



Public Health
England



NHS Newborn Hearing Screening Programme

Time from screening outcome to attendance at an audiological appointment (NHSP standard 5): learning from best performing sites

December 2017

Public Health England leads the NHS Screening Programmes

About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. We do this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. We are an executive agency of the Department of Health, and are a distinct delivery organisation with operational autonomy to advise and support government, local authorities and the NHS in a professionally independent manner.

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About PHE Screening

Screening identifies apparently healthy people who may be at increased risk of a disease or condition, enabling earlier treatment or better informed decisions. National population screening programmes are implemented in the NHS on the advice of the UK National Screening Committee (UK NSC), which makes independent, evidence-based recommendations to ministers in the 4 UK countries. The Screening Quality Assurance Service ensures programmes are safe and effective by checking that national standards are met. PHE leads the NHS Screening Programmes and hosts the UK NSC secretariat.

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Executive summary

There is variation across NHSP sites in England in meeting the achievable threshold of $\geq 95.0\%$ for standard 5 (NH2). Performance across England is steadily improving but has not yet reached the target threshold.

A survey was sent to 18 of the best performing NHSP sites to ascertain the factors that enabled success. There was an overall response rate of 78%.

Diversity in terms of the size of the NHSP site, ethnicity and deprivation levels of the population does not negatively impact on the ability to achieve this target. Evidence from Bradford, Leicester, Newham and South East London show that having well established processes and effective communication enables achievement of the target.

Learning from best performing NHSP sites can be themed into:

1. Good communication between screeners and audiology
 2. Information to parents
 3. Appointments – booking, flexibility and reminders
- Communication between screening and audiology teams and access to appointment IT systems can be easier if both services are within the same organisation.
 - Good communication between the screener and parents is important in helping parents to understand the importance of attending the audiology appointment. Access to interpreting services also helps communicate the importance of the appointment to parents.
 - Although there were different approaches to booking the audiology appointment, many responding sites stressed the importance of booking the appointment face to face at the time of the screen, before the parents left the department.
 - Sending reminders to parents before the audiology appointment was a common feature of the best performing sites and contributes to success.
 - Health visitors play an important role in supporting and encouraging parents to attend the appointment, helping to follow up parents who did not attend the audiology appointment and in providing ongoing support to the families.
 - Following up parents who do not attend the first appointment is important.

Recommendations

1. Audiology teams should complete records in national IT system SMaRT4Hearing (S4H) at the earliest opportunity to enable timely measuring of performance against NH2.
2. NHSP team leaders and local managers should review local processes against the findings of this report to assess and implement changes where relevant to improve the local referral pathway. A checklist is provided in appendix 5.
3. All NHSP sites should have standard operating procedures specifying:
 - how appointment processes work
 - how to manage parents who do not attend the first appointment.
4. All NHSP sites should work closely and involve health visitors (HVs) as they play a vital role in providing additional information and ongoing support to parents. Sites that involved HV's said their role contributed to achieving high attendance rates.
5. All NHSP sites not meeting the NH2 KPI threshold should consider undertaking a health equity audit in the next 6- 12 months to understand how services are delivered in relation to the needs of different population groups. This audit could include factors such as:
 - deprivation
 - ethnicity
 - location of services
 - gestational age and time spent on neonatal unit or not (well- baby protocol vs neonatal intensive care protocol)
 - mode of delivery (vaginal or caesarean) and
 - family history of hearing loss.
6. PHE screening should as part of the inequalities strategy address the ability to access and use data such as NHS postcode directory, ethnicity and use of an interpreter. These data should be available in the NHSP reporting universe.

Introduction

In November 2016 the antenatal and newborn joint action meeting (ANNB JAM) reviewed the performance of key performance indicator (KPI) NH2 (NHS Newborn Hearing Screening Programme standard 5) across England (see appendix 1). The aim was to decide what actions to take to drive continuous improvement in meeting this KPI's achievable threshold ($\geq 95.0\%$). Performance across England is slowly improving but it does not yet meet the target (table 1). Performance varies by region and NHSP site. NHSP site performance data should be interpreted with caution. For some sites, the number of babies who require referral is small and changes in small numbers can result in large fluctuations in performance.

Table 1: Performance on NH2 across England			
Year	Denominator	Numerator	Performance
1 April 2014 to 31 March 2015	18,224	15,711	86.2%
1 April 2015 to 31 March 2016	17,507	15,260	87.2%
1 April 2016 to 31 March 2017	16,442	14,601	88.8%
2016/17 performance on NH2 by region			
North	5,701	4,894	85.8%
South	2,667	2,392	89.7%
Midlands and East	4,633	4,179	90.2%
London	3,441	3,136	91.1%

Background

The UK National Screening Committee recommends all eligible newborn babies in England are offered screening for bilateral permanent hearing impairment (sensorineural or permanent conductive). Screening should be offered to all babies up to 3 months of age, but ideally screening should be performed within days of birth.

Identifying babies with a hearing impairment early enables the right support to be put in place to improve the outcomes for the child.

Prior to the newborn hearing screening programme, more than half of children born deaf were not identified by the age of 18 months and a quarter were not identified by the age of three-and-a-half. Now, with the routine offer of screening to all babies, the average age of diagnosis is just 60 days and the average age an affected child gets fitted with a hearing aid is 90 days.

Over 7 million babies have been screened since the newborn hearing screening programme was introduced, leading to the early identification of just over 13,500 with a hearing impairment.

Methodology

The ANNB JAM looked at 5 quarters of data, 1 April 2015 to 30 June 2016 and identified best performing sites. We designed a survey to find out the processes and structures these sites had in place to enable success. The survey was sent to 18 targeted best performing sites (table 2) on 20 February with a deadline for completing of 31 March 2017.

