Review of Paediatric Audiology
in Leicester, Leicestershire and Rutland

Report by the Review Group

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1 Executive Summary

Background

Over a number of years, there have been significant developments in the standards of the Newborn Hearing Screening Programme (NHSP) relating to children’s audiology which has impacted on how and where paediatric audiology services are delivered.

There are currently a number of different services providing paediatric audiology across Leicester Leicestershire and Rutland (LLR). These include:

- University Hospitals of Leicester NHS Trust (UHL) - medicine, electro-diagnostic services, aetiological investigation and newborn screening
- Leicestershire Partnership Trust - community audiology
- Local Authority (LA) Education Departments - educational audiology and habilitation.

As part of the NHSP Quality Assurance (QA) Programme a peer-led review is undertaken every 3 years to ensure that each area is meeting the required standards across the whole audiology pathway. The local services were last reviewed in 2010/11 and a number of potential issues were highlighted within the community and educational components. These issues were considered significant enough for an overall review of the service to be undertaken, which was endorsed by the Clinical Commissioning Groups (in a paper presented in January 2012) and by the Leicester City Council in November 2011.

The local patient care pathways are complex, with lack of common IT system for referrals or sharing of clinical information. This has led in the past to duplication of appointments or children being missed. Much of how services are currently delivered relies on experience and knowledge of the professionals involved, which clearly is unsustainable in the long-term.

There has been a high degree of uncertainty about leadership of the service. The Children’s Hearing Service Working Group (CHSWG), a multi-agency professional group was formed to lead at the operational level. This has generally worked well, but strategic engagement was difficult to secure. Importantly, there are no contractual or other formal agreements between
agencies and lines of communication are not always clear. This is no fault of individuals, more a consequence of the historical way of working.

However, it must be stressed that the service continues to achieve very positive feedback from parents and meets the performance requirements. Main concerns are about its sustainability in the future.

**Review Process**

The Review Team included the representatives from all agencies. The process has been led and co-ordinated by commissioning and public health staff. The group met monthly since February 2012 and weekly during the month of July.

The overall direction was determined by the outcome of the initial SWOT analysis, which included parent representatives and a representative of the voluntary sector. Local acute service providers were consulted (ENT) and the review received expert external advice on the professional and service development issues.

**Outcome and Recommendations of the Review**

The review identified a number of concerns relating to clinical risks, staffing, facilities, management, and governance and commissioning of the service.

The main **clinical risks** identified include:

- lack of capacity to undertake HA fitting in small children by two experienced audiologists (this is required by national professional standards of care),
- lack of contingency plans for habilitation services (currently provided by educational audiology) and aetiological services (medicine).
- risk for missing cases and high DNA rates in community audiology due to inadequate facilities.

All these have a potential to significantly affect the quality of patient care in the future.

One of the factors that became clear is the **lack of strategic clinical leadership** at a senior level in respect of the whole pathway. Such leadership is necessary to ensure that there are appropriate mechanisms for raising clinical and managerial concerns and risks at a more strategic level. This leadership needs to be developed through the CHSWG and linked effectively to all relevant decision-making boards.
It is therefore recommended that a clinical lead post (senior medical audiologist) be created and funded by the NHS. In addition to its clinical remit, the post will bring both clinical and operational leadership to the pathway as well as being responsible for ensuring that issues relating to the pathway are properly recognised and actions taken to mitigate against the risks.

A review of the current community clinics has identified a serious lack of fit for purpose facilities, creating potential health and safety risks as well as reducing effective clinical time for staff. Virtually all of the current 14 venues are in rooms that are shared by other services, unfit for audiology in children and young people, most importantly lacking attenuated walls. This leads to an increased number of false positive results and may be distressing for parents or carers and the children, despite best effort on the part of community teams. Appropriate facilities would reduce the number of additional appointments and false positive results.

It is therefore recommended that a smaller number of venues are developed throughout LLR through a staged programme. The proposed model is based on six venues, shared between educational and community audiology and including the two existing ones (in Coalville and Leicester) and four in new locations.

The review identified significant risks emerging from lack of formal commissioning arrangements between partners. All of the current agreements have no formal contract or service level agreement. Whilst much of these work on a day-to-day basis, the risk of them breaking down is high.

It is therefore recommended that service level agreements are formally drawn up between the various partners in order to ensure clarity of role and responsibility of each agency including accountability which will lead to greater transparency. This will require a robust process, led by a strengthened CHSWG.

It is therefore recommended that the role of the CHSWG as the lead strategic group is ratified by all partners and the lead organisation within NHS is identified. Sources of funding for CHSWG need to be identified; membership, leadership and TOR need also to be reviewed.
2 Introduction

Hearing impairment can significantly affect child’s education but it is amenable to early intervention. Evidence for the effectiveness of such interventions is now compelling.

Children with hearing difficulties need to be identified and assessed and to receive appropriate intervention as early as possible. The majority of children can now identified very early through the universal Newborn Hearing Screening Programme (NHSP) but both the children and their families also need effective on-going support from a high quality service which is seamless, integrated across agencies, local, efficient and responsive to their changing needs.

In Leicester, Leicestershire and Rutland (LLR) several risks to audiology services have been identified in the last few years, regarding staffing, facilities and governance which, if not addressed urgently, could severely affect the future provision locally. These issues have been highlighted by the national Quality Assurance process looking at NHSP locally as potential challenge to managing hearing impaired children identified through screening.

It is important to stress that despite these professional concerns about its sustainability, the service continues to achieve very positive feedback from parents and meets the performance requirements.

With a view to address these concerns, the Paediatric Audiology Review Group formed out of the LLR Children’s Hearing Services Working Group (CHSWG). Members included representatives of medical and educational audiology, voluntary sector, Public Health and Primary Care Trust Commissioners.

2.1 Purpose of this document

This report presents the outcome of the Review and its consultation process. It describes the background and rationale behind its main recommendations.
2.2 Aims and objectives of the Review

The aim of the Review was to propose a robust, sustainable and equitable model of delivery of paediatric audiology services, ensuring that both quality standards and future needs of the population are met, ultimately improving the outcome in each hearing impaired child in LLR.

The objectives of the Review included:

1) To assess the current audiology service provision, identifying problems and risks
2) To review the current demand for service, evidence of effectiveness and estimate the future need
3) To consult with stakeholders, parents and external experts
4) To propose optional models of service and future governance arrangements
5) To consult with stakeholders and users

2.3 Local Paediatric Audiology Services

There is a continuum of audiology service commissioned from several agencies. Its components can be described as follows:

A. Services in early childhood include identification and assessment of permanent childhood hearing impairment (PCHI) as well as support to children and their families from pre-natal period through to the school-entry.

B. Services for children with ‘glue ear’ refer to pathways for fluctuating/temporary hearing loss through the NHS 18-weeks programme

C. Services for school aged children with permanent hearing loss/deafness – including hearing aids management according to Modernising Children's Hearing Aid Services (MCHAS) programme’s protocols and management of transition into adult services

D. Services for children with PCHI and complex needs

E. Supra-specialist audiology services such as cochlear implantation, bone-anchored hearing aid (BAHA) implants, cleft lip/palate or auditory neuropathy, are generally low volume and high cost and are managed through specialist commissioning

This report is concerned specifically with the audiology service in early childhood (A), while highlighting interdependencies with other commissioned pathways, where appropriate.
2.4 Evidence Base and Standards

National and international evidence strongly supports the effectiveness of early identification and intervention in hearing loss. This resulted in setting up by the UK National Screening Committee (UKNSC) of the national newborn hearing screening programme (NHSP) within the mainstream of the NHS.¹

Providers are expected to comply with current and future recommendations from the UKNSC regarding identification and management of hearing loss in children, including the relevant professional guidelines published by a number of bodies, such as:

- Modernising Children's Hearing Aid Services (MCHAS)² protocols and guidelines
- Map of Medicine Care Pathways³
- NHSP Standards and Guidelines⁴
- A number of Professional protocols and guidelines – for Teachers of the Deaf, paediatric audiologists and others

The configuration of paediatric audiology services can be complex as PCHI is relatively rare and pathways follow multi-agency partnerships, with clinical services provided by medical audiologists, physicians and paediatricians and early interventions by qualified Teachers of the Deaf (ToD). Notably, such networks include the NHS and local authorities’ education and social care. Although specific local arrangements can vary, there are evidence based recommendations as to size of the population for an effective specialist audiology network, which is that of 20,000 births annually. This is usually aligned with population covered by an NHSP programme, which locally is in Leicester providing for the whole of LLR (currently nearly 13,000 births per year).

