

Hearing Impairment: Summary

How many people are affected and how many receive services?

- In Greenwich there are an estimated 31,000 people with some form of hearing loss; 19,000 of whom would benefit from a hearing aid. The NHS in Greenwich spends approximately £1.6 m on hearing loss detection and management each year.
- Just 731 hearing aids were fitted in NHS hospitals for Greenwich residents in 2011-11 suggesting either marked unmet need or need being met via the private sector or both.
- There is a similar picture of potential unmet need in adults with profound hearing loss. There are predicted to be 361 people aged 18 years or over (39 <64 yrs; 322 >=65 yrs) with a profound hearing loss. Of these 29 received services from social care directly as a result of hearing loss (though more may be recorded under other causes) and 7 people were supported by communicator guides and 11 received a cochlear implant.
- There is a different picture in children where 91 are registered as having Special Educational Needs due to hearing impairment compared to an estimated 100.

Risk factors for hearing impairment

- Risk factors for permanent hearing loss include age, high noise levels; communicable diseases (rubella, measles, meningitis, mumps, syphilis); genetic; birth injury
- Risk factors for hearing loss which is usually temporary include otitis media (ear infection); perforated eardrum; glue ear in children; wax.

What works?

- Prevention
 - Uptake of MMR (mumps, measles and rubella) vaccine and HiB against one form of meningitis – levels of uptake are currently around 90% in Greenwich but need to be at least 95% in order to provide herd immunity that protects those who cannot have the vaccine.
 - Screening of pregnant women for infectious diseases that might lead to deafness in their baby
 - Reduction in exposure to high levels of noise in the workplace. RBG Environmental health officers visited 161 premises that might have been exceeding noise levels due to music or entertainment to enforce the Control of Noise at Work Act 2008 and provided training in the compliance with the Act. The
 - European regulations from 2013 state that all personal music players must have a maximum of 85 decibels with warnings and reminders when this is breached.
- Detection
 - The Newborn Hearing Screening Programme aims to assess all children for hearing loss by 4-5 weeks of age – in Greenwich 95% of babies are checked by 5 weeks
 - The school entry health check at age 4-5 years aims to pick up children prior to formal education so that adaptations can be made in the classroom to accommodate any hearing loss.
- Management/re-ablement
 - Hearing aids are the mainstay of management and those with hearing loss who use a hearing aid have a better quality of life
 - Cochlear implants may be helpful for those with profound bi-lateral hearing loss who have gained no benefit from hearing aids. As any residual hearing is lost from the operation the decision to operate needs to be taken carefully

Hearing Impairment

Hearing Impairment

What do we know about it?

Introduction

Hearing impairment is the complete or partial loss of the ability to hear in one or both ears, and can be temporary or permanent. Permanent impairment can lead to a wide range of disability, from difficulty following speech in noisy environments to profound deafness, and may result from a variety of underlying disorders. Hearing loss is one of the commonest disabilities, with over 90% of the over-eighty population expected to have some reduction in hearing, alongside smaller but still significant numbers of younger people (see Fact and Figures below). Awareness of the substantial consequences of hearing loss is low among young people, with 66% believing that hearing loss would not dramatically affect their lives.

Risk factors

Causes of impairment are wide-ranging, with different predominant factors for temporary and permanent deafness and for different age groups. While the most common cause of permanent hearing loss is presbycusis, where hearing declines as part of the aging process, there are various other risk factors some of which can be intervened upon to reduce the chance of hearing loss occurring.

Noise

After aging, the most common cause of permanent hearing loss is noise exposure. Even noise that doesn't seem very loud can damage hearing over long periods. Louder sounds, such as those encountered on building sites, and in factories and music venues can cause damage quickly. Personal music devices (iPods, MP3 players and phones) used with earphones can produce volumes which harm hearing.