Table 2: 18 targeted NHSP sites with performance over 95%	
NHSP sites that had performance over 95% for 3 or more quarters	NHSP sites that had performance over 95% for 4 or more quarters
Kings Lynn	Newham
Shropshire	South East London
South Warwickshire	Leicester
Chester	Cambridgeshire (Hinchbrook)
Scunthorpe	Cambridgeshire (Peterborough)
Hampshire Hospital Area	Crewe
Brighton, Hove and Mid Sussex	Bradford
Wiltshire (Salisbury)	Berkshire / Royal Berkshire
Wiltshire (Swindon)	Wiltshire (Bath)

Findings

Other NHSP sites can refer to these findings to make changes to their local service to help achieve this KPI.

Response rate

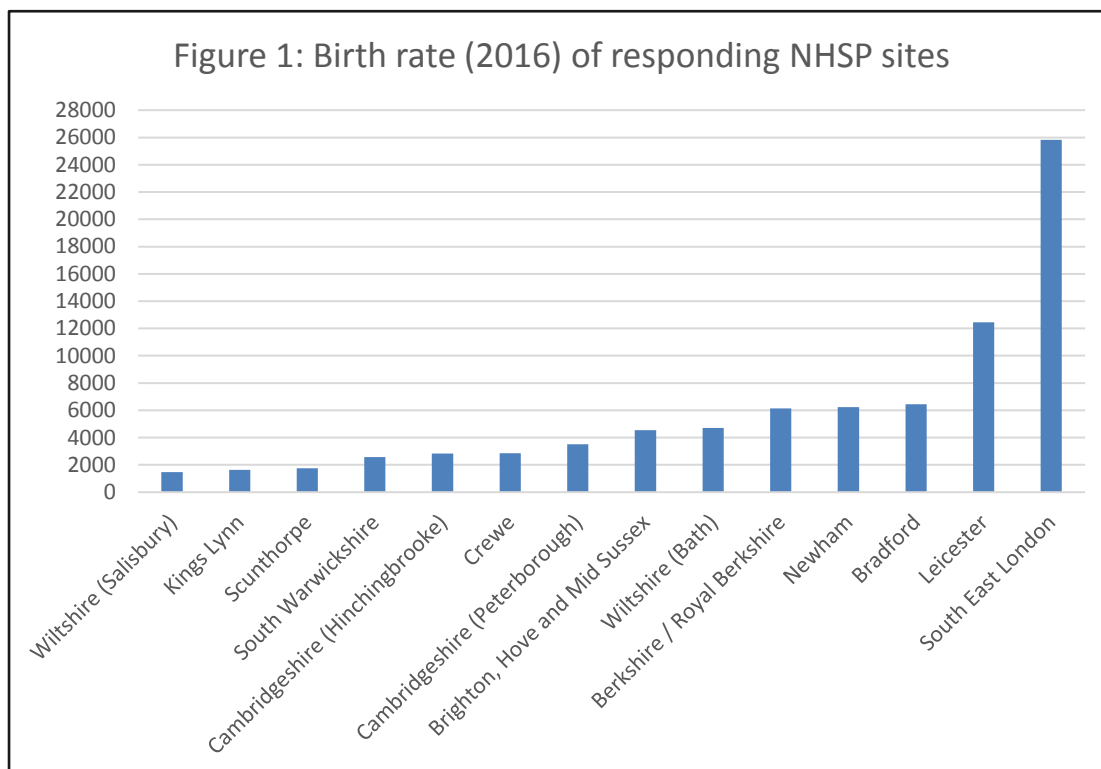
Fourteen of the 18 sites completed the survey, giving a response rate of 78% (table 3). All 9 NHSP sites that had performance over 95% for 4 or more quarters responded to the survey. This may indicate their high level of commitment to the screening programme.

Table 3: NHSP sites that responded to the survey	
NHSP sites that had performance over 95% for 3 or more quarters	NHSP sites that had performance over 95% for 4 or more quarters
Kings Lynn	Newham
South Warwickshire	South East London
Scunthorpe	Leicester
Brighton, Hove and Mid Sussex	Cambridgeshire (Hinchbrook)
Wiltshire (Salisbury)	Cambridgeshire (Peterborough)
	Crewe
	Bradford
	Berkshire / Royal Berkshire
	Wiltshire (Bath)

Population and organisational structure

The birth rate in responding sites ranged from approximately 1,500 to just under 26,000 per year (figure 1). Some of the best performing sites, such as Bradford, Leicester, Newham and South East London, serve diverse ethnic populations and this diversity does not limit their ability to consistently meet the achievable target. The ethnic diversity also differs, for example the Pakistani birth population is higher in Bradford whilst the African birth population is higher in South East London. The South East London site is also the largest urban NHSP site in England and the best performing sites serve both urban and rural areas (appendix 2). These sites also represent some of the most deprived areas in England (appendix 3a, 3b, 3c and 3d).

In all 14 sites that responded, the NHSP screening team and audiology services were part of the same organisation.



Factors that enable success

We asked sites to describe the 3 most important factors that enabled them to achieve the NH2 KPI target. We grouped responses into 3 themes:

- good communication between screeners and audiology
- information to parents
- appointments- booking, flexibility and reminders

Good communication between screeners and audiology

Most sites listed this as one of the most significant factors in achieving the standard. Their comments included:

- good communication between audiology and screening teams
- co- located in the same office means that we are in constant communication with each other
- NHSP team has direct access to audiology staff
- NHSP attend the monthly children's audiology team meetings and feedback NHSP data to the whole team.

Sites said strategies that helped good working relationships include:

- screeners and audiologist are part of the same team
- co-location of offices
- regular face to face meetings, team meetings are held quarterly and attended by both screening and audiology teams
- NHSP local manger attends monthly children's audiology team meetings
- regular feedback on NHSP data
- providing intelligence to audiology -for example social concerns about a family that may impact on attendance
- NHSP staff attending audiology appointments for training and/or to observe diagnostic appointment, particularly when they anticipate that a child may have a permanent childhood hearing impairment (PCHI)

Information to parents

Sites highlighted the importance of good communication to enable parents to understand the importance of attending the appointment. Some components of the information they described were as follows:

- what happens at the appointment
- how to find the department
- the need for the parent to have the support of a partner/friend at the appointment in case of unexpected and also to help settle the baby during testing
- stress the importance of attending the appointment (1 site has created a family friendly crib sheet to explain to parents to importance of the appointment – appendix 4).

