing loss, commonly waiting on average 10 years.[20] Reasons for delaying seeking medical advice may be due to multiple factors. Individuals may underestimate the serious effects that hearing loss can have, they may fear the stigma associated with hearing loss and hearing aids. There could also be barriers in lack of awareness of available treatment. There could also be outdated attitudes towards what management is available, for example many people believe that NHS hearing aids are

[19] Tsimpida D, Kontopantelis E, Ashcroft D, Panagioti M. Comparison of Self-reported Measures of Hearing With an Objective Audiometric Measure in Adults in the English Longitudinal Study of Ageing. *JAMA Netw Open.* 2020;3(8):e2015009. doi:10.1001/jamanetworkopen.2020.15009

[20] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294.

		analogue and of poor quality to those available privately. All hearing aids supplied by the NHS are digital and of good quality. <u>Awareness & attitude of healthcare professionals</u> Evidence has shown that there is a lack of awareness of hearing loss and management among health professionals, specifically GPs. GPs fail to refer 45% of those reporting hearing loss to for hearing assessment.[14] This could be for a number of reasons, such as lack of awareness of management available, failure to notice the signs of hearing loss, only referring those who self-identify, or outdated beliefs that people who are prescribed hearing aids do not wear them. Recent data shows that this is not the case and on average, those who are issued hearing aids wear them for 7.8hrs a day.[12] Action on Hearing Loss have worked closely with the Royal College of GPs to develop a toolkit of information which will be crucial in addressing these barriers and raising awareness of hearing loss.[21]

[21] RCGP Hearing Loss and Deafness Spotlight Project https://www.rcgp.org.uk/clinical-and-research/our-programmes/clinical-priorities/spotlight-projects-2019-to-2020/hearing-loss.aspx

		A screening programme could further help raise awareness of hearing loss, not only among the general public but also among health professionals who are the gatekeepers to the audiology pathway.
38.	Question 4 – is clinical detection and management currently well implemented in the UK?	Clinical detection currently relies on the majority of patients self-identifying and presenting in primary care. As evidence shows, many people with hearing loss delay seeking help or are not able to self-identify. We would argue that the only way to overcome this would be through hearing screening. However we recognise that a Universal Adult Hearing Screen is not the only solution and there are other potential means of implementation. This could be through including a hearing loss screening component in the NHS Health Check. We are also aware of a pilot during the pandemic that aimed to streamline the NHS hearing loss pathway, providing more services in primary and community care. This involved trialling a single device that provides a validated and simple hearing screen, creates a digital record of otoscopy and removes ear wax where necessary. Feedback from these pilots has been overwhelmingly positive from both the patient and clinician perspective. Despite an apparent lack of literature as to how management is implemented, prior to Covid-19, Action on Hearing Loss conducted research into audiology

		services. This research found that the majority of CCGs were meeting the Referral to Treatment waiting time target. Furthermore this report found that hearing aids are provided to all who need them across the UK, with only one area of England, North Staffordshire, not providing them to those with mild hearing loss. At the time of the previous NSC review for adult hearing loss screening, other CCGs were considering similar rationing of hearing aids. However due to the publication of the Hearing Loss Commissioning Framework, commissioners have been able to redesign their services, avoiding inefficiencies and providing a cost and clinically effective hearing loss management. This has been further strengthened by the publication of the NICE Guidance for hearing loss (2018) and corresponding Quality Standards (2019). As with all elements of health care delivery, audiology has undergone a radical transformation as a result of the Covid-19 pandemic. Several elements of appointments are now delivered remotely, such as follow ups, while face to face delivery has been maintained for certain procedures. Research is currently investigating a blended approach to management in audiology with promising initial results. Action on Hearing Loss has long recognised the need for the increased adoption of digital technology in NHS audiology services and Covid-19 has brought about this

		rapid change. NHS audiology has arguably needed to undergo this change for some time in order to be better equipped for the increase in number of people requiring audiology services in the near future.
38.	Sub-question – What is the proportion of hearing loss that remains undiagnosed?	As outlined above, 12 million people in the UK are deaf or have hearing loss (with an average hearing threshold level of 25dBHL or greater). Of this 12 million, it is thought that around 7 million are most likely to benefit of hearing aids (with an average hearing threshold level of 35dBHL or greater). Further to this, it is estimated that 2 million people have hearing aids in the UK.[1] However the proportion of hearing loss that is undiagnosed is not clear. Recent findings have suggested that around 1 in 3 adults over 50 may not be able to identify that they have a hearing loss,[19] which has large implications for understanding the proportion of those with undiagnosed hearing loss, considering that being diagnosed requires self-identification in the current pathway.
41.	Cost benefit of screening not outlined.	The evidence review has not made reference to the costs associated with unmanaged hearing loss and the cost-benefit of a hearing screening programme. While we understand this is out of scope of this review, it is

		important to emphasise that evidence shows an adult hearing screening programme would be cost effective. In 2013 it was estimated that the financial cost of hearing loss to society was approximately £136 million per annum, this includes approximately £76 million per annum associated with additional use of GP services and £60 million associated with additional use of social care services. The net burden of illness in terms of reduced quality of life associated with hearing impairment was estimated to be around £26 billion in 2013. Furthermore, the cost of a screening programme as proposed by Davis et al. (2007) is likely to be cost effective.

