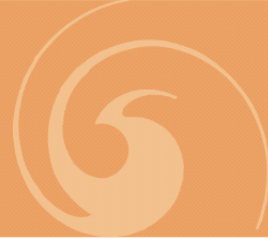


Universal Newborn Hearing
Screening and Early
Intervention Programme



Universal Newborn Hearing Screening and Early Intervention Programme (UNHSEIP)

**Monitoring Report on Newborn Hearing
Screening Service Provision**

October 2010 – March 2011



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Executive Summary

The national implementation of the Universal Hearing Screening and Early Intervention Programme (UNHSEIP) was completed in August 2010. All 20 District Health Boards (DHBs) are now offering screening to the families and whānau of newborn babies.

The core goals of the programme, which are based on international best practice, are described as '1-3-6' goals:

- 1= babies to be screened by 1 month of age
- 3= audiology assessment completed by 3 months of age
- 6= initiation of appropriate medical, audiological and early intervention education services by 6 months of age.

This monitoring report covers the six month period from 1 October 2010 to 31 March 2011. This is the second UNHSEIP monitoring report to provide information on both screening and audiology. This is also the first report in which all DHBs were offering screening for the full period.

Tables 1 and 2 on pages 4-6 provide a summary of the screening and audiology information contained within this report.

Key Points from October 2010 to March 2011

- At the national level within this reporting period, 95.2% of families and whānau were offered newborn hearing screening, compared with live birth data for the same period.
- Nationally, just 1.5% of the families who were offered screening declined to take it up.
- 91.7% of parents/guardians offered hearing screening for their newborn consented to this screening.
- Of those with consent for screening, a high proportion started the process (99.6%). These high rates were consistent across DHBs, ethnicities and decile groups. Similarly high rates of completion were found once babies started screening with an average of 99.2% completion, once again showing little difference across DHBs, ethnicity or decile ratings.
- In total 27,612 babies completed newborn hearing screening in this six month period. Compared with the 32,016 live births in this time, approximately 86% of babies born completed screening.
- Of babies who completed screening, approximately 93% of babies completed by the target of one month of age (corrected age). This did show variation by DHB, ranging from 60.4% to 99.3%. There was little variation by ethnicity and just 70% of babies born at home completed by the target of one month.

- Overall the referral rate to audiology was 1.7% (474 babies in this reporting period), which is well within the international benchmark of 4% or less. This rate did show a small variation between DHBs ranging from 0% to 4%. The referral rate for NICU/SCBU babies was higher at 7.9% as might be expected.
- Of those babies that passed screening, 5.3% were identified for targeted follow-up. This showed a variation between DHBs and was significantly higher for babies from NICU/SCBU at 30.8%.
- Of those babies referred to audiology, 47% are reported to have started audiology assessment. This rate varied significantly between DHBs from 0% through to 100%. Of the 474 babies who did not pass screening and were referred to audiology, information was recorded in the national database for just 223 of these babies. This does not mean that just over half of the babies have not been seen by audiology. The data is limited because some DHBs have not submitted audiology forms to the NSU, and some forms have yet to be entered into the national database due to missing information. The NSU is working with DHBs to improve the completeness of audiology data for future monitoring reports.
- 68% of those babies who completed audiological assessment did so within the target of three months of age. Variation between DHBs, ethnicity and decile can be seen but the numbers are too small to draw any strong conclusions.
- 16 babies (7.2%) of those that completed an audiology assessment had a permanent/congenital hearing loss identified.
- A greater percentage of babies were identified with a conductive or mixed hearing loss, 25.6% of those who completed an audiology assessment.
- The ages at which a hearing loss was identified were: 8 by 4 weeks, 35 by 8 weeks, 10 by 12 weeks and the remaining 20 by over 12 weeks.
- This report was reviewed in draft by DHBs and by the UNHSEIP Advisory Group, whose recommendations for follow-up are included in the report.

Summary of Recommendations

RECOMMENDATION ON DECLINE OF SCREENING

1. The National Screening Unit to follow-up with Northland, West Coast and South Canterbury DHBs to explore the reasons for declines, including examining the data by ethnicity.

RECOMMENDATION ON NEWBORN HEARING SCREENING STARTED

2. The National Screening Unit to check the distribution of “not stated/unspecified” ethnicity by DHB.

RECOMMENDATION ON NEWBORN HEARING SCREENING COMPLETED

3. The National Screening Unit to follow-up with Northland, Waitemata, Bay of Plenty and MidCentral DHBs about their newborn hearing screening completed by one month of age figures.

RECOMMENDATION ON TARGETED FOLLOW-UP

4. The National Screening Unit to follow-up with Northland DHB about their proportion of targeted follow-up.
5. The National Screening Unit to consider testing the statistical significance of differences in ethnicity and deprivation figures.

RECOMMENDATIONS ON RISK FACTORS

6. The National Screening Unit to continue to monitor the frequency of risk factors, and consider review if/when there is new evidence published.

RECOMMENDATIONS ON AUDIOLOGY ASSESSMENT STARTED

7. The National Screening Unit to follow-up with Hawke’s Bay DHB to encourage them to send in their audiology forms.
8. The National Screening Unit to consider if reporting on the age of starting audiology is possible.

RECOMMENDATIONS ON AUDIOLOGY ASSESSMENT COMPLETED

9. The National Screening Unit to follow-up with Counties Manukau DHB about their audiology completed by three months figures.

Table 1a Summary of newborn hearing screening indicators by DHB, for October 2010 to March 2011

DHB of birth	Live Births	Consent for Screen	Started Screen	Completed Screening by 1 month of age	Completed Screening	Pass	Referred to Audiology	Passed with Targeted follow-up	Consents to Live Births	Started Screening to Consented for Screening	Completed Screening by 1 month to completed	Completed Screening to Consents for Screening	Referral Rate to audiology	Targeted follow-up
Northland	1,160	785	779	460	761	731	30	104	67.7%	99.2%	60.4%	96.9%	3.9%	14.2%
Waitemata	3,947	2,782	2,770	2,401	2,731	2,711	20	118	70.5%	99.6%	87.9%	98.2%	0.7%	4.4%
Auckland	3,451	3,796	3,783	3,543	3,719	3,639	80	202	110.0%	99.7%	95.3%	98.0%	2.2%	5.6%
Counties Manukau	4,351	2,941	2,931	2,629	2,889	2,773	116	121	67.6%	99.7%	91.0%	98.2%	4.0%	4.4%
Waikato	2,819	2,627	2,625	2,511	2,621	2,593	28	168	93.2%	99.9%	95.8%	99.8%	1.1%	6.5%
Lakes	836	816	815	790	812	797	15	29	97.6%	99.9%	97.3%	99.5%	1.8%	3.6%
Bay of Plenty	1,540	1,346	1,340	1,176	1,324	1,303	21	58	87.4%	99.6%	88.8%	98.4%	1.6%	4.5%
Tairāwhiti	406	360	359	344	353	353		14	88.7%	99.7%	97.5%	98.1%	0.0%	4.0%
Taranaki	819	788	786	773	785	771	14	58	96.2%	99.7%	98.5%	99.6%	1.8%	7.5%
Hawke's Bay	1,145	1,126	1,126	1,093	1,123	1,109	14	66	98.3%	100.0%	97.3%	99.7%	1.2%	6.0%
Whanganui	459	398	397	371	396	389	7	21	86.7%	99.7%	93.7%	99.5%	1.8%	5.4%
Mid Central	1,183	842	842	740	840	837	3	54	71.2%	100.0%	88.1%	99.8%	0.4%	6.5%
Hutt Valley	1,074	1,039	1,036	1,020	1,027	1,012	15	61	96.7%	99.7%	99.3%	98.8%	1.5%	6.0%
Capital & Coast	2,066	1,929	1,927	1,882	1,927	1,915	12	87	93.4%	99.9%	97.7%	99.9%	0.6%	4.5%
Wairarapa	283	270	270	253	269	265	4	19	95.4%	100.0%	94.1%	99.6%	1.5%	7.2%
Nelson Marlborough	809	787	784	753	783	765	18	34	97.3%	99.6%	96.2%	99.5%	2.3%	4.4%
West Coast	199	153	152	142	150	149	1	8	76.9%	99.3%	94.7%	98.0%	0.7%	5.4%
Canterbury	3,301	3,075	3,070	2,916	3,063	3,009	54	94	93.2%	99.8%	95.2%	99.6%	1.8%	3.1%
South Canterbury	295	268	268	264	268	265	3	5	90.8%	100.0%	98.5%	100.0%	1.1%	1.9%
Southern	1,873	1,830	1,783	1,604	1,771	1,752	19	129	97.7%	97.4%	90.6%	96.8%	1.1%	7.4%
Total	32,016	27,958	27,843	25,665	27,612	27,138	474	1,450	87.3%	99.6%	92.9%	98.8%	1.7%	5.3%

