UK National Screening Committee
Screening for Hearing Loss in Adults - an evidence review

Consultation comments pro-forma

Please find attached a response from the Screening for Life Coalition (PAGE 1) (see www.hearingscreening.org.uk) to the UK National Screening Committee's evidence review of Screening for Hearing Loss in Adults, which we are happy to be published. Please also find attached a separate document with responses from people with hearing loss to the external review (PAGE 32 BELOW) – please do not publish this document.

If you have any questions, do let me know.

Thanks

Chris

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Organisation (if appropriate):	The Hearing Screening for Life Coalition, which includes: • Age UK • Carers UK • Dementia UK • Independent Age		

	• The MS Society • Sense • Action on Hearing Loss • Hearing Link • The Ear Foundation • The UK Council on Deafness (UKCoD) See www.hearingscreening.org.uk for more information.
Role:	**Senior Research and Policy Officer, Action on Hearing Loss**

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.*
General	**General**	We are the Hearing Screening for Life coalition[1], a group of major charities representing a wide range of people, and we are calling on the National Screening Committee (NSC) to introduce a hearing screening programme for everyone at the age of 65. We are all concerned at the wide ranging impact that hearing loss can have across all areas of someone's life and on society as a whole. In our response we set out why screening for hearing loss in adults should be introduced, and the evidence that has not been included in the NSC's review. We have also

[1] See www.hearingscreening.org.uk for more information.

		asked people to submit their own experiences of hearing aids and the service they received from the NHS, and why they think screening should be introduced, and we have included these in a separate document also submitted to the NSC. The Hearing Screening for Life coalition members are: • Age UK • Carers UK • Dementia UK • Independent Age • The MS Society • Sense • Action on Hearing Loss • Hearing Link • The Ear Foundation • The UK Council on Deafness (UKCoD) Ten million people across the UK have hearing loss – that's one in six of the population[2]. Hearing loss has been shown to have major impacts on communication, health and quality of life, and can lead to isolation, depression and dementia as well as creating issues for the management of all other health conditions. From support services, cochlear implants and equipment to lipreading classes, counselling and hearing therapy,

[2] Davis (1995) Hearing in Adults, London: Whurr; Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss.

		there are services available that would help all of these people, including six million of them who could benefit from hearing aids[3]. However, there are massive unmet needs[4] – on average people wait ten years to seek help for their hearing loss, and of the six million who could benefit from hearing aids only two million people have them – meaning that four million people who could benefit from hearing aids do not have them[5]. Most hearing loss is age-related, with prevalence rising from 42% of over 50 year olds to 71% of over 70s. It affects people at a time when they are most at risk of many other health conditions, impacting on their ability to hear and communicate with friends, family and health professionals, and therefore on their ability to manage other health conditions, maintain active lives and live independently. With more of us living longer and with the strong link between ageing and hearing loss, the number of people with hearing loss is estimated to increase from 10 million to 14.5 million by 2031[6]. Given that far too few people seek help when they first notice symptoms and many wait for long periods, the number with unaddressed needs will also increase unless something

[3] Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss.

[4] Many other studies have found high levels of unrecognised hearing loss – see for example Ramdoo et al (2014) Opportunistic hearing screening in elderly inpatients, SAGE Open Medicine 2; Ramdoo, Singh, Tatla, London Northwest Healthcare (in publication).

[5] 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); Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss.

[6] Davis (1995) Hearing in Adults, London: Whurr; Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss.

		is done. Despite recent reforms to make it easier for people to access services, for example by providing services in people's communities, and reforms that have ensured effective services are in place that can deal with increased numbers of patients, most people with hearing loss are still not seeking help. This is why the UK Government recently launched a cross-government strategy, the Action Plan on Hearing Loss[7], which called for action across government to tackle this "major public health issue". A recent government strategy in Northern Ireland, the Physical and Sensory Disability Strategy and Action Plan 2012-2015[8], also aimed to improve service provision, and in Scotland the 2014 See Hear strategic framework for sensory impairments highlighted the need for early diagnosis and intervention for hearing loss, and stated that screening for sensory loss should be included in care pathways[9]. There is clear evidence, outlined in this response, showing that early intervention is needed to encourage people to seek help, that hearing aids work, and that they are acceptable and bring major benefits to people with hearing loss. It is therefore vital that hearing

[7] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.

[8] Department of Health, Social Services and Public Safety (2012) Physical and sensory disability strategy and action plan 2012-2015, Belfast: Department of Health, Social Services and Public Safety.

[9] The Scottish Government (2014) See hear: a strategic framework for meeting the needs of people with a sensory impairment in Scotland, Edinburgh: Scottish Government.

		screening is introduced now, to ensure that people are encouraged to get the help they need from hearing aids as well as other support; are made aware of the impacts of hearing loss and the effectiveness of the interventions available; are able to communicate, manage and reduce the risk of other health conditions; and remain active, independent and healthy. A health technology assessment, which along with other evidence is largely missing from this review, has set out how screening meets the NSC's criteria[10]. In our response we set out how this and numerous other pieces of evidence fulfil the NSC's criteria.
Page 3	**Summary**	This literature review was undertaken in December 2012, nearly three years ago. The review states that some additional papers were included, but the review was not re-run at this time. Therefore key pieces of recent evidence are missing. As a consequence, the review misses many significant pieces of evidence, particularly around the impact of screening and hearing aids and the link with dementia, which we detail throughout this response. Crucially, the review has also not taken into account the focus on

[10] 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).

		earlier diagnosis and service improvements for hearing loss in recent national government strategies[11], including the UK Government strategy released earlier this year, the Action Plan on Hearing Loss[12], which sets out the need for earlier identification and diagnosis of hearing loss: "Early identification and intervention are key actions that should make a real difference in reducing risks and attaining better hearing health outcomes throughout life. It is particularly important in reducing the impact and cost of congenital hearing loss and of long term conditions such as adult onset progressive hearing loss". The review also misses the impact of improvements to pathways and capacity, for example following the modernising of NHS hearing aids[13], and through the Any Qualified Provider policy in England, which a Monitor review[14] found has led to flexible and innovative pathways. These changes mean the system is well positioned to deal with the increased numbers of people