5. Hearing Loss and Deafness Alliance

Name:	Brian Lamb	**Email address:**	xxxx xxxx
Organisation (if appropriate):	Hearing Loss and Deafness Alliance		
Role:	Chair		
Do you consent to your name being published on the UK NSC website alongside your response?			

Yes		
Section and / or page number	**Text or issue to which comments relate**	**Comment** *Please use a new row for each comment and add extra rows as required.*
1.	General	The Alliance welcomes the opportunity to submit comments to the UK National Screening Committee's consultation on Screening for hearing loss in adults. The Alliance represents voluntary organisations, professional associations, user groups, hearing aid dispensers and manufactures working in the field of hearing loss and deafness. There are 12 million people in the UK who are deaf or have hearing loss.[22] It is estimated that around 7 million are likely to benefit from hearing aids but only 2 million have them. Furthermore, the number of people who are deaf or have hearing loss is expected to increase to 14.2

[22] Action on Hearing Loss (2020) Facts and Figures. Available at: https://actiononhearingloss.org.uk/about-us/research-and-policy/facts-and-figures/. [Accessed on 23/10/202

		million by 2035.Furthermore, the number of people who are deaf or have hearing loss is expected to increase to 14.2 million by 2035. This is in part due to the fact the most common cause of hearing loss is age, with over 40% of over 50s having hearing loss. This figure rises to over 70% for the over 70s. Age-related hearing loss is gradual, with those affected losing the ability to detect high frequency sounds and discern speech in noisy environments first. As the onset of age-related hearing loss is so gradual, many people do not seek help for it immediately and live with their hearing loss for some time (in many cases years) before pre-senting to their GP. Unmanaged hearing loss is associated with poor health, social and wellbeing outcomes,[23] including increased risk of social isolation and mental ill-health,[24] [25] increased risk of falls,[26] the ability to stay in work and there is recent and growing evidence that unmanaged hearing loss in midlife

[23] Kochkin S., 2000. Quantifying the obvious: The impact of hearing instruments on quality of life. Hearing Review, 7(1).
[24] Lawrence BJ, Jayakody DM, Bennett RJ, Eikelboom RH, Gasson N, Friedland PLJTG. Hearing loss and depression in older adults: a systematic review and meta-analysis. 2020;60(3):e137-e54.
[25] Saito H., et al., 2010. Hearing handicap predicts the development of depressive symptoms after three years in older community-dwelling Japanese. Journal of the American Geriatrics Society, 58(1), 93-7.
[26] Lin, F. R., & Ferrucci, L. (2012). Hearing loss and falls among older adults in the United States. Archives of internal medicine, 172(4), 369–371. https://doi.org/10.1001/archinternmed.2011.728

		is associated with an increased risk of dementia and cognitive decline.[27] It is crucial therefore that early intervention and management of hearing loss is prioritised. There is incontestable evidence that hearing aids, the most common treatment for hearing loss, are cost and clinically effective and improve quality of life.[28] There is strong evidence that early intervention for acquired hearing loss leads to better health related and hearing health outcomes.[29] [30] [31] Despite this compelling and concerning evidence, there is currently no national universal hearing screening programme in the UK.

[27] Livingston G, Sommerlad A, Orgeta V, Costafreda SG, Huntley J, Ames D, et al. Dementia prevention, intervention, and care. 2017;390(10113):2673-734. Brian Lamb and Sue Archbold, Hearing Care, Cognitive Decline and Dementia: A public health challenge for an opportunity for healthy ageing? April 2019.
[28] Ferguson MA, Kitterick PT, Chong LY, Edmondson-Jones M, Barker F, Hoare DJJCDoSR. Hearing aids for mild to moderate hearing loss in adults. 2017(9).
[29] Ciorba A., et al., 2012. The impact of hearing loss on the quality of life of elderly adults. Clinical Interventions in Aging, 7:159–163.
[30] Swan I., et al., 2012. Health-related quality of life before and after management in adults referred to otolaryngology: a prospective national study. Clinical Otolaryngology, 37(1):35-43.
[31] Barton G., et al., 2004. Comparing utility scores before and after hearing aid provision: results according to the EQ-5D, HUI3 and SF-6D. Applied Health Economics and Health Policy, 3(2):103-5