Table 1b Summary of newborn hearing screening indicators by Ethnicity, Deprivation and Birth Location for October 2010 to March 2011

DHB of Birth	Consent for Screen	Started Screen	Completed Screening by 1 month of age	Completed Screening	Pass	Referred to Audiology	Passed with Targeted follow-up	Started Screening to Consented for Screening	Completed Screening by 1 month to completed	Completed Screening to Consents for Screening	Referral Rate to audiology	Targeted follow-up
Ethnicity												
Maori	7,016	6,988	6,262	6,911	6,745	166	465	99.6%	90.6%	98.5%	2.4%	6.9%
Pacific	2,953	2,942	2,653	2,895	2,820	75	131	99.6%	91.6%	98.0%	2.6%	4.6%
Asian	3,301	3,299	3,072	3,278	3,225	53	85	99.9%	93.7%	99.3%	1.6%	2.6%
European	13,852	13,811	12,931	13,729	13,565	164	724	99.7%	94.2%	99.1%	1.2%	5.3%
Unspecified	293	263	239	262	255	7	22	89.8%	91.2%	89.4%	2.7%	8.6%
Other ethnic groups	543	540	508	537	528	9	23	99.4%	94.6%	98.9%	1.7%	4.4%
Total	27,958	27,843	25,665	27,612	27,138	474	1,450	99.6%	92.9%	98.8%	1.7%	5.3%
Deprivation												
Decile 1-2	4,203	4,186	3,948	4,151	4,110	41	170	99.6%	95.1%	98.8%	1.0%	4.1%
Decile 3-4	4,487	4,463	4,180	4,434	4,378	56	206	99.5%	94.3%	98.8%	1.3%	4.7%
Decile 5-6	5,438	5,420	5,044	5,393	5,312	81	272	99.7%	93.5%	99.2%	1.5%	5.1%
Decile 7-8	6,483	6,456	5,889	6,394	6,284	110	383	99.6%	92.1%	98.6%	1.7%	6.1%
Decile 9-10	7,281	7,254	6,548	7,178	6,996	182	415	99.6%	91.2%	98.6%	2.5%	5.9%
Unknown	66	64	56	62	58	4	4	97.0%	90.3%	93.9%	6.5%	6.9%
Total	27,958	27,843	25,665	27,612	27,138	474	1,450	99.6%	92.9%	98.8%	1.7%	5.3%
Birth Location												
Public Hospital	27,291	27,191	25,176	26,980	26,518	462	1,414	99.6%	93.3%	98.9%	1.7%	5.3%
Private Hospital	138	138	120	130	127	3	4	100.0%	92.3%	94.2%	2.3%	3.1%
Home	437	423	296	418	414	4	26	96.8%	70.8%	95.7%	1.0%	6.3%
Other Location	92	91	73	84	79	5	6	98.9%	86.9%	91.3%	6.0%	7.6%
Total	27,958	27,843	25,665	27,612	27,138	474	1,450	99.6%	92.9%	98.8%	1.7%	5.3%

Table 2a Summary of newborn hearing audiology indicators by DHB for October 2010 to March 2011

DHB of audiology	Commenced Audiology	Completed Audiology	Completed Audiology in 3 months	Permanent /Congenital Hearing Loss	Conductive /Mixed Hearing Loss		Completed Audiology From commenced	Completed Audiology in 3 months from completed audiology	Permanent /Congenital Hearing Loss from completed	Conductive/Mixed hearing loss from completed
Northland	12	12	5	0	7		100.0%	41.7%	0.0%	58.3%
<i>Waitemata</i>										
Auckland	42	42	37	2	13		100.0%	88.1%	4.8%	31.0%
Counties Manukau	41	41	6	0	4		100.0%	14.6%	0.0%	9.8%
Waikato	24	24	18	4	8		100.0%	75.0%	16.7%	33.3%
Lakes	11	11	10	1	1		100.0%	90.9%	9.1%	9.1%
Bay of Plenty	9	9	6	3	2		100.0%	66.7%	33.3%	22.2%
<i>Tairāwhiti</i>										
Taranaki	9	9	8	1	1		100.0%	88.9%	11.1%	11.1%
<i>Hawke's Bay</i>										
<i>Whanganui</i>										
Mid Central	3	3	3	0	2		100.0%	100.0%	0.0%	66.7%
Hutt Valley	16	16	15	2	6		100.0%	93.8%	12.5%	37.5%
Capital & Coast	3	3	2	0	0		100.0%	66.7%	0.0%	0.0%
<i>Wairarapa</i>										
Nelson Marlborough	16	16	13	2	0		100.0%	81.3%	12.5%	0.0%
<i>West Coast</i>										
Canterbury	23	23	20	1	6		100.0%	87.0%	4.3%	26.1%
South Canterbury	2	2	2	0	0		100.0%	100.0%	0.0%	0.0%
Southern	12	12	7	0	7		100.0%	58.3%	0.0%	58.3%
Total	223	223	152	16	57		100.0%	68.2%	7.2%	25.6%

- Indicates no figure included usually due to no babies progressing to this stage and percentages therefore not being meaningful.