[11] See General section above - The Scottish Government (2014) See hear: a strategic framework for meeting the needs of people with a sensory impairment in Scotland, Edinburgh: Scottish Government; Department of Health, Social Services and Public Safety (2012) Physical and sensory disability strategy and action plan 2012-2015, Belfast: Department of Health, Social Services and Public Safety.
[12] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.
[13] See for example Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.
[14] Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients.

		seeking help that would be expected from the introduction of screening.
Page 5, section 2.2.	**The condition, health impact**	This review has not included most of the evidence around the impacts of hearing loss, particularly on social isolation, depression and dementia (see also our response to sections 4.1 and 4.2 below for missed evidence on the benefits of hearing aids in reducing these impacts). The evidence is clear that hearing loss often leads to communication difficulties, hindering an individual's interaction with friends, family, and colleagues, which can lead to social isolation and loneliness[15]. Gopinath et al (2012) examined more than 800 older hearing impaired people over five years and found that older, hearing-impaired adults were "significantly more likely to experience emotional distress and reduced social

[15] Herbst et al (1990) Implications of hearing impairment for elderly people in London and in Wales. *Acta Oto-laryngologica* 476, 209-214; Du Feu and Fergusson (2003) Sensory impairment and mental health. *Advances in psychiatric treatment*. 9, 95-103; Monzani et al (2008) Psychological profile and social behaviour of working adults with mild or moderate hearing loss. *Acta Otorhinolaryngologica Italica*. 28(2), 61-6; Barlow et al (2007) Living with late deafness: insight from between worlds. *International Journal of Audiology.* 46(8), 442-8; Hétu et al (1993) The impact of acquired hearing loss on intimate relationships: implications for rehabilitation. *Audiology* 32(3), 363–81; Gopinath et al (2012) Hearing-impaired adults are at increased risk of experiencing emotional distress and social engagement restrictions five years later. *Age and Ageing* 41(5), 618–623; Echalier (2010) In it together – the impact of hearing loss on personal relationships, London: Action on Hearing Loss. Available from: www.hearingloss.org.uk/~/media/Documents/Policy%20research%20and%20influencing/Research/Previous%20research%20reports/2010/In%20it%20together/In%20it%20Together.ashx; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6; Pronk et al (2011) Prospective effects of hearing status on loneliness and depression in older persons: identification of subgroups. *International Journal of Audiology* 50(12), 887-96.

		engagement restrictions (self-perceived hearing handicap) directly due to their hearing impairment"[16]. From a study of 73 hearing-impaired subjects and 96 controls, Monzani et al concluded that "sensory impairment, with its associated disability, may discourage hearing-impaired individuals from exposing themselves to socially challenging situations, producing isolation that leads to depression, irritability, feelings of inferiority"[17]. As summarised in Arlinger's review of the literature on the negative consequences of uncorrected hearing loss, unaddressed hearing loss "gives rise to disabilities of various kinds" and can "often lead to withdrawal from social activities... this, in turn, leads to reduced intellectual and cultural stimulation, and an increasingly passive and isolated social citizen"[18]. Extensive research shows that, if it is not addressed early and effectively, hearing loss can increase the risk of mental health problems[19]. Anxiety, paranoia and

[16] Gopinath et al (2012) Hearing-impaired adults are at increased risk of experiencing emotional distress and social engagement restrictions five years later. *Age and Ageing* 41(5), 618–623.
[17] Monzani et al (2008) Psychological profile and social behaviour of working adults with mild or moderate hearing loss. *Acta Otorhinolaryngologica Italica* 28(2), 61-6.
[18] Arlinger (2003) Negative consequences of uncorrected hearing loss – a review. *International Journal of Audiology* 42(2), 17-20.
[19] Eastwood et al (1985) Acquired hearing loss and psychiatric illness: an estimate of prevalence and co-morbidity in a geriatric setting. *British Journal of Psychiatry* 147, 552–556; Saito 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; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6; Cacciatore et al (1999) Quality of life determinants and hearing function in an elderly population: Osservatorio Geriatrico Campano Study Group. *Gerontology* 45, 323-323; Genther et al (2013) Association of hearing loss with hospitalization and burden of disease in older adults. *Journal of the American Medical Association* 309(22), 2322; Monzani et al (2008) Psychological profile and social behaviour of working adults with mild or moderate hearing loss. *Acta Otorhinolaryngologica Italica*. 28(2), 61-6.

		depression are particular risks; research has shown that the hard of hearing are over-represented among samples of patients suffering from paranoid psychoses in later life[20] and older people with hearing loss are more than twice as likely to develop depression as their peers without hearing loss[21]. A growing body of evidence has identified a strong association between all levels of hearing loss and cognitive decline and dementia[22]. People with mild hearing loss are twice as likely to develop dementia as people without any hearing loss. The risk increases to three times for those with moderate hearing loss, and people with severe hearing loss are five times as likely to develop dementia[23]. Recent research found that hearing

[20] Cooper (1976) Deafness and psychiatric illness. *British Journal of Psychiatry* 129, 216-226.

[21] Saito 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.

[22] Lin et al (2011) Hearing loss and incident dementia. *Archives of Neurology* 68(2), 214-220; Lin et al (2013) Hearing loss and cognitive decline in older adults. *Internal Medicine* 173(4), 293-299; Lindenberger and Baltes (1994) Sensory functioning and intelligence in old age: a strong connection. *Psychology and Aging* 9, 339-355; Lindenberger and Baltes (1997) Intellectual functioning in old and very old age: cross-sectional results from the Berlin aging study. *Psychology and Aging* 12, 410-432; Uhlmann et al (1989) Relationship of hearing impairment to dementia and cognitive dysfunction in older adults. *Journal of the American Medical Association* 261, 1916-1919; Gurgel et al (2014) Relationship of hearing loss and dementia: a prospective, population-based study. *Otology & Neurotology* 35(5), 775-81; Cacciatore et al (1999) Quality of life determinants and hearing function in an elderly population: Osservatorio Geriatrico Campano Study Group. *Gerontology* 45, 323-323.