29.	Question 2 – What is the evidence regarding the acceptability of treatment to adults with hearing loss? Criterion 9 – Lack of evidence on acceptability of treatment (hearing aids) to adults with hearing loss on the basis of a positive screen result.	If a screening programme were to be implemented within the context of the current hearing pathway, a positive hearing screening test would result in a referral for comprehensive hearing assessment in audiology. Hearing assessment involves a battery of diagnostic tests, a medical history, and discussion of hearing and lifestyle. The patient and audiologist make a shared decision based on the information gathered during the assessment on what management would be most appropriate, for many people this is hearing aids. This is recommended by the NICE guidelines for hearing loss.[32] Therefore it's not appropriate to base the decision to recommend a screening programme on whether someone will find hearing aids acceptable solely from a positive screen. A positive result would not make someone sufficiently informed to make this decision, and acceptability of treatment should not be determined at this stage. Only after a comprehensive hearing assessment can this decision be made.

[32] NICE (2018) Hearing Loss in adults: Assessment and Management [NG98] https://www.nice.org.uk/guidance/ng98

		Further there is good evidence that the acceptability of hearing aid use has been increasing and that more people are wearing hearing aids and wearing them for longer. Data from the UK EuroTrak survey found that; - 85% of hearing aid owners say their hearing aid works better than or as expected - 94% of hearing aid owners declare that their hearing aids improve their quality of life at least sometimes (only 8% who own HAs don't use them at all). The proportion of people with a stated hearing impairment who have adopted a hearing aid has grown steadily over the past decade (38.6% in 2009; 47.6% in 2018).[33] We would argue that the purpose of a screening test is to determine if someone needs more comprehensive assessment and discussion of treatment options with a qualified professional. A screening test would enable this to take place at an earlier stage than the reported average wait to seek help of 10 years.[34]

[33]EHIMA (2018) EuroTrak United Kingdom. https://www.ehima.com/eurotrak/

[34] NICE (2018) Hearing Loss in adults: Assessment and Management [NG98] https://www.nice.org.uk/guidance/ng98

29.	Criterion 9 – "evidence that intervention at a pre-symptomatic phase leads to better outcomes for the screened individual compared with usual care"	Findings have shown that the ability to adapt to and manage hearing loss becomes increasingly difficult the older people are when they present for assessment and intervention.[35], Highlighting early intervention through a screening programme would ensure that individuals are supported to manage their hearing loss at an age when they are likely to benefit the most. Further there is now clear evidence that dementia is associated with hearing loss. The recent and globally-acclaimed "Lancet Study" argued that mid-life hearing loss may account for up to 9.1% of preventable dementia cases worldwide and is one of the most potentially modifiable risk factors for dementia.[36] Hearing screening programmes would help people take early action which could mitigate against the risk of dementia. While "usual care" is likely to remain the same for this group through the provision of hearing aids, intervention when hearing loss symptoms are mild will likely result in

[35] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294.

[36] Livingston G, Sommerlad A, Orgeta V, Costafreda SG, Huntley J, Ames D, et al. Dementia prevention, intervention, and care. The Lancet. 2017. https://doi.org/10.1016/s0140-6736(17)31363-6 See also Brian Lamb and Sue Archbold, Hearing Care, Cognitive Decline and Dementia: A public health challenge for an opportunity for healthy ageing? April 2019. https://www.researchgate.net/publication/332753002_Hearing_Care_Cognitive_Decline_and_Dementia_A_public_health_challenge_for_an_opportunity_for_healthy_ageing

		better health related and hearing health outcomes. [37]This in turn will reduce the need for frequent follow up appointments often seen in those who have delayed seeking help and enable increased independence in managing a hearing loss. Furthermore it's important to highlight that the test won't just detect people at the "pre-symptomatic phase" i.e. those with milder hearing loss. A screening test would also detect people who have moderate hearing loss but are putting off seeking help.
34.	Criterion 9 – More evidence needed on proportion of uptake and long term use.	While more evidence of this nature is pertinent to audiology pathway design, for example ensuring there is adequate follow up, we would argue that this is not strictly relevant to criterion 9 therefore not relevant to this ask. Furthermore there is good evidence that many people do use and benefit from hearing aids and it is a misconception that most people do not wear them. The latest data from the EuroTrak study shows that on average those with hearing aids in the UK wear them for 7.8hrs a day and only 8% who own hearing aids don't

[37] Ferguson MA, Kitterick PT, Chong LY, Edmondson-Jones M, Barker F, Hoare DJJCDoSR. Hearing aids for mild to moderate hearing loss in adults. 2017(9).
Ciorba A., et al., 2012. The impact of hearing loss on the quality of life of elderly adults. Clinical Interventions in Aging, 7:159–163.

