Transforming Adult Hearing Services for Patients with Hearing Difficulty

A Good Practice Guide
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A Good Practice Guide

June 2007
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<table>
<thead>
<tr>
<th>Policy</th>
<th>Estates</th>
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<tbody>
<tr>
<td>HR/Workforce</td>
<td>Performance</td>
</tr>
<tr>
<td>Management</td>
<td>IM &amp; T</td>
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<tr>
<td>Planning</td>
<td>Finance</td>
</tr>
<tr>
<td>Clinical</td>
<td>Partnership Working</td>
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<table>
<thead>
<tr>
<th>Description</th>
<th>Further to the publication of ‘Improving Access to Audiology Services in England’ in March 2007, this document provides good practice and evidence to help commissioners and service providers to make changes to the way that adult hearing services are delivered, in particular, to reduce waits for patients with the most common hearing difficulties.</th>
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<tbody>
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Figures

Figure 1: High level pathway for adults with hearing difficulties 4
Figure 2: An integrated audiology service 5
Figure 3: Primary care questionnaire to assess hearing difficulty 8
Figure 4: Suggested referral management 9
Figure 5: Patient grouping for adult hearing services 10
Figure 6: Summary of lean solutions 13
Figure 7: Open ear tip technology 15
Figure 8: Comply ear tip technology 15
Figure 9: Percentage of people with ‘open ear’ hearing aid fitting by age group 16
Figure 10: Percentage of people with ‘open tip’ and ‘open tip + comply tip’ as a function of better hearing ear threshold category (averaged 0.5, 1, 2, 4kHz) 16
Figure 11: GHABP benefit from open ear technology 17
Figure 12: Assessment using audiology triage equipment 18
Figure 13: Triage equipment 19
Figure 14: Automated audiometry 20
Figure 15: Workforce solutions 22
Figure 16: Process pathway for hearing difficulty 24
Figure 17: Commissioning 28
Foreword

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Improving Access to Audiology services in England published by the Department of Health in March 2007 set out the vision for people with hearing and balance problems and how the NHS needed to respond to the challenge.

Integral to improving access and reducing waits, particularly in adult hearing services, is the need for services to be transformed applying all the tools and techniques of service improvement and redesign.

This good practice guide provides practical evidence based advice and introduces a new care pathway designed to provide speedier access to assessment and treatment and to fundamentally change the patient experience. It is intended to support both commissioners and providers in finding and implementing solutions to capacity constraints and reducing waits to a sustainable position.
Vision for Audiology and Adult Hearing Services

1. The vision for people with hearing and balance problems is for them to receive high quality, efficient services delivered closer to home, with low waits and high responsiveness to the needs of individual patients, which are free at the point of access.

2. The levers and incentives introduced by the health reforms provide the opportunity for more effective commissioning of audiology services, including practice based commissioning and Tariffs. Each NHS audiology service should be encouraged to become self-improving and deliver a quality service that aims to achieve, year-on-year, a better patient experience.

3. *Improving Access to Audiology Services in England*\(^1\) sets out the context for the transformation of adult hearing services in England in relation to the key patient outcomes of improving health and well being, through the provision of safe, effective and responsive services which are efficient, affordable and equitable. In particular it seeks to improve responsiveness to the needs of individual patients and to make a maximum wait of 18 weeks from referral to treatment possible for all audiology referrals.

4. The Care Closer to Home ENT demonstrator sites\(^2\) have taken forward the White Paper, 'Our Health, Our Care, Our Say', vision for people to have greater independence, choice, control and empowerment. A report from this work will be produced shortly, which touches on audiology services.

5. The Health Select Committee Enquiry report into audiology\(^3\) also supports the need to improve audiology services. Whilst this document addresses some of the issues raised in the report, it does not attempt to pre-empt the Government’s formal response to this document.

6. *Improving Access to Audiology Services in England* sets out the DH commitment to produce a range of materials that will support the NHS in delivering on these priorities.

7. This document represents the first part of this supporting information. It provides evidence and advice to help commissioners and service managers make changes to audiology services, in particular to reduce waits for patients with the most common hearing difficulties. It does not address more complex hearing need (such as for bone anchored hearing aids or

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cochlear implants), balance conditions, tinnitus or paediatric care, which will be addressed through further materials to be produced later in the year. The document is split into two sections.

- The first focuses on the benefits that can be gained through getting the systems and processes right, using the best technology that is available and planning an effective and affordable workforce,
- The second section introduces a new patient pathway for the majority of patients with hearing difficulties, with suggestions about an effective way to deliver each stage of care.

8. The evidence on which this document is largely based is from the experience of six DH NHS Physiological Measurement Development Sites4, which tested innovative delivery models and solutions to reducing waiting times, predominantly to NHS provided adult hearing services during 2006/07. Some of the evidence is based on early findings and requires ongoing refinement, testing, analysis and evaluation. The experience from these sites is presented in a series of case studies which will be available on the 18 weeks website, these are listed at annex A. This evidence is supplemented by evidence from other NHS sites and services provided by other organisations that have demonstrated improvements in the delivery of their services.

9. New information is provided on a model care pathway for adults with hearing difficulties, a high level overview of which is outlined at figure 1 and which will be described in detail later in this document. Additional pathways will be developed and published during 2007 to cover a more comprehensive range of hearing and balance disorders including those affecting children.