[23] Lin et al (2011) Hearing loss and incident dementia. *Archives of Neurology* 68(2), 214-220; Lin et al (2013) Hearing loss and cognitive decline in older adults. *Internal Medicine* 173(4), 293-299.
293-299; Lindenberger and Baltes (1994) Sensory functioning and intelligence in old age: a strong connection. *Psychology and Aging* 9, 339-355; Lindenberger and Baltes (1997) Intellectual functioning in old and very old age: cross-sectional results from the Berlin aging study. *Psychology and Aging* 12, 410-432; Uhlmann et al (1989) Relationship of hearing impairment to dementia and cognitive dysfunction in older adults. *Journal of the American Medical Association* 261, 1916-1919; Gurgel et al (2014) Relationship of hearing loss and dementia: a prospective, population-based study. *Otology and Neurotology* 35(5), 775-81.

		loss not only increases the risk of the onset of dementia, but also accelerates the rate of cognitive decline.[24] Hearing loss has also been shown to have a negative impact on overall health. Studies have found hearing loss to be independently associated with increased health care use and burden of disease among older adults[25], more frequent falls[26], and an increased risk of mortality[27]. There is also evidence to suggest that there are associations between hearing loss and diabetes[28], cardiovascular disease[29], stroke[30], Parkinsons[31] and

[24] Lin et al (2013) Hearing loss and cognitive decline in older adults. *Internal Medicine* 173(4), 293-299; Gurgel et al (2014) Relationship of hearing loss and dementia: a prospective, population-based study. *Otology & Neurotology* 35(5), 775-81.
[25] Genther et al (2013) Association of hearing loss with hospitalization and burden of disease in older adults. *Journal of the American Medical Association* 309(22), 2322; The Ear Foundation (2014) The Real Cost of Adult Hearing Loss: Reducing its impact by increasing access to the latest hearing technologies. Nottingham: The Ear Foundation.
[26] Lin and Ferrucci (2012) Hearing loss and falls among older adults in the United States. *Archives of Internal Medicine* 172(4), 369-371; Viljanen et al (2009) Hearing as a predictor of falls and postural balance in older female twins. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences* 64(2), 312-7.
[27] Appollonio et al (1996) Effects of sensory aids on the quality of life and mortality of elderly people: a multivariate analysis. *Age and Ageing* 25, 89-96; Karpa et al (2010) Associations between hearing impairment and mortality risk in older persons: the Blue Mountains Hearing Study. *Annals of Epidemiology* 20(6), 452-9.
[28] Kakarlapudi et al (2003) The effect of diabetes on sensorineural hearing loss. *Otology and Neurotology* 24(3), 382-386; Mitchell et al (2009) Relationship of Type 2 diabetes to the prevalence, incidence and progression of age-related hearing loss. *Diabetic Medicine* 26(5), 483-8; Chasens et al (2010) Reducing a barrier to diabetes education: identifying hearing loss in patients with diabetes. *Diabetes Education* 36(6), 956-64.
[29] Helzner et al (2011) Hearing sensitivity in older adults: associations with cardiovascular risk factors in the health, aging and body composition study. *Journal of the American Geriatric Society*, 59 (6), 972-9; Rosenhall et al (2006) Age-related hearing loss and blood pressure. *Noise Health*, 8 (31), 88-94.
[30] Formby et al (1987) Hearing loss among stroke patients. *Ear and Hearing* 8(6), 326-32; Gopinath et al (2009) Association between age-related hearing loss and stroke in an older population. *Stroke* 40(4), 1496–1498.
[31] Pisani et al (2015) An investigation of hearing impairment in de-novo Parkinson's disease patients: a preliminary study. *Parkinsonism & Related Disorders* Jun 9

		sight loss[32]. Communication issues between patients and health professionals, coupled with reduced participation and mental health issues, mean that hearing loss can cause problems for the diagnosis and management of any other health condition – and this is particularly a problem given the high prevalence of hearing loss in older people who are at a higher risk of developing many other health conditions[33]. As the national Government strategy, the Action Plan on Hearing Loss states, the challenge of tackling hearing loss is a "major public health issue", particularly in relation to the growing numbers of older people with hearing loss, for whom hearing loss has a "disproportionate effect on their wider physical and mental health, independence and ability to work". Hearing loss is "responsible for an enormous personal, social and economic impact throughout life"[34]. As well as the health impacts outlined above, hearing loss has major impacts on employment. People with hearing loss are less likely to be employed compared with people without hearing loss[35], and many don't fulfil

[32] Chia et al (2006) Association between vision and hearing impairments and their combined effects on quality of life. *Archives of Ophthalmology* 124(10), 1465-70.
[33] Action on Hearing Loss / DCAL (2013) Joining up, London: Action on Hearing Loss; McKee et al (2011) Perceptions of cardiovascular health in an underserved community of deaf adults using American Sign Language. Disability and Health 4(3), 192-197; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6.
[34] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.
[35] Office for National Statistics (ONS) (2015) Labour Force Survey January – March 2015, analysis cited in House of Commons debate 9 June 2015 c 1723W.

		their potential or retire early because of their hearing loss[36]. The International Longevity Centre has estimated that in 2013, the UK economy lost £24.8 billion in potential economic output because people with hearing loss are unable to work[37]. Because of the ageing population and people staying in work for longer, they estimate that this will increase to £38.6 billion lost per year by 2031[38].
Page 6, section 2.3.	**All the cost-effective primary prevention interventions should have been implemented as far as practicable**	This section of the review does not take into account the fact that although some forms of hearing loss are preventable, research suggests that age-related hearing loss – the most prevalent form of hearing loss – cannot be prevented. Therefore no primary prevention interventions have been shown to reduce the prevalence of age-related hearing loss. It is clear from the focus in this review on over 50s that any screening programme would target older people, who make up the vast majority of people affected by hearing loss, and most of whom will have age-related hearing loss. This should therefore not be a reason why a screening programme should not be introduced.
Pages 6-9,	**There should be a simple, safe, precise and**	A number of screening tests and pieces of evidence are

[36] Arrowsmith (2014) Hidden disadvantage: why people with hearing loss are still losing out at work. London: Action on Hearing Loss.
[37] International Longevity Centre (ILC) UK (2013) Commission on hearing loss: final report, London: ILC-UK.
[38] International Longevity Centre (ILC) UK (2013) Commission on hearing loss: final report, London: ILC-UK.