Table 2b Summary of newborn hearing audiology indicators by Ethnicity, Deprivation and Birth Location for October 2010 to March 2011

	Commenced Audiology	Completed Audiology	Completed Audiology in 3 months	Permanent /Congenital Hearing Loss	Conductive /Mixed Hearing Loss		Completed Audiology From commenced	Completed Audiology in 3 months from completed audiology	Permanent /Congenital Hearing Loss from completed	Conductive/Mixed hearing loss from completed
Ethnicity										
Maori	75	75	43	7	22		100.0%	57.3%	9.3%	29.3%
Pacific	32	32	19	0	6		100.0%	59.4%	0.0%	18.8%
Asian	20	20	13	2	2		100.0%	65.0%	10.0%	10.0%
European	85	85	68	6	24		100.0%	80.0%	7.1%	28.2%
Other ethnic groups	5	5	4	1	0		100.0%	80.0%	20.0%	0.0%
Not known/Unspecified	6	6	5	0	3		100.0%	83.3%	0.0%	50.0%
Total	223	223	152	16	57		100.0%	68.2%	7.2%	25.6%
Deprivation										
Decile 1-2	21	21	14	1	5		100.0%	66.7%	4.8%	23.8%
Decile 3-4	29	29	24	2	8		100.0%	82.8%	6.9%	27.6%
Decile 5-6	44	44	34	2	14		100.0%	77.3%	4.5%	31.8%
Decile 7-8	51	51	42	4	12		100.0%	82.4%	7.8%	23.5%
Decile 9-10	78	78	38	7	18		100.0%	48.7%	9.0%	23.1%
Total	223	223	152	16	57		100.0%	68.2%	7.2%	25.6%
Birth Location										
Public Hospital	220	220	150	16	56		100.0%	68.2%	7.3%	25.5%
Private Hospital	1	1	0	0	1		100.0%	0.0%	0.0%	100.0%
Home	1	1	1	0	0		100.0%	100.0%	0.0%	0.0%
Other Location	1	1	1	0	0		100.0%	100.0%	0.0%	0.0%
Total	223	223	152	16	57		100.0%	68.2%	7.2%	25.6%

1. Introduction

1.1. The Universal Newborn Hearing Screening and Early Intervention Programme

Universal newborn hearing screening is the standard of care internationally, and has now been introduced in New Zealand. The early detection of hearing loss, and the application of appropriate medical and educational interventions, has been demonstrated to significantly improve the baby's long-term language skills and cognitive ability.

New Zealand's Universal Newborn Hearing Screening and Early Intervention Programme (UNHSEIP) was implemented over a three year period 2007 – 2010. The UNHSEIP is jointly overseen by two Government agencies, the Ministries of Health and Education. The Ministry of Health has responsibility for screening, audiology diagnosis of hearing loss and medical interventions, and the Ministry of Education has responsibility for Early Intervention Services.

District Health Boards (DHBs) are the main providers of newborn hearing screening, follow-up audiology services, and medical interventions. Newborn hearing screening must be offered to the family/whānau of all eligible babies born in a DHB region, whether they are born in hospital or at home, within a framework of nationally consistent policies, standards and guidelines.

1.2. Programme Monitoring

The aim of the UNHSEIP is for the early identification of newborns with hearing loss, so that they can access timely and appropriate interventions, inequalities are reduced and the outcomes for these children, their families and whānau, communities and society are improved. The core goals of the UNHSEIP are described as “1-3-6” goals which are based on international benchmarks:

1. Babies to be screened by 1 month of age
3. Audiology assessment to be completed by 3 months of age
6. Initiation of appropriate medical and audiological services, and Early Intervention education services, by 6 months of age.

In 2007, a Monitoring Framework, centred around the Programme goals, was developed (<http://www.nsu.govt.nz/health-professionals/3824.aspx>). A Monitoring Framework is a plan for the routine, systematic collection and recording of information about aspects of the Programme over time. The purpose is to assess whether progress is being made on achieving the Programme goals.

Monitoring is a core aspect of quality improvement activities, which are concerned with maximising the likelihood that the day-to-day operations of the screening programme will deliver the expected outcomes.

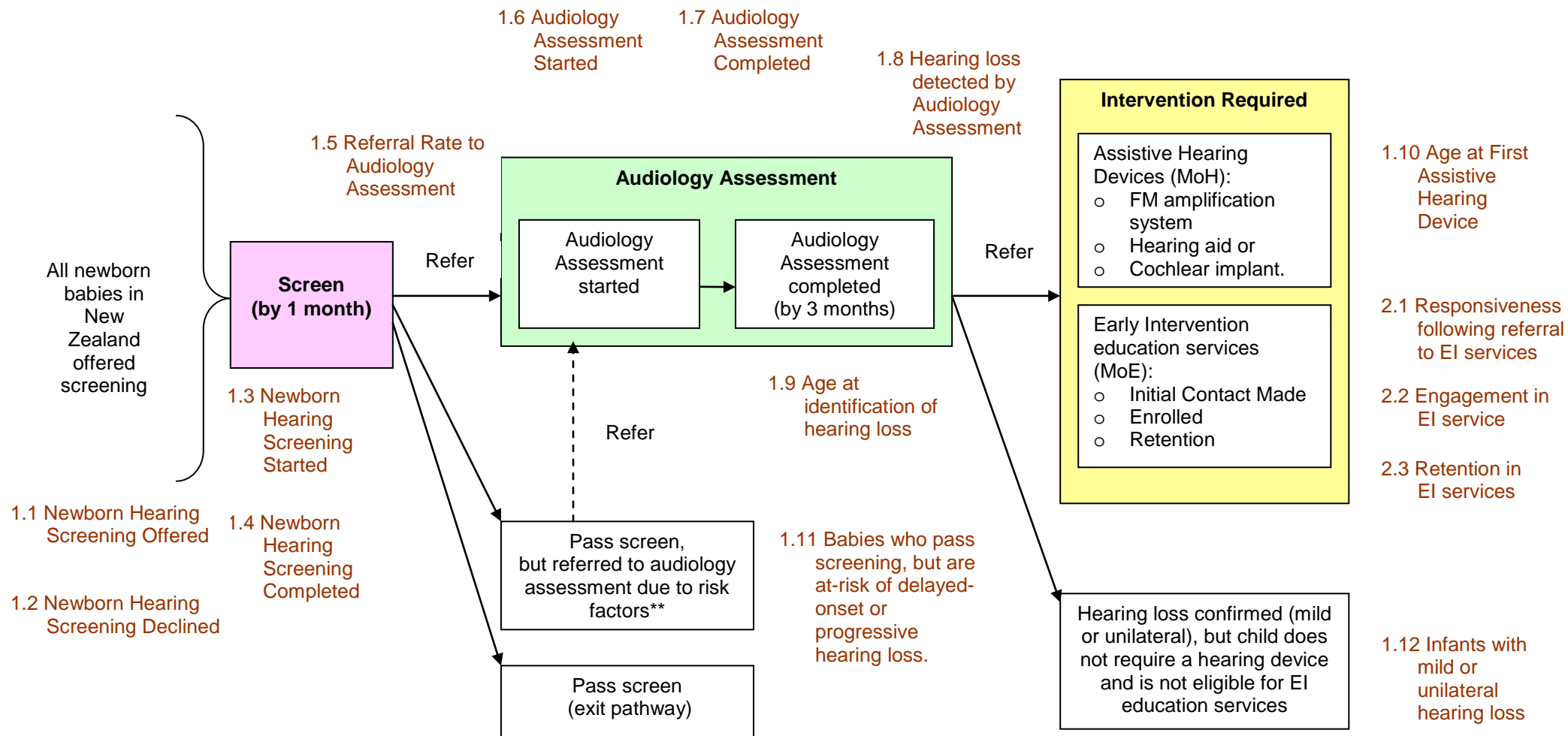
Routine monitoring, based on newborn hearing screening and audiology data provided to the Ministry by DHBs, will be reported on a quarterly basis. Quarterly monitoring will focus on babies who have screening, and their outcomes.

Annual reporting will be at a higher level, and incorporate other aspects of the Programme such as audiology and Early Intervention information. The full UNHSEIP screening pathway and associated indicators, as depicted in Figure 1, will be the basis of annual reporting.

This report, which is based on the data of babies who were screened during the six month period 1 October 2010 through to 31 March 2011, covers the following indicators:

- 1.1 Newborn Hearing Screening Offered
- 1.2 Newborn Hearing Screening Declined
- 1.3 Newborn Hearing Screening Started
- 1.4 Newborn Hearing Screening Completed
- 1.5 Referral Rate to Audiology Assessment
- 1.6 Audiology Assessment Started
- 1.7 Audiology Assessment Completed
- 1.8 Hearing Loss Detected by Audiology Assessment
- 1.9 Age at Identification of Hearing Loss
- 1.11 Babies who Pass Screening but are at risk of delayed onset or progressive hearing loss.