		use them at all. Additionally, the proportion of people with a stated hearing loss who have adopted a hearing aid has grown steadily over the past decade (38.6% in 2009; 47.6% in 2018). [38] More recent findings are of slightly higher rates of non-use (20%) but also observed an increase in the proportion of those who wear hearing aids “most of the time”. Furthermore 74% of people who use hearing aids are satisfied with them.[39]
35.	Question 3 – Does screening for hearing loss in adults improve health outcomes?	While we agree that there is limited evidence for improvement of health outcomes as a direct result of screening for hearing loss, there is compelling evidence that early intervention and adoption of hearing aids is more beneficial than late uptake. Screening would detect hearing loss at a milder stage and a referral to audiology would equip someone with appropriate information to take action on their hearing loss earlier. More people would be likely to trial hearing aids at an earlier stage as a result. Not only does early uptake of a hearing aid reduce the risk of social isolation and associated poor mental health, there is also growing evidence that hearing aids can slow

[38] EHIMA (2018) EuroTrak United Kingdom https://www.bihima.com/wp-content/uploads/2018/10/Anovum_EuroTrak_2018_UK_FINAL.pdf

[39] Dillon H, Day J, Bant S, Munro KJ. Adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics. Int J Audiol. 2020 Aug;59(8):567-573. doi: 10.1080/14992027.2020.1773550. Epub 2020 Jun 12. PMID: 32530329.

		cognitive decline. Furthermore people are more likely to better manage and benefit from a hearing aid the earlier they use it, therefore improving overall hearing health related outcomes.[40] There is also evidence that introducing a hearing screening check at 55 could potentially delay the onset of dementia or improve its management. The 2017 Lancet Commission (and subsequent 2020 report) on dementia prevention concluded that unmanaged hearing loss in mid-life is responsible for 9% of all dementia cases.[41] This was higher than for any other individual risk factor. The commission also reported the youngest age at which hearing loss increases dementia risk is 55 years. Around 47% of those over 55 have some degree of hearing loss.[42] With respect to the limitations of the previous UK NSC Review (2015) we would therefore encourage the committee to consider the age of 55 as appropriate to commence screening for hearing loss.

[40] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294

[41] Livingston G, Huntley J, Sommerlad A, Ames D, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. Lancet. 2020 Aug 8;396(10248):413-446. doi: 10.1016/S0140-6736(20)30367-6. Epub 2020 Jul 30. PMID: 32738937; PMCID: PMC7392084.

[42] Action on Hearing Loss (2020) Facts and Figures. Available at: https://actiononhearingloss.org.uk/about-us/research-and-policy/facts-and-figures/. [Accessed on 23/10/2020]

37.	Comment referring to the increase in number of people referred for treatment of moderate hearing loss.	We agree that a screen will likely increase referral numbers into audiology but would argue that an increase in referrals is necessary. Given that only 2 million people have hearing aids out of around 7 million in the UK who are likely to benefit from them, confirms that there are barriers to referral. We have outlined various potential barriers below. <u>Potential barriers to referral</u> <u>Awareness & attitude of the general public</u> The current hearing pathway requires the majority of people to self-identify as having hearing difficulty in order to be referred for hearing assessment by their GP. Recent evidence suggests that as many as 2 in 5 adults over the age of 50 are unable to identify having hearing loss.[43] Furthermore, evidence has shown that many people delay seeking help for their hearing loss, commonly waiting on average 10 years.[44] Further reasons for delaying seeking medical advice may be due to multiple factors. Individuals may underestimate

[43] Tsimpida D, Kontopantelis E, Ashcroft D, Panagioti M. Comparison of Self-reported Measures of Hearing With an Objective Audiometric Measure in Adults in the English Longitudinal Study of Ageing. *JAMA Netw Open.* 2020;3(8):e2015009. doi:10.1001/jamanetworkopen.2020.15009

[44] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294.

		the serious effects that hearing loss can have, they may fear the stigma associated with hearing loss and hearing aids. There could also be barriers in lack of awareness of available treatment. There could also be outdated attitudes towards what management is available, for example many people believe that NHS hearing aids are analogue and of poor quality to those available privately. And feel they can't afford the cost of a private hearing aid? All hearing aids supplied by the NHS are digital and of good quality. <u>Awareness & attitude of healthcare professionals</u> Evidence has shown that there is a lack of awareness of hearing loss and management among health professionals, specifically GPs. GPs fail to refer 45% of those reporting hearing loss to for hearing assessment.[45] This could be for a number of reasons, such as lack of awareness of management available, failure to notice the signs of hearing loss, only referring those who self-identify, or outdated beliefs that people who are prescribed hearing aids do not wear them. Recent data shows that this is not the case and on average, those