section 3.1	**validated screening test**	relevant here but are not included in this review. Missing tests include speech in noise tests[39], which can be undertaken online or over the phone, and an easy to use, low cost hand-held screener which uses pure tones to screen for sensorineural, conductive and mixed hearing losses at different frequencies and severities[40]. Because it uses pure tones itself, the hand-held screener has been shown to have high negative and positive predictive values, and there was good correlation when its results were compared with full audiometric testing[41]. It is non-invasive, safe and easy to use, it has been shown to be cost effective[42], and it was successful and popular when it was piloted by GPs[43]. This test would be effective at predicting full audiometric testing and at predicting the benefit a patient would get from hearing aids, and it would therefore be effective in a screening programme. The conclusion of the health technology assessment, a

[39] Smits (2006) How we do it; the Dutch functional hearing-screening tests by telephone and internet. Dept of Otolaryngology/Audiology, EMGO Institute, VU University Medical Centre, Amsterdam; Watson (2012) Telephone screening tests for functionally impaired hearing: current use in seven countries and development of a US version. *Journal of the American Academy of Audiology* 23, 757-767.
[40] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9.
[41] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9; Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.
[42] Action on Hearing Loss / London Economics (2010) Cost benefit analysis of hearing screening for older people. Available from: www.actiononhearingloss.org.uk/supporting-you/policy-research-and-influencing/research/our-research-reports/research-reports-2010.aspx.
[43] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9; Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.

		major large scale study which found that the optimal cut off for screening was 35 dB HL, and that the most effective screening test was to ask two verified questions alongside pure tone audiometry, is also missing here[44]. Since that time screening tools such as the handheld screener above have been developed, which like full audiometry uses pure tones to effectively screen for hearing loss. There is therefore good evidence that a simple, safe, precise and validated screening test is available, and is easy to use and low cost.
Page 10, section 3.3	**The test should be acceptable to the population**	There are studies on the acceptability of hearing screening, and there is little risk to the population of screening or hearing aid use. The health technology assessment showed that hearing screening is acceptable to the older population[45], and a systematic review has shown hearing aids are acceptable and used – studies showed that 80-90% of people continue to use their hearing aids[46]. Page 12 of this review states that "[h]arms are unlikely to be greater than minimal because screening and confirmatory testing are non-invasive and treatment with hearing aids is not associated with significant harms". This should therefore not be a reason

[44] 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).
[45] 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).
[46] Perez and Edmonds (2012) A systematic review of studies measuring and reporting hearing aid usage in older adults since 1999: a descriptive summary of measurement tools, *PLoS ONE* 7(3), e31831.

		why screening is not introduced.
Page 11, section 3.5	**There should be an agreed policy on the further diagnostic investigation of individuals with a positive test result and on the choices available to those individuals**	Evidence is missing here on current policy around the diagnosis and management of hearing loss, recent experience of changes to pathways and how these have dealt well with increased and variable numbers of patients and so would be appropriate for screen detected cases. Only around one in three people who could benefit from hearing aids currently has them, and evidence shows that people wait on average ten years to seek help for their hearing loss[47]. There is clearly extensive undiagnosed hearing loss and unmet need for hearing aids and other management. Furthermore, the current pathway from GP to hearing services (such as audiology) or to ENT and then on to other services works well. Research from the UK and elsewhere shows that GPs are seen as credible sources of information and their advice and support can motivate patients to manage their hearing loss[48], and the vast majority of people are satisfied with hearing services and the hearing aids they receive[49]. Hearing screening would lead to increased numbers of patients seeking help and needing support from services. However, there is previous experience of

[47] Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss; 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); See also: Ramdoo et al (2014) Opportunistic hearing screening in elderly inpatients, SAGE Open Medicine 2; Ramdoo, Singh, Tatla, London Northwest Healthcare (in publication).
[48] Gilliver and Hickson (2011) Medical practitioners' attitudes to hearing rehabilitation. *International Journal of Audiology* 50(12), 850-856.
[49] Eurotrak data (2012). Available from: http://www.anovum.com/publikationen/Anovum_EuroTrak_2012_UK_EuroTrak%202012.pdf

		individual hearing services responding to increased numbers of patients resulting from the modernising of hearing aids. In response to this, the way services were commissioned was reformed, so that they are now able to cope with increasing levels of patient numbers[50]. In recent years, further reforms such as the introduction of any qualified provider (AQP) in adult hearing services in England have increased flexibility in provision, so commissioners pay only per patient and can respond quickly to changes in numbers of patients seen through flexibility in provision[51]. Reforms to hearing services mean there are now effective and flexible pathways for people diagnosed with hearing loss, reducing the risk of increased patient numbers leading to a lack of capacity and increased waiting lists[52]. AQP means that services must provide a high quality service, and are paid a set tariff per patient, so increased numbers of patients are easily dealt with. Strict service standards and an effective pathway were developed and agreed between the Department of Health, hearing loss charities and providers. This includes referral criteria, clinical guidance and standards for the timing of follow up and how often tests should

[50] Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.
[51] Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients.
[52] Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients.

		take place. It has been shown to work well and would respond well to cases detected through screening[53]. Across the whole the UK, including outside of AQP areas, some GPs and other health professionals do screen and check people's hearing, and refer positive cases to audiology or ENT. There are large variations in the numbers of audiological assessments between different areas[54], but those people seeking help have generally been dealt with well and waiting times have been kept low. Evidence from areas where increased numbers of people have sought help suggests that services are flexible enough to deal with increased numbers of people seeking help, and are appropriate to manage the further diagnostic investigation and management of screen detected cases of hearing loss.
Pages 11-15, sections 4.1 and 4.2	**There should be an effective treatment or intervention for patients identified through early detection, with evidence of early treatment leading to better outcomes than late treatment; There should be agreed evidence-based policies covering which individuals should be offered treatment and**	The 2007 health technology assessment showed the benefits of earlier diagnosis and fitting of hearing aids, and therefore the need for a screening programme to ensure people get the most from hearing aid fittings by getting these earlier - this is particularly important given that people wait on average ten years before they seek help for their hearing loss, and so only a minority of

[53] Department of Health (2012) Adult hearing AQP implementation pack, London: Department of Health; Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients.