Communicable disease

Other causes of permanent hearing loss include infections during gestation or in later life such as measles, rubella, bacterial meningitis (infection of the covering of the brain) and encephalitis (swelling of the brain) and in rare cases mumps (NHS Choices, 2012). Studies produce varying estimates of risk, suggesting that 10-20% of bacterial meningitis cases in children will lead to some hearing loss (Nadol, 1978) (Dodge, 1984), around 10% of measles cases will cause an ear infection which may cause deafness (CDC, 2013), and up to 60% of babies with congenital rubella (mother infected during pregnancy) will go on to develop hearing impairment (Wild, 1989).

Genetics

More than 50% of pre-lingual deafness is genetic, with hearing loss the most common birth defect in developed countries (Smith, 2013).

Problems in pregnancy and birth

Various factors relating to pregnancy or birth including infections their mother has during pregnancy (e.g. rubella or syphilis) and lack of oxygen during birth can lead to hearing impairment in early life

Temporary deafness

Temporary hearing loss may be caused by localised infections (otitis media) which may give rise to perforated ear drums; by glue ear in children (where mucus in the ear does not drain away), and by blockages to the ear canal due to a build-up of wax.

Effects

Hearing loss can have major social consequences - during a time when there was high employment, people in the UK with severe to profound hearing loss were four times more likely to not have a job than average (RNID, 2007). In 2006, it was found that the UK was losing £13 billion per year through unemployment related to hearing loss (Shield, 2006). In calculating this figure, only people with less than profound hearing loss were considered. This means that the economic cost associated with profound hearing loss is additional to this figure.

Deafness may cause people to withdraw socially, as they avoid situations where they won't be able to hear others. Within the family relationships may be affected by people not being able to communicate and also from their reliance on family members for help. Some people who lose hearing will suffer from tinnitus, a ringing sound in their ears which they may find very upsetting.

Tinnitus can be particularly distressing, and one study found that 60% of those affected had a major depressive disorder (Daugherty, 2011).

Research has highlighted that awareness and concern about hearing loss is quite low among young people with only 16% of young people worrying about their hearing, and 66% believed that losing some hearing would not have a dramatic effect on their life (Bennett, 2012).

National Strategies

The most recent national strategy 'Improving Access to Audiology Services in England', DH, 2007, concentrates on good practice along the whole pathway of care. It included adding access to diagnostic hearing tests within the NHS health maximum 18 week wait from referral to treatment target for the most complex cases (where patients are referred to Ear Nose and Throat (ENT) consultants), and assessment within 6 weeks where patients have been referred to audiology departments.

Facts and figures

It is estimated that over 31,000 over-16s in Greenwich will have some degree of hearing loss, and almost 19,000 would benefit from using a hearing aid. The table below applies rates of hearing loss found in the most recent comprehensive study (Davis 1995) to estimate the likely numbers in Greenwich's population.

Table 1. Estimated numbers and proportions of Greenwich residents with hearing loss, by degree of impairment and age, 2012

Age range	Number of people with hearing loss	
	With some hearing loss	With hearing loss that would benefit from hearing aids
16-49	5,134 (4.0%)	2,314 (1.8%)
50-64	8,188 (22.7%)	3,248 (9.0%)
65-79	10,352 (51.0%)	6,304 (31.1%)
80+	7,785 (90.5%)	6,792 (79.0%)
Total 16+	31,460	18,657

Source: Hearing in Adults, Davis, 1995 and GLA population projection for 2012, 2011 round

PANSI ('Projecting Adult Needs and Service Information' IPC and Oxford Brookes University) data for Greenwich estimates that there are currently 39 people aged 18 – 64 with a profound hearing loss in the borough. This is expected to rise to 41 in 2015 and 45 in 2020. Additionally PANSI estimates that there are 4,785 adults aged 18 – 64 in the borough with a moderate or severe hearing impairment. It is projected that this will rise to 5,011 in 2015 and 5,500 by 2020, based on ONS population increase and demographic change projections (PANSI, 2012).

For older people, i.e. adults aged 65+, the figures are considerably higher. POPPI ('Projecting Older People Population Information System' IPC and Oxford Brookes University) data estimate that 322 people aged 65 or older have a profound hearing loss and 11,558 have a moderate or severe hearing impairment in Greenwich. Both these figures are projected to fall slightly by 2015 but then rise again to 336 and 12,021 respectively by 2020 (PANSI, 2012).