10. Good practice in providing care for adults with hearing difficulties as outlined in this document and using this patient pathway will:

- Challenge existing practice and pathways so that patient outcomes and experience are improved
- Maximise transformational change opportunities so that services meet patient needs
- Minimise risks to patients in taking forward change
- Utilise service improvement techniques
- Support commissioners to deliver 18 weeks across all care pathways

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4 Referred to as the NHS Development Sites, case studies listed at annex A will be made available on http://www.18weeks.nhs.uk/Public/default.aspx?main=true&load=ArticleViewer&ArticleId=557#1
A more comprehensive pathway for all adults with hearing difficulties is also embedded within a ‘symptom based’ commissioning pathway\(^5\) published as one of a series of commissioning pathways to support delivery of 18 weeks. The good practice in this document refers mostly to the column headed ‘primary assessment’.

12. *Improving Access to Audiology Services in England* describes the audiology service today. Audiology services have commonly been commissioned from the acute sector with highly variable accessibility, patient waits and outcomes. By using existing knowledge about improving NHS Systems and Process, evidence about Innovative Technology and planning and introducing a competent, productive Workforce to deliver the right processes at the right skill level, services can be transformed to deliver the vision.

13. This section triangulates evidence to support these essential components of integrated service improvement for delivering services to adults with hearing difficulties.

**Figure 2: An integrated audiology service**

14. Waiting times for adults with hearing difficulties can be radically reduced by getting the basic systems and processes right through:

- Understanding the scale of the challenge locally and collecting appropriate information to plan capacity
- Improving referral criteria and ensuring that they are consistently applied by well informed primary care practitioners
- Better waiting list management and efficient scheduling, including managing DNAs
- Managing variation in capacity and demand and maximising added steps in the patient pathway
- Utilising all the benefits of the audiology Patient Management Systems and linking where possible with broader NHS Patient Management Systems
- Adopting lean processes and other service improvement methodologies through a systematic approach to understanding local services
15. A wide range of good practice materials in the general management of systems and processes have been produced by the Modernisation Agency and more recently by the NHS Institute for Innovation and Improvement, which may provide useful reference material. These materials will help to improve the efficiency and productivity of pathways, but need to be coupled with a transformational approach which results in services looking very different from the present.

Understanding the scale of the challenge locally and collecting appropriate information to plan capacity

16. It is estimated that the prevalence of hearing loss among adults in England is 20%. Age is a major predictor of hearing impairment so as the population ages more people will be affected. There is little effect of prevention strategies for people aged 50 years and older, although noise exposure at work and at leisure (clubs, concerts, DIY, power tools etc) is the major preventable risk factor for those under 50 years. About 10% of the adult population have hearing difficulties and could benefit from hearing aids associated with a significant and substantial improvement in their quality adjusted life years (QALYs).

17. Improving Access to Audiology Services in England estimates that nationally around 300,000 extra pathways are needed between April 2007 and December 2008 to make a maximum wait of 18 weeks from referral to treatment possible for all adult patients with hearing difficulties, including those requiring reassessment of their needs and an appropriate hearing aid upgrade. Each SHA will have its own estimated capacity gap associated with its long waits and the needs of its population.

18. The NHS development sites illustrated the benefits that can be achieved through understanding their local demand and historical activity levels and estimating the capacity needed for sustainable services with reduced waiting times. This has in some way been helped by the need for systems to be put in place to generate information for the DH monthly data returns and quarterly census which include a requirement to provide waiting list and activity information.

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6 www.modern.nhs.uk/improvementguides/capacity/
www.wise.nhs.uk/cmsWISE/Cross+Cutting+Themes/capacity/planning.htm
www.modern.nhs.uk/improvementguides/capacity/7.htm
www.institute.nhs.uk/ServiceTransformation/Lean+Thinking/
www.nodelaysachiever.nhs.uk/

7 www.hse.gov.uk/pubns/indg322.pdf and www.hse.gov.uk/noise
8 Davis 1995; Davis et al 2007
9 www.performance.doh.gov.uk/diagnostics
19. In order to understand the scale of the challenge for NHS services, commissioners should ensure that providers:

- Collect and analyse demand data for all stages of the pathway, against agreed lists, in order to determine the rate of referral, and any changes to this

- Maintain data sets, which record the type of referral, referral source including speciality, referral date, appointment dates, attendance record, waiting and/or clearance times

- Understand and plan the capacity of the service (encompassing all sessions and different types of referrals) and how this needs to alter to meet current demand and any fluctuations, including through use of the audiology Patient Management Systems (see para 33)

- Utilise data to inform service redesign and models of provision to ensure that access is improved and that patient flow is balanced into and out of the service associated, for example, with variations in demand and capacity

20. To assist NHS service providers, the National Physiological Measurement Programme has developed a simple capacity planning and scheduling tool that is currently being tested by NHS partners and will be available shortly\(^\text{10}\).

21. Commissioners should also review how the independent sector can be utilised as a flexible resource to meet additional capacity requirements.

**Improving and consistently applying referral criteria**

22. Clear and consistently applied referral criteria into health services are a key element of service transformation processes, supporting not only equitable provision but also ensuring that patients with defined symptoms flow into the most appropriate service.

23. The level of hearing loss is tested by determining the intensity of a sound (in dBHL) that can be heard at different frequencies (kHz). It is usually acknowledged that there is a problem when hearing loss in any ear is 25dBHL or greater across a mid range of frequencies (0.5, 1, 2 and 4 kHz)\(^\text{11}\).

\(^{10}\) http://www.18weeks.nhs.uk/public/default.aspx?load=ArticleViewer&ArticleId=557

\(^{11}\) Davis, 1995
24. The validated questionnaire at figure 3\textsuperscript{12} will help primary care and other practitioners to make a decision about whether a new patient has a hearing loss that can benefit from using hearing aids and whether it affects one or both ears as part of the initial assessment\textsuperscript{13}: The questionnaire could be carried out by a range of primary care professionals, including practice nurses, healthcare assistants and GPs or could be self administered and interpreted by a healthcare professional.