¹ www.hearing.screening.nhs.uk
² http://www.psych-sci.manchester.ac.uk/mchas/
³ www.mapofmedicine.com
⁴ http://hearing.screening.nhs.uk/standardsandprotocols
2.5 Policy Context

The care for children with hearing difficulty has been a subject of several policy initiatives in the past decade.

The Children’s Act 2004 set out the role of NHS Strategic Health Authorities and Primary Care Trusts in drawing up arrangements for integrated working with local authorities, to be implemented by 2008\(^5\).

The Department of Health (DH) Audiology Framework was published in 2007,\(^6\) setting out national policy with regard to all audiology services in England, and was followed by an evidence-based practice guide for paediatric audiology in 2008.\(^7\) Both documents provide the key guidelines on the principles and methods of implementing the service.

The national policy sets out a vision of a high quality service responsive to need of local community, with low waiting times for medical or surgical referrals (18 weeks maximum), close to home and free at the point of access. It puts a focus on a self-improving local audiology service with good commissioning, patient choice, information, tariffs and spread of good practice across England.

There has been a number of relevant local policy initiatives in the past, such as the ‘One Leicester’ community strategy, in which one of the seven key action priorities is investing in children. This priority includes “safeguarding those who are vulnerable and ensuring that children who are disadvantaged through disability or circumstance are given extra support to enable them to realise their potential”. The ‘Leicester’s ‘Children and Young People’s Plan 2011-2014’ stated: “We will work together to improve the life chances of the most vulnerable children. We will support all children to achieve their potential”. The focus of this policy is on prevention and early intervention, inter-agency work, effective planning and joint commissioning of services.

\(^5\) Every Child Matters, HMSO 2003
\(^7\) Transforming Services for Children with Hearing Difficulty and their Families. Department of Health August 2008
3 Existing Services

The initial work of the Review Group included an understanding of components and gaps in the current service and pathways for babies and children with identified hearing loss. The focus was on identification of current good practice, any existing local protocols and guidelines, as well as areas of potential improvement, any contingency planning, issues of continuity of service etc.

Currently, the following organisations provide paediatric audiology services in LLR:

1. University Hospitals of Leicester NHS Trust (Leicester Royal Infirmary, LRI, site)
   a. newborn screening (NHSP)
   b. electrophysiological testing
   c. Paediatric ENT
   d. behavioural audiological assessment
   e. aetiological investigation

2. Leicestershire Partnership NHS Trust (LPT)
   a. community paediatric audiology behavioural assessment
   b. school entry hearing screening (SES)

3. Leicester City Council (Education)
   a. paediatric habilitation

4. Leicestershire County Council (Education)
   a. paediatric habilitation
3.1 SWOT Analysis

At the initial meeting of the Review Group in February 2012, a SWOT exercise was undertaken, with representation from parents and voluntary sector. Following is the brief summary of main identified strengths, weaknesses opportunities and threats.

3.1.1 Strengths

The current service was widely regarded as efficient, family-friendly and accessible, supported by high level of expertise. There was excellent continuity of care from named audiologists and good liaison with the teachers of the deaf; flexibility and responsiveness. Service was highly valued by families and children.

3.1.2 Weaknesses

The main concerns included poor facilities and lack of up-to-date testing equipment in community and educational audiology. The habilitation service was reliant on just two audiologists with no contingency for sickness; they have been alone and thus were unable to deliver service in accordance with MCHA guidelines, requiring two audiologists fitting HAs is small babies.

There was a lack of clinical governance in these services and no clarity about responsibility for service delivery and standards, emergency arrangements or planned cover in school holidays. There was no named head of service with an overall responsibility and no effective strategic engagement. There were serious issues with sharing information and no effective performance monitoring or reporting.

There was very limited scope for development and innovation. The staff had little opportunity to utilise the full range of their skills and there was little joint working between any paediatric audiology service, ENT or social care.

3.1.3 Opportunities

An opportunity for more integrated working and sharing facilities across the city and the county was highlighted, to maximise use and improve access as well as possibility of joint funding through a partnership between local authority education, social services and NHS. This would require adopting a single plan and building a multi-agency commissioning forum in support of such a plan.

The role of CHSWG should be strengthened as the principal forum to consider upcoming issues and to contribute to local and national agenda.
3.1.4 Threats

Potential threats include the future changes in strategic NHS priorities, increasing role of the CCGs in commissioning, the shift in public health agenda with their move to Local Authority and the possibility of budget cuts in the near future. GPs may choose to commission audiology service from other providers.

3.2 Service Components in LLR

3.2.1 Screening – NHSP (UHL)

Screening of newborn babies is commissioned from the UHL. It resides within the Imaging and Medical Physics Directorate. Maternity services are split between two UHL sites (LRI and Leicester General Hospital). In year 2011/12, 100% of babies born were offered a screen and 99% completed the screen by 4 weeks (against a regional average of 98.2% and national average of 97%). In terms of uptake and completeness of hearing screening, Leicester PCT ranks among 5-10% highest scoring PCTs nationally and LCR PCT is within top 15%.

**Staffing** levels are those recommended by the NHSP centre (Table 2 and Table 3, for the local population 10 WTE staff) and agreed with the service provider, the UHL. Currently there is 0.7 WTE screener vacancy within the service. As currently part of the funding (for equipment replacement) is provided by the national office, there are concerns about its sustainability within new NHS commissioning arrangements. It is recommended that a contractual arrangements id reached with the new NHS CB in 2013.

**Demand** – In 2011/12 there were 12,432 babies screened at the Leicester site. Birth rate forecast for LLR indicates that this figure is likely to rise by 1.5-2% every year for the next five years.

3.2.2 Electro-diagnostic Service (UHL) - audiological assessment

Audiological assessment for babies referred from screening should take place within 4 weeks. This is one of the key performance indicators (KPI 2) for NHSP and in 2011/12 91.5% of the LLR 318 referred babies were assessed within the appropriate frame of time, that is above the acceptable standard of 90%. However, for LCR babies this was still marginally short of the standard (89.9%). There has been an improvement in this indicator over the year, for example in 2010/11 only 81.2% of babies were assessed within 4 weeks.
**Staffing** - this service is currently provided by the Diagnostic Audiology at the UHL, including Audiologists (1.5 WTE total) and a Clinical Scientist (0.3 WTE).

**Demand** – the service accepts referrals from NHSP (about 320 patients per year), GPs and health visitors, relevant clinical departments and hearing clinics at the UHL (about 160 patients annually) (Table 2). The total demand for tests per year, including repeats, is about 570.

### 3.2.3 Paediatric Hearing Clinics (UHL)

The service provides behavioural testing at 8 months + for children referred from a variety of health care providers, whether clinical or community setting.

### 3.2.4 Aetiological investigation (UHL)

Up to 2011 the service provided by LPT community paediatrician (working 1.5 WTE), including bilateral PCHI cases from NHSP only. Currently this service is commissioned form UHL.

### 3.2.5 Community Audiology

Paediatric community audiology is provided by the Children’s Community Health Service (Leicestershire Partnership Trust, LPT). The service provides assessments at 8 months and later, as result of referrals from NHSP, UHL clinical departments and Electro-diagnostic Service, form school entry Hearing Screening, GPs and other health professional as well as education. It used 15 different venues across LLR, none of which are dedicated to audiology and mostly do not meet the required standards.

**Staffing** – service includes a Team Leader (1 WTE, 3 audiologists and 3 screeners, 2.7 WTE and 2.1 WTE, respectively)

**Demand** – in 2011/12 the service received about 2000 audiology and 4000 audiometric referrals (6000 total).

**Facilities** – Community Audiology currently uses 14 venues (**Appendix 4**). All venues were recently audited. None of the venues has necessary soundproofing required by the national standards.
3.2.6 Educational Audiology (City and County Teams) - habilitation and management

Paediatric habilitation services in LLR manage the initial hearing aid (HA) fitting and on-going assessment and management of all children with HAs. Babies identified through NHSP (around 12 per year) require an immediate HA fitting, which should be undertaken by two audiologists working together to fulfil MCHAS guidelines on HA fitting in small children. In total, there will be at least 20 children from each birth cohort in LLR with moderate to permanent hearing loss requiring HA fitting and on-going management.