Figure 1 The UNHSEIP Screening Pathway and Indicators



**These babies passed screening, however it is recommended that they have "targeted follow-up" as they may be at-risk of delayed-onset or progressive hearing loss. While targeted follow-up is outside the primary screening pathway, it is recommended that these babies have at least one audiology assessment by the time they are 18 months of age.

2. Data

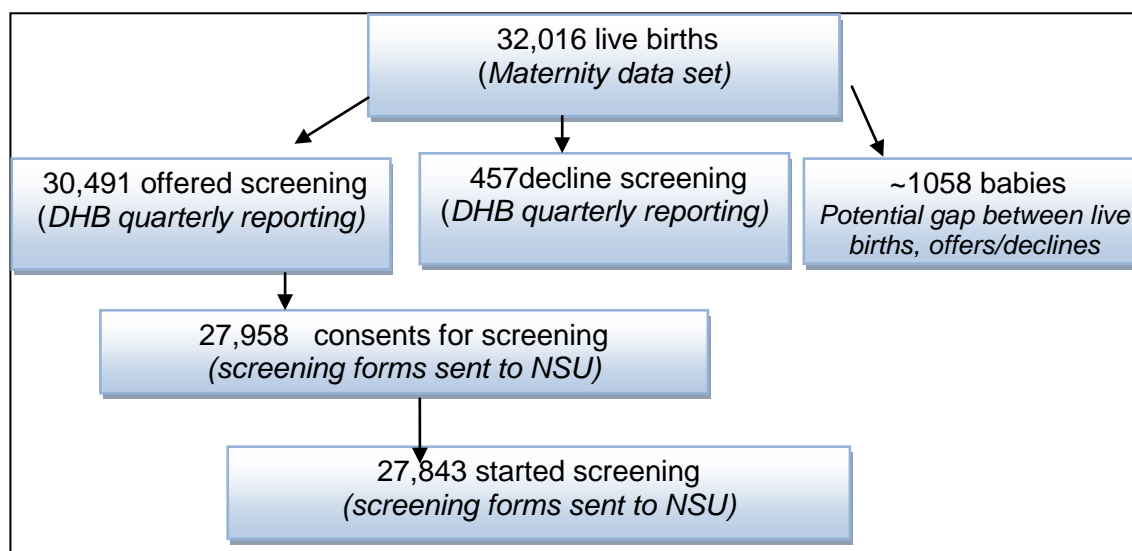
2.1. Data Collection Process

Screening and audiology information is collected and recorded on paper forms by newborn hearing screening providers. The paper forms are regularly submitted to the Ministry of Health's National Screening Unit (NSU) and the data is entered into the NSU's web-based application/database. The start date for entering newborn hearing screening information was for babies born from 1 October 2009 onwards, however the audiology form was not implemented until April/May 2010. This is the second report to provide audiology information.

Data, for babies who started screening during the reporting period, is extracted from the NSU's web-based application via an Oracle package. Deprivation data is added to the screening data from the Ministry of Health's National Health Index database. Then the NSU systematically checks the data for missing values and discrepancies. There are 32 business rules applied to ensure the data reported on is of the highest quality. The data extract is produced in a tabular format, which is then analysed against the monitoring indicators and presented as tables and/or charts.

At this time, additional information for monitoring is sourced from quarterly DHB contractual reporting. This information is used to monitor trends in offer and decline of newborn hearing screening, as only information from babies with consent is recorded in the national database.

It is important to note the data for live births, offers and consents are from separate data sources so not directly comparable. They do however provide a picture as to the flow of babies into the screening program as identified below. Looking at this data six monthly is not ideal but it is provided below to assist the reader in interpreting the early indicators in this report.



2.2. Information Included in this Report

The information reported is from newborn hearing screening forms where the date of screening started was between 1 October 2010 and 31 March 2011.

Participating District Health Boards 1 October 2010 – 31 March 2011

The information in this report relates to all 20 DHBs for which screening activity was recorded in the national database for this period.

Table 3: DHBs starting date for UNHSEIP

DHB	Start date of implementation
Northland	April 2010
Waitemata	late March 2010
Auckland	late March 2010
Counties Manukau	late March 2010
Waikato	July 2007
Lakes	March 2009
Bay of Plenty	March 2009
Tairāwhiti	July 2007
Taranaki	April 2009
Hawke's Bay	July 2007
Whanganui	June 2009
Mid-Central	February 2010
Wairarapa	April 2010
Hutt Valley	July 2009
Capital & Coast	June 2009
Nelson Marlborough	late March 2010
West Coast	December 2009
Canterbury	May 2009
South Canterbury	April 2009
Southern	August 2010

Audiology assessment

The audiology form was not implemented until April/May 2010 so this report completes a year of implementation. The data is still quite limited but is beginning to provide useful information. Limitations still exist as some DHBs have not submitted forms, and also some forms were unable to be entered into the national database due to missing information. This report includes audiology information on 223 of the 474 babies that were referred for audiology assessment.

Early intervention education services

This report does not include information on the early intervention education service. Early intervention information will be included in annual reporting, as its goal of “initiation by 6 months of age” is not suited for quarterly monitoring. Annual reporting will be a more useful way of portraying this information.

2.3. Ethnicity Reporting

Ethnicity data in this report is grouped according to a prioritised system. This is a common method of ethnicity reporting across the health sector. Prioritised ethnic groups involve each person being allocated to a single ethnic group, based on the ethnicities they have identified with, in the prioritised order of Māori, Pacific, Asian, European and Other. For example, if someone identifies as being European and Māori, under the prioritised ethnic group method, they are classified as Māori for the purpose of the analysis.

Ethnicity data prioritisation means that the group of prioritised Other effectively refers to non-Māori, non-Pacific, non-Asian, non-European people. The aim of prioritisation is to ensure that where some need exists to assign people to a single ethnic group, ethnic groups of policy importance, or of small size, are not overwhelmed by the European ethnicity.

People may identify with as many ethnic groups as they choose. Within this population of babies, the maximum number of ethnicities recorded (five) was recorded for eight babies. Four ethnicities were recorded for 108 babies and three ethnicities were recorded for 3% of babies (n=898). Two ethnicities were recorded for 24% of babies (n=6654) and the remaining almost 73% of babies had only one ethnicity recorded.

2.4. Deprivation Index

The deprivation index is the average level of deprivation of people living in an area at a particular point in time, relative to the whole of New Zealand. Deprivation refers to areas (based on New Zealand Census meshblocks) rather than individuals. Nine indicators are combined to give the deprivation index. The indicators reflect aspects of material and social deprivation, and the nine indicators are:

- income derived from benefits
- unemployment
- low income earning
- access to car
- access to telephone
- sole-parent families
- lack of formal educational qualifications
- level of home ownership
- living space within a home.

In the deprivation index system used by the health sector, areas classified as Decile 1-2 have the least deprivation and areas classified as Decile 9-10 have the most deprivation. This is opposite to some other systems of classification such as that used by education, where level 10 is the least disadvantaged and level 1 the most disadvantaged.

2.5. Known Data Quality Issues in this Report

The following data quality issues should be considered when interpreting the data presented in this publication.