Prevalence estimates for hearing loss among children can be obtained from several sources. Royal Borough of Greenwich figures on children in maintained schools with Special Educational Needs showed that there were 91 pupils registered with a Special Educational Need due to hearing impairment (either with a statement of need or at 'school action plus', indicating an impairment that requires support from outside the school). This is in line with *National Deaf Children's Society* estimates, which suggest that around 100 children under 18 in Greenwich would have hearing loss.

Trends

The WHO (World Health Organisation) predicts that hearing impairment will be one of the top ten disease burdens in rich and middle-income countries by 2030 (Shield, 2006). There have been no comprehensive studies of rates of hearing loss in recent years in the UK on which to base trend estimates.

What works?

Prevention

Preventing hearing loss from occurring in the first place clearly provides the best outcomes and there are various opportunities for reducing incidence.

Noise

The primary preventable cause of hearing loss is noise exposure. Strategies to reduce this exposure vary by setting with different legal contexts and obligations applying to employees and the general public.

Workplace

- A Cochrane review of studies on improving workplace hearing interventions found "[t]he evidence shows that tailored interventions (the use of communication or other types of interventions that are specific to an individual or a group and aim to change behaviour) improve the mean use of hearing protective devices (HPD) versus non-intervention. Individually tailored education was more effective in improving HPD use compared with target education programmes which address shared worker characteristics. Mixed interventions (education, mailing, distribution of HPDs, noise assessments and audiometric testing) were also more effective in improving HPD use compared with hearing testing alone." (Cochrane, 2012)
- In the professional environment, the Control of Noise at Work Regulations 2005 requires employees to act to "prevent or reduce risks to health and safety from exposure to noise" (HSE, 2012). Awareness of these rules and regulations is likely to be good in sectors traditionally associated with loud noise, such as construction and more recently in music and entertainment. However the relatively low volumes which can give rise to hearing loss over extended periods mean that people are likely to be exposed to damaging levels of noise in other circumstances where they would not expect noise to be a danger. Ensuring that noise at work laws are adhered to in all workplaces reduces risks to employees and may in turn help to raise awareness levels around noise more generally. The "rule of thumb" for breaches of acceptable levels of exposure to noise at work are: Level 1 breach – it is difficult to hear someone speaking in a normal conversational voice at 2 metres away; Level 2 breach – it is difficult to hear someone speak when they are speaking close to your ear. At level 2 it is very likely that active hearing damage is occurring. Thresholds for acceptable daily or weekly exposure are set at 80-85db (decibel) whilst peak exposure is set at 135-137 db.

General public

The law offers less protection to the general population than those in the workplace.

- Raising awareness of the risk to hearing from noise, and ways to reduce that risk, can empower individuals to make more informed decisions about exposure.
- EU regulations have recently required a pre-set maximum volume for personal music players of 85dB with warnings and reminders when this is exceeded. These warnings may again have a wider effect of reminding people that noise can be a risk for their hearing.

Communicable disease

- Reducing hearing loss due to infectious disease relies on maximising uptake of the MMR (Mumps, Measles and Rubella) vaccination and HiB (Haemophilus Influenzae B) vaccine which prevents one of the forms of early childhood meningitis) and reacting swiftly and appropriately to outbreaks of disease (e.g. meningitis).

Problems of pregnancy and birth

- Preventing hearing loss among newborns due to infections during pregnancy relies on identifying mothers with relevant infections (chiefly rubella and syphilis) and providing appropriate treatment
- Preventing hearing loss due to problems of hypoxia during birth depends on providing the best possible maternity services.

Detection

Detecting hearing loss in children as early as possible gives them the best chance of developing to their full potential whether that be through improving hearing using hearing aids, implants or learning sign language.