Educational audiologists provide training to community teams and Health Visitors locally.

**Staffing** – services are currently provided by the local authority education services, including two Educational Audiologists (separately for city and county, 2 WTE total) and two Audiology Technicians (2 WTE total). There are no formal agreements between the NHS and LCC or Leicestershire CC ensuring continuing provision of these services.

**Demand** – The demand for educational audiology services in LLR are presented in Appendix 4 (Table B). There are nearly 800 children seen by either Leicester or County clinic each year.

**Facilities** – in the county the facilities in Coalville (Comet Way) are of acceptable standard, however in Leicester (New Parks) they are not.
3.3 Care and Referral Pathways

Current pathways of referral in LLR (Figure 1) are regarded as complex by the service providers and users, with lack of common IT system for referrals and sharing of clinical information. In summary they can be described as follows:

3.3.1 Screening programme and its outcomes

The majority of screened babies (NHSP) have acceptable hearing in both ears and no risk factors and these babies are discharged. Cases with clear response and recognised risk factors or other considerations (e.g. incomplete screens or missed appointments) are referred to community audiology (LPT) at 8 months for ongoing surveillance.

Babies with a positive test (or if referral is otherwise indicated) are referred for early audiological assessment at Electro-diagnostic Service (UHL).

3.3.2 Newborn babies with sensorineural hearing loss

Babies identified through NHSP as possibly having uni- or bilateral hearing loss are referred to the Electro-diagnostic Service at UHL to establish whether HL is present and if so to clarify its degree and configuration.

Babies with confirmed bilateral PCHI are referred for aetiological investigation (Community Paediatrics up to 2011, currently contracted with the ENT at the UHL). All babies with either unilateral or bilateral PCHI are referred to Educational Audiology for HA fitting and follow-up and in some cases to the ENT Department at UHL for further investigation and management. All children have will have been discharged to the adult service by the age of 19 years, with most being discharged at 16.

3.3.3 Newborn babies with conductive hearing loss

Babies identified by the UHL Electro-diagnostic Service with conductive hearing loss can be referred for an 8-month followup with community audiology or, if with cleft palate, to the UHL Paediatric Hearing Services for behavioural testing. City and county Educational Audiology also accepts referrals for such babies at their discretion. Babies with cleft lip are referred to Nottingham Cleft Lip/Palate Team. All those requiring hearing aid(s) are referred to the Educational Audiology.
3.3.4 Older children with hearing loss

Any children with hearing loss/deafness not identified by the NHSP and under 16 years of age who present through school entry screening, parental concern, general practice or other health or education professionals are referred to Community Audiology or Audiometry Clinic for confirmation, and later referred to UHL ENT or Educational Audiology, as appropriate.
Figure 1. Current pathways of referral in LLR (NB children can be discharged at any step of the pathway, dependent on outcome)
3.4 Management and Governance

3.4.1 Children's Hearing Services Working Group (CHSWG)

The group has been in operation for a number of years with public health and children’s NHS commissioners attending. The core group, including senior representatives from all services meets quarterly. It has been difficult to align the group strategically, and in terms of accountability, across NHS and Local Authorities and the lack of clear clinical professional leadership continues to affect the Group’s effectiveness.

Group is finding it difficult at some meeting to have full parental representation and engagement with commissioners and social care services has been poor.

3.4.2 Current challenges

A number of challenges have been identified, primarily relating to community and educational components. These include:

Governance and funding

- Lack of service level agreements for services
- Sustainability of educational audiology
- No contingency within educational audiology in case of illness
- Pathways are highly complex and poorly documented
- DNA rates are high (e.g. Down’s syndrome, educational audiology)
- No clarity about funding for clinic equipment and on-costs
- Sustainability of educational funding for audiology
- No succession planning or effective clinical governance
- Lack of clear safeguarding for children who do not attend (paediatrics/ENT/community)

Facilities and venues

- Lack of dedicated venues for community audiology
- Clinics largely are not fit for purpose
- Inadequate IT provision - computer systems/access (especially lack of access to SystmOne for community teams
• Educational audiology clinic facilities in the city (New Parks) do not meet required standards

**Staffing**

• No capacity to provide two audiologists needed to fit hearing aids in babies

• Loss of aetiological investigation in 2011 – sustainability of service in the future

• Sustainability and recruitment issues for educational audiology

• Lack of workforce development opportunities

• Uncertainty about the future of training provided by Educational Audiologists locally
4 Proposed Model of Future Service

The Review Group considered a number of scenarios for community and educational audiology service across LLR. Factors taken into account in included current activity and appointment capacity in the existing clinics (detailed in Appendix 4), projected demographic trends, accessibility (geography and existence of public transport) and suitability of potential venues. An options appraisal was carried out to test the advantages and disadvantages of final scenarios.

4.1 Aims and Objectives for Paediatric Audiology in LLR

4.1.1 Aims

To identify all children with permanent hearing loss or deafness as early as possible and to improve their life chances through effective programmes of intervention.

4.1.2 Objectives

- Provide high quality screening programme and ensure access for all babies (coverage and uptake)
- Provide high quality hearing surveillance in early childhood
- Respond to parental or professional concerns
- Provide appropriate audiological assessment
- Identify those with congenital deafness or PCHI
- Provide immediate access to programmes of intervention
- Provide medical management and aetiological investigation for children with identified PCHI or deafness
- Provide audiological assessment and intervention through appropriate hearing aids fitting
- Ensure the service is joined-up, family-friendly and sustainable
- Ensure seamless transfer to adult services

An effective network should

- Engage parents as full partners
- Have a clear clinical and managerial leadership
- Have an effective CHSWG, forming a basis of network and informing commissioning
4.1.3 Outcomes

a) Of newborn screening programme – early identification
b) Of post-newborn surveillance – detection of mild/unilateral PCHI
c) Of intervention – HA fitting, educational and social care management

4.2 Need for Paediatric Audiology in LLR

This chapter presents key information on LLR population and epidemiology of hearing impairment used to model the need for the audiology service in LLR.

4.2.1 Demography

The network covers three local authority areas of LLR, with a population of about one million and linked to one NHSP programme. LLR has a broad mix of population from highly disadvantaged primarily urban population of Leicester to relatively affluent populations in parts of Leicestershire and Rutland. However, pockets of rural deprivation are not uncommon and there are access issues in more remote parts of Leicestershire with poor public transport links.

4.2.2 Epidemiology

The following estimates of need are based on published national evidence sources.

There are about 12,700 live births annually (12,709 in 2010) in LLR as a whole. The city of Leicester has a high (40%) proportion of BME population, in their majority of Asian descent. Over 40% of Leicester population can also be described as socio-economically disadvantaged, the deprivation affecting all ethnic groups. Given these population considerations one can expect a total of about 20 babies with at least moderate hearing impairment (>=40 dB) in every annual birth cohort in LLR, 17 of these congenital and 4 with profound deafness (Table 1). Further 12 children may develop or acquire PCHI by the age of
10, due to in-utero CMV infection, mumps, meningitis, head injury or use of ototoxic drugs. There will be **80 pre-school** and **320 school-age deaf children** in the population.

A substantial proportion (30-40%) of children with profound deafness will have additional needs, often developmental or mental health needs.

### 4.2.3 Outcomes

Children with unidentified and/or poorly managed hearing loss can be affected by educational underachievement, while there is compelling evidence that effective intervention programmes improve their language outcomes.\(^8\)

The overarching outcome of screening and intervention programmes is improvement in life chances of children through better communication and social, emotional and educational development.

Primary intermediate outcome of screening in newborn and post-newborn period is identification of moderate to profound PCHI, whether unilateral or bilateral. In addition, post-newborn surveillance is able to detect cases mild and unilateral PCHI. Intervention in all screening-detected cases needs to be timely, effective and appropriate in order to achieve objectives set for the pathway.