Gestational age

Where gestational age was not recorded, a gestational age of 40 weeks was allocated (3% of records, n=785). DHBs will be encouraged to include the correct gestational age on the data forms, as this is an important field. For babies born at less than full term, corrected age was calculated for the reporting of screening completed by one month of age and audiology completed by three months.

Accuracy of reporting

Data is manually entered into the national database from hand written screening forms. The potential for errors in data entry is minimised by a two step data checking process one at data entry and the other during data processing. An example of this is that a birth date of 16 July 1980 would not be allowed. Each record must contain a value in twelve mandatory fields to be included in reporting. These fields are:

- valid NHI number
- consent = yes
- valid birth date
- screening protocol
- birth location
- DHB of birth
- ethnicity
- screening outcome
- DHB of screening test 1
- DHB audiology test
- test Method 1.

All newborn hearing screening providers are responsible for maintaining a high quality of data. Although the National Screening Unit monitors the quality of the information, newborn hearing screening providers are also expected to have quality control mechanisms in place. During the data entry process, quality issues, such as missing information, were raised with DHBs, and data quality continues to improve.

Denominator

For the purpose of this report, birth data is sourced from a newly available National Maternity Database. This data base combines information from live birth registrations from the Births, Deaths and Marriages Register along with hospital discharge information and Lead Maternity Carer claims. This provides a much more complete data set as registrations of births often take a long period of time. This is different from the last report and live birth numbers are slightly higher this period due to the change in data set.

The DHB of a baby's birth is used as the parameter for data extraction, as the denominator is based on where the baby is born. However, DHB screening activity is reported based on babies who are screened within the DHB, which can be different to the DHB of birth. As has been discussed and agreed previously, all tables in the first section of this report refer to DHB of birth unless otherwise stated. DHB of Audiology is used to report against the audiology indicators.

3. Monitoring Indicators

1.1 Newborn hearing screening offered
Description The proportion of parents / guardians of eligible newborns offered newborn hearing screening.
Relevant outcome The UNHSEIP has a principle of “universality”: that all parents / guardians of eligible newborns should be offered newborn hearing screening. A high screen offered rate should result in high screening uptake rate.
methodology <i>Indicator 1.1</i> Numerator: Number of eligible newborns offered screening. Denominator: Number of eligible live births.
notes <ul style="list-style-type: none">• It is recognised that newborn hearing screening programmes do not usually achieve high coverage in the early stages of implementation. Additionally, programmes often have a phased implementation such as screening of hospital births occurring first, followed by implementation in the community. As a result, a percentage outcome target was not set at this stage of the programme.• The UNHSEIP will regularly review coverage data for this indicator. If the goal of “All” is not being achieved, then the UNHSEIP will work collaboratively with DHBs and negotiate targets in order to improve coverage.

3.1. Offer of Newborn Hearing Screening

At this time, the offer of newborn hearing screening is reported through DHB contractual reporting to the Ministry. This is because only babies with informed consent for screening can be recorded on the national database – families who do not consent, and those who are not offered screening, are not recorded in the national database. In the future, if a coordinated electronic system for maternity and newborn notes is in place, the offer of screening will be able to be nationally recorded.

From the offer of screening reported in DHB quarterly reports for this time, 95.2% of babies were offered newborn hearing screening, compared with live births. This is an increase from the 84.7% in the April to September 2010 reporting period.

The proportion of offers of screening to live births was generally between 80% to over 100%. From Table 4, the lowest rate this quarter was in Counties Manukau (75.6%) where three quarter of babies born were offered screening, however this is an improvement from 64.7% in the previous report. Notable improvements from the previous report were seen in Waitemata (44.8 to 87.1) MidCentral (52.7 to 94.0) and Southern (45.4 to 100.3).

Table 4 Offer of Screening by DHB for October 2010 to March 2011

DHB	Offered Screening	Live Births	Percentage Offered
Northland	942	1,160	81.2
Waitemata	3,439	3,947	87.1
Auckland	4,155	3,451	120.4
Counties Manukau	3,290	4,351	75.6
Waikato	2,730	2,819	96.8
Lakes	868	836	103.8
Bay of Plenty	1,368	1,540	88.8
Tairāwhiti	369	406	90.9
Taranaki	857	819	104.6
Hawkes Bay	1,086	1,145	94.8
Whanganui	450	459	98.0
MidCentral	1,112	1,183	94.0
Hutt Valley	1,052	1,074	98.0
Capital & Coast	2,076	2,066	100.5
Wairarapa	288	283	101.8
Nelson Marlborough	869	809	107.4
West Coast	166	199	83.4
Canterbury	3,198	3,301	96.9
South Canterbury	297	295	100.7
Southern	1,879	1,873	100.3
Total	30,491	32,016	95.2

Challenges in reporting on the offer of newborn hearing screening

The number of babies offered screening within a reporting period can be greater than the number of live births attributed to the DHB, leading to the percentage offered being more than 100%. One contributing factor is that live births are reported based on the baby's DHB of residence, and sometimes babies may be offered screening at a different DHB. This can most obviously be seen in Table 4 for Auckland DHB. The local over (and under) proportions should balance out at regional and national levels.

Another issue for periodic reporting is that babies offered screening may have been born outside of the reporting period. For example a baby born in September may be offered screening in October, but this birth will not be included in the denominator. Annual reporting will be based on babies born within a one year period, which will improve reporting against the denominator.

Progress with national implementation

During this six month period, there were 32,016 live births recorded, and 30,491 babies offered screening. The distributed by DHB of those offered to live births is shown in Figure 2. At this time newborn hearing screening has been implemented by all DHBs, this is the first report where all DHBs were screening throughout the entire period.

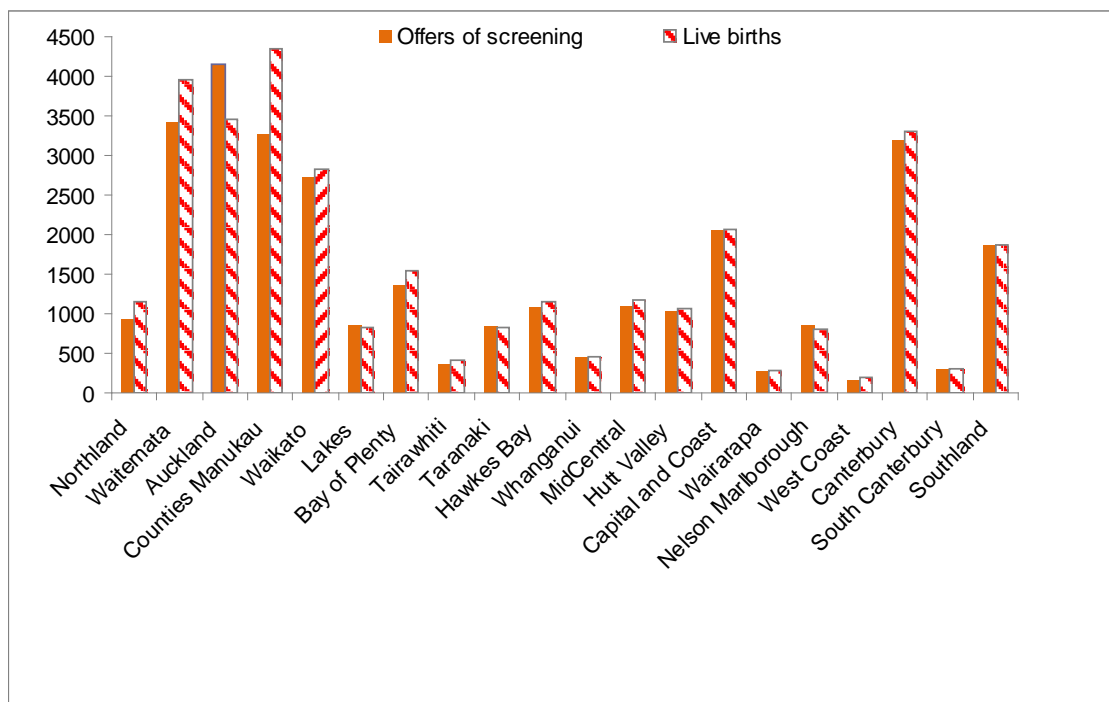


Figure 2 Number of offers by DHB for October 2010 to March 2011 compared with the number of consents by DHBs

RECOMMENDATIONS ON OFFER OF SCREENING

There were no recommendations from the Advisory Group on Offer of Screening.