25. Assessment of other factors, which are outlined at figure 4 (based on good practice from open ear fitting trial), will help to make a judgment about the most appropriate referral for the individual and should be based on information provided by both the patient and carers/relatives and taking account of patient choice and preferences. This includes assessment of the medical symptoms that could accompany hearing difficulty, such as vision and manual dexterity. At this early stage it is important to ascertain whether the patient is likely to choose treatment with a hearing aid if they do have suspected or demonstrated hearing loss, however, this should not preclude further assessment of hearing difficulty.

**Figure 3: Primary care questionnaire to assess hearing difficulty**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Do you have any difficulty with your hearing?</td>
<td>No/Yes</td>
</tr>
<tr>
<td>Q2. Do you find it very difficult to follow a conversation if there is background noise (such as TV, radio, children playing?)</td>
<td>No/Yes</td>
</tr>
<tr>
<td>Q3. How well do you hear someone talking to you when that person is sitting on your RIGHT SIDE in a quiet room?</td>
<td>No difficulty, slight difficulty, moderate difficulty, great difficulty, Cannot hear at all</td>
</tr>
<tr>
<td>Q4. How well do you hear someone talking to you when that person is sitting on your LEFT SIDE in a quiet room?</td>
<td>No difficulty, slight difficulty, moderate difficulty, great difficulty, Cannot hear at all</td>
</tr>
</tbody>
</table>

If the answer to Q1 or Q2 is yes and the response to both Q3 and Q4 are at least slight then hearing aids would give benefit and would be more likely to be used.

\textsuperscript{12} Validated in the national study of hearing Davis 1995 and Davis et al 2007

\textsuperscript{13} The mean hearing threshold level associated with a YES to Q1 or Q2 is about 30 dB HL and for Q3 the answers no, slight, moderate, great difficulty and cannot hear at all are associated with about 20, 35, 45, 70, 85 dB HL respectively across the average of 0.5, 1, 2 and 4kHz thresholds in people age 50-80 years.
26. Informed primary care staff will be critical to the success of introducing the questionnaire, a more streamlined service model and needs based referral systems.

Waiting list management and better scheduling

27. The national diagnostics data collection has highlighted long waits and clearance times in audiology services and particularly those associated with adult hearing difficulty. Waiting list management was variable in the NHS development sites. The following principles provide a guide for NHS audiology services to achieve consistency but also an expectation of service providers by commissioners:

- As far as possible adopt existing local provider waiting times policies and procedures that reflect 18 weeks
- Carry out administrative and patient based validation to exclude unnecessary cases e.g. people who are on the list more than once, those that have already been seen, those who no longer need care or have died
- Maintain as few separate waiting lists as possible
- Group together and maintain clear guidelines for patients who need broadly similar services\(^{14}\)

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\(^{14}\) www.modern.nhs.uk/improvementguides/capacity/1.htm
• Register patients as they enter the service

28. The importance of adopting good waiting list management is demonstrated in a number of NHS development sites. For example, by validating their waiting lists, Leeds Teaching Hospitals NHS Trust achieved a reduction of 894 patients (27% of the list) and Stoke on Trent NHS Trust reduced lists by 245 patients (5.2%). Stockport PCT reduced their list by 254 patients (10%) through eliminating duplications and list based mistakes and then by up to 25% when written confirmation letters were sent out asking for a reply to whether the patient wanted an appointment or re-assessment.

29. The first stage in achieving an effective approach to waiting list management and in moving towards fully booked audiology services is to break the appointment list down by triaged needs and to make an assessment of the available capacity to assess and manage clinical priority patients and all other patients currently referred for each care pathway.

30. Experience from the NHS Development Sites suggests an effective grouping for establishing and maintaining lists for adult hearing difficulty after adopting the referral management outlined earlier (paragraph 22), this is set out at figure 5:

Figure 5: Patient grouping for adult hearing services

a. Urgent patients including those with sudden hearing loss or associated concurrent symptoms that are referred from medical services

b. New patients with hearing difficulty
   • Referred to Audiology for “assess and fit” pathway service with universal open ear tip device or comply ear tip devices
   • Referred to audiology for a two stage pathway with an assessment appointment when an earmould is taken and information provided, followed by hearing aid fitting at a further appointment.

c. Existing patients with discontinued analogue hearing aids to be upgraded to new models

d. All other existing patients

31. NHS and other audiology services are encouraged to introduce a patient tracking list (PTL) to prospectively manage their waiting lists on the basis of referral to treatment, this will ensure that a focus on improving access to definitive treatment is both established and maintained irrespective of the route of referral and provision of service. Guidance on implementing an 18 weeks PTL is provided on the 18 weeks website. This will be mandated for 18 weeks pathways from July (e.g. those via ENT). Four NHS pilot sites are also currently trialling a PTL for non 18 week audiology pathways.

32. Integral to the introduction of a PTL is ensuring that scheduling or booking arrangements are as efficient as possible and all available capacity is appropriately managed and utilised. For audiology services (see case studies for individual examples, average figures given here) this could include:

- better management of DNAs through a clear and consistently applied DNA policy, which can reduce DNA to well below 5% of appointments
- cancellations handled consistently and in line with the Trusts access or waiting list policy eg by booking at short notice into cancelled slots, which can improve capacity by 5%
- applying innovative (and ethical) ways of both calling patients for appointment and reminding them of the date of their appointment
- offering a booked in advance audiology service to consultant led ENT outpatients rather than an ad hoc on demand service, which is an inefficient use of staff time, which demonstrated huge reductions in variation of workload and an increase in efficiency of audiology staff involved in ENT clinics of about 20%
- offering specific slots and/or sessions for particular activities (eg repairs, telephone follow up) instead of offering drop in or ad hoc provision, which demonstrated large reductions in variability of demand for services
- offering extended hours of operation and using staff flexibly to enable more patients to be scheduled using the same physical resources, which demonstrated 20 – 25% increase in capacity

Utilising all the benefits of Audiology Patient Management Systems

33. The audiology patient management system is domain/audiology specific as it has to work with NOAH. NOAH is designed specifically for the hearing care industry. It can measure a patient’s
hearing loss and transfer results automatically to a common database, record journal notes regarding the session and automatically save these in the patient’s record, either in NOAH or in a NOAH-compatible office management system such as AuditBase or Practice Navigator. NOAH comes with modules for performing basic fitting, measurement and office management functions.