### 4.2.4 Predicted Future Need - Population Forecast

According to the current population forecast published by the ONS\(^9\), the number of LLR children aged 0-4 is likely to rise year on year by 1200-1500 (equivalent to 2-2.3% annual increase) until 2017-18 and with no change thereafter (Table 4). The total of children under 15 is likely to rise each year by between 2500-3500, or 1.5-2%. This means that by 2017 (taking year 2011 as base), the neonatal workload could rise by about 11%, with no change after that year. According to the forecast, the total numbers of **children under 15 will be 11% higher in 2017 and 15% in 2020.**

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\(^8\) Commissioning Services for Children with Hearing Difficulty and their Families in London. Draft. August 2010

Table 1. Estimated number of children with PCHI >=40dB in an annual birth cohort in LLR and number of profoundly deaf children

<table>
<thead>
<tr>
<th></th>
<th>Births (in 2010)</th>
<th>PCHI (95% CI)*</th>
<th>Congenital</th>
<th>Profound**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leicester</td>
<td>5,299</td>
<td>11 (10-12)</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Rutland</td>
<td>344</td>
<td>0 (0-0)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leicestershire</td>
<td>7,066</td>
<td>9 (9-10)</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>LLR Total</td>
<td>12,709</td>
<td>20 (19-21)</td>
<td>17</td>
<td>4</td>
</tr>
</tbody>
</table>

* based on 133/100,000 births, adjusted for ethnicity and deprivation (Leicester), with 95% confidence interval;
** profound deafness in 22

4.3 Options Appraisal

4.3.1 Retaining the current service configuration - ‘do nothing’ option (Table 2 – option a)

This option assumes no change to the service, as it exists at present, and successful recruitment to the two educational audiologist posts, when they become vacant on retirement of current post holders. It is unlikely that appropriately trained and experienced candidates would be found for these two posts. There is little capacity within the service to ensure effective induction of the prospective new educational audiologists. All risks to the current service would remain, as described in Section 3.

4.3.2 Minimum outlay option (Table 2 – option b)

As a minimum, an update the city audiology clinic (New Park) is required and securing appropriate technical support to meet the national standards for audiology service.

Appointment of two clinical audiologists - one clinical audiologist with experience in paediatrics (AfC 7) to enable two-handed appointments for young children and in time take over clinical responsibilities of educational audiologists, and one senior audiologist (AfC 8B/C) to lead the service and implement further changes in addition to clinical responsibilities. Both audiologists would work across city and county venues, handling a large proportion of the clinic appointments.

Remaining risks with this option include persisting complexity of referral pathways, uncertainty about the future of at least some community venues and general capacity issues.

This option also stipulates fitting a new dedicated clinic in Market Harborough (St Luke’s Hospital) in an appropriate venue, already identified. This would result in a configuration of 3
fully dedicated clinics (‘one stop shop’ approach), staffed by the two new audiologists, educational audiologists and current community audiologists to support hearing aid fitting in younger children, although formal arrangements with county Education need to be drawn to ensure the Coalville clinic can be used by the NHS staff.

This model would reduce the use of current educational audiology clinics in city and county allowing for more assessment work being undertaken and a move towards a year-round system of appointments. This option assumes all administration being undertaken by the health service.

However, many capacity issues would remain, even in dedicated venues, and some of the current referral complexities would persist, resulting is possibly three steps from diagnosis to hearing aid fitting for some families, in different venues.

4.3.3 Model based on six dedicated venues (Table 2 – option c).

The most optimal model proposed locally is based on six dedicated venues across city and county (Appendix 6). It takes into account geography and ease of access, mainly the availability of public transport and population considerations. This model is not particularly pragmatic, as for some locations specific venues have not been yet identified and caseloads in the two city venues (See Appendix 4, Table C), would be much higher than for those in the county. However, this model allows for population growth as well as the recent trends in referral to the service, so should provide enough capacity within the service for the city and county alike.

4.3.4 Rationale supporting dedicated venues for audiology

Clinics that are dedicated to audiology/audiometry would allow for more appropriate use of resources and time, i.e. travel and setting up of equipment. Currently within community audiology a large proportion of clinical time is diverted towards equipment setting and organisation of clinics.

Each clinic across the patch would provide consistent professional service, allowing for two audiologists working with all children under 6 years of age (one senior clinical audiologist supported by an educational audiologist) and one clinical audiologist working with older children. They would also for consistent clinical processes across all venues.

They would allow for one point of contact and simplified patient pathways, less travelling for patients, although for a proportion of families access could deteriorate, in comparison with the current local community venues.
Such clinics would be **commissioned through an appropriate process**, including staff and equipment. Agreement needs to be reached between commissioners regarding future funding of equipment and replacements.

**IT and patient records** as well as referrals would be significantly simplified, with a possibility of a central booking system in the future.

It is assumed that dedicated clinics would provide **services across the year** and including times more suitable for working families, e.g. evenings, thus more time flexibility with only small potential loss of current geographical flexibility of community audiology clinics.

The model ensures more flexibility regarding cover in case of illness or leave – staff will be expected to work across venues, when necessary.

The model will incorporate much more **robust governance arrangements** through the local CHSWG as well external links with other networks.

The professional benefits of this model include easier networking and **maintaining clinical competence** for the audiologists, clearer career pathways and opportunities for further development.

The model requires recruitment of additional qualified staff, including one clinical audiologist at a senior level, who would take on the lead role within the service. However, recruitment into these two posts will soon be necessary anyway.

The model will require a **phased introduction over 3 years** with continuity and process management required over time, subject to developing good working relationships with new NHS commissioning organisations, such as NHS CB and PHE.

Based on the current activity in the existing venues and taking into account projected increase in the demand (for detail see **Appendix 4 Tab C**), the demand/workloads for the proposed sites are as follows:

1. Coalville - the existing venue at Comet Way, serving North West Leicestershire and Charnwood (including Loughborough) – about 100 children.

2. New Parks venue in Leicester - the existing venue, which needs to be re-fit. It serves the population of the West of Leicester (about 145 children).

3. St Luke’s Hospital in Market Harborough - new equipment to become a dedicated venue for paediatric audiology. It would primarily serve the population of east/south of Leicestershire, including Rutland, initially about 70 children.
4. A venue in Central Leicester (for example St Peters HC, Sparkenhoe St) to serve a large proportion of Leicester families (about 185 children).

5. A venue in the North-East of Leicester, such as Syston, to be accessible for a proportion of Leicester families as well as those from Melton Mowbray area, a total caseload of 80 children is predicted.

6. A venue in Hinckley to provide services for south-west Leicestershire patients.

4.3.5 Allocating audiology sessions in the new model

Table C in Appendix 4 presents the proposed allocation of monthly sessions to the new clinics. This is based on minimum calculation from the current monthly appointment capacity for community teams (119 sessions per month – Appendix 4 Table A) and educational audiology, which currently provides a total of 157 hours (1080+ 799/12, Appendix 4 Table B) or 45 sessions per month – total of 164 (one session taking approximately 3.5 hours).

With 15% uplift for population increase by 2020 (page 25) gives a minimum of 188 sessions need to be allocated to the new venues.

In the model proposed in Table C, two of the city clinics (New Parks and City West) appear to be over-allocated with 47 and 40 sessions per month\(^\text{10}\), but it is assumed that increased efficiency will mean a reduction in the 3.5 hours per session average.

It is important to stress that these are minimum predicted activity estimates and, together with geographical considerations for county families, are primarily presented to show the necessity for no less than six venues across LLR.

The estimated cost of implementation of this proposal is given in Appendix 7.

\(^{10}\) Maximum of 40 session per clinic per month (2 per day) for 3.5 hour sessions
Table 2. Options appraisal for paediatric audiology services in Leicester, Leicestershire and Rutland.

<table>
<thead>
<tr>
<th>Description</th>
<th>Option</th>
<th>a</th>
<th>b</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Do nothing' option</td>
<td>Service stays the same.</td>
<td>1) Appoint 1 Lead Clinical Audiologist (AfC 8B); 2) Upgrade the city audiology clinic to national standards and ensure appropriate technical support for that clinic; 3) Appoint 1 Clinical Audiologist (AfC 7); 4) Equip Market Harborough Clinic (St Luke's); 5) Ensure formal arrangement with county education for NHS to use the Coalville clinic.</td>
<td>As option 'b' plus 3 new dedicated audiology clinical venues (to the total of 6 across LLR).</td>
<td></td>
</tr>
</tbody>
</table>

Benefit to patients (weight 5)

1) Community audiology clinics remain local; 2) Maintained continuity of the current service arrangements for parents and children. 

Note that this can be guaranteed only for maximum of one year.

SCORE: 5 10 20

Compliance with best practice (weight 5)

1) Not meeting quality criteria for fitting HAs in small babies (2 audiologists required to meet standards); 2) City clinic and community clinics not compliant with standards (not soundproof); 3) No capacity to fit HAs after educational audiologists retire in 2013/2014.