[54] Public Health England (2013) NHS Atlas of Variation in Diagnostic Services: reducing unwarranted variation to increase value and improve quality, London: Public Health England; The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.

	the appropriate treatment to be offered.	people who could benefit from hearing aids currently have them[55]. This key evidence is missing here. The review of the evidence of the effectiveness of hearing aids in this section (pages 13-15) is severely lacking. Key systematic reviews[56] have been overlooked, and randomised controlled trials[57] that have shown the benefits of hearing aids, alongside many robust studies which find health improvement benefits of hearing aids using quality of life outcome measures have not been included here, some of which cover long periods of time (up to 11 years) and some cover screening. These include: Swan et al 2012[58]; Barton et al 2004[59]; Appollonio et al 1996[60]; Davis et al 2007[61]; Mondelli and

[55] 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); MacMahon (2013) The need for improved detection and management of adult-onset hearing loss in Australia, *International Journal of Otolaryngology,* Article ID 308509.

[56] Chisolm et al (2007) A systematic review of health-related quality of life and hearing aids: final report of the American Academy of Audiology task force on the health-related quality of life benefits of amplification in adults. *Journal of American Academy of Audiology* 18, 151-183; 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); Chao and Chen (2008) Cost-effectiveness of hearing aids in the hearing-impaired elderly: a probabilistic approach. *Otology and Neurotology* 29(6), 776-83.

[57] Mulrow et al (1990) Quality-of-life changes and hearing impairment, a randomized trial. *Annals of Internal Medicine* 113(3), 188-94; Yueh et al (2001) Randomized trial of amplification strategies. *Archives of Otolaryngology - Head and Neck Surgery* 127(10), 1197-204; Jerger et al (1996) Comparison of conventional amplification and an assistive listening device in elderly persons. *Ear and Hearing* 17(6), 490-504.

[58] Swan 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.

[59] Barton 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.

[60] Appollonio et al (1996) Effects of sensory aids on the quality of life and mortality of elderly people: a multivariate analysis. *Age and Ageing* 25, 89-96.

[61] 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).

		Souza 2012[62]; Lotfi et al. 2009[63]; McArdle et al 2005[64]; Mizutari et al 2013[65]; National Council on the Aging 2000[66]; Yueh et al 2010[67]; Dawes et al 2015[68]. Reviews of the literature have taken the large number of positive studies as proof that hearing aids provide significant benefits to communication, health, wellbeing and quality of life[69]. This is on top of the evidence of other benefits from hearing aids – as detailed above, hearing loss is associated with an increased risk and increased impact of numerous other health conditions, and evidence not included in this review shows that hearing aids reduce the risk and impact of other health conditions – for example one study showed that hearing aids reduce the risk of isolation associated with hearing loss[70], evidence

[62] Mondelli and Souza (2012) Quality of life in elderly adults before and after hearing aid fitting. *Revista Brasileira de Otorrinolaringologia* 78(3), 49-56.
[63] Lotfi et al (2009) Quality of life improvement in hearing-impaired elderly people after wearing a hearing aid. *Archives of Iranian Medicine* 12(4), 365-70.
[64] McArdle et al (2005) The WHO-DAS II: Measuring outcomes of hearing aid intervention for adults. *Trends in Amplification* 9(3), 127-43.
[65] Mizutari et al (2013) Age-related hearing loss and the factors determining continued usage of hearing aids among elderly community-dwelling residents. *PLoS One* 8(9), e73622.
[66] National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6.
[67] Yueh et al (2010) Long-term effectiveness of screening for hearing loss: the screening for auditory impairment--which hearing assessment test (SAI-WHAT) randomized trial. *Journal of the American Geriatrics Society*, 58(3), 427-34.
[68] 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.
[69] Chao and Chen (2008) Cost-effectiveness of hearing aids in the hearing-impaired elderly: a probabilistic approach. *Otology and Neurotology* 29(6), 776-83.
[70] Pronk et al (2011) Prospective effects of hearing status on loneliness and depression in older persons: identification of subgroups. *International Journal of Audiology* 50(12), 887-96.

		shows that hearing aids reduce the risk of depression[71], and new evidence suggests that hearing aids may reduce the risk of developing dementia[72]. By enabling communication between patients and health professionals, and improving participation and mental health, hearing aids certainly improve the diagnosis and management of other health conditions[73]. Although it is not always recognised by commissioners, there is very good evidence that hearing aids are beneficial and cost effective – in particular at a very low cost they lead to major cost savings in terms of quality of life, employment and NHS and social care spend over the long term[74]. Not providing hearing aids or restricting their provision is a false economy. Despite the quality and quantity of the evidence of the benefits of hearing aids, the review says that the

[71] Saito 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; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6; Mulrow et al (1990) Quality-of-life changes and hearing impairment, a randomized trial. *Annals of Internal Medicine* 113(3), 188-94; Mulrow et al (1992) Sustained benefits of hearing aids. *Journal of Speech & Hearing Research* 35(6), 1402-5; Acar et al (2011) Effects of hearing aids on cognitive functions and depressive signs in elderly people. *Archives of Gerontology and Geriatrics*, 52(3), 250-2; Goorabi et al (2008) Hearing aid effect on elderly depression in nursing home patients. *Asia Pacific Journal of Speech, Language and Hearing* 11(2), 119-123.

[72] Deal et al (2015) Hearing impairment and cognitive decline: a pilot study conducted within the atherosclerosis risk in communities neurocognitive study. *American Journal of Epidemiology*, 181 (9), 680-690; Lin et al (2011) Hearing loss and incident dementia. *Archives of Neurology*, 68 (2), 214-220; Lin et al (2013) Hearing loss and cognitive decline in older adults. *Internal Medicine*, 173 (4), 293-299.

[73] Action on Hearing Loss / DCAL (2013) Joining up, London: Action on Hearing Loss; McKee et al (2011) Perceptions of cardiovascular health in an underserved community of deaf adults using American Sign Language. Disability and Health 4(3), 192-197; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6.