[45] Davis A., et al., 2007. Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models. Health Technology Assessment, 11(42):294.

		who are issued hearing aids wear them for 7.8hrs a day.[46] A screening programme could further help raise awareness of hearing loss, not only among the general public but also among health professionals who are the gatekeepers to the audiology pathway.
38.	Question 4 – is clinical detection and management currently well implemented in the UK?	Clinical detection currently relies on the majority of patients self-identifying and presenting in primary care. As evidence shows, many people with hearing loss delay seeking help or are not able to self-identify. We would argue that the only way to overcome this would be through hearing screening. However we recognise that a Universal Adult Hearing Screen is not the only solution and there are other potential means of implementation. This could be through including a hearing loss screening component in the NHS Health Check. We are also aware of a pilot during the pandemic that aimed to streamline the NHS hearing loss pathway, providing more services in primary and community care. This involved trialling a single device that provides a validated and simple hearing screen, creates a digital record of otoscopy and removes ear wax where necessary. Feedback from these pilots

[46] NICE (2018) Hearing Loss in adults: Assessment and Management [NG98] https://www.nice.org.uk/guidance/ng98

		has been overwhelmingly positive from both the patient and clinician perspective. Hearing aids are provided to all who need them across the UK, with only one area of England, North Staffordshire, not providing them to those with mild hearing loss. At the time of the previous NSC review for adult hearing loss screening, other CCGs were considering similar rationing of hearing aids. However due to the publication of the Hearing Loss Commissioning Framework, commissioners have been able to redesign their services, avoiding inefficiencies and providing a cost and clinically effective hearing loss management. The Alliance was a key partner in the development and promotion of the Action Plan on Hearing Loss and subsequent guidance. This has been further strengthened by the publication of the NICE Guidance for hearing loss (2018) and corresponding Quality Standards (2019). As with all elements of health care delivery, audiology has undergone a radical transformation as a result of the Covid-19 pandemic. Several elements of appointments are now delivered remotely, such as follow ups, while face to face delivery has been maintained for certain procedures. Research is currently investigating a

		blended approach to management in audiology with promising initial results.
38.	Sub-question – What is the proportion of hearing loss that remains undiagnosed?	As outlined above, 12 million people in the UK are deaf or have hearing loss (with an average hearing threshold level of 25dBHL or greater). Of this 12 million, it is thought that around 7 million are most likely to benefit of hearing aids (with an average hearing threshold level of 35dBHL or greater). Further to this, it is estimated that 2 million people have hearing aids in the UK.1 However the proportion of hearing loss that is undiagnosed is not clear. Recent findings have suggested that around 1 in 3 adults over 50 may not be able to identify that they have a hearing loss,[47] which has large implications for understanding the proportion of those with undiagnosed hearing loss, considering that being diagnosed requires self-identification in the current pathway.
41.	Cost benefit of screening not outlined.	The evidence review has not made reference to the costs associated with unmanaged hearing loss and the cost-benefit of a hearing screening programme. While we understand this is out of scope of this review, it is important to emphasise that evidence shows an adult hearing screening programme would be cost effective.

[47] Tsimpida D, Kontopantelis E, Ashcroft D, Panagioti M. Comparison of Self-reported Measures of Hearing With an Objective Audiometric Measure in Adults in the English Longitudinal Study of Ageing. JAMA Netw Open. 2020;3(8):e2015009. doi:10.1001/jamanetworkopen.2020.15009

		In 2013 it was estimated that the financial cost of hearing loss to society was approximately £136 million per annum, this includes approximately £76 million per annum associated with additional use of GP services and £60 million associated with additional use of social care services. The net burden of illness in terms of reduced quality of life associated with hearing impairment was estimated to be around £26 billion in 2013.[48] Furthermore, the cost of a screening programme as proposed by Davis et al. (2007) is likely to be cost effective.[49] A number of other studies have also shown similar results for different age groups. [50]

6. National Community Hearing Association

[48] Archbold S, Lamb B, O'Neill C, Atkins J. (2014). The Real Cost of Adult Hearing Loss: reducing its impact by increasing access to the latest hearing technologies. The Ear Foundation. See also Ciaran O'Neill, Brian Lamb & Sue Archbold (2016) Cost implications for changing candidacy or access to service within a publicly funded healthcare system?, Cochlear Implants International, 17:sup1, 31-35, DOI: 10.1080/14670100.2016.1161123 for a longitudinal study of the additional costs of not addressing hearing loss.