1) Meeting quality standards for patients under the age of 3; 2) 3 venues standard-compliant; 3) A significant proportion of community venues meeting standards in a range of testing.

1) All venues compliant with national standards and able to provide high level service for children all ages; 2) All venues able to provide two audiologist to test children under 6 years.

SCORE: 10 15 20

Clinical outcomes (weight 5)

Inadequate soundproofing may lead to false positive results with negative impact on patients and services. 

1) Improved diagnosis in under 3-year olds; 2) Improved timeliness of intervention - HA fitting; 3) improved outcomes of testing in standard-compliant venues.

1) The highest likelihood of best outcome for patients as service would be integrated and robust for the future; 2) Equity of service across LLR; 3) Integration between Health and Education to facilitate in improving the outcomes of children with...
### Integration of the Service (weight 4)

Current service is not well integrated. Lack of common information system. Potential for duplication of appointments.

<table>
<thead>
<tr>
<th>SCORE:</th>
<th>10</th>
<th>15</th>
<th>25</th>
</tr>
</thead>
</table>

1. Senior clinical audiologist to take on early lead on service design and governance, including lead on CHSWG;
2. Improved integration of the service across LLR, to match the NHSP patch;
3. Strong opportunity to integrate IT and administration of the service across 3 three committed venues.

### Risks (weight 4)

In the immediate future:
1. Failure to provide service compliant with the national standards - will continue to be highlighted through the national Newborn Hearing Screening QA process;
2. Missed appointments;
3. Potential for false positive or false negative results;
4. Lack of sustainability of key service components in case of absence or retirement (educational audiologists could retire with immediate effect).

Beyond 2013/14:
Service in its current format is not sustainable beyond the retirement of educational audiologists without appropriate replacement in place.

<table>
<thead>
<tr>
<th>SCORE:</th>
<th>4</th>
<th>12</th>
<th>20</th>
</tr>
</thead>
</table>

1. Not meeting standards for children between 3 and 6 - potential failure in the QA process;
2. Lack of capacity in clinical audiology in case of educational audiologist(s) retiring early;
3. Continuing level of risk due to inadequate community audiology in venues outside the 3 dedicated clinics - a 'two-tier' community service (inequality in provision).

### Ease of Implementation (weight 1)

Easy but with high level of clinical risk, uncertainty among the staff

<table>
<thead>
<tr>
<th>SCORE:</th>
<th>4</th>
<th>12</th>
<th>20</th>
</tr>
</thead>
</table>

Relatively easy (venues existing, upgrade and/or equipment only), but depending on successful early recruitment into the

The most costly/difficult option to implement, depending on availability of 3 appropriately located venues. Option most likely to meet the support of staff, due to improved
<table>
<thead>
<tr>
<th></th>
<th>/low morale.</th>
<th>Lead Clinical Audiologist post to manage the process.</th>
<th>conditions of work and career prospects.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCORE:</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>ALL ABOVE - sum is the clinical benefit score</strong></td>
<td><strong>41</strong></td>
<td><strong>67</strong></td>
<td><strong>107</strong></td>
</tr>
<tr>
<td>Costs (weight 5)</td>
<td>All cost estimates are indicative</td>
<td>No additional cost involved while the educational audiologists are in post.</td>
<td>Venues (non-recurrent): 1) City venue upgrade and equipment at an estimated cost of £160K. 2) County venue (St Luke’s) equipment only £40K. Staff (recurrent): 3) Recruitment of a AfC 8B clinical post - £70K, incl on-cost. 4) Recruitment of a AfC 7 post - £50K, incl. on-cost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Venues (non-recurrent): 1) City venue upgrade and equipment at an estimated cost of £160K. 2) County venue (St Luke’s) equipment only £40K. 3) Fit and equip 3 new venues at a cost of £160K each - total of £480K. Staff (recurrent): 3) Recruitment of a AfC 8B clinical post - £70K, incl. on-cost. 4) Recruitment of a AfC 7 post - £50K, incl. on-cost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>LLR TOTAL of £200,000 non recurrent and £120,000 per annum recurrent</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>LLR TOTAL of £680,000 non recurrent and £120,000 per annum recurrent</strong></td>
</tr>
<tr>
<td>SCORE:</td>
<td>20</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Savings (weight 5)</td>
<td>No financial saving through this option.</td>
<td>No financial saving through this option.</td>
<td>No financial saving through this option.</td>
</tr>
<tr>
<td>SCORE:</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td><strong>OVERALL SCORE</strong></td>
<td><strong>66</strong></td>
<td><strong>82</strong></td>
<td><strong>117</strong></td>
</tr>
</tbody>
</table>
Figure 2. Proposed new pathway of referral (NB children can be discharged at any step of the pathway, dependent on outcome)
4.4 Future Commissioning and Governance of the Service

At the time of writing, it is not completely clear how the newly emerging NHS commissioning structures will affect paediatric audiology in the future. NHSP will be commissioned by the NHS Commissioning Board (NHSCB), under the Public Health England (PHE) lead. The commissioning teams responsible for all screening and immunisation from April 2013 will consist of one Consultant Lead per NHSCB Area Team with a supporting senior managerial and coordinator structure. Some of the public health services for children will also be commissioned by the NHSCB, while others by CCGs. The role of the CHSWG will remain key in ensuring that Audiology services as commissioned effectively in the future. This role is described in more detail below.

4.4.1 Role of the CHSWG

The NHSP prescribes in detail the role and remit of the local CHSWGs (see: http://hearing.screening.nhs.uk/chswg).

A recommendation in the NDCS Quality Standards in Audiology Volume IV (Oct 2000) recommended that health services set up Audiology Working Groups (AWG) whose aim was to promote the "collaboration and responsiveness of services to meet the real needs of families".

Following the publication of the NDCS Quality Standards in the Early Years (2003) AWGs became Children’s Hearing Services Working Groups. The NDCS Quality Standards outline a range of responsibilities of the CHSWG and this included their remit to be both strategic and operational in their function.

The role of the CHSWG can be summarised as follows:

- The CHSWG should be developed formally with the full co-operation and authorisation of the lead service provider.

- The Group is the framework for multidisciplinary working and cover all services, whether statutory or voluntary, involved in supporting deaf children and their families – these include health, education and social care.

- Membership must include parent and patient (user) representatives.
All members should work together to continuously monitor and improve services for deaf children and their families.

A key role of CHSWGs is to ensure that children's hearing services are high in the agenda of those responsible for planning and delivering services, and resourcing at a strategic level, offering advice, guidance and exerting influence to ensure high quality services are available.

However, the CHSWG has both strategic and operational responsibilities, thus its membership should include service providers at a practitioner, managerial and strategic level.

The group should be accountable for their activities to all host organisations.

CHSWG needs a strong and transparent quality assurance

Its programme of work should include:

- Developing partnership in the strategic management of services.
- Developing policies and strategies which enable services which are family friendly and well-resourced
- Discussing and agreeing the content of all local policies and guidelines within the multidisciplinary setting for services offered to children and their families.
- Reporting to the CHSWG chair any issues concerning quality across health, education and social care.
- Establishing, monitoring and reviewing the implementation of the quality assurance strategy locally.
- Reviewing the management of serious incidents (SIs), agreeing the major lessons that need consideration and actions that should be implemented
- Suggesting reviews to policy and operational matters that should be commissioned
- Approving reports on programme performance and critical incident management
CSWG should meet at least twice a year, have clear terms of reference, keep records of all meetings, record attendance including sectors represented and carry out an annual survey of client satisfaction.

CHSWG should provide regular reporting to senior management with an Annual Report being produced for all group members, stakeholders, service-users and service providers.
5 Consultation Process

5.1 Professional consultation

The Review Group consulted locally with the ENT Lead (Mr Anil Banerjee) at the UHL as well as externally with the Consultant Audiovestibular Physician (Dr Glynnis Parker). The aim of both consultations was to clarify a number of professional and service management issues emerging from the Review.

The recommendations of the Review Group were supported by both consultants, particularly the need for an integrated service with robust pathways and governance arrangements, ensuring high standard of local provision in the future.

The detailed recommendations of the external consultation can be summarised as follows:

1. A configuration of six dedicated venues with a core team covering all venues, as proposed by the Review Group was recommended, as appropriate for the size and type of population in LLR.