Appointments- booking, flexibility and reminders

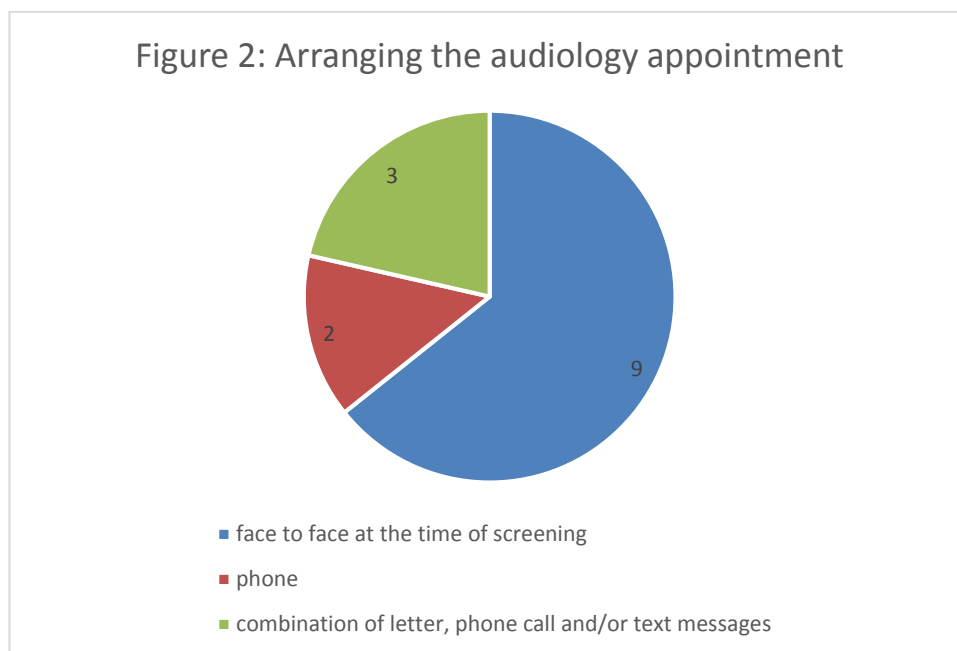
It was clear from the responses that the following were essential to meeting the standard. All respondents listed this theme as a factor for success. Their comments included:

- screeners access the audiology computer systems to make and chase up appointments
- adequate appointments available within the week to accommodate referrals
- flexibility of the audiology department in creating extra appointment slot if required
- trained appointment booking team who know to act urgently on NHSP referrals
- parents have flexibility regarding choice of appointment date and time

- availability of a weekend service
- parents are given appointment date and time before they leave the department
- parents are sent reminders before the appointment
- health visitors are involved to support attendance at the audiology appointment.

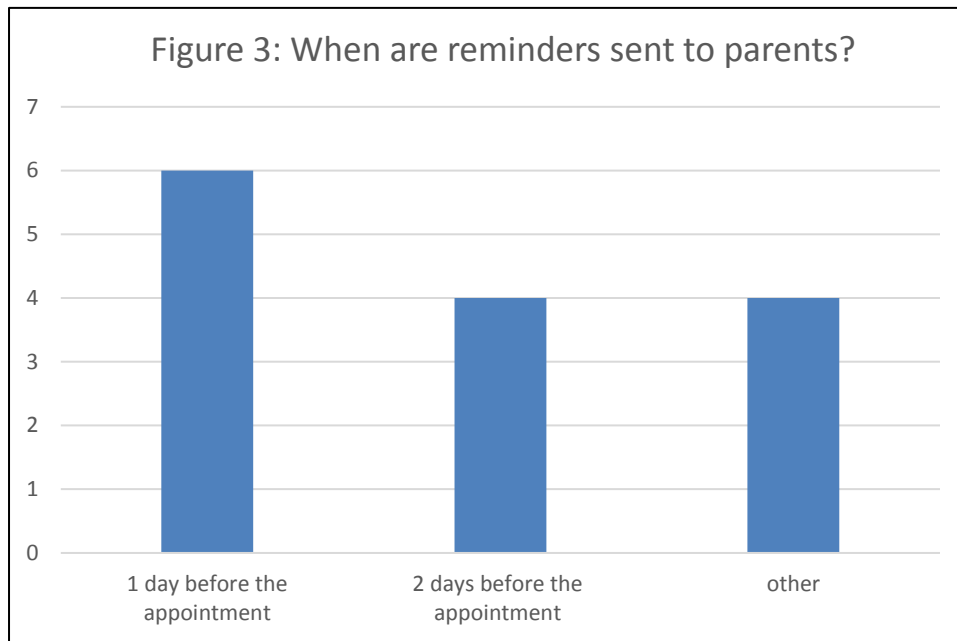
Arranging the audiology appointment

Although there were different approaches to booking the audiology appointment, many responding sites stressed the importance of booking the appointment face to face at the time of screening, before the parents left the department (figure 2).



Reminders before the audiology appointment

Some sites used a combination of methods to remind parents about the appointment but the majority (9 sites) phoned parents. Three used other methods such as letters and text reminders. One site mentioned that the audiology department sent a text reminder but the screener would follow this up by a phone call (figure 3). Only one out of the 14 sites did not send a reminder.



Other types of reminders that sites mentioned include:

- two text messages are sent 5 days and 2 days before the appointment
- we send a letter out the day the appointment is booked (day of screen referral). We then send a text reminder same day as referral. We then call parents on the Friday prior to clinic on the Monday to ensure they are attending. We also ask health visitors to contact the family before the appointment to encourage attendance
- at the time the appointment is booked, which is on average about a week prior to the appointment a hospital wide text reminder is also sent. A call on the day is sometimes employed to confirm
- text reminders are sent automatically usually 10 days and 5 days before the appointment date. The hearing screeners phone parents to remind them of their baby's appointment and stress the importance of attending 2 days before the appointment date.