[74] The Ear Foundation (2014) The Real Cost of Adult Hearing Loss: Reducing its impact by increasing access to the latest hearing technologies. Nottingham: The Ear Foundation.

		evidence is limited. Since there are robust studies, including randomised controlled trials and systematic reviews, which show the clear benefits of hearing aids in terms of communication, mental health outcomes, quality of life, risk of and management of other health conditions, and general health, there is no reason why more evidence in these areas is required. Evidence is already available that shows the benefits of hearing aids. Undertaking long term randomised controlled trials to test the benefits of an intervention in a population where it is already provided to everyone who wants it for free would be unnecessary and may be unethical. It would involve withholding hearing aids from people with hearing loss for long periods of time despite knowledge that they would derive significant benefits from those hearing aids.
Page 11, sections 4.1 and 4.2	**There should be an effective treatment or intervention for patients identified through early detection, with evidence of early treatment leading to better outcomes than late treatment; There should be agreed evidence- based policies covering which individuals should be offered**	Evidence is not included here of the benefits of other services for people who are unlikely to benefit from hearing aids and are not fit for surgery for cochlear implants – for example assistive equipment and support services, lipreading classes, hearing therapy, training and counselling[75]. This is important as it shows that

[75] See for example Hickson et al (2007) A randomized controlled trial evaluating the active communication education program for older people with hearing impairment, *Ear and Hearing* 28(2), 212-30; Barker et al (2014) Interventions to improve hearing aid use in adult auditory rehabilitation, *Cochrane Database of Systematic Reviews* 7, CD010342; Ringham (2013) Not just lip service, London: Action on Hearing Loss, available at: http://www.actiononhearingloss.org.uk/notjustlipservice.aspx; see also best practice guidance from the British Society of Audiology, available at: http://www.thebsa.org.uk/wp-content/uploads/2014/04/BSA_APD_Management_1Aug11_FINAL_amended17Oct11.pdf and http://www.thebsa.org.uk/wp-content/uploads/2014/04/BSA_PPC_Rehab_Final_30August2012.pdf, and guidance from the American Speech-Language-Hearing Association, available at: http://www.asha.org/public/hearing/Hearing-Assistive-Technology

	treatment and the appropriate treatment to be offered	screening would be useful and provide a benefit for these groups of people as well.
Page 12, sections 4.1 and 4.2	**There should be an effective treatment or intervention for patients identified through early detection, with evidence of early treatment leading to better outcomes than late treatment; There should be agreed evidence- based policies covering which individuals should be offered treatment and the appropriate treatment to be offered**	It is a common misconception that people who are provided with hearing aids do not use them. The evidence shows that most people do use and gain benefit from their hearing aids. More recent evidence from a systematic review and from two studies undertaken showing data from the UK shows that acceptance of hearing aids is higher than the figures quoted here. A systematic review showed that although studies used different time periods and measures, very high numbers of people continued to use and benefit from hearing aids, usually around 80-90%[76]. A recent study of numbers across Europe, including in the UK, and a study undertaken into the introduction of AQP in England also showed that the vast majority of people wore and gained benefit from their hearing aids, and were satisfied with their hearing aids[77]. Furthermore, with proper information and support,

[76] Perez and Edmonds (2012) A systematic review of studies measuring and reporting hearing aid usage in older adults since 1999: a descriptive summary of measurement tools. *PLoS ONE* 7 (3), e31831.

[77] Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients; Eurotrak data (2012). Available from: http://www.anovum.com/publikationen/Anovum_EuroTrak_2012_UK_EuroTrak%202012.pdf

		including self-management, levels of hearing aid use increase and people have improved ability to hear and communicate[78].
Page 15-16, section 4.3	**Clinical management of the condition and patient outcomes should be optimised in all healthcare providers prior to participation in a screening programme.**	See response to Summary and section 3.5 above. Clear published evidence shows that waiting times have improved, and this review misses the reforms to pathways following the introduction of AQP. The experience in some areas shows that the health system can deal with increased numbers of patients, and is already working well in encouraging patients to use, and gain benefit from, their hearing aids. Although improvements can always be made, the central needs of most people who seek help are being met by high quality hearing services and hearing aid provision. A systematic review showed that although studies used different time periods and measures, very high numbers of people continued to use and benefit from hearing aids, usually around 80-90%[79]. A recent study of numbers across Europe, including in the UK, and a study undertaken into the introduction of AQP in England also showed that the vast majority of people wore and gained benefit from

[78] Leighton et al (2013) Evaluation of interactive video tutorials to educate first-time hearing aid users, *The European Journal of Public Health* 23 (1); Barker et al (2014) Interventions to improve hearing aid use in adult auditory rehabilitation, *Cochrane Database of Systematic Reviews* 7, CD010342.
[79] Perez and Edmonds (2012) A Systematic Review of Studies Measuring and Reporting Hearing Aid Usage in Older Adults since 1999: A Descriptive Summary of Measurement Tools. PLoS ONE 7 (3), e31831

		their hearing aids, and were satisfied with their hearing aids[80]. Where the pathway is currently not working is at the start – many more people must be encouraged to seek help for their hearing loss in the first place, and the best and most cost effective way to do this would be to introduce a screening programme.
Pages 16-18, sections 5.1 and 5.2.	**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**	This section does not take into account the extent of unmet need for the diagnosis and management of hearing loss – on average people with hearing loss wait ten years to seek help, and only one in three people who need hearing aids currently has them[81]. It is clear that for long periods of time, most people with hearing loss simply do not seek help from anyone, and it is unusual for them to be referred for diagnosis opportunistically by other health professionals. This section misses the significant findings of other randomised controlled trials such as Mulrow 1990[82] and other studies and modelling of screening such as Davis et al 2007[83], Dawes et al 2015[84] and Morris et al 2013[85].

[80] Monitor (2015) NHS adult hearing services in England: exploring how choice is working for patients, London: Monitor. Available from: https://www.gov.uk/government/publications/nhs-adult-hearing-services-in-england-exploring-how-choice-is-working-for-patients; Eurotrak data (2012). Available at: http://www.anovum.com/publikationen/Anovum_EuroTrak_2012_UK_EuroTrak%202012.pdf

[81] 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).

[82] Mulrow et al (1990) Quality-of-life changes and hearing impairment, a randomized trial. *Annals of Internal Medicine* 113(3), 188-94.