2. A clinical model of paediatric audiology, professionally hosted by the acute provider, was recommended.

3. It should be provided by a core multidisciplinary team, ensuring career progression pathways and training opportunities for staff.

4. It will need to ensure two trained audiologists to fit hearing aids in small children (all under the age of 6) - the current service cannot fulfil this standard of care.

5. Creation of a clinical senior clinical audiologist (AFC 8B/C) was strongly recommended to ensure effective leadership of the service in the future. Part of this post's remit would be to lead on the implementation of the review.

6. It was also recommended to create an additional clinical audiologist post grade AFC 7 to undertake clinical functions of the current educational audiologists and ensure paediatric audiology standards in the future are fulfilled.

7. The soon to be mandatory professional accreditation for audiology should be used as an opportunity to enable more comprehensive staff development.

8. Several issues should be addressed this through the CHSWG in partnership with local authorities such as the roles of educational audiologists in the new system and closer engagement of social care.
9. It was also recommended to address IT issues early in the implementation.

5.2 Consultation with Parents

Parents representatives were engaged initially though their participation in the SWOT exercise in February 2012 (page 13). Families were informed about the review taking place through regular newsletters issued by educational service throughout 2012 and encouraged to give feedback.

The final consultation with parents took place throughout the month of December 2012. It included a questionnaire survey of families attending community and educational appointments in venues across LLR and two events organised in the city educational venue (New Parks House) for both city and county families. The events included a presentation on the proposed changes by the audiology staff, a questions and answers session, followed by a questionnaire.

The full results of the responses and additional comments are presented in Appendix 8 (B). Overall, there were 91 responses to questionnaires, showing a general support to the proposed changed, with a majority (65%) of parents expressing a preference for better facilities and improved care and less appointments over the current local provision of community audiology clinics.

The majority of parents regarded the proposed integration of testing and hearing aid fitting in the same venue as the most important improvement to the service, followed by preference for fewer appointments. The general conditions in the community clinics were also regarded as very important indicator of the quality of service.

Although only 85% of families travelled less than 5 miles for an appointment, the majority of used a car (80%) for travel to clinics.
6 Conclusions and Recommendations

The review identified a number of concerns relating to clinical risks, staffing, facilities, management, and governance and commissioning of the service.

6.1.1 Clinical Risks

The main clinical risks include:

1. Lack of capacity to undertake HA fitting in small children, when current national standards require two experienced audiologist

2. No contingency plans for habilitation services, currently provided by Educational Audiologist, due to retire within next two years.

3. Uncertainty about future provision of diagnostic aetiological services.

4. Risk for missing cases and high DNA rates in community audiology due to inadequate facilities. All these have a potential to significantly affect the quality of patient care.

5. Lack of strategic clinical leadership at a senior level in respect of the whole pathway. Such leadership is necessary to ensure that there are appropriate mechanisms for raising clinical and managerial concerns and risks at a more strategic level.

It is therefore recommended that:

1. A clinical lead post (senior medical audiologist, AfC 8B/C) be created and funded by the NHS. In addition to its clinical remit, the post will bring both clinical and operational leadership to the pathway as well as being responsible for ensuring that issues relating to the pathway are properly recognised and actions taken to mitigate against the risks.

2. A second audiologist post (AfC 7) is created to provide clinical service across LLR and ensuring standards are met.
3. Professional and clinical relationships are strengthened effectively across an integrated network.

6.1.1 Facilities

A review of the current community clinics has identified a serious lack of dedicated facilities. Virtually all of the current venues are in rooms that are shared by other services, unfit for audiology in children and young people, most importantly lacking attenuated walls. Appropriate facilities would reduce the number of additional appointments and false positive results.

It is therefore recommended that a smaller number of clinics are set up and equipped appropriately throughout LLR through a staged programme. The proposed model is based on six venues, shared between educational and community audiology. It is estimated that the additional cost of fitting, mainly sound-proofing, is in a ball-park of £120,000 each with additional £40,000 needed for equipment.

6.1.2 Commissioning and governance

The review identified significant risks emerging from lack of formal commissioning arrangements between partners. All of the current agreements have no contract or service level agreement, with a high risk of them breaking down.

It is therefore recommended that:

1) service level agreements are formally drawn up between the various partners in order to ensure clarity of role and responsibility of each agency including accountability which will lead to greater transparency (process to be led by the strengthened CHSWG)

2) that the role of the CHSWG as the lead strategic group is ratified by all partners and the lead organisation identified (NHS). Sources of funding for CHSWG need to be identified; membership, leadership and TOR need also to be reviewed.
7 Glossary of Abbreviations

AfC – Agenda for Change
BAHA – Bone Anchored Hearing Aids
BME – Black and minority ethnic population
CCG – Clinical Commissioning Group
CHSWG – Children’s Hearing Services Working Group
DNA – ‘did not attend’
ENT – Ear, Nose and Throat
f/u – follow-up
HA – hearing aid
LLR – Leicester, Leicestershire and Rutland
LPT – Leicestershire Partnership Trust
NDCS - National Deaf Children’s Society
NHS CB – NHS Commissioning Board
NHSP – Newborn Hearing Screening Programme
OME – otitis media with effusion
ONS – Office for National Statistics
PCHI – Permanent childhood hearing impairment
PCT – Primary Care Trust
SNHL – sensorineural hearing loss
ToD – Teacher of the Deaf
UHL – University Hospitals of Leicester NHS Trust
8 Appendices

Appendix 1: Health service workforce estimates.

Appendix 2: Current staffing levels in LLR.

Appendix 3: Population forecast (children in LLR from 2011 to 2020)

Appendix 4: Activity in current audiology venues and proposed dedicated clinics.

Appendix 5: Equipment required for dedicated venue

Appendix 6: Location of new clinics

Appendix 7: Indicative costs of the proposed model of investment

Appendix 8: Parent consultation survey
## Appendix 1. Estimates of service requirement

<table>
<thead>
<tr>
<th>Service item</th>
<th>Service demand</th>
<th>Local demand</th>
<th>Staffing Determinants</th>
<th>Staff Required / sector</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>NHSP</em></td>
<td>13,000</td>
<td>12,432 babies in 2011/12</td>
<td>1.0 WTE Screener /1250 births, 1.0 WTE Co-ordinator /10000 births, 0.1 WTE Lead / PCT</td>
<td>10.0 WTE Screener, 1.0 WTE Co-ordinator, 0.1 WTE Team Leader</td>
</tr>
<tr>
<td><strong>Audiological assessments</strong></td>
<td>550</td>
<td>a) 320 babies referred by NHSP, b) 160 – non NHSP, - resulting in about 570 tests annually*</td>
<td>2 appointments/clinical session for AIC 8 Audiologist</td>
<td>0.7 WTE AIC 8 Audiologist</td>
</tr>
<tr>
<td><strong>Reactive Referral and Surveillance</strong></td>
<td>1300</td>
<td></td>
<td>Audiologists trained to work with children – working in two handed clinics with 5 appointments/clinical session</td>
<td>0.7 WTE AIC 7 Audiologist, 0.7 WTE AIC 6 Audiologist working with Community Paediatrician</td>
</tr>
<tr>
<td><strong>Audiological and Medical Management</strong></td>
<td>500-550</td>
<td></td>
<td>Audiologists trained to work with children – working in two handed clinics with 2-3 appointments/clinical session</td>
<td>0.4 WTE AIC 8 Audiologist, 0.4 WTE AIC 7 Audiologist, Working with Audiovestibular Physician Plus Audiologist for unscheduled repairs, maintenance and ear-moulds</td>
</tr>
</tbody>
</table>
Appendix 2. Current staffing levels of paediatric audiology in LLR.

Staffing cost of NHSP (£243,597) has been provided by the National Screening Centre. WTE=whole time equivalent.