34. To maximise the benefits of IT, service managers should ensure that their audiology department:

- Engages with the Trust’s IT department and ensure that audiology service requirements are reflected in existing and new strategies going forward e.g. National Programme for IT
- Understands how their audiology Patient Management System works
- Ensures that there is appropriate and early segmentation of lists and that local PTLs are established
- Understands how PMS interfaces to the local IT infrastructure and choose and book and plan to ensure that the NHS trust and PCT can share management information across systems in line with NHS Connecting for Health policy17
- Ensures the capabilities of the local PMS are being used to put appropriate workflow and local procedures in place
- Receive adequate training to ensure they use the system to its maximum effect with recognition that local IT support may be required, where possible contracts should be in place to ensure that local services are able to receive system upgrades

Adopting Lean Processes

35. Service model improvement stems from adopting a lean system design approach, removing unnecessary steps in the patient journey and fully using the resources that are available in audiology services. An effective way to attain this level of understanding is to undertake a local process mapping exercise18. This should lead to better understanding of the entire patient pathway by all team members and thus improved workflow and greater efficiency of all staff, with better team working. A Medical Research Council workflow report19 suggests that organisational efficiency could increase productivity by about 10% in good departments and that in others this gain could be greater especially if waiting lists are poorly maintained and DNA rates are high.

17 http://www.connectingforhealth.nhs.uk/
18 http://www.institute.nhs.uk/ServiceTransformation/Lean+Thinking/
NHS audiology departments have made significant changes to their delivery models as a result of lean thinking and these are detailed in figure 6:

**Figure 6: Summary of lean solutions**

<table>
<thead>
<tr>
<th>Lean solution</th>
<th>Benefits</th>
<th>Site</th>
<th>Impact on waiting times and/or capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimise duplication</td>
<td>Fewer letters, effective meeting and greeting, information, travel plans and associated bureaucracy</td>
<td>East Kent Hospitals NHS Trust</td>
<td>5% capacity increase</td>
</tr>
<tr>
<td>Use of audiology PMS</td>
<td>Increased capacity as workflow is more efficiently managed</td>
<td>Royal Berkshire Hospital NHS Trust Royal Bolton Hospital NHS Trust</td>
<td>100% capacity increase 10-15% capacity increase</td>
</tr>
<tr>
<td>Group instruction sessions</td>
<td>Time saving, and morale/social involvement for the patients</td>
<td>Norfolk and Norwich University Hospitals NHS Trust East Kent Hospitals NHS Trust Leeds Teaching Hospitals NHS Trust</td>
<td>20-30% capacity gain</td>
</tr>
<tr>
<td>Establish a teleaudiology follow up service</td>
<td>More convenient for patients, reduce the number of visits that the patient makes to the clinic, saving time for both patients and staff</td>
<td>Norfolk and Norwich University Hospitals NHS Trust</td>
<td>Between 66%-70% discharged using teleaudiology; 50% of the patient population covered by the service</td>
</tr>
<tr>
<td>Extend working day</td>
<td>Extra capacity by staggering existing staff over the extended day</td>
<td>Leeds Teaching Hospital NHS Trust Norfolk and Norwich University Hospitals NHS Trust</td>
<td>20-25% extra capacity using same infrastructure 40 additional patients seen each week for assessment for first hearing aid</td>
</tr>
<tr>
<td>Remove ear wax on the spot during audiology appointment</td>
<td>Extension of audiologist role; reduction in number of wasted appointments</td>
<td>Royal Bolton Hospital NHS Trust</td>
<td>Reduces poorly used clinic appointments by 5-10%</td>
</tr>
<tr>
<td>Service ENT clinics more efficiently</td>
<td>Patients seen before ENT, which releases clinical time</td>
<td>East Kent Hospitals NHS Trust</td>
<td>Reduced variability in productivity</td>
</tr>
</tbody>
</table>
Technology

37. Embracing the benefits of new technology has been highlighted by the Government as critically important in delivering services for 21st century healthcare. This applies equally to audiology services where innovations in current and emerging technology that support the assessment and treatment of hearing difficulty mean that audiology departments need to constantly evolve and reap the benefits of new technology, in line with recent reviews such as by the audiology supply group and by the Clinical Audiological Research Network (CARnet).

38. A number of new pieces of equipment have been introduced into the market with several others in the pipeline, which could help to improve patient experience, productivity in audiology departments and outcomes for patients, including:
   a. Digital signal processing (DSP) hearing aids
   b. Open ear tips and comply tips
   c. Triage equipment/Hear Screen equipment
   d. Automated audiometry equipment

39. Information is provided in the following paragraphs on a number of very new technological developments and whilst these may not constitute a major part of the current solution to audiology services, providers and commissioners are encouraged to keep these solutions and evidence on the benefits they can provide, under review.

Digital Hearing Aids

40. Digital signal processing hearing aids provided a major technological advance in the provision of audiology services when they were first introduced to the NHS in 2000. DSP hearing aids have enormous benefits over the older analogue aids for patients, providing optimised treatment and enabling patients to experience major improvements in quality of life.