- The national screening programme for newborn hearing provides a reliable and accepted mechanism for finding hearing loss in newborn babies.
- In older age groups where there is no screening, hearing loss is usually diagnosed when individuals come to GPs with difficulties from their condition. This may be adults noticing a decline in hearing, or parents suspecting problems with their children. In either case increased awareness of signs and symptoms would be expected to contribute to earlier presentation, diagnosis and treatment and thus better outcomes for affected patients.

Management/re-ablement

- Digital hearing aids can be used to improve hearing in those with mild to moderate hearing loss, improving communication and independence. Rates of emotional problems among older people with hearing loss were found to be higher in those who did not use hearing aids (NCAHNN, 2000).
- Among those whose hearing loss is too profound to be treated with hearing aids, alternative methods of communication such as British Sign Language are key, allowing a medium for face to face interaction. Ensuring that services are available to provide support for this group is important.
- Cochlea implants (implanted electronic devices which connect directly to the auditory nerve) may be useful in cases of severe to profound deafness. NICE recommends a single implant in adults with severe hearing loss, unless they are blind and need their hearing to find their way around, in which case two implants are suggested. For children the default offer should be two implants.
- Various types of equipment may be found useful in allowing hearing impaired people to lead a safe and normal life, for example modifications to fire alarms to make them detectable, amplified telephones and alarms etc. Hearing dogs may be used by some people to address the difficulties they encounter due to hearing loss.

Local assets

There are currently two voluntary organisations based in Greenwich supporting deaf or hearing impaired residents: DISC (*Deaf is Special Children*) provides a youth club for children with hearing loss, alongside the *Woolwich Deaf Club*.

What do we know about the services?

Healthcare services

Healthcare services impacting on hearing loss are concerned with prevention, detection and management.

Prevention

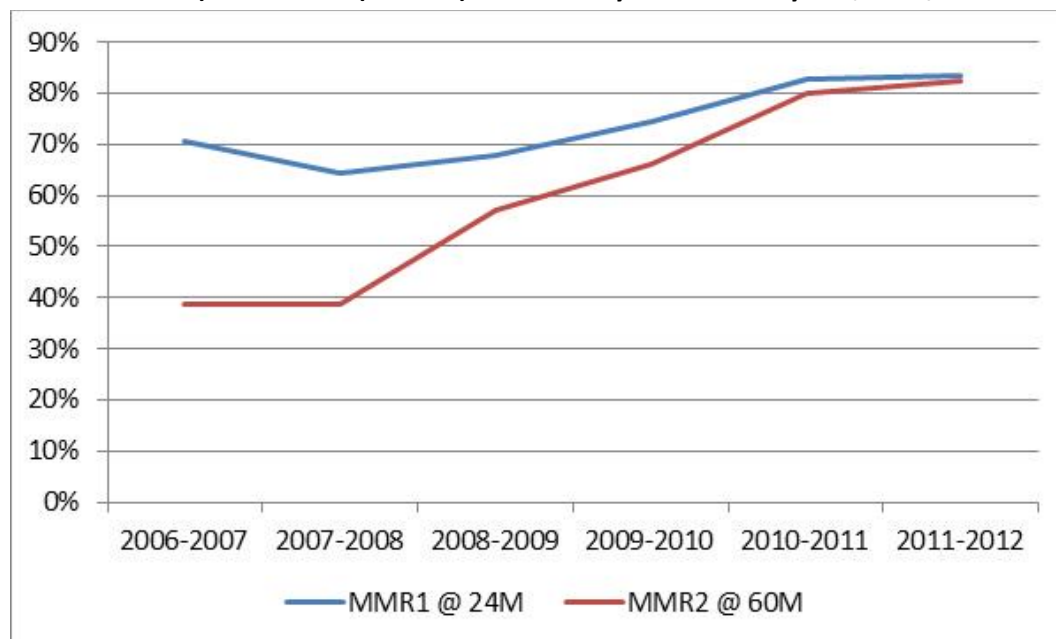
Noise

At present there are no Public Health campaigns locally or nationally promoting awareness of noise-induced hearing loss and the importance of prevention/avoidance techniques.