Standard operating procedures for the appointment process

Nine of the 14 responding sites had standard operating procedures to underpin their processes and 8 of these sites said they would be willing to share them.

Involving the health visitor

Eight sites reported that health visitors (HVs) play a role in supporting parents to attend the audiology appointments. Six sites said HVs were not involved.

The 8 sites where HVs are involved described the HV's role as vital in supporting and encouraging parents to attend the appointment. Where parents have not attended HVs provide additional information and ongoing support. All 8 sites said the HV's role contributed to achieving high attendance rates. These are comments made by some sites:

- vital role, HVs are advised of the appointment and not only provide support to the families whilst going through the pathway but also encourage attendance
- if the parents are struggling with the appointment time and date, then the HVs will contact the audiology team. Also if the baby does not attend then the HVs get involved and provide support for the baby to attend next time
- we contact the HV if the parent does not attend the first offered appointment to see if there are any issues which may affect their attendance.

Interpreting services

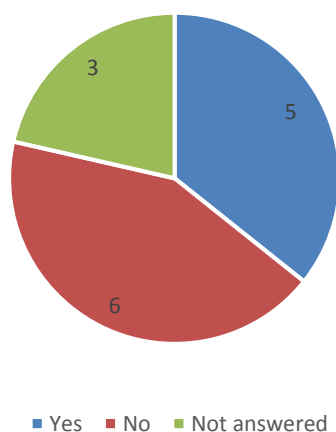
Thirteen of the 14 responders provided information on use of interpreting services. All had access to some means of interpreting such as:

- face to face interpreters on ward or booked to attend screening and diagnostic appointments
- translations apps on smart phones
- telephone translation services- Language line, Big word
- screeners will use available interpreter on the ward
- British Sign Language (BSL) interpreter

Parents who do not attend (DNA)

Most NHSP sites follow up the first DNA by phoning parents to offer another appointment. In many cases, the HV is also involved at this stage. If parents DNA a second or third appointment they are usually either sent a letter and are referred back to their GP and HV. Three sites reported that in cases of second or third DNAs an 8-month targeted follow-up appointment is offered. Not all sites had a guideline specifying how DNAs are managed (figure 4).

Figure 4: Availability of a written DNA guideline



Barriers

Three responding sites mentioned that parents can experience barriers that prevent them from attending the audiology appointment. Table 4 outlines these barriers and the strategies adopted by NHSP to try to overcome them.

Table 4: Barriers parents may experience in attending the audiology appointment and strategies to improve	
Barriers	Improvement strategy
Some parents found it difficult to attend our main audiology department for their appointment because of the distance of the location, especially since we started covering a larger area for the screening programme	Audiology started seeing some of the referral appointments at another community site which was more central for the area covered and offered an alternative venue for parents
1-Accessibility (parking, transport, driving in cases of caesarean section) 2-Not being concerned about hearing 3-Other more pressing issues (complex health issues) 4-Childcare	Screening occurs in more than one site. Audiology appointments occur at home mostly. Attempts to communicate families following a DNA via phone, text, letter to try and understand the issue or to try and convince them of the importance to attend
Location and cost of travel	One site said they managed to overcome these barriers but no further information was provided

Acknowledgements

Thanks to the following individuals who contributed to the content of this report in particular the NHSP sites as without their hard work none of this would be possible.

- Elizabeth Tempest
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- Linda Syson Nibbs

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- Sally A Wood, Graham J Sutton & Adrian C Davis (2015) Performance and characteristics of the Newborn Hearing Screening Programme in England: The first seven years, *International Journal of Audiology*, 54:6, 353-358, DOI: 10.3109/14992027.2014.989548
- Unpublished report- NHS newborn hearing screening in Derbyshire and Nottinghamshire- using health equity audit to improve outcomes

Appendix 1: KPI definition NH2

KPI	NH2: Newborn hearing screening – time from screening outcome to attendance at an audiological assessment appointment				
Description	The proportion of babies with a no clear response <u>result</u> in one or both ears or other result that require an immediate onward <u>referral</u> for audiological assessment who receive audiological assessment within the required timescale				
Rationale	To provide assurance that babies with a no clear response <u>result</u> in one or both ears or other result who require an immediate onward <u>referral</u> for audiological assessment receive diagnostic audiological assessment in a timely manner				
Definition	<table><tr><td><i>referrals for diagnostic audiological assessment who attend an appointment that is within the required timescale</i></td><td rowspan="2">expressed as a percentage, where:</td></tr><tr><td><i>referrals for diagnostic audiological assessment</i></td></tr></table> <p><i>'referrals for diagnostic audiological assessment'</i> (denominator) is the total number of babies who receive a no clear response <u>result</u> in one or both ears or other result that requires an immediate onward <u>referral</u> for audiological assessment. Within the national software solution for newborn hearing <u>screening</u> it is defined as the following 'screening outcomes':</p> <ul style="list-style-type: none">• no clear response – bilateral <u>referral</u>, unilateral <u>referral</u>• incomplete – baby/equipment reason, equipment malfunction, equipment not available, baby unsettled• incomplete – screening contraindicated <p>The numerator is the number of babies from the denominator who attend an appointment within the required timescale</p> <p>The required timescale is either within 4 weeks of <u>screen</u> completion or by 44 weeks gestational age</p> <p>Corrected age is used for babies born at <40 weeks gestation</p>		<i>referrals for diagnostic audiological assessment who attend an appointment that is within the required timescale</i>	expressed as a percentage, where:	<i>referrals for diagnostic audiological assessment</i>
<i>referrals for diagnostic audiological assessment who attend an appointment that is within the required timescale</i>	expressed as a percentage, where:				
<i>referrals for diagnostic audiological assessment</i>					
Performance thresholds	Acceptable level: ≥ 90.0% Achievable level: ≥ 95.0%				
Mitigations/ qualifications	The following babies will be included in the denominator but may not attend follow up in England and therefore will not be included in the numerator.				