41. Some patients still need to be upgraded from older analogue to digital technology, given the benefits and as spares on many of the analogue models are being phased out. Those that already have a digital hearing aid will benefit in the future from the improved models that the NHS will procure as they come onto the market. This together with the ‘3-4 year half-life’ of a DSP hearing aid mean that patients will require the devices to be replaced and the patient’s needs reassessed to optimise and maintain support at regular intervals. Replacement needs should be taken into account in demand and capacity planning.

20 DH Strategic Implementation Group, Health Industries Taskforce ‘Innovation for health: making a difference’
21 Smith et al
Universal Open Ear Tip Technology

42. Earmoulds couple hearing aids to a patient’s outer ear so that appropriately amplified sound can be presented to the middle and inner ear. Traditional earmoulds need an impression of the ear to be made and then for a customised earmould to be made from that impression. This involves two separate appointments for assessment and fitting of the hearing aid.

43. Open ear tip technology has been developed in a universal format that can be used as a good alternative to the traditional custom made earmoulds in appropriate cases. The modular element means that, providing the right size tip is used, it will support an assess and fit in a single appointment, remove unnecessary steps in the patient journey and reduce the time from referral to provision.

Figure 7: Open ear tip technology

44. Comply ear tip (CET) technology is similar to the open ear tip technology but uses heat sensitive foam tips closely coupled to the ear tube that delivers sound from the hearing aid to the ear canal. Comply tips can also be used (on a permanent or temporary basis) where open ear fittings are not possible such as for patients with greater hearing loss than the current fitting range.

Figure 8: Comply ear tip technology

45. The NHS Development Sites, have shown that open ear or comply tip fittings can be a solution for between 60 to 70% of patients who are directly referred from primary care to NHS audiology departments who need hearing aids as part of their treatment and can also be used for existing patients22.

46. Open ear technology brings a range of other benefits:

- Low frequency sounds, including the patients’ own voice, sound more natural. This naturalness, coupled with some cosmetic improvement means that the hearing aids, especially when

22 Kuk et al 2005; Wynne et al 2006; Davis et al 2007
fitted in both ears (bilaterally), are more acceptable to patients

- The open ear technology can be used across a range of patient age groups with the approach being suitable in 75% of those patients in the age range 50 to 74 years (50% of those referred for the first time) and 40% of patients aged 85 years and over. This is illustrated overleaf:
- Greater patient choice is provided as patients can choose whether they would prefer a conventional ear mould fitting or the new technology, which is less intrusive
- Open ear or comply tip technology can be used across a wide range of hearing severity levels including in the form of an assess and fit service model, as illustrated in the diagram overleaf.

A percentage of patients with more severe hearing difficulties can have hearing aids (treatment) earlier on in the patient pathway and can receive benefits earlier

Figure 10 highlights the additional benefit that can be gained from using open fit with a comply tip. It illustrates the difference between the number of people fitted with open tip alone (purple) and the total number fitted with open tip or comply tip (burgundy). This shows that comply tip can be adopted across hearing severity levels, but as hearing impairment becomes more severe the number of patients that benefit reduces.

Figure 10: Percentage of people with ‘open tip’ and ‘open tip + comply tip’ as a function of better hearing ear threshold category (averaged 0.5, 1, 2, 4kHz)

- Technology is available in sizes to fit most ears
- Importantly, patient outcomes as measured by the Glasgow Hearing Aid Benefit Profile (GHABP) from open ear
technology with DSP hearing aids are similar, if not better, to those that might be expected from the conventional ear moulds with DSP hearing aids as illustrated in figure 11.

Further evidence is needed to fully evaluate the utilisation of the assess and fit approach and in particular the open ear technology including:

- Whether the number of patients that continue to use their aid increases
- The proportion of patients who will need customised ear moulds at a later date either as hearing impairment progresses or if the outlined benefits are not sustained
- The continued degree of additional benefit given by the aids
- How often the technology needs to be repaired and replaced
- The extent to which this approach may be easier for staff
- The number of patients who may require follow up assistance to get the full benefits including help with blockages of the tip or with excessive hearing aid feedback. It is estimated that this could be 20% of patients and this is similar to those patients who currently receive and have problems with conventional ear moulds in NHS services.

**Figure 11: GHABP benefit from open ear technology**

Figure 11 provides the GHABP score on the vertical axis. The higher score relates to better benefit. On the horizontal axis scores are provided for a sample of patients who received either one or two DSP hearing aids (ie for one or two ears) with a conventional ear mould (MHAS 1 or 2) compared to a sample of patients who received either one or two DSP hearing aids with open fit technology (open ear trial 1 and 2), n = gives the number of patients who completed assessment.

In this sample the evidence suggests that open ear technology provided better patient outcomes for both one or two ear fittings compared to the conventional approach using similar behind the ear hearing aids.
- Cost effectiveness, including taking account of the increased number of patients that can be treated

**Triage Equipment**

48. A hearing screening device test has been developed based on using different tones at three intensity levels, it has been shown to be effective in identifying people who may benefit from hearing aids\(^23\). This device is not currently available on the market but is due to be launched in summer 2007. It enables a screen to be made of a patient’s hearing loss before a formal diagnostic assessment, to identify those individuals below a certain threshold who do not need to be referred to an audiology service\(^24\).

49. The equipment can be used by non-audiological staff such as GPs and practice nurses. It is anticipated that the device could be used to effectively triage patients and to streamline referrals as outlined in figure 12, however, further testing and evaluation will be required after its introduction.