Communicable disease

- MMR vaccinations are currently offered as part of the national childhood immunisation package. Rates of vaccination have risen in recent years but do not currently reach levels required for herd immunity, where unvaccinated members of the population are protected by the level of immunisation of the whole group. More information on childhood immunisation is available

Figure 1. Percentage of eligible children in Greenwich receiving MMR1 (initial Measles, Mumps and Rubella vaccine) and MMR2 (booster) within two years and five years, 2006/07 – 2011/12



Source: COVER

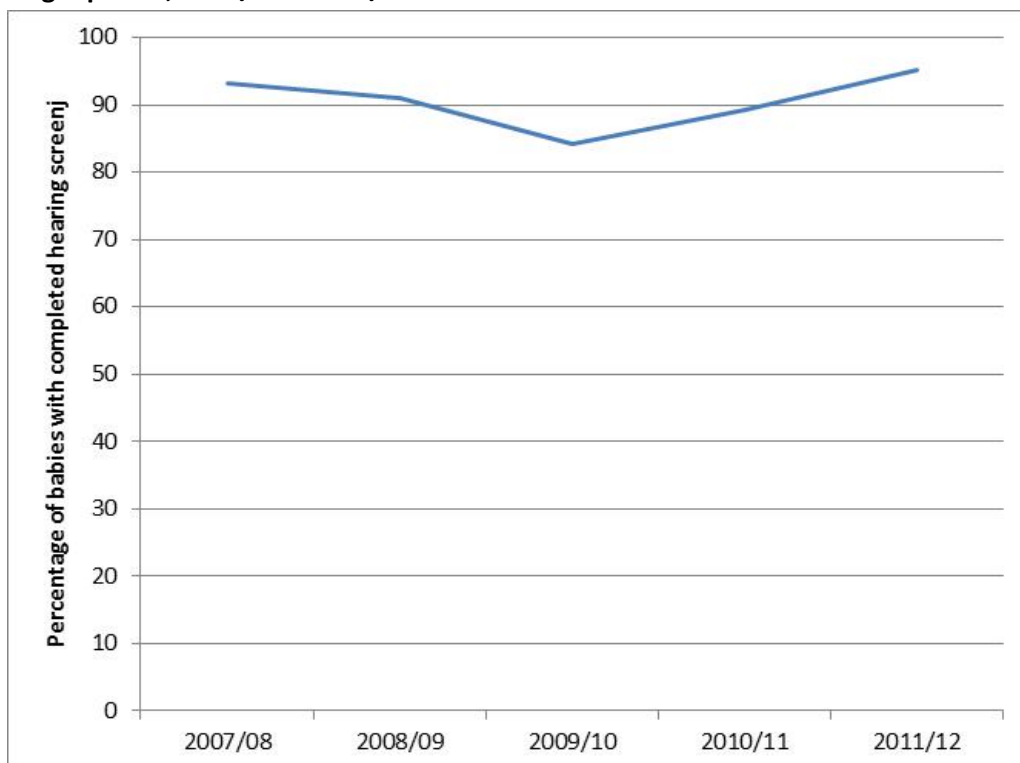
- Women are tested in pregnancy for infectious diseases that can cause hearing loss as part of the *NHS Infectious Diseases in Pregnancy National Screening Programme*. Women who are found to be susceptible to rubella are offered a postnatal vaccination.
- Changes in the hospital system in South London, with the merging of Queen Mary Sidcup, Queen Elizabeth Woolwich and Princess Royal University Hospital to form the South London Healthcare NHS Trust, alongside other data issues, have meant that it is not currently possible to tell

whether previously high rates of coverage for infectious diseases in pregnancy testing (99.3%) have been maintained.

Detection

- ❖ The NHS Newborn Hearing Screening Programme (NHSP) aims to provide a hearing test to all children before they are 4 weeks or 5 weeks old, depending on the format of the local programme.
- ❖ In Greenwich the Newborn Hearing Screening Programme comprises three levels:
 - The initial first line testing is carried out by Health Visitors, or by staff in Special Care Baby Unit for babies who are in this care setting.
 - Babies who test positive in the first screen are referred to a secondary testing service run by Oxleas NHS Foundation Trust.
 - A positive result from secondary line screening leads to a final tertiary service provided mainly by St. Georges Hospital and delivered in Bexley to finally confirm hearing loss.
- ❖ While the NHSP is set up chiefly to detect bilateral hearing loss, it should also pick up cases of unilateral hearing loss.