[49]Davis et al (2007) Acceptability, benefit and costs of early screening for hearing disability: a study of potential screening tests and models, Health Technology Assessment 11(42). Morris A, Lutman M, Cook A, Turner DJJoPH. An economic evaluation of screening 60-to 70-year-old adults for hearing loss. 2013;35(1):139-46. Action on Hearing Loss / London Economics (2010) Cost benefit analysis of hearing screening for older people.

[50] Morris et al (2013) An economic evaluation of screening 60- to 70-year-old adults for hearing loss. Journal of Public Health 35(1), 139 – 146. Dawes et al (2015) Hearing-aid use and long-term health outcomes: hearing handicap, mental health, social engagement, cognitive function, physical health, and mortality, International Journal of Audiology, early online 1-7. Available from: http://informahealthcare.com/doi/abs/10.3109/14992027.2015.1059503?journalCode=ija

UK National Screening Committee

Name:	Harjit Sandhu	**Email address:**	xxxx xxxx
Organisation (if appropriate):	National Community Hearing Association		
Role:			

Do you consent to your name being published on the UK NSC website alongside your response?

Yes

Section and / or page number	Text or issue to which comments relate	Comment *Please use a new row for each comment and add extra rows as required.*
General	General feedback	We agree with the NSC, NHS, NICE, Public Health England, Local Government Association, and the Association of Directors of Public Health that hearing loss is a major and growing public health concern in the UK.[51] We also agree with the NSC that unsupported hearing loss

[51] NICE, 2018, Hearing loss in adults: assessment and management https://www.nice.org.uk/guidance/ng98
NHS England, the Local Government Association, the Association of Directors of Public Health, Public Health England et al, 2019, Joint Strategic Needs Assessment Guidance https://www.england.nhs.uk/wp-content/uploads/2017/09/joint-strategic-needs-assessment-guidance-jul19.pdf

		• "has adverse consequences on interpersonal communication, psychosocial well-being, quality of life and economic independence." • "Adults with hearing loss experience social isolation and stigmatization, abuse, psychiatric disturbance, depression, difficulties in relationships with partners and children, restricted career choices, occupational stress and relatively low earnings." • "Elderly individuals with hearing loss have an increased rate of developing dementia and a more rapid decline. Older adults with moderate to severe hearing loss are more likely to experience impaired activities of daily living compared with those with mild or no hearing loss and if left untreated, these effects can become an ongoing contributor to the decline of health with age." (Reference: page 11, NSC consultation document). The evidence for acting on hearing loss is also clear • An independent review of the clinical and economic evidence by NICE has found that hearing aids help improve quality of life and are one of the most cost-effective interventions the NHS provides, with the early diagnosis and management of hearing loss with hearing aids costing £4,591 per Quality Adjusted Life Year (QALY) for the first 10 years of treatment. This is significantly below the cost-effectiveness threshold of £20,000 per QALY that NICE usually uses. NICE therefore recommend commissioners encourage early intervention and support for hearing loss.[52]

[52] NICE, 2018, Hearing Loss, Hearing loss in adults: assessment and management, NG98, full guideline https://www.nice.org.uk/guidance/ng98/evidence/full-guideline-pdf-4852693117

		In summary, it is universally agreed that unsupported hearing loss in adults is a serious and growing public health issue. Hearing aids are the primary intervention and very cost-effective for the NHS. The NHS should therefore encourage the early diagnosis and management of hearing loss in a targeted way (e.g. for high risk groups) and support people with hearing difficulties to come forward for support.[2] The NSC however must, given its remit, assess the merits of screening a population which does not report hearing difficulties and does not self-present for support etc. Here, it is disappointing that a lack of funding into high quality research (methodologically robust and sufficient sample sizes) remains a barrier to establishing a national screening programme for adults with hearing loss. We replied to the previous NSC consultation on screening for hearing loss in adults (September 2015).[53] At the time we agreed with the NSC that there was not sufficient evidence to recommend a national screening programme. We again accept that there is currently insufficient evidence to recommend a national screening programme. We would ask the NSC to make clear, however, that people in high risk groups and those with self-reported hearing difficulties should be

[53] NCHA submission to the UK NSC, 2015 https://the-ncha.com/downloads/36_NSC_Hearing_Loss_in_Adults.docx

		encouraged to have a hearing test so that an audiologist can assess their hearing using PTA and other validated methods and if necessary prescribe hearing aids and rehabilitation support. These treatment pathways are cost-effective and evidence-based and can help address the public health challenge unsupported hearing loss presents. Meeting hearing needs in this way, while we wait for high quality evidence to support a national screening programme, is something we hope the NSC can encourage other public health officials and commissioners to support.