3.2. Consent for Newborn Hearing Screening

Monitoring the proportion of families and whanau consenting to newborn hearing screening is a way of looking at screening coverage. All babies with informed consent for newborn hearing screening are captured in the national database. This information is compared with the offer of screening figures collated by DHBs in their quarterly reporting, to enable the proportion of families who consent to newborn hearing screening to be monitored. While this does not allow the separation of declines from those who were not offered screening, this information is important for monitoring trends over time.

Over this period the proportion of consent for screening to offers of screening was 91.7%. This is reported in a slightly different way than the previous report which was against live births so is not directly comparable to the previous report.

Table 5 Consents for Newborn Hearing Screening by DHB, October 2010 to March 2011

DHB	Consents for Screening	Offered Screening	% consents to offered
Northland	785	942	83.3
Waitemata	2,782	3,439	80.9
Auckland	3,796	4,155	91.4
Counties Manukau	2,941	3,290	89.4
Waikato	2,627	2,730	96.2
Lakes	816	868	94.0
Bay of Plenty	1,346	1,368	98.4
Tairāwhiti	360	369	97.6
Taranaki	788	857	91.9
Hawkes Bay	1,126	1,086	103.7
Whanganui	398	450	88.4
MidCentral	842	1,112	75.7
Hutt Valley	1,039	1,052	98.8
Capital and Coast	1,929	2,076	92.9
Wairarapa	270	288	93.8
Nelson Marlborough	787	869	90.6
West Coast	153	166	92.2
Canterbury	3,075	3,198	96.2
South Canterbury	268	297	90.2
Southland	1,830	1,879	97.4
Total	27,958	30,491	91.7

In comparing the offer of screening to consents, it is important to note that the two data sources for Table 5 are different. The offer of screening is reported by DHBs based on babies they have offered screening to during October to March. Consents for screening is drawn from the screening data in the national database. While this comparison is useful for monitoring, there may be some data discrepancies such that Hawke's Bay has 40 more babies consented for screening than offered.

The proportion of consents for screening are presented by ethnicity, deprivation status and birth location in Figures 3-5 below. Figure 3 shows almost half of the babies with consent for screening were in the “European” ethnic group. In this period 25% had a prioritised ethnicity of Maori with 12% Asian and 11% Pacific.

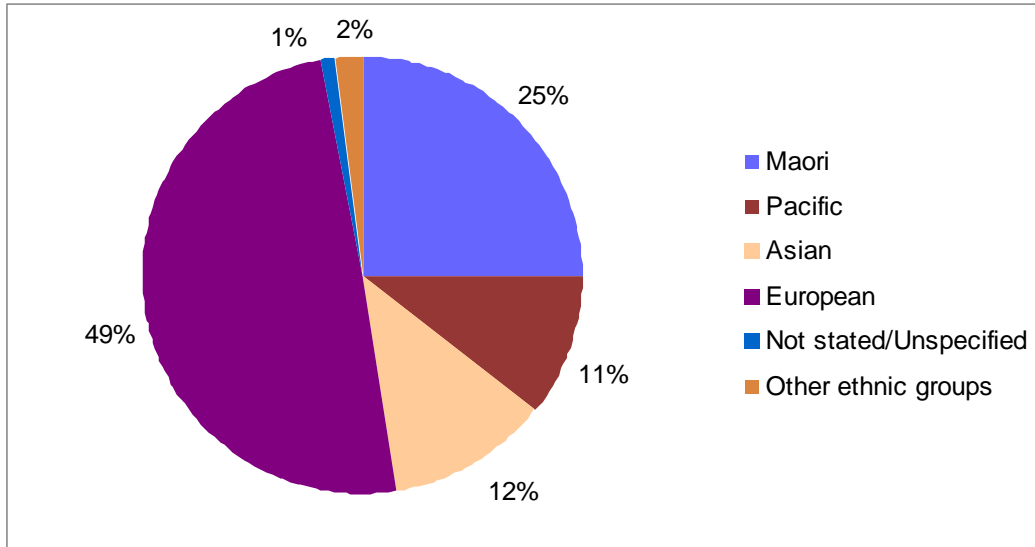


Figure 3 Consents for screening (total n=27,958) by prioritised ethnicity, October 2010 to March 2011

Figure 4 shows that just over half (54%) of the babies that consented for screening were in Decile 7 or greater (the more disadvantaged areas). Rather than this being a specific outcome related to hearing screening this is consistent with the national live births data, where a greater proportion of births occur in the more disadvantaged areas.

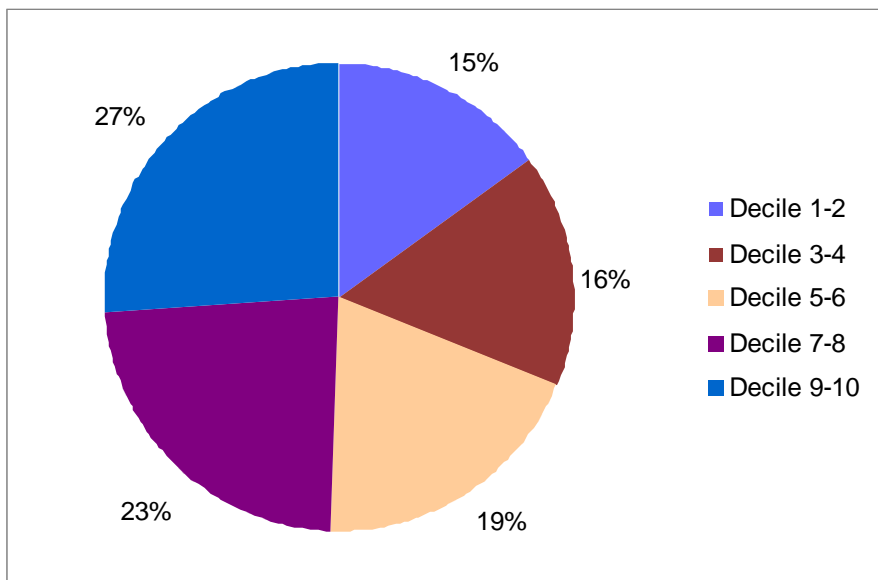


Figure 4 Consents for screening (total n=27,958) by deprivation, October 2010 to March 2011

The majority of consent for screening occurred in public hospitals (98%) as seen in Figure 5. This result may reflect the implementation approach of starting newborn hearing screening in hospitals, and then rolling out screening to private and community settings. However, the birth patterns in New Zealand are strongly based in public hospitals, so this is likely to remain as the most frequent birth location.