Newborn hearing: time from screening outcome to attendance at an audiological appointment

	<p>These babies should be accounted for and the reason explained in the commentary as mitigations against performance thresholds:</p> <ul style="list-style-type: none"> • babies who are too unwell to proceed or who die between screen completion and offer of diagnostic audiological assessment appointment • babies whose follow up appointment is in another country <p>Providers need to be able to demonstrate robust follow up of those who did not attend as per local policy</p>
Reporting arrangements	<p>Reporting focus: local NHSP</p> <p>Data source: S4H</p> <p>Responsible for submission: national NHSP</p>
Reporting period	<p>Quarterly data to be collated between 2 and 3 months after each quarter end</p> <p>Deadlines: 30 September (Q1), 31 December (Q2), 31 March (Q3), 30 June (Q4)</p>

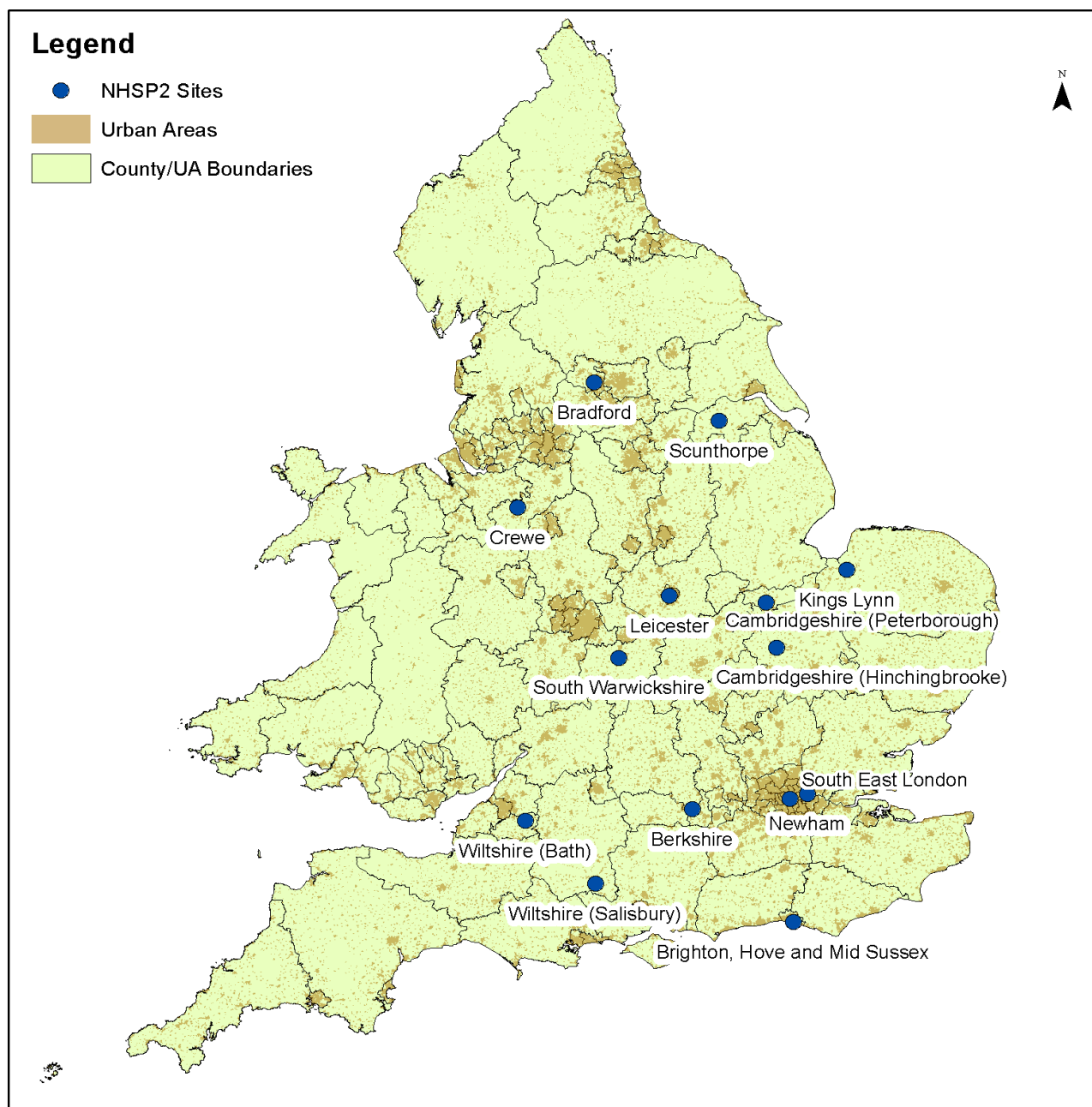


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Appendix 2

NHS hearing screening programme sites with performance over 95% for 3 or more quarters