UK National Screening Committee

7. Manchester Biomedical Research Centre

Dear Sir or Madam

Re: UK National Screening Committee on hearing loss screening in adults

We would like to comment on the conclusions of the draft review against programme appraisal criteria for the UK National Screening Committee in relation to screening for hearing loss in adults. We would also like to outline the on-going program of research at the NIHR Manchester BRC that addresses the gaps in the evidence identified by this review.

COMMENTS ON CONCLUSION

We welcome recognition of hearing loss as being a major public health issue and appreciate the NSC's attention to adult hearing loss. With respect to the four areas of focus of the review:

RELEVANT ONGOING RESEARCH THAT WILL INFORM THE NEXT REVIEW

1. **The accuracy of screening tests for hearing loss in adults (The Test: UK NSC criteria 4 and 5)**

Recent developments have resulted in proliferation of on-line hearing tests that offer potential for efficient low-cost hearing screening. The move to tele-health following the COVID pandemic fuelled a recent surge in the numbers of on-line tests, and we are currently carrying out a systematic evaluation of recent on-line tests to update Bright et al's (2016) systematic review. Our new systematic review will be published in 2021.

We are currently developing and validating an on-line hearing test that i) has diagnostic levels of accuracy, and ii) will supply the information required by audiologists to program a hearing aid. The on-line hearing test will be used by audiology clinics in Greater Manchester to provide COVID-safe hearing support.

Additionally, we intend to use the on-line hearing test in a controlled evaluation of adult hearing screening. We have an NIHR program development grant (NIHR202044; commencing March 2021 for 12 months; abstract provided as an Appendix below) to develop the outcome measures to be used in the trial.

2. **The acceptability of treatment for hearing loss (The Intervention: UK NSC criterion 9)**

Our proposed NIHR programme grant for applied research application will involve an on-line hearing assessment (via primary care practices) linked to a range of low- and no-touch hearing support interventions, including a mix of remotely delivered and in-person care. We will co-develop and support these intervention options with adult patients as part of the rant, and we will evaluate acceptability of these treatment options during the program grant. The program grant application will be submitted towards the end of 2021 for commencement in 2022.

3. **If screening improves health outcomes for adults with hearing loss (The Screening programme: UK NSC criteria 11 and 13)**

In our proposed NIHR programme grant for applied research (see previous point), we will evaluate the impact of adult hearing screening on uptake of hearing support interventions, quality of life and health outcomes for adults with hearing loss via a randomised controlled trial.

3. **How well clinical detection and management are currently implemented in the UK (The Test: UK NSC criterion 15)**

We would like to draw your attention to two recent papers that report rates of hearing aid uptake and use in UK populations (abstracts in Appendix 2):

Dillon, H., Day, J., Bant, S., & Munro, K. J. (2020). Adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics. *International Journal of Audiology*, 1-7. https://doi.org/10.1080/14992027.2020.1773550

UK National Screening Committee

Sawyer, C. S., Armitage, C. J., Munro, K. J., Singh, G., & Dawes, P. D. (2020). Biopsychosocial Classification of Hearing Health Seeking in Adults Aged Over 50 Years in England. *Ear and hearing*, *41*(5), 1215-1225.
doi: 10.1097/AUD.0000000000000839

Thank you again for the opportunity to comment on the NSC review. We recognise the lack of evidence identified by the NSC review and we look forward to being able to address the gaps identified by this review within the next 5 years.

Yours Sincerely

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Appendix 1– Scientific abstract for Program Development Grant NIHR202044 'Hearing health information from primary care data: How to capture hearing aid uptake'

BACKGROUND: To improve outcomes and reduce health inequalities, we propose a unique and comprehensive NHS telehealth program grant to evaluate case finding of adult hearing loss in primary care via online assessment linked to remotely delivered intervention. Our application embraces the NHS long-term plan by using: digital solutions, innovations, technology supported self-management, and remote care to better support people with long-term conditions.

To conduct the planned evaluation of this intervention, a reliable measure of hearing aid (HA) uptake is required that can be used at primary care level. Although primary care data can index treatment uptake for many health conditions, the coding of hearing loss and hearing loss treatments is variable. NHS Audiology services communicate with referring GPs and Clinical Commissioning Groups (CCG) through letters or bills of service, respectively, but no communication or coding standards exist.

AIM: To identify and evaluate candidate measures of HA uptake in an adult primary care population, based on routine clinical data, to inform development of an efficient and inexpensive long-term outcome measure for clinical trials.

OBJECTIVES:

- Audit recording of HA provision in primary care against NHS audiology records to characterise how HA uptake is communicated, coded, and billed.
- Determine sensitivity of primary care records and CCG billing at identifying first HA provision.
- Identify what information is required by GPs, what audiology services can provide, and barriers/facilitators to communication between audiology and primary care.
- Develop, implement, and evaluate a primary care coding scheme for first-time HA provision by NHS audiology services.