<table>
<thead>
<tr>
<th>WTE</th>
<th>Grade</th>
<th>Basic Pay *</th>
<th>BCS** (£)</th>
<th>BSC x WTE</th>
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</thead>
</table>

**NHSP (UHL):**

<table>
<thead>
<tr>
<th>Role</th>
<th>WTE</th>
<th>Grade</th>
<th>Basic Pay</th>
<th>BCS**</th>
<th>BSC x WTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team Leader</td>
<td>0.1</td>
<td>AfC 8b</td>
<td>55,945</td>
<td>69,212</td>
<td>6,921</td>
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<tr>
<td>Coordinator</td>
<td>1</td>
<td>AfC 6</td>
<td>34,189</td>
<td>41,714</td>
<td>41,714</td>
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<tr>
<td>Senior Screener</td>
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<td>AfC 4</td>
<td>21,798</td>
<td>26,337</td>
<td>13,169</td>
</tr>
<tr>
<td>Senior Screener</td>
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<td>AfC 4</td>
<td>21,798</td>
<td>26,337</td>
<td>21,070</td>
</tr>
<tr>
<td>11 X PT Screeners</td>
<td>7</td>
<td>AfC 3</td>
<td>19,077</td>
<td>22,960</td>
<td>160,722</td>
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</table>

**NHSP Total:** 9.4 WTE  £243,596

**Community (LPT):**

<table>
<thead>
<tr>
<th>Role</th>
<th>WTE</th>
<th>Grade</th>
<th>Basic Pay</th>
<th>BCS**</th>
<th>BSC x WTE</th>
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</thead>
<tbody>
<tr>
<td>Team Leader</td>
<td>1</td>
<td>AfC 6</td>
<td>34,189</td>
<td>41,714</td>
<td>41,714</td>
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<tr>
<td>3 x Audiologist</td>
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<td>90,635</td>
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<td>3 x Screener</td>
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<td>AfC 3</td>
<td>19,077</td>
<td>22,960</td>
<td>48,217</td>
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**Diagnostic Audiology (UHL):**

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<th>Grade</th>
<th>Basic Pay</th>
<th>BCS**</th>
<th>BSC x WTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Scientist</td>
<td>0.3</td>
<td>AfC 8a</td>
<td>46,621</td>
<td>57,295</td>
<td>17,189</td>
</tr>
<tr>
<td>3 x Audiologist</td>
<td>1.5</td>
<td>AfC 6</td>
<td>34,189</td>
<td>41,714</td>
<td>62,571</td>
</tr>
</tbody>
</table>

**Educational Audiology:**

<table>
<thead>
<tr>
<th>Role</th>
<th>WTE</th>
<th>Grade</th>
<th>Basic Pay</th>
<th>BCS**</th>
<th>BSC x WTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Audiologist</td>
<td>1</td>
<td>n/a</td>
<td>46,000</td>
<td>56,580</td>
<td>56,580</td>
</tr>
<tr>
<td>Educational Audiologist</td>
<td>1</td>
<td>n/a</td>
<td>46,000</td>
<td>56,580</td>
<td>56,580</td>
</tr>
<tr>
<td>Technician - city</td>
<td>1</td>
<td>n/a</td>
<td>21,000</td>
<td>25,830</td>
<td>25,830</td>
</tr>
<tr>
<td>Technician - county</td>
<td>1</td>
<td>n/a</td>
<td>21,000</td>
<td>25,830</td>
<td>25,830</td>
</tr>
</tbody>
</table>

**Hearing Services (UHL):**

<table>
<thead>
<tr>
<th>Role</th>
<th>WTE</th>
<th>Grade</th>
<th>Basic Pay</th>
<th>BCS**</th>
<th>BSC x WTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audiological Scientist</td>
<td>0.75</td>
<td>AfC 7</td>
<td>40,157</td>
<td>49,121</td>
<td>36,840</td>
</tr>
<tr>
<td>Audiologist</td>
<td>0.6</td>
<td>AfC 7</td>
<td>40,157</td>
<td>49,121</td>
<td>29,472</td>
</tr>
</tbody>
</table>

**Audiology Total:**  £735,054

* For the NHS staff - top of the AfC scale; for education staff current pay.

** Including on-cost @ 23% (both education and NHS).
### Appendix 3. Population forecast for children in LLR 2011 to 2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Age 0-4</th>
<th>Age 5-9</th>
<th>Age 10-14</th>
<th>All under 15</th>
<th>All (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>1200</td>
<td>1700</td>
<td>-400</td>
<td>2500</td>
<td>1.4</td>
</tr>
<tr>
<td>2013</td>
<td>1300</td>
<td>1500</td>
<td>100</td>
<td>2900</td>
<td>1.6</td>
</tr>
<tr>
<td>2014</td>
<td>1500</td>
<td>900</td>
<td>600</td>
<td>3000</td>
<td>1.7</td>
</tr>
<tr>
<td>2015</td>
<td>1200</td>
<td>1300</td>
<td>1000</td>
<td>3500</td>
<td>1.9</td>
</tr>
<tr>
<td>2016</td>
<td>900</td>
<td>1200</td>
<td>1300</td>
<td>3400</td>
<td>1.8</td>
</tr>
<tr>
<td>2017</td>
<td>500</td>
<td>1300</td>
<td>1500</td>
<td>3300</td>
<td>1.7</td>
</tr>
<tr>
<td>2018</td>
<td>200</td>
<td>1200</td>
<td>1600</td>
<td>3000</td>
<td>1.5</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
<td>1400</td>
<td>1000</td>
<td>2400</td>
<td>1.2</td>
</tr>
<tr>
<td>2020</td>
<td>0</td>
<td>1300</td>
<td>1300</td>
<td>2600</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Appendix 4. Current and proposed audiology venues with activity estimates

A - Current Community Appointment Capacity - all figures per month

<table>
<thead>
<tr>
<th>Venue</th>
<th>Appointment capacity*</th>
<th>Sessions</th>
<th>Capacity (hours) **</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Coalville</td>
<td>45</td>
<td>9</td>
<td>31.5</td>
</tr>
<tr>
<td>2 Loughborough</td>
<td>45</td>
<td>9</td>
<td>31.5</td>
</tr>
<tr>
<td>3 Syston</td>
<td>50</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>4 Melton</td>
<td>25</td>
<td>5</td>
<td>17.5</td>
</tr>
<tr>
<td>5 Oakham</td>
<td>30</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>6 Harborough</td>
<td>30</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>7 Hinckley</td>
<td>50</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>8 New Parks</td>
<td>20</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>9 Westcotes</td>
<td>65</td>
<td>13</td>
<td>45.5</td>
</tr>
<tr>
<td>10 Braunstone</td>
<td>95</td>
<td>19</td>
<td>66.5</td>
</tr>
<tr>
<td>11 South Wigston</td>
<td>30</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>12 Rushey Mead</td>
<td>10</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>13 St Peters</td>
<td>80</td>
<td>16</td>
<td>56</td>
</tr>
<tr>
<td>14 Uppingham Rd</td>
<td>20</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>595</td>
<td>119</td>
<td>416.5</td>
</tr>
</tbody>
</table>

* based on 5 appointments per session
** based on 3.5 hours per session (0.5 hr setup, 5 x 0.5 hr appointments and 0.5 hr admin)

B - Current Audiology Clinics Appointments (Education) in Leicestershire and Rutland (Coalville, Comet Way), and Leicester (New Parks) - annual figures

<table>
<thead>
<tr>
<th></th>
<th>Leicestershire and Rutland</th>
<th>Leicester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Appt</td>
</tr>
<tr>
<td>Preschool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Mild</td>
<td>57</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>Severe</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Profound</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Total (Preschool)</td>
<td>141</td>
<td>2</td>
</tr>
<tr>
<td>Primary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral</td>
<td>165</td>
<td>1.5</td>
</tr>
<tr>
<td>Mild</td>
<td>54</td>
<td>1.5</td>
</tr>
<tr>
<td>Moderate</td>
<td>7</td>
<td>1.5</td>
</tr>
<tr>
<td>Severe</td>
<td>12</td>
<td>1.5</td>
</tr>
<tr>
<td>Profound</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total (Primary)</td>
<td>253</td>
<td>4.5</td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral</td>
<td>137</td>
<td>1.5</td>
</tr>
<tr>
<td>Mild</td>
<td>41</td>
<td>1.5</td>
</tr>
<tr>
<td>Moderate</td>
<td>15</td>
<td>1.5</td>
</tr>
<tr>
<td>Severe</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>Profound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergencies</td>
<td>1.5</td>
<td>20</td>
</tr>
<tr>
<td>FM first fit</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Targetted reviews</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Admin/calibrations</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>545</td>
<td>1080.5</td>
</tr>
</tbody>
</table>

N = Number of children
Appt = Length of an appointment in hours
Appt/yr = Number of appointments per year
Total (hrs) = Total number of hours per year
C - Proposed Venues for Dedicated Audiology Clinics in LLR - monthly session allocation