[83] 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).

	the individual being screened; There should be evidence that the complete screening programme (test, diagnostic procedures, treatment/ intervention) is clinically, socially and ethically acceptable to health professionals and the public.	As discussed in our response to sections 4.1 and 4.2 above, this review does not include many of the systematic reviews[86], randomised controlled trials[87] and other studies[88] showing the benefits of hearing aids – further randomised controlled trials would be unnecessary and may be unethical. Hearing loss increases with age – with prevalence rising from 42% of over 50 year olds to 71% of over 70s[89].

[84] 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

[85] 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.

[86] Chisolm et al (2007) A systematic review of health-related quality of life and hearing aids: final report of the American Academy of Audiology task force on the health-related quality of life benefits of amplification in adults. *Journal of American Academy of Audiology* 18, 151-183; 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); Chao and Chen (2008) Cost-effectiveness of hearing aids in the hearing-impaired elderly: a probabilistic approach. *Otology and Neurotology* 29(6), 776-83.

[87] Mulrow et al (1990) Quality-of-life changes and hearing impairment, a randomized trial. *Annals of Internal Medicine* 113(3), 188-94; Yueh et al (2001) Randomized trial of amplification strategies. Archives of Otolaryngology - Head and Neck Surgery 127(10): 1197-204; Jerger et al (1996) Comparison of conventional amplification and an assistive listening device in elderly persons. *Ear and Hearing* 17(6), 490-504.

[88] Swan 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; Barton 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; Appollonio et al (1996) Effects of sensory aids on the quality of life and mortality of elderly people: a multivariate analysis. *Age and Ageing* 25, 89-96; Mondelli and Souza (2012) Quality of life in elderly adults before and after hearing aid fitting. *Revista Brasileira de Otorrinolaringologia* 78(3), 49-56; Lotfi et al (2009) Quality of life improvement in hearing-impaired elderly people after wearing a hearing aid. *Archives of Iranian Medicine* 12(4), 365-70; McArdle et al (2005) The WHO-DAS II: Measuring outcomes of hearing aid intervention for adults. *Trends in Amplification* 9(3), 127-43; Mizutari et al (2013) Age-related hearing loss and the factors determining continued usage of hearing aids among elderly community-dwelling residents. *PLoS One* 8(9), e73622; National Council on the Aging (2000) The consequences of untreated hearing loss in older persons. *Head & Neck Nursing* 18(1), 12-6; Yueh et al (2010) Long-term effectiveness of screening for hearing loss: the screening for auditory impairment--which hearing assessment test (SAI-WHAT) randomized trial. *Journal of the American Geriatrics Society*, 58(3), 427-34; 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.

[89] Action on Hearing Loss (2011) Hearing Matters, London: Action on Hearing Loss; Davis (1995) Hearing in Adults, London: Whurr.

		There is good evidence from a health technology assessment and economic cost modelling that screening people at the age of 65 would be the most cost effective[90]. As stated above, there is no evidence of any risks from a screening test for hearing loss, and evidence shows it, along with the clinical pathway of diagnosis and management, are acceptable to people with hearing loss[91]. Also as stated above, this review misses a number of screening tests and pieces of evidence. Missing tests include speech in noise tests[92], which can be undertaken online or over the phone, and an easy to use, low cost hand-held screener which uses pure tones to screen for sensorineural, conductive and mixed hearing losses at different frequencies and severities[93]. Because it uses pure tones itself, the hand-held screener has been shown to have high negative and positive

[90] 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 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; Action on Hearing Loss / London Economics (2010) Cost benefit analysis of hearing screening for older people. Available from: www.actiononhearingloss.org.uk/supporting-you/policy-research-and-influencing/research/our-research-reports/research-reports-2010.aspx.
[91] 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).
[92] Smits (2006) How we do it; the Dutch functional hearing-screening tests by telephone and internet. Dept of Otolaryngology/Audiology, EMGO Institute, VU University Medical Centre, Amsterdam; Watson (2012) Telephone screening tests for functionally impaired hearing: current use in seven countries and development of a US version. *Journal of the American Academy of Audiology* 23, 757-767.
[93] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9.

		predictive values, and there was good correlation when its results were compared with full audiometric testing[94]. It is safe and easy to use, and it was successful and popular when it was piloted by GPs[95]. It is estimated that with bulk buying the hand-held screener would cost around £50 per unit, meaning that providing one to every GP surgery across the UK would cost around £508,000[96]. This screening test would be effective at predicting full audiometric testing and at predicting the benefit a patient would get from hearing aids, and it would therefore be effective in a screening programme. The conclusion of the health technology assessment, which found that the optimal cut off for screening was 35 dB HL, and that the most effective screening test was to ask two verified questions alongside pure tone audiometry, is also missing here[97]. Since that time screening tools such as the handheld screener above have been developed, which like full audiometry uses pure tones to effectively screen for hearing loss. There is

[94] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9; Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.

[95] Parving et al (2008) Evaluation of a hearing screener, *Audiological Medicine* 6(2), 115-9; Davis et al (2012) Diagnosing patients with age-related hearing loss and tinnitus: supporting GP clinical engagement through innovation and pathway redesign in audiology services, *International Journal of Otolaryngology.* Available from http://dx.doi.org/10.1155/2012/290291.

[96] Action on Hearing Loss / London Economics (2010) Cost benefit analysis of hearing screening for older people. Available from: www.actiononhearingloss.org.uk/supporting-you/policy-research-and-influencing/research/our-research-reports/research-reports-2010.aspx.

[97] 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).

		therefore good evidence that screening tests are available that work well, are acceptable, and given the current effective pathway for the diagnosis and management of hearing loss, introducing such a test would improve outcomes for many people with hearing loss.
Page 19, section 5.6.	**The opportunity cost of the screening programme (including testing, diagnosis and treatment, administration, training and quality assurance) should be economically balanced in relation to expenditure on medical care as a whole (i.e. value for money). Assessment against these criteria should have regard to evidence from cost benefit and/or cost effectiveness analyses and have regard to the effective use of available resource.**	The hearing screening test using a hand-held screener is estimated to cost £13 per person, with full treatment around £100[98]. The NHS provides hearing aids and management of hearing loss at a fraction of the cost of private providers because of its bulk buying power, and (as detailed above) since the vast majority of people use and gain benefit from hearing aids once they are provided, a screening programme would be very cost effective. A detailed cost-benefit analysis, not taken into account here, has been undertaken by Action on Hearing Loss which estimates that a hearing screening programme at the age of 65 would cost £255 million over ten years but the benefits would amount to over £2 billion in that time, including avoided personal, employment, social and healthcare costs. This gives a benefit to cost ratio, developed in accordance with Government guidance, of more than 8:1[99]. There is strong evidence that such a screening programme would be cost

[98] 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).