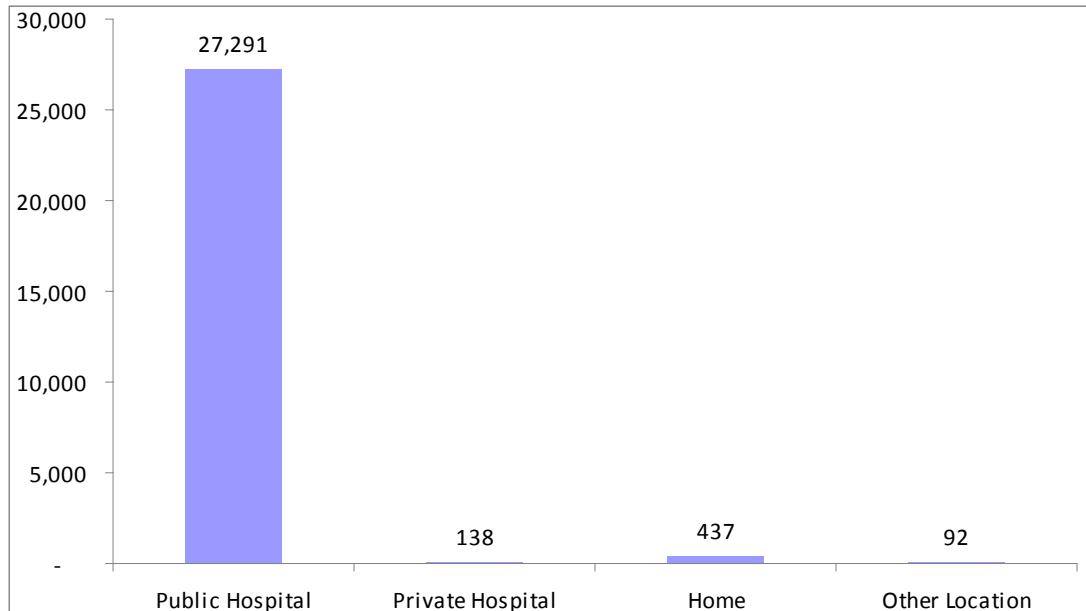


Figure 5 Consents for screening (total n=27,958) by birth location, October 2010 to March 2011

RECOMMENDATIONS ON CONSENTS FOR SCREENING

There were no recommendations from the Advisory Group on Offer of Screening.

1.2 Newborn hearing screen declined

Description

The proportion of newborns whose parents / guardian decline screening.

Relevant outcome

The proportion of newborns whose parents / guardian decline screening is expected to be very low and in keeping with international programmes.

No percentage outcome target at this stage of the programme (see rationale section).

Rationale

Parents / guardians have the same right to accept or decline hearing screening or any follow-up care for their newborn as for any other screening or evaluation procedures or intervention.

A high decline rate (eg, for an individual DHB, for the programme relative to international figures or for particular ethnic groups) would warrant further investigation and consideration of outcome targets.

methodology

Indicator 1.2

Numerator: Number of eligible newborns whose parents/guardian declined newborn hearing screening.

Denominator: Number of eligible newborns whose parents/guardian were offered screening.

Notes

There are some limitations to the decline data that will be available, due to privacy concerns. For this reason, only babies with informed consent are included in the database. The UNHSEIP receives data on the number of declines through DHB contractual reporting.

3.3. Newborn Hearing Screening Declined

At this time, the decline of newborn hearing screening is reported through DHB contractual reporting to the Ministry. This is because only babies with informed consent for screening can be recorded on the national database – families who decline, and those who are not offered screening, are not recorded in the national database. In the future, if a coordinated electronic system for maternity and newborn notes is in place, the decline of screening will be able to be nationally recorded.

Table 6 is sourced from DHB quarterly reports, not from the national database extract. It is still important to report on the decline of screening, as this will enable the monitoring of trends over time. Across all the DHBs, the overall decline rate was 1.5% of those offered screening. When looking at individual DHB information, it is important to take into account that when an area has a small number of live births, the percentage of declines may look disproportionate. The decline rates were highest in Northland at around 7 percent and West Coast at just under 5%.

Table 6 Decline of Screening by DHB for October 2010 to March 2011

DHB	Declined Screening	Offered Screening	Percentage Declined
Northland	70	942	7.4
Waitemata	7	3,439	0.2
Auckland	73	4,155	1.8
Counties Manukau	34	3,290	1.0
Waikato	22	2,730	0.8
Lakes	10	868	1.2
Bay of Plenty	23	1,368	1.7
Tairāwhiti	0	369	0.0
Taranaki	12	857	1.4
Hawkes Bay	5	1,086	0.5
Whanganui	6	450	1.3
MidCentral	10	1,112	0.9
Hutt Valley	12	1,052	1.1
Capital & Coast	29	2,076	1.4
Wairarapa	4	288	1.4
Nelson Marlborough	22	869	2.5
West Coast	8	166	4.8
Canterbury	45	3,198	1.4
South Canterbury	11	297	3.7
Southern	54	1,879	2.9
Total	457	30,491	1.5

RECOMMENDATION ON DECLINE OF SCREENING

1. The National Screening Unit to follow-up with Northland, West Coast and South Canterbury DHBs to explore the reasons for declines, including examining the data by ethnicity.

1.3 Newborn hearing screening started	
Description	The proportion of the eligible newborns whose parents / guardian consented to newborn hearing screening that start screening.
Relevant outcome	All eligible newborns (whose parents / guardian consent to newborn hearing screening) start screening.
RATIONALE	
<p>For ongoing service and programme development it is important to compare consent for screening numbers, with screening started coverage and screening completed coverage, particularly from an inequalities perspective.</p> <p>International programmes generally have a >95% screen completed target for all eligible births. As many of these programmes are achieving their targets after initial implementation (see screen completed indicator), a high screen started figure should be achievable once the UNHSEIP is fully implemented.</p> <p>At this stage of programme implementation, a specific outcome target has not been set. However, if regular reviews of data for this indicator reveal issues with progression through the screening pathway from consent to screening started to screening completed, particularly from an inequalities perspective, then further investigation, working with DHBs and consideration of outcome targets would be necessary.</p>	
Methodology	
<i>Indicator 1.3</i>	
Numerator:	Number of eligible newborns that started newborn hearing screening.
Denominator:	Number of eligible newborns born whose parents / guardian consented to newborn hearing screening.

3.4. Newborn Hearing Screening Started

Monitoring the proportion of babies who actually start screening when their family and whānau has consented is important to identify potential gaps in systems and processes. Started screening is when there is a valid date for screening test 1, and there is a valid screening outcome for at least one ear. For records to be included in each of the following indicators they must have started screening.

Factors such as whether the baby is admitted to NICU/SCBU, ethnicity, deprivation status and birth location could influence participation in newborn hearing screening. The information presented in Tables 7-10 indicates that none of these factors are influential at this time.

There is a high proportion of babies who consent to screening that commence screening (99.6%). This high proportion is consistent across DHBs, as show in Figure 6.