**Figure 12: Assessment using audiology triage equipment**

<table>
<thead>
<tr>
<th>Outcome from triage device</th>
<th>Action/referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can hear all 6 tones</td>
<td>– unlikely to need further hearing assessment</td>
</tr>
<tr>
<td></td>
<td>– may be discharged after an explanation and advice, if necessary, that many people have problems hearing speech in noise or have tinnitus and if this persists being a problem may need further investigation</td>
</tr>
<tr>
<td>Can hear 3,4 or 5 tones</td>
<td>– likely to have a hearing difficulty that would benefit from fitting of an assess and fit hearing aid product such as an open ear tip or a comply tip as appropriate for the patient</td>
</tr>
<tr>
<td>Can hear less than 3 tones</td>
<td>– referred for comply tip or for assessment and fitting in two sessions</td>
</tr>
<tr>
<td>Cannot hear any tones</td>
<td>– referred for assessment in a clinic that can appropriately assess severe hearing impairment</td>
</tr>
<tr>
<td>Different results for each ear</td>
<td>– referral for full audiometric assessment</td>
</tr>
</tbody>
</table>

\(^{23}\) MRC HARC and an industrial partner

\(^{24}\) Davies et al 2007
50. The device has been used in a number of sites, including Stockport PCT where, through a trial, all 157 re-assessment patients involved were effectively directed to the correct appointment. The device has been found, in an early pilot study, to be in the region of 90% sensitive and 85% specific.

Automated Audiometry

51. Still in the early stages of development and testing, automated audiometry can be used to carry out pure tone audiometry (air conduction and bone conduction with masking) using an automated procedure which gives patient instructions in English and requires a high degree of patient co-operation and concentration. It has been developed in the USA and elsewhere. Work is underway in the UK to fully understand whether this technology could be used appropriately in a wider range of locations in the NHS and in the independent sector, although it will still require a sound-proofed room or area. The benefits will be dependent on local facilities, work flow and skill mix, as well as a range of patient related factors.
Workforce

52. As outlined in *Improving Access to Audiology Services in England* and the recent Health Select Committee report on audiology services, workforce transformation is critical in achieving reduced waits for patients with hearing difficulties. Workforce development plans need to be affordable and supported by significant role redesign, skill mix and productivity gains to produce a sustainable workforce of the future.

53. The delivery of the complete range of hearing and balance services for adults and children will require an audiology workforce spanning the whole career framework, inclusive of medical staff. It should be supported by appropriate education and training. Key to delivering the adult hearing difficulty pathway, however, is the introduction of an associate practitioner role, which would be recognised in terms of scope of practice in both the NHS and Independent Sectors.

54. The introduction of new technology and of streamlining systems and processes as outlined earlier in this document, together with new models of care, provide opportunities in themselves for reprofiling of the current workforce, defining and utilising skill sets and introducing new ways of working.

New roles and expanded roles

55. A range of redesigned and new workforce roles have emerged at the NHS development sites to support innovative solutions to the long waits for adult hearing services. These are summarised overleaf and related to the new pathway outlined at the beginning of this document. They do not cover the pathway as a whole but demonstrate a function and competence based approach to achieving the aim of utilising skill mix to meet the pathway requirements. They represent a combination of expanding the roles of the current workforce, new administrative roles and a potential new role to support the new model of care.

56. Figure 15 illustrates that significant workforce transformation could be achieved within audiology services. There is potential for greater efficiencies, with skills and competences required to deliver service outputs being more closely matched to the healthcare scientist career framework level descriptors. The NHS development sites have highlighted the importance of administrative duties of audiology staff being kept at a minimum. Efficiency of audiologists was greatly

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27 Executive Summary: Workflow analysis project – Adult Hearing Services
improved when highly skilled and competent administrative or clerical staff who are trained to understand the patient flow, scheduling and listing of patients and waiting list management were introduced into departments.

57. In common with making services more lean, by process mapping and redesign, is the need to undertake a similar process for workforce redesign and profiling by mapping the functions that need to be undertaken, then identifying the skills and competences required to undertake the task/s and defining the supporting education, training and assessment needs. This can be done locally, and has been undertaken in part by some of the NHS development sites, however work for the complete 18 week adult hearing pathway will be undertaken nationally in the near future to develop a national data set of competences to support the local commissioning of a competent workforce for delivery.

58. The opportunities for the roles outlined at figure 15 to be nationally transferable and defined to support local implementation will be explored. Work will continue on the definition of the associate practitioner role to undertake routine adult hearing assessment and fitting, which would support both the NHS and IS sector requirements. The workforce capacity in this high volume task area could be increased relatively quickly, affordably and safely through the new models of education and training provision. Within the NHS such a role would exist within a team comprising of a range of different professionals and roles undertaking the breadth of hearing and balance disorders, including for patients with more complex needs.

59. As outlined in Improving Access to Audiology Services in England, a toolkit of materials will be produced to support local health systems in adjusting workforce profiles to reflect new pathways and volumes of activity. This work will, where relevant, be undertaken in conjunction with the DH Modernising Scientific Careers programme. This will identify nationally transferable roles together with supporting education and training programmes to assist local workforce planners and commissioners, together with modernised pre and post registration education and training. It will provide a more comprehensive and fit for purpose audiology career framework to support the delivery of all care pathways as they emerge. The workforce in both the NHS and IS will be considered and opportunities for cohesive development opportunities explored.