Figure 2. Percentage of babies in Greenwich who were screened for hearing problems within the target period, 2007/08 – 2011/12



Source: NHSP Trends, retrieved 30/08/2012

- At the age of four or five years when children begin primary school they will be offered the School Entry Health Check which includes a hearing test. If appropriate they will then be referred to an audiologist for further testing.
- There is no screening programme for adults. Diagnosis of hearing loss in adults usually results from patients self-presenting to GPs complaining of hearing difficulty.

Management

- Hearing aids: Greenwich commissions audiology services from University Hospital Lewisham and Guy's and St. Thomas' Hospital. Both sites provide hearing aid assessment (hearing test), fitting, follow up and repairs. Lewisham provides all of the hearing aids (only digital aids are offered), with a total of 731 in 2010-11. Most follow up appointments take place at Guy's and St. Thomas'.
- Greenwich participated in the national Any Qualified Provider procurement in 2012, which has led to it holding contracts for hearing testing and aid provision with seven providers:
 - Guy's and St Thomas' NHS Foundation Trust
 - Imperial College Healthcare NHS Trust
 - In Health Ltd
 - Lewisham Healthcare NHS Trust
 - Royal Berkshire NHS FT
 - University College London Hospitals NHS FT
 - Specsavers
- Patients are offered a choice of where they would like to go for their test and aid.
- Cochlea implants are offered in the borough, although in line with the national picture, only a small number of people receive them. 11 implants were provided between 2010 and 2012.
 - 7 deaf clients are currently supported by communicator guides from the Royal Borough of Greenwich.

Costs

In 2010/11 Programme Budgeting figures show that £1,560,000 was spent in the 'Problems of hearing category', with 90% of the spend within secondary care. 28% was on elective and day case inpatients and 54% was on other secondary care.

Royal Borough of Greenwich services

Prevention

A key area where Royal Greenwich has an opportunity to impact on hearing loss is through the protection of employees from workplace noise exposure. Regulation of health and safety at work, including that relating to noise, is a shared responsibility between local authorities' Environmental

Health Departments and the Health and Safety Executive (HSE). Broadly, the HSE is responsible for enforcing the law in manufacturing and public sector premises, while local authorities are responsible for commercial premises including the retail, wholesale and leisure and entertainment sector.

In 2006, the Control of Noise at Work Regulations 2005 came into force, introducing more stringent standards than the Noise at Work Regulations 1989 that they replaced. It was recognised that the music and entertainment industry would be particularly affected by the new regulations so they were not applicable to this sector until April 2008.

As these premises were a significant proportion of those that the Council were the enforcement authority for, a specific project was undertaken to raise awareness with the owners and ensure compliance. A total of 161 such premises were contacted including public houses, private members clubs and nightclubs which resulted in a generally positive response and good level of compliance. Environmental Health investigates any complaints from employees about excessive noise they are being exposed to and complaints from members of the public who have visited such venues. Although the regulations do not apply to the public, such complaints are a useful source of intelligence that may indicate a problem for employees.

Detection/route into local authority services

People may access adult social care services through a number of routes. Young people approaching the age of 18 will be assessed and supported by the Transitions Team. Some people may be referred to social services following a stay in hospital. Typically they will be referred to an Occupational Therapist and/or a Community, Assessment and Rehabilitation (CAR) team. These interventions will usually be one-off or short-term interventions aimed at supporting people back to independence. Should someone require longer-term or specialist support then they will be referred on to a Specialist Social Work Team (SSWT). People that approach the Council directly to request a service will first be assessed by an Information and Contact Officer (ICO). The ICO will determine whether or not people are likely to qualify for a service and refer them on to either the CAR or SSWT as appropriate.