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1:3,298,538

0 40 80 160 km

Public Health England
Skipton House
London

Map Created: 20/10/2017 at 12:48
Created by: Jo.Jacomelli

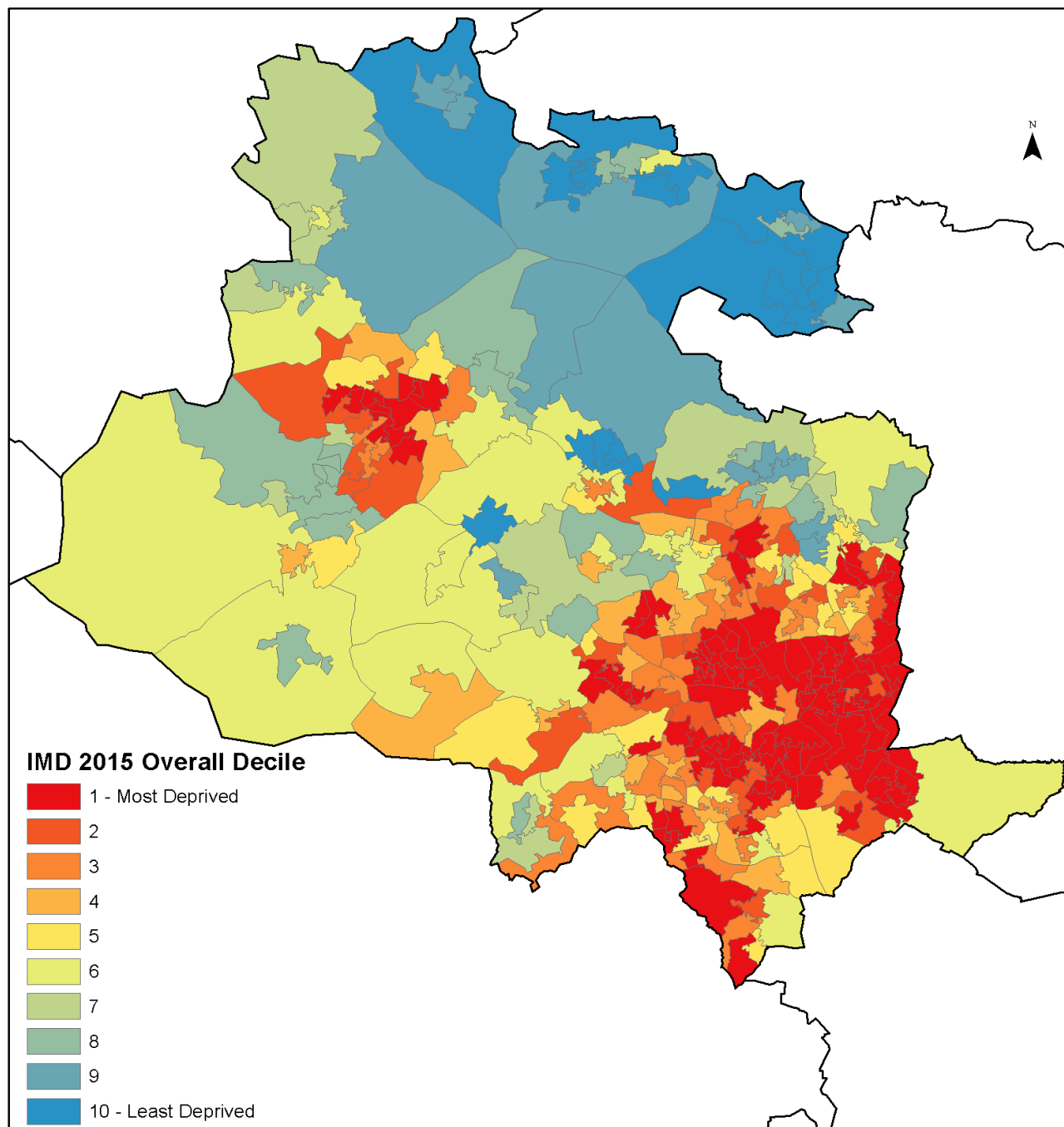


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Appendix 3a

Index of multiple deprivation 2015 overall decile, Bradford Local Authority



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1:142,789