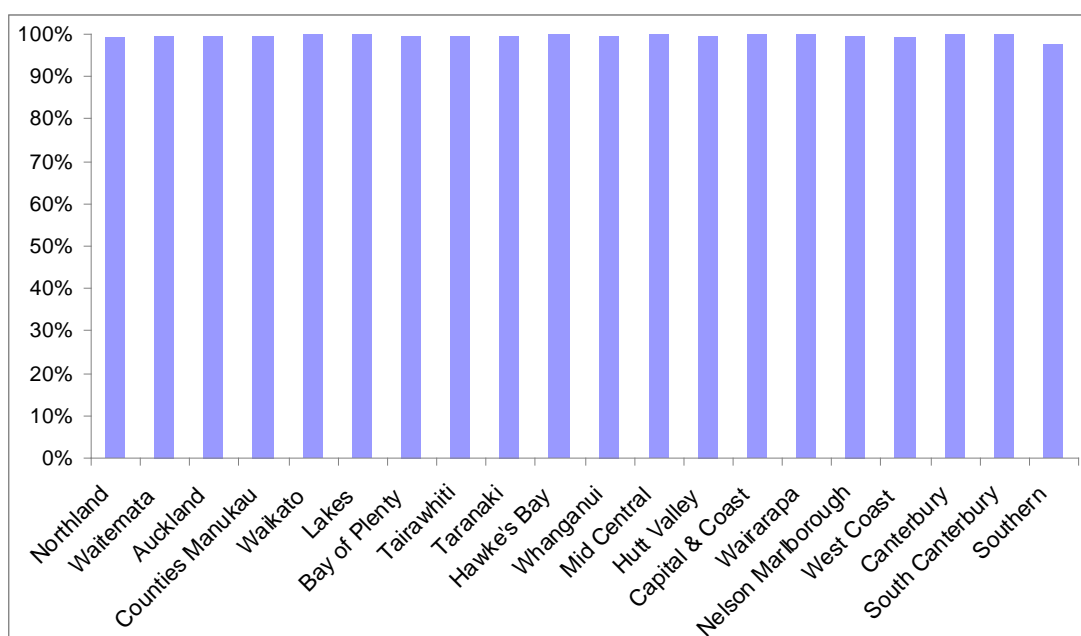


Figure 6 Proportion of babies with consent who start newborn hearing screening, October 2010 to March 2011

RECOMMENDATION ON NEWBORN HEARING SCREENING STARTED

2. The National Screening Unit to check the distribution of “not stated/unspecified” ethnicity by DHB.

Table 7 Newborn Hearing Screening Started compared with Consents to Screening by DHB, October 2010 to March 2011

DHB	Well Baby			NICU/SCBU			Total		
	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started
Northland	699	694	99.3%	86	85	98.8%	785	779	99.2%
Waitemata	2,667	2,655	99.6%	115	115	100.0%	2,782	2,770	99.6%
Auckland	3,592	3,580	99.7%	204	203	99.5%	3,796	3,783	99.7%
Counties Manukau	2,789	2,779	99.6%	152	152	100.0%	2,941	2,931	99.7%
Waikato	2,412	2,410	99.9%	215	215	100.0%	2,627	2,625	99.9%
Lakes	764	763	99.9%	52	52	100.0%	816	815	99.9%
Bay of Plenty	1,253	1,248	99.6%	93	92	98.9%	1,346	1,340	99.6%
Tairāwhiti	339	338	99.7%	21	21	100.0%	360	359	99.7%
Taranaki	749	747	99.7%	39	39	100.0%	788	786	99.7%
Hawke's Bay	1,033	1,033	100.0%	93	93	100.0%	1,126	1,126	100.0%
Whanganui	380	379	99.7%	18	18	100.0%	398	397	99.7%
MidCentral	755	755	100.0%	87	87	100.0%	842	842	100.0%
Hutt Valley	920	917	99.7%	119	119	100.0%	1,039	1,036	99.7%
Capital & Coast	1,802	1,800	99.9%	127	127	100.0%	1,929	1,927	99.9%
Wairarapa	249	249	100.0%	21	21	100.0%	270	270	100.0%
Nelson Marlborough	739	736	99.6%	48	48	100.0%	787	784	99.6%
West Coast	152	151	99.3%	1	1	100.0%	153	152	99.3%
Canterbury	2,880	2,876	99.9%	195	194	99.5%	3,075	3,070	99.8%
South Canterbury	264	264	100.0%	4	4	100.0%	268	268	100.0%
Southern	1,693	1,648	97.3%	137	135	98.5%	1,830	1,783	97.4%
Total	26,131	26,022	99.6%	1,827	1,821	99.7%	27,958	27,843	99.6%

Table 8 Newborn Hearing Screening Started compared with Consents to Screening by Ethnicity, October 2010 to March 2011

Ethnicity	Well Baby			NICU/SCBU			Total		
	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started
Maori	6,489	6,462	99.6%	527	526	99.8%	7,016	6,988	99.6%
Pacific	2,762	2,751	99.6%	191	191	100.0%	2,953	2,942	99.6%
Asian	3,148	3,146	99.9%	153	153	100.0%	3,301	3,299	99.9%
European	12,959	12,921	99.7%	893	890	99.7%	13,852	13,811	99.7%
Not Stated/Unspecified	260	231	88.8%	33	32	97.0%	293	263	89.8%
Other ethnic groups	513	511	99.6%	30	29	96.7%	543	540	99.4%
Total	26,131	26,022	99.6%	1,827	1,821	99.7%	27,958	27,843	99.6%

Table 9 Newborn Hearing Screening Started compared with Consents to Screening by Deprivation, October 2010 to March 2011

Decile	Well Baby			NICU/SCBU			Total		
	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started
Decile 1-2	3,947	3,930	99.6%	256	256	100.0%	4,203	4,186	99.6%
Decile 3-4	4,207	4,184	99.5%	280	279	99.6%	4,487	4,463	99.5%
Decile 5-6	5,102	5,086	99.7%	336	334	99.4%	5,438	5,420	99.7%
Decile 7-8	6,047	6,022	99.6%	436	434	99.5%	6,483	6,456	99.6%
Decile 9-10	6,771	6,745	99.6%	510	509	99.8%	7,281	7,254	99.6%
Unknown	57	55	96.5%	9	9	100.0%	66	64	97.0%
Total	26,131	26,022	99.6%	1,827	1,821	99.7%	27,958	27,843	99.6%

Table 10 Newborn Hearing Screening Started compared to Consents to Screening by Birth Location, October 2010 to March 2011

Birth Location	Well Baby			NICU/SCBU			Total		
	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started	Consented to screening	Started Screening	% of consents that started
Public Hospital	25,483	25,389	99.6%	1,808	1,802	99.7%	27,291	27,191	99.6%
Private Hospital	137	137	100.0%	1	1	100.0%	138	138	100.0%
Home	429	415	96.7%	8	8	100.0%	437	423	96.8%
Other location	82	81	98.8%	10	10	100.0%	92	91	98.9%
Total	26,131	26,022	99.6%	1,827	1,821	99.7%	27,958	27,843	99.6%

1.4 Newborn hearing screening completed

Description

1. The proportion of eligible newborns that complete the UNHS screening protocol.
2. The proportion of eligible newborns who complete the UNHS screening protocol by 1 month of age.

Relevant Outcome

A core goal of the programme is that eligible newborns, whose parents/guardians consented, should complete newborn screening by 1 month of age.

Rationale

“Newborns to be screened by 1 month of age” is a core goal of the UNHSEIP ie: the 1 part of the 1-3-6 goals.

Although the international targets are usually >95% of all newborns screened by 1 month of age, many are achieving above this:

- >95% coverage should be obtainable where screening occurs in a hospital environment
- >95% for community screening may depend on factors such as the timeliness of notification of birth, but should be achievable in the longer-term.

This indicator will be closely monitored and further investigation will be required if progression towards the goal is not occurring.

Methodology

Indicator 1.4a

Numerator: Number of eligible newborns that complete newborn hearing screening.

Denominator: Number of eligible newborns who began newborn hearing screening.

Indicator 1.4b

Numerator: Number