Management/re-ablement

Social Care services are provided according to the needs of the individual. A package of care will be developed based on an assessment of the person's needs that may include accommodation, personal care, the provision of equipment, day-time activity and respite. There are no block-purchased services for hearing impaired people. Clients may rely on social work teams to arrange a care package for them, but all clients have the opportunity to request a personal budget such that they can arrange their own package of care. People who choose to take up a personal budget can take complete control of organising their care or they can request support to do this.

Adults with sensory impairments (i.e. hearing loss and sight loss) are included in the Adults with a Disability client group. The numbers of people that accessed social care services in 2011/12 are low and only 6 people aged 18-64 years are recorded as having received services specifically as a result of their hearing impairment. This is reflected for older people too; only 23 of adults aged 65+ that received a service in 2011/12 received support specifically because of a hearing impairment. However, this does not mean that other people in receipt of services do not have significant hearing

loss and are receiving services. Many people with a sensory impairment will have other needs that are considered the primary reason for accessing services, e.g. another physical disability, a mental health problem or a learning disability and therefore it is difficult to identify accurate numbers from the data available.

Planned improvements

- Continued attention to childhood immunisation is planned and targets of 95% to reach herd immunity are being planned for with primary care teams.
- Existing prevention, detection and management/re-ablement services continue to plan for improvements but there are no specific new programmes planned.

References

- Bennett, 2012 Claire Bennett, *Too many people take their hearing for granted*, Royal National Institute for Deaf People (now 'Action on Hearing Loss'), retrieved 2012
- CDC, 2013 Centers for Disease Control and Prevention, Measles: Complications, <http://www.cdc.gov/measles/about/complications.html>
- Cochrane, 2012 El Dib RP, Mathew JL, Martins RHG, *The effectiveness of interventions to promote the wearing of hearing protection to reduce exposure to noise among workers*, Cochrane Collaboration, April 2012 <http://summaries.cochrane.org/CD005234/the-effectiveness-of-interventions-to-promote-the-wearing-of-hearing-protection-to-reduce-exposure-to-noise-among-workers>
- Daugherty, Julie Daugherty, *The latest buzz on tinnitus*, The Nurse Practitioner, 2007, cited in 2007 *Hearing Matters*, Action on Hearing Loss, 2011
- Dodge, 1984 *Prospective evaluation of hearing impairment as a sequela of acute bacterial meningitis*, The New England Journal of Medicine [1984, 311(14):869-874]
- HSE, 2012 *Employers' responsibilities - legal duties*, Health and Safety Executive website, retrieved August 2012
- Nadol, 1978 *Hearing loss as a sequela of meningitis*, *Laryngoscope*, 1978 May;88(5):739-55
- NCAHNN, 2000 *The consequences of untreated hearing loss in older people*, National Council on Aging, Head and Neck Nursing, 2000, cited in *Hearing Matters*, Action on Hearing Loss, 2011
- POPPI, 2012 Projecting Older People Population Information System, Institute of Public Care, Oxford Brookes University www.poppi.org.uk

- PANSI, 20-12 Projecting Adult Needs and Service Information, Institute of Public Care, Oxford Brookes University www.pansi.org.uk
- RNID, 2007 *Opportunity Blocked*, Royal National Institute for Deaf People (now 'Action on Hearing Loss'), 2007
- RNID, 2009 *Hidden Crisis, Why Millions Stay Silent About Hearing Loss*, Royal National Institute for Deaf People (now 'Action on Hearing Loss'), 2009
- Shield, 2006 Bridget Shield, *Evaluation of the Social and Economic Costs of Hearing Impairment*, a report for Hear-It, 2006
- Smith, 2013 *Deafness and Hereditary Hearing Loss Overview*, NCBI, <http://www.ncbi.nlm.nih.gov/books/NBK1434/>
- Wild, 1989 *Onset and severity of hearing loss due to congenital rubella infection*, N J Wild, S Sheppard, R W Smithells, et al., *Arch Dis Child* 1989 64: 1280-1283 doi: 10.1136/adc.64.9.1280