[99] Action on Hearing Loss / London Economics (2010) Cost benefit analysis of hearing screening for older people. Available from: www.actiononhearingloss.org.uk/supporting-you/policy-research-and-influencing/research/our-research-reports/research-reports-2010.aspx.

		effective.
Page 20, section 5.7.	**All other options for managing the condition should have been considered (e.g. improving treatment, providing other services), to ensure that no more cost- effective intervention could be introduced or current interventions increased within the resources available.**	As stated above in response to Summary and sections 3.5 and 4.3, improvements to pathways, increased access and more flexibility to deal with increased numbers of patients have already been introduced across many areas of the UK. Despite this, most people who have hearing loss and could benefit from interventions such as hearing aids still do not seek help. As detailed in section 5.6 of this review and in our response to section 5.6 above, introducing hearing screening would be cost effective and would encourage more people to seek help.
Page 20, sections 5.8, 5.9 and 5.10.	**There should be a plan for managing and monitoring the screening programme and an agreed set of quality assurance standards; Adequate staffing and facilities for testing, diagnosis, treatment and programme management should be available prior to the commencement of the screening programme; Evidence-based information, explaining the consequences of testing, investigation and treatment, should be made available to potential participants to assist them in making an informed choice.**	Quality standards and appropriate pathways are already in place that would be well suited to the introduction of a screening programme, along with flexible services that can respond well to increased numbers of patients, as stated above in our response to section 3.5. Services already provide information, support and advice to patients about the consequences of testing and the choices they can make, so this would continue under any screening programme.
Page 20, section 6.	**Conclusions**	There is clear evidence from a health technology assessment, randomised controlled trials and systematic reviews, and from recent changes to service delivery in

		the UK that is not taken into account throughout this review. This evidence, detailed throughout this response, fulfils the criteria listed in this conclusion. The age at which screening should take place has been investigated, with screening at 65 found to be the most cost effective and beneficial. The optimal cut off for screening is 35 dB HL and the most effective screening test is to ask two verified questions alongside pure tone audiometry. The long term benefits of hearing aids, including in improving quality of life, has been proven by numerous robust studies, detailed above, and evidence from the changes made to services in areas of the UK show that effective and flexible diagnostic pathways have the potential to deal effectively with increasing numbers of patients seeking help. Although the frequency of screening is not mentioned in the rest of this review, it is mentioned in the conclusions section. Since hearing aids last around 3-5 years, and most people's hearing does deteriorate as they age, it is recommended that people are invited back for another hearing test every three years after the age of 65[100]. There is clear evidence that early intervention improves outcomes for people with hearing loss and that hearing aids work, are acceptable to people with hearing loss

[100] Department of Health (2012) Adult hearing AQP implementation pack, London: Department of Health; 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).

		and bring major benefits. As the national government strategy the Action Plan on Hearing Loss[101] has stated, unaddressed age-related hearing loss is a major public health issue which will cause increasing issues for people unless something is done. A hearing screening programme would encourage people to get the help they need from hearing aids and other support, ensure they are made aware of the impacts of hearing loss and the effectiveness of the interventions available, and ultimately will lead to thousands more people being able to communicate, manage and reduce the risk of other health conditions, and remain active, independent and healthy.
Page 21, section 6.2.	**Implications for research**	A large amount of evidence, detailed in our response, has not been included in this review. We believe this evidence is sufficient to fulfil the criteria and introduce screening for hearing loss in adults over 65 years. Governments across the UK have already made tackling hearing loss and improving its diagnosis a priority[102], and Public Health England has committed to strengthen the

[101] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.

[102] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/; The Scottish Government (2014) See hear: a strategic framework for meeting the needs of people with a sensory impairment in Scotland, Edinburgh: Scottish Government; Department of Health, Social Services and Public Safety (2012) Physical and sensory disability strategy and action plan 2012-2015, Belfast: Department of Health, Social Services and Public Safety.

		evidence base on the diagnosis and management of hearing loss[103]. Following this consultation, if the National Screening Committee does not believe existing evidence justifies a change in policy, it must provide the reasons why and highlight specifically where it believes additional evidence is needed. This will allow Public Health England and the wider government to meet its commitments in the Action Plan on Hearing Loss by commissioning or securing any relevant research and ensuring that the growing challenge of hearing loss is met.

[103] The Department of Health and NHS England (2015) The Action Plan on Hearing Loss. London: Department of Health and NHS England. Available from: http://www.england.nhs.uk/2015/03/23/hearing-loss/.

Screening for Hearing Loss in Older Adults, external review against programme appraisal criteria for the UK National Screening Committee, 2014

Hearing Screening for Life coalition - stories from people with hearing loss

We are the Hearing Screening for Life coalition, a group of major charities representing a wide range of people, and we are calling on the National Screening Committee (NSC) to introduce a hearing screening programme for everyone at the age of 65. We are all concerned at the wide ranging impact that hearing loss can have across all areas of someone's life and on society as a whole. In a separate document, we have submitted a joint response to the NSC's consultation. We also asked people to submit their own experiences of hearing aids and the service they received from the NHS, and what difference getting hearing tests and aids earlier would make. These stories, which show the patient perspective on why hearing screening should be introduced for adults, are listed below. We have grouped these into three sections, which answer three main evidence gaps highlighted by the NSC's review:

- Evidence for the long-term effectiveness of hearing aids in improving hearing and quality of life.
- Support for the current pathway for addressing hearing loss within the NHS.
- Support for the need for early intervention in addressing hearing loss.

Please do not publish these stories as they contain personal information.

Evidence for the long-term effectiveness of hearing aids in improving hearing and quality of life

1. **xxxx xxxx** **xxxx xxxx**

2. **xxxx xxxx** **xxxx xxxx**

3. xxxx xxxx xxxx xxxx

4. xxxx xxxx xxxx xxxx

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Support for the current pathway for addressing hearing loss within the NHS

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Support for the need for early intervention in addressing hearing loss

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