0 1.75 3.5 7 km

Public Health England
Skipton House
London

Map Created: 17/10/2017 at 18:17

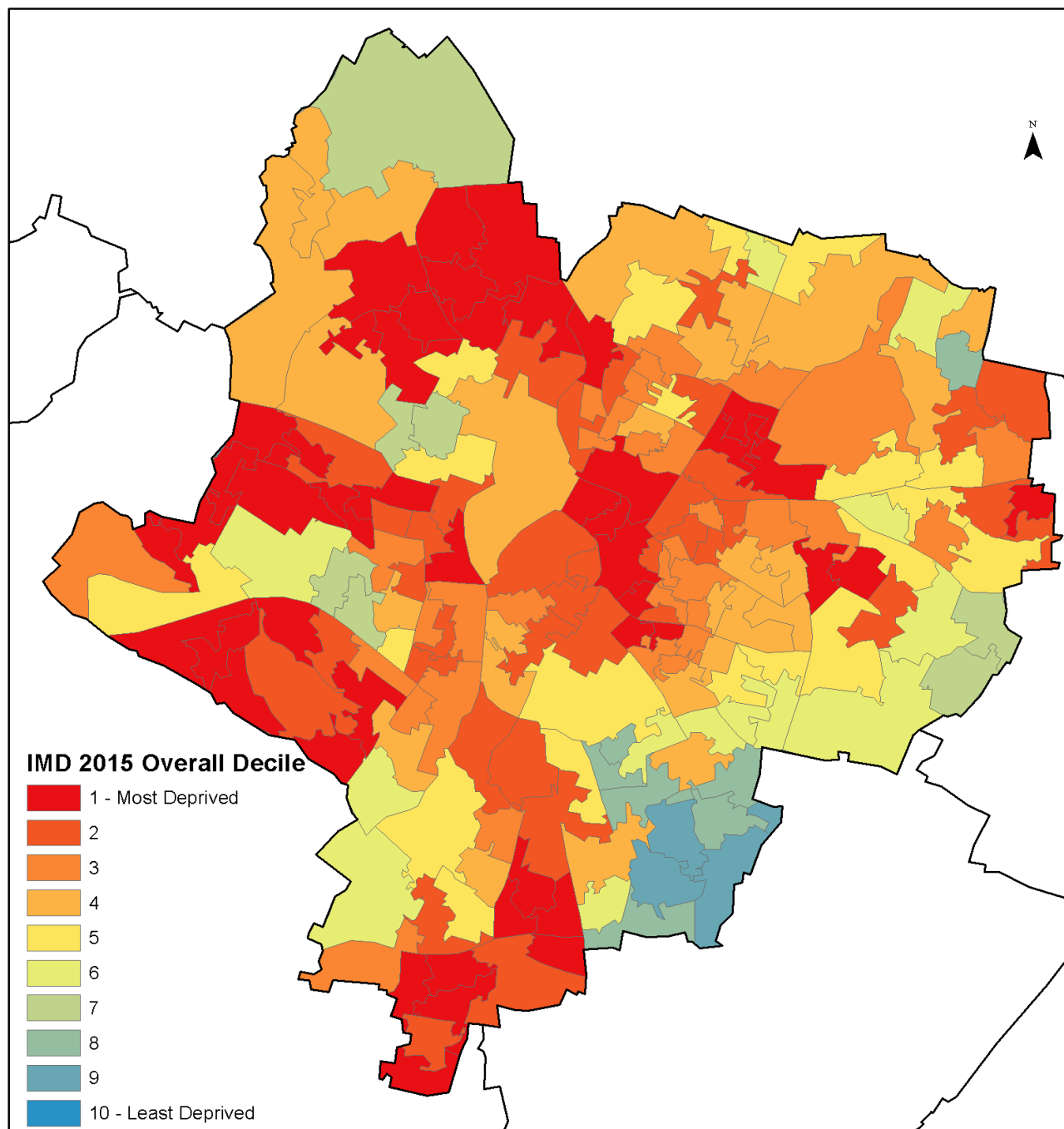


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Appendix 3b

Index of multiple deprivation 2015 overall decile, Leicester Local Authority

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1:60,367

0 0.75 1.5 3 km

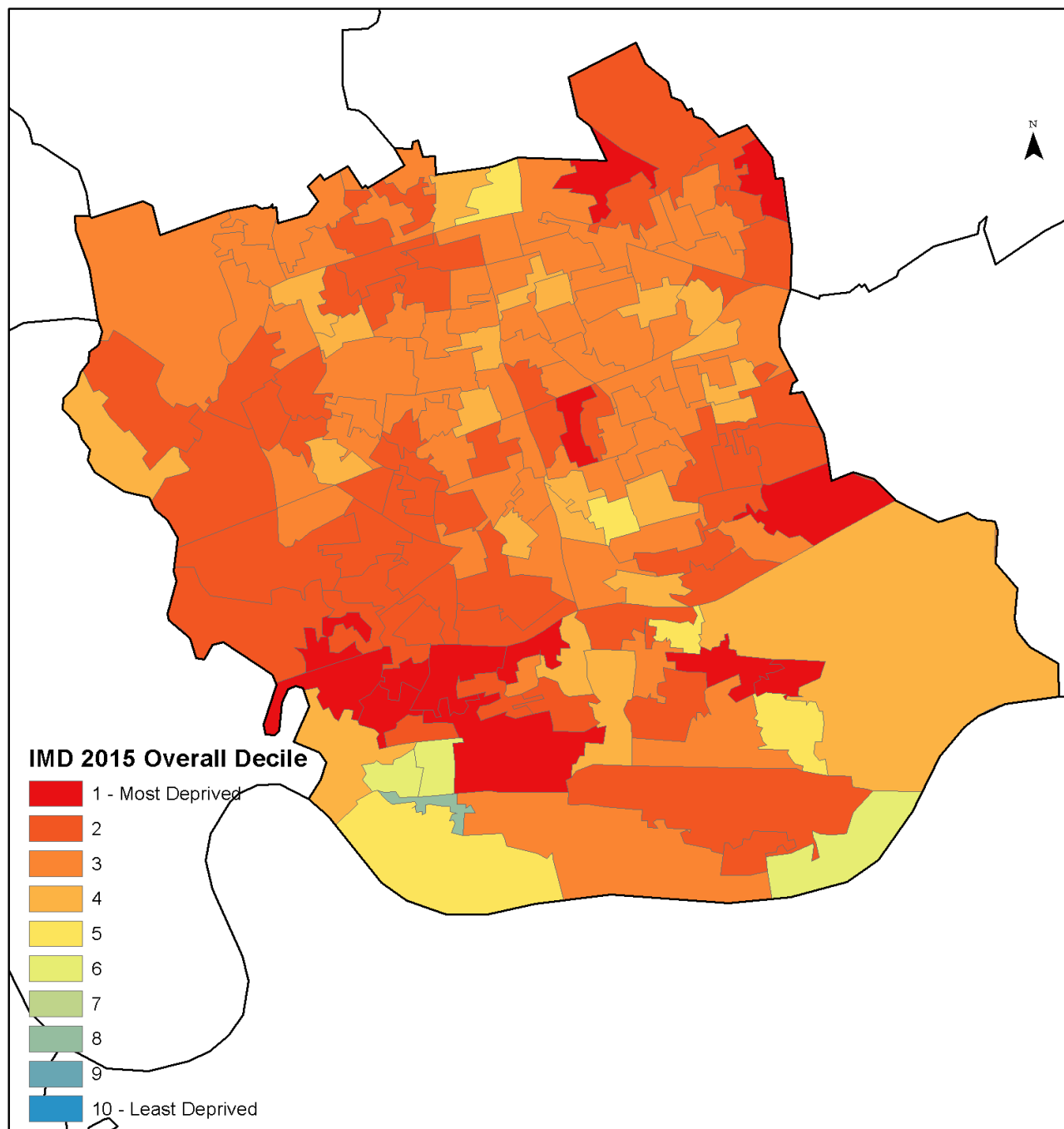
Public Health England
Skipton House
London