29 Improving Access to Audiology Services in England
### Figure 15: Workforce solutions

<table>
<thead>
<tr>
<th>Pathway stage</th>
<th>Role</th>
<th>Impact</th>
<th>Site where it was developed</th>
</tr>
</thead>
</table>
| Wax removal   | Expanded role of audiologist | - Extension of the audiologist role.  
- A reduction in the number of wasted appointments.  
- Fewer journeys for patients – they don’t have to come back to the audiology department for a rescheduled appointment following their earwax removal. | Norfolk and Norwich University Hospitals NHS Trust |
| Improved scheduling to most appropriate list | Office Manager/ Administration Co-ordinator | - Efficient and consistent administrative hub  
- All telephone calls handled in one place  
- Repetition of administrative tasks reduced  
- Efficiently equitably managed waiting list  
- Activity reports’ quality and consistency has improved | Leeds Teaching Hospitals NHS Trust  
East Kent Hospitals NHS Trust |
| Assess and fit for mild to moderate patients | New associate practitioner focused on routine patients | - Practitioner dedicated to assessing and fittings digital hearing aids  
- Patients referred on to audiologists where required  
- Can be trained on the job under supervision | East Kent Hospitals NHS Trust |
| Ear mould impressions | Assistant audiologist | - Reduced administration time for audiologists  
- Increased knowledge for whole team of ear mould processes, pitfalls and problems  
- Skill mix by using the relevant skills at the relevant place along the pathway has given value for money  
- Release audiologists to do other tasks | Pennine Acute Hospitals NHS Trust |
| Telephone follow up | Expanded role of secretarial and administrative staff in potential follow up | Since April 2006,  
- reduced the number of clinic appointment slots available for follow-up by 120 a month  
- corresponding gain of 15 hours of clinic time a week for a qualified audiologist  
- This capacity has been reinvested into hearing aid assessment and hearing aid fitting slots and is helping to drive down waiting lists | Norfolk and Norwich University Hospitals NHS Trust |
| Maintenance and repair | Assistant led clinic – expanded role of an assistant audiologist | - Increase number of free slots for Audiologist led clinic  
- Triage at time of booking  
- many patients directed to the robust volunteer network for retubing | East Kent Hospitals NHS Trust |
Volunteers

60. The use of volunteers was highlighted in a case study from Hearing Concern which has a network of volunteers to support NHS audiology services across the country. The volunteers provide rehabilitative advice to help patients live with and manage their hearing difficulty. Whilst currently small scale, this project illustrates the role that the voluntary sector can play to provide similar input.

61. Reflecting the benefits of this approach, NHS audiology services have begun to develop their own volunteer arrangements, for example at the Shrewsbury and Telford NHS Trust, which is supported by a locally developed education and training programme. These examples show how services can be delivered in partnership which needs to be an integral part of local planning arrangements. The capacity of the NHS audiology service can be enhanced by working with the Third Sector and options should be explored through workforce planning to support local delivery.

Leadership

62. To achieve the major change in workforce transformation strong clinical leadership is essential together with support when it is required and a can do attitude from the whole delivery team and a ready to embrace change philosophy.

63. An effective pathway will maximise the way that services are delivered so that patients presenting with hearing difficulty are managed effectively and in a timely manner. The aim for every patient is to receive services according to need and in a way whereby they can benefit from treatment options quickly and efficiently.

64. The high level pathway shown at the start of this document (figure 1) is further broken down into its component parts in figure 16, this provides an opportunity to commission elements differently and in a way that may ensure, for example, that NHS capacity is used in a focused way and that care for some parts of the process can be provided closer to home.
Part 2
A new model pathway for commissioning audiology services for patients with hearing difficulties

Figure 16: Process pathway for hearing difficulty

<table>
<thead>
<tr>
<th>Clinical issue</th>
<th>Stages</th>
<th>Process</th>
<th>Patient Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible hearing difficulty</td>
<td>Patient self management</td>
<td>Screen</td>
<td>Patient/others identify level of hearing difficulty needing attention</td>
</tr>
<tr>
<td>Hearing difficulty</td>
<td>Primary Care/GP</td>
<td>Triage: Questions, otoscopy, screening test</td>
<td>Discharge/Ear wax/refer for possible DSP aid</td>
</tr>
<tr>
<td>Ear wax and aural hygiene</td>
<td>In primary care or one stop model</td>
<td>Wax removal and aural hygiene</td>
<td>Hear better so discharge or still difficulty – continue refer for DSP aid</td>
</tr>
<tr>
<td>Routine and complex cases of hearing difficulty</td>
<td>Hearing services providers: 1 stop model or 2 stage for complex</td>
<td>Hearing loss assessed, explained and fit hearing aids. If patient chooses, group instruction, deal with patient problems</td>
<td>Watchful waiting or DSP hearing aid fitted or other support</td>
</tr>
<tr>
<td>Optimise Hearing for everyday living</td>
<td>Follow up – variety of provider models</td>
<td>Outcome assessed GHABP/GHADP plus HD questions by phone, face to face or internet</td>
<td>Degree of Hearing and communication improved with hearing aid use</td>
</tr>
<tr>
<td>Provide local on going support</td>
<td>Maintenance/advice-variety of provider models</td>
<td>Provide batteries, tubes and repair and rehabilitation</td>
<td>Successful hearing aid user achieving benefit in everyday living</td>
</tr>
</tbody>
</table>
65. The pathway essentially comprises of six main stages, identified in the green boxes in the diagram and detailed in the following paragraphs:

- Patient self management
- Primary care
- Assessment and fitting
- Follow up
- Maintenance, advice and support
- Review

66. Patient’s will take some responsibility for self management of their hearing condition by:

- Consulting with their doctor if they experience hearing problems, possibly leading to a hearing screening test (in person or on the phone)
- Ensuring appropriate aural hygiene i.e. that the problem is not a build up of wax (which should be managed in primary care)
- Ensuring that any aids they already have are appropriately and hygienically maintained, with earmoulds and tubes regularly cleaned and the right stock of batteries kept

67. There should be greater focus on the involvement of primary care by:

- Removal of wax done or planned in primary care or commissioned from the audiology service provider in a one stop appointment model with assess and fit
- Where there is a need, patients with analogue should be prioritised over patients with DSP hearing aids
- Implementing standardised referral criteria to identify correct pathway with all patients with sudden hearing loss going to A&E and/or ENT during outpatient hours or to audio-vestibular physicians
- Reviewing patient’s ongoing requirements every 4-6 years or earlier on a needs basis

68. All of the above will require a greater awareness and understanding of hearing difficulties among primary care practitioners, which will need to be built into any commissioning plan.