<table>
<thead>
<tr>
<th>New Venue</th>
<th>Community</th>
<th>Education</th>
<th>Total Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current venue</td>
<td>Number of sessions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>County and Rutland</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sessions</td>
<td></td>
<td>Sessions</td>
</tr>
<tr>
<td>1 Coalville</td>
<td>1,2</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>2 Leicester New</td>
<td>8,9,10</td>
<td>36</td>
<td>1.5</td>
</tr>
<tr>
<td>Parks House</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Market</td>
<td>4,5,6</td>
<td>17</td>
<td>10</td>
</tr>
<tr>
<td>Harborough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Leicester City</td>
<td>11,13,14</td>
<td>26</td>
<td>1.5</td>
</tr>
<tr>
<td>West</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Leicester North</td>
<td>3,12</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>East</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Hinckley</td>
<td>7</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>119</td>
<td>39</td>
<td>28</td>
</tr>
</tbody>
</table>
Appendix 5. Equipment required for a clinic

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Cost (£)</th>
<th>Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamplex OAE system</td>
<td>1,500</td>
<td>Yes</td>
</tr>
<tr>
<td>VRA stands</td>
<td>1,775</td>
<td>Yes</td>
</tr>
<tr>
<td>Loudspeakers</td>
<td>300</td>
<td>Yes</td>
</tr>
<tr>
<td>VRA screens, software and control centre</td>
<td>1,878</td>
<td>Yes</td>
</tr>
<tr>
<td>Aurical test box</td>
<td>6,875</td>
<td>Yes</td>
</tr>
<tr>
<td>PC (Compac notebook)</td>
<td>279</td>
<td>Yes</td>
</tr>
<tr>
<td>Fonix FP 35 test box</td>
<td>3,500</td>
<td>No</td>
</tr>
<tr>
<td>Affinity test box</td>
<td>4,670</td>
<td>No</td>
</tr>
<tr>
<td>Two HP computers</td>
<td>900</td>
<td>Yes (1)</td>
</tr>
<tr>
<td>NOAH software</td>
<td>600</td>
<td>Yes</td>
</tr>
<tr>
<td>Parrott Plus system</td>
<td>2,000</td>
<td>Yes</td>
</tr>
<tr>
<td>KC 50 Audiometer</td>
<td>3,000</td>
<td>Yes</td>
</tr>
<tr>
<td>Free field hand held Audiometer</td>
<td>900</td>
<td>Yes</td>
</tr>
<tr>
<td>Norsonic Sound Level Meter</td>
<td>4,780</td>
<td>Yes</td>
</tr>
<tr>
<td>Kamplex Tympanometer</td>
<td>2,500</td>
<td>Yes</td>
</tr>
<tr>
<td>Otoscope</td>
<td>75</td>
<td>Yes</td>
</tr>
<tr>
<td>Two HI PRO hearing aid programmers</td>
<td>1,200</td>
<td>Yes (1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£36,732</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total (essential equipment only)</strong></td>
<td><strong>£27,512</strong></td>
<td></td>
</tr>
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</table>
Appendix 6. Approximate location of the proposed clinics

(NB year 2013/14 is equivalent to Option B of the plan)

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
<th>LLR Total</th>
<th>Leicester City</th>
<th>West Leics</th>
<th>East Leics &amp; Rutland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recurrent staff cost:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AfC 8B 1WTE Clinical Audiologist</td>
<td>£70,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AfC 7 1WTE Clinical Audiologist</td>
<td>£50,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total recurrent:</strong></td>
<td>€120,000</td>
<td>€120,000</td>
<td>€42,000</td>
<td>€42,000</td>
<td>€36,000</td>
</tr>
<tr>
<td><strong>Phased non-recurrent investment:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013/14</td>
<td>City venue* - upgrade</td>
<td>£120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>City venue* - equipment</td>
<td>£40,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>County venue** - equipment</td>
<td>£40,000</td>
<td>€200,000</td>
<td>€70,000</td>
<td>€70,000</td>
</tr>
<tr>
<td>2014/15</td>
<td>2 venues - upgrade</td>
<td>£240,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 venues - equipment</td>
<td>£80,000</td>
<td>€320,000</td>
<td>€112,000</td>
<td>€112,000</td>
</tr>
<tr>
<td>2015/16</td>
<td>1 venue - upgrade</td>
<td>£120,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 venue - equipment</td>
<td>£40,000</td>
<td>€160,000</td>
<td>€56,000</td>
<td>€56,000</td>
</tr>
<tr>
<td><strong>Total non-recurrent:</strong></td>
<td>€680,000</td>
<td>€680,000</td>
<td>€238,000</td>
<td>€238,000</td>
<td>€204,000</td>
</tr>
</tbody>
</table>

* New Parks House, Pindar Rd, Leicester, LE3 9RN
** St Luke's Hospital, 33 Leicester Road, Market Harborough, Leicestershire, LE16 7BN
Appendix 8. Survey for parents

A. Survey form

Children’s Hearing Clinics

We would like you to help us improve our service to you and your child so we would be grateful if you could take a few moments to answer the following questions. Please put a tick in the box beside the comment which most suits you.

1. When my child has a hearing test I prefer to:
   a) Be given a fixed appointment
   b) Phone to choose an appointment

2. My preferred time of appointment is:
   a) Weekdays
      i) 9-12 am
      ii) 1-4 pm
      iii) 4-6 pm
   b) Saturday 9-12 am

3. I go to the clinic by:
   a) Car
   b) Bus
   c) I walk
   d) Other

4. To get to the clinic I travel:
   a) Under 1 mile
   b) 1-5 miles
   c) 6-10 miles
   d) Over 10 miles

5. I would be happy to travel further to a clinic where there are improved facilities for testing and to reduce the number of appointments I attend:
   a) Yes
   b) No

6. Some improvements in the service I would like to see would be:
   (please number in order of importance where 1 is most important and 5 is least important)
   a) Child friendly facilities
b) Comfortable waiting room

c) Hearing test, hearing aid fitting and repairs in the same place

d) Fewer appointments

e) Quiet conditions

7. Other professionals who see my child are:

a) Paediatrician

b) Speech and Language Therapist

c) Occupational Therapist

d) Physiotherapist

e) Education

f) United Hospital Leicester

g) Other/s …………………………………………………………………………

8) It would really help future planning if you could tell us what area you live in

……………………………………………………………………………

Thank you for spending time to help improve services for children
B. Survey results: responders from a total of 91 across all audiology clinics in LLR

<table>
<thead>
<tr>
<th>Q1 Appointments</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) fixed appointment</td>
<td>22</td>
<td>24.2</td>
</tr>
<tr>
<td>b) phone to book</td>
<td>66</td>
<td>72.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2 appointment time</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) 9-12 weekday</td>
<td>44</td>
<td>48.4</td>
</tr>
<tr>
<td>ii) 1-4pm</td>
<td>21</td>
<td>23.1</td>
</tr>
<tr>
<td>iii) 4-6pm weekday</td>
<td>25</td>
<td>27.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3 transport</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) car</td>
<td>74</td>
<td>81.3</td>
</tr>
<tr>
<td>b) bus</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>c) walk</td>
<td>10</td>
<td>11.0</td>
</tr>
<tr>
<td>d) train</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q4 distance to clinic</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) &lt;1 mile</td>
<td>17</td>
<td>18.7</td>
</tr>
<tr>
<td>b) 1-5 miles</td>
<td>56</td>
<td>61.5</td>
</tr>
<tr>
<td>c) 6-10 miles</td>
<td>10</td>
<td>11.0</td>
</tr>
<tr>
<td>d) over 10 miles</td>
<td>7</td>
<td>7.7</td>
</tr>
<tr>
<td>N/R</td>
<td>1</td>
<td>1.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q5 travel further</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Yes</td>
<td>55</td>
<td>60.4</td>
</tr>
<tr>
<td>b) No</td>
<td>34</td>
<td>37.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q6 ranking (1=highest, 5=lowest)</th>
<th>Number</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) child friendly</td>
<td>3</td>
<td></td>
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<td>b) comfortable waiting room</td>
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<td>c) hearing tests and aiding in one place</td>
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<td>d) fewer appointments</td>
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<td>e) quiet conditions</td>
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<td>f) UHL</td>
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<td>g) other</td>
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