Map Created: 17/10/2017 at 18:21

Appendix 3c

Index of multiple deprivation 2015 overall decile, Newham Local Authority

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1:45,528

0 0.5 1 2 km

Public Health England
Skipton House
London

Map Created: 17/10/2017 at 18:06

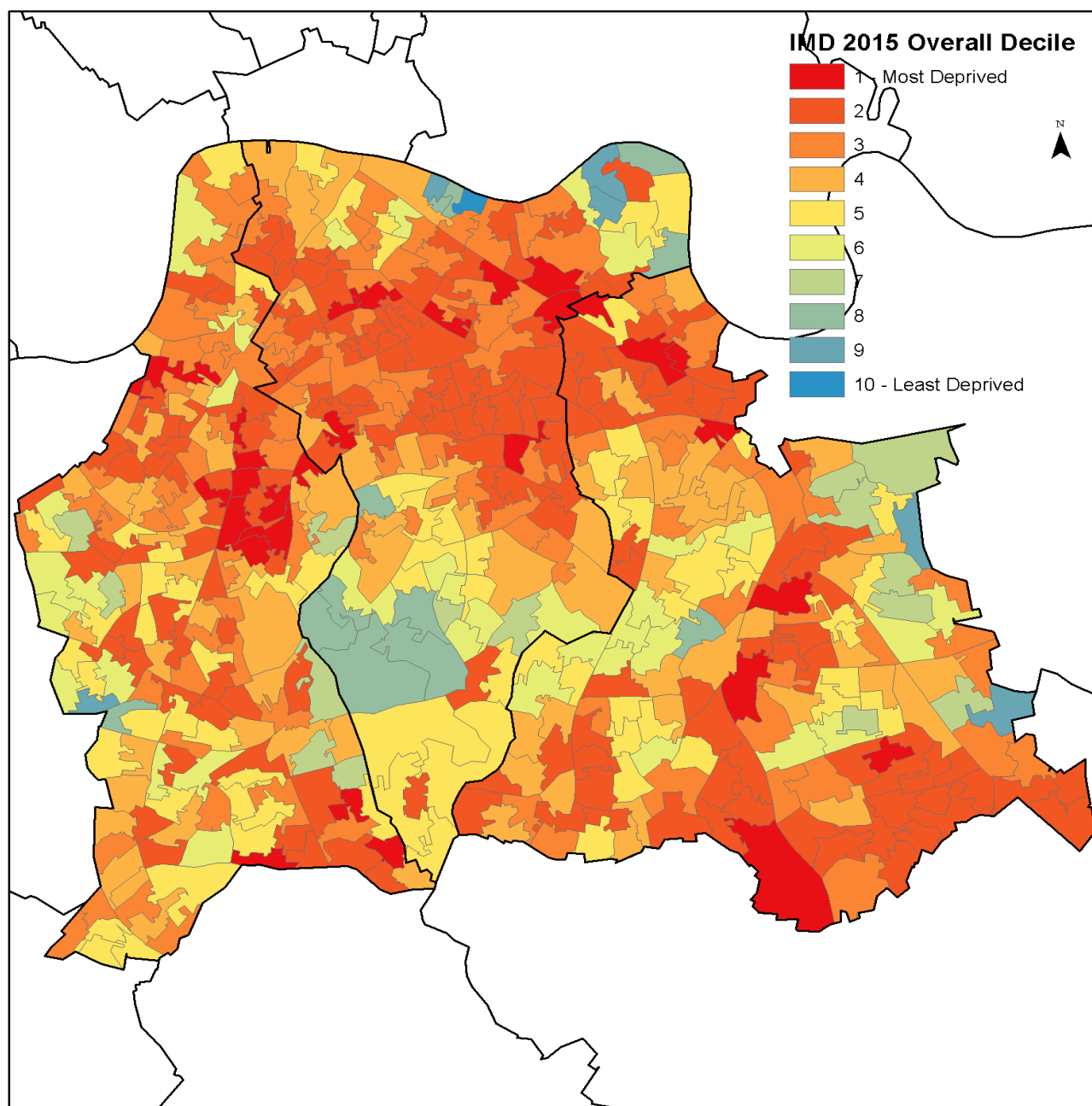
Appendix 3d



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Index of multiple deprivation 2015 overall decile, Lambeth, Southwark and Lewisham Local Authorities

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1:67,935

0 0.75 1.5 3 km

Public Health England
Skipton House
London

Map Created: 17/10/2017 at 18:12

Appendix 4

NHS
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and Goole
NHS Foundation Trust

Diana Princess of Wales Hospital
Newborn Hearing Screeners
Scartho Road
Grimsby
North East Lincolnshire
DN33 2BA
03033 304827

Scunthorpe General Hospital
Cliff Gardens
Scunthorpe
North Lincolnshire
DN15 7BH
03033 302542

Information and requirements for your baby's visit to Audiology

- It is important that your baby attends the appointment arranged due to the younger your baby is, the more settled they will be during the test. We will then be able to provide you with an assessment of their hearing status.
- If you are unable to attend the appointment please contact the department as soon as possible. Scunthorpe General Hospital 03033 302436. Grimsby Hospital 03033 304535
- You will stay with your baby during the diagnostic test.
- A diagnostic ABR test takes 30-90 minutes to complete. Sometimes a repeat may be required.
- This test is not uncomfortable for your baby.
- The more relaxed your baby is the easier it is to perform the tests required.
- It is recommended that a feed is available during the appointment even if it is not near a feeding time.
- It is also recommended to take spare nappies in case your baby requires their nappy changed during your appointment.
- Results are given as soon as they are known.
- "Your babies visit to the Audiology clinic" booklet, which has been given to you by the screener provides you with all the relevant information.
- To perform the test it needs to be a reasonably quiet environment. If you are bringing other children to the appointment, please also bring someone to look after those children, rather than them being in the assessment room.



Our Trust is committed to clinical research and patients may be asked to take part in studies.

Appendix 5: Checklist for NHSP sites

This checklist enables NHSP sites to identify areas for potential improvement based on the findings of the best performing sites

Questions	Answers	Actions
What is our current performance against NH2 (look at last 4 quarters)? Beware of small numbers and potential fluctuations in percentages		
What do we know about the population we serve? What is the ethnic breakdown? Have we ever completed a health equity audit?		
What could we do to strengthen our communication links with audiology? Do we attend audiology meetings? Do we have a forum for feeding back KPI data to the audiology team? Do we share intelligence about vulnerable families with the audiology team?		
Do we have a process where screeners can attend the audiology appointment to provide additional support for some families and use attendance as a CPD activity as required?		
What information and in what format do we give parents about the practicalities of the audiology appointment e.g. how to find the audiology department? Do we always involve interpreters when required?		
Can screeners access the audiology appointment system? Are appointment made face to face with parents before they leave the department? Is there a named contact in audiology that screeners can contact when extra slots are required? Is there any flexibility in the appointment process?		
Do we have a process for sending reminders to parents? Is the method effective? Is the contact timely?		
Do we involve health visitors in the process? Can we strengthen the role of the health visitor in the process?		
Do we have a written guideline for managing parents who do not attend? Do all staff follow the guideline?		
Are there any training needs for staff?		