69. Where possible, and when clinically appropriate, the patient should be assessed and fitted with a digital hearing aid in a single appointment or be seen in a streamlined two stage process:

- Assess and fit with open ear technology should be used for patients with mild to moderate hearing loss, usually delivered by an associate audiologist
• Those not suitable for assess and fit technology, and those with severe hearing loss, should be assessed against a suitable protocol, including a review and full needs assessment by an audiologist.

• Ear moulds should be taken on the day of the appointment for patients that are not suitable for open ear technology.

• Potential reductions to be made in producing earmoulds should be capitalised using new technology eg 3D scanning of ear impression and laser manufacturing of ear moulds which could reduce the time between impression and ear mould being delivered to patient in three working days.

It should be noted that some patients fitted with open ear tips may need to come back into the system for an ear mould at a later date.

70. **Follow up after fitting** should be triaged and handled initially by phone where possible and/or face to face based on patient need and choice:

- Follow up should initially be by phone, using a structured questionnaire and an outcome assessment of whether hearing needs have been met. This may be face to face according to patient need and choice or based on an assessment by the audiologist or associate audiologist when their hearing aid is fitted).

- Patients who cannot be followed up over the phone and who are not deriving expected benefits should be seen in a dedicated face to face follow up clinic.

- Follow up could be provided by the NHS audiology department or external provider e.g. Hearing Direct (part of NHS Direct) or the Third Sector.

71. Patients who have received an aid should get non urgent or routine **maintenance and advice and support** from locations convenient to them:

- Maintenance and repairs – such as for batteries or tubing – should be provided in locations convenient for the patient and where appropriate by the independent sector or third sector.

- Support and advice may be provided by telephone and, if a need is identified, the patient may be required to revisit an audiology provider.

- Provision could involve the third sector or IS provision on the high street.
• Patient records need to be maintained, wherever care is provided

72. Patients should be advised to return to primary care to be referred for a **review** on a needs basis:

• It is suggested that patients are reviewed after a period of time, to check that their hearing aid is delivering optimum benefits

• The frequency of such a review should be determined locally in conjunction with audiology providers and based on patient need

• If a patient's hearing deteriorates and/or they feel their hearing aid is no longer fit for purpose, they should be advised to return to primary care where support may be provided. If appropriate, the patient will be referred to an audiology provider for assessment and treatment, if required, this would represent a new episode of care.

**Commissioning**

73. Audiology services for the NHS should be commissioned to provide patients with services that are responsive to their needs and that empower patients to be partners in achieving those needs. The high level overview shown in figure 1 and the 18 week commissioning pathway promote delivery of a service in which:

• primary care provide a more active role in assessing patient need and preparation for hearing care (e.g. removal of earwax)

• referral criteria are uniformly implemented to the main referral streams

• appropriate new and returning patients receive one-stop assessment and fitting based on available technology

• follow up, including reassessment of patient needs, is conducted by telephone

• patients who have received hearing aids get maintenance, battery replacement and ongoing advice from locations convenient to them, including in primary care

74. The version of the pathway at figure 17 shows the different elements that need to be commissioned. Each colour represents potentially different service providers, although one provider could provide all services. Particular attention needs to be given as to how the interface with ENT and other scheduled and unscheduled care is taken forward. Other care pathways will be published later this year.
75. As part of the PCT commissioning cycle, all current and potential providers of audiology services should be consulted in relation to adoption of the suggested referral criteria and new pathway outlined in this document and to engage in broader local implementation plans. Developing a PCT and/or SHA wide network may be useful in helping to implement this pathway and in spreading good practice and making best use of all of the available capacity.

Figure 17: Pathway for Commissioners
Acknowledgements

Audiology Working Group
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Physiological Development Sites
East Kent Hospitals NHS Trust
Leeds Teaching Hospital NHS Trust
Norfolk & Norwich University Hospital NHS Trust
Royal Devon & Exeter NHS Foundation Trust
Royal Free Hampstead NHS Trust
Pennine Hospitals Acute Trust
Annex 1
Summary of case study evidence referenced in the good practice

East Kent Hospitals NHS Trust
- Service ENT clinics more efficiently
- Commit to continuous service improvement
- Create clinical capacity by stripping out administrative and non clinical tasks from clinical roles
- Consolidate and validate waiting lists
- Introduce positive booking

Norfolk & Norwich University Hospital NHS Trust
- Minimise waster appointments: remove ear wax on the spot during an audiology appointment
- Use telephone follow-up
- Use Fit and Go open mould ear technology for a one-stop hearing assessment and hearing aid fitting service

Leeds Teaching Hospital NHS Trust
- Relocate hearing aid assessment and fitting services into primary care settings
- Encouraging patient management of follow-up care
- Using dynamic IT based tools for clinic planning and staff management
- Actively managing waiting lists
- Introduce fully booked follow-up and repair services
- Increase productivity by introducing an extended working day

Royal Devon & Exeter NHS Foundation Trust
- Introducing new technology – Assess and Fit

Royal Free Hampstead NHS Trust
- Bundle diagnostic tests at one appointment to reduce waiting times for patients
- Validate waiting lists on an ongoing basis

Pennine Hospitals Acute Trust
- Setting up an in-house service to manufacture ear moulds
Annex 2
References


7. Wynne Ch, Sparkes C, Jones H, Tyson S. Pilot study to evaluate hearing aid provision for mild/moderate high frequency, permanent hearing loss in adults and the ability to use a one stop fitting technique, BAA conf Nov 2006.