METHODS: We will audit primary care coding and CCG billing data to identify first time adult HA recipients across NHS HA services (NHS Trusts and Any Qualified Provider) and trace these cases to the relevant primary care provider in order to characterise communication of HA provision (objective 1&2).

We will interview audiologists and GPs to determine: (i) what information GPs want

from audiology; (ii) what constraints/facilitators there are for coding information; (iii) what information audiology can provide; and (iv) what constraints/facilitators there are on providing that information to GPs (objective 3).

This work will inform development of a communication strategy from audiology to primary care and a coding scheme for HA fittings. We will implement the coding scheme and evaluate the degree to which first-time HA fittings are captured in GP records over 3-months post-implementation in a sample of 6 practices in two geographic areas (North West and London), varying in size and deprivation (objective 4). Implementation and access to routine data will be facilitated by tools developed by PRIMIS (primary care health informatics: https://www.nottingham.ac.uk/primis/)

TIMELINES: Audit and interviews will run concurrently in the first 6 months of the project; development and implementation of the coding scheme in the final 6 months.

IMPACT AND DISSEMINATION: Developing reliable communication and overcoming barriers to coding of HA uptake information in primary care will i) facilitate indices for future trials to improve hearing health and ii) promote good communication and record keeping between primary care and audiology, enabling better clinical outcomes for people with hearing loss.

Appendix 2 – study abstracts

Dillon, H., Day, J., Bant, S., & Munro, K. J. (2020). Adoption, use and non-use of hearing aids: a robust estimate based on Welsh national survey statistics. *International Journal of Audiology*, 1-7. https://doi.org/10.1080/14992027.2020.1773550

Objective: To report a robust measure of the proportion of adults who do not use their hearing aids.

Design: Data on hearing aid use was extracted from national household survey data, from 2004 to 2018 in Wales, UK.

Study sample: A representative sample of 10,000 to 16,000 adults per year.

Results: Self-reported hearing difficulty increased smoothly from 14 to 16% during the 12 years when survey administration remained unchanged. The proportion reporting that they had tried a hearing aid increased from 5 to 7% and stabilised at this level since 2011. The proportion who reported using their hearing aid most of the time increased from 47 to 52% during the 15-year period. The proportion who did not use their hearing aids at all decreased from 21 to 18% over the same period.

Conclusions: In this extensively-surveyed population, approximately 20% of adults currently do not use their hearing aids at all, 30% use them some of the time and the remaining 50% most of the time. Hearing aids are valued by many, as judged by use, but there is substantial room for improvement. Inclusion of questions on use within a large-scale, regular national survey enables the collection of demonstrably reliable data.

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Objectives:

Approximately 10 to 35% of people with a hearing impairment own a hearing aid. The present study aims to identify barriers to obtaining a hearing aid and inform future interventions by examining the biopsychosocial characteristics of adults aged 50+ according to 7 categories: (i) Did not report hearing difficulties, (ii) Reported hearing difficulties, (iii) Told a healthcare professional about experiencing hearing difficulties, (iv) Referred for a hearing assessment, (v) Offered a hearing aid, (vi) Accepted a hearing aid, and (vii) Reported using a hearing aid regularly.

Design:

The research was conducted using the English Longitudinal Study of Aging wave 7 with data obtained from 9666 adults living in England from June 2014 to May 2015. Cross-sectional data were obtained from a subset of 2845 participants aged 50 to 89 years of age with a probable hearing impairment measured by hearing screening (indicating a hearing threshold of >20 dB HL at 1 kHz or >35 dB HL at 3 kHz in the better ear). Classification according to hearing health-seeking category was via participants' self-report. Participants in each category were compared with people in all subsequent categories to examine the associations between each category and biopsychosocial correlates (sex, age, ethnicity, educational level, wealth, audiometric hearing level, self-reported health status, cognitive performance, attitudes to aging, living alone, and engagement in social activities) using multiple logistic regression.

Results:

The proportions of individuals (N = 2845) in categories i to vii were 40.0% (n = 1139), 14.0% (n = 396), 4.5% (n = 129), 4.0% (n = 114), 1.2% (n = 34), 7.7% (n = 220), and 28.6% (n = 813), respectively. Severity of hearing impairment was the only factor predictive of all the categories of hearing health-seeking that could be modeled. Other correlates predictive of at least one category of hearing health-seeking included sex, age, self-reported heath, participation in social activities, and cognitive function.

Conclusions:

For the first time, it was shown that 40.0% of people with an audiometrically identified probable hearing impairment did not report hearing difficulties. Each of the five categories of hearing health-seeking that could be modeled had different drivers and consequently, interventions likely should vary depending on the category of hearing health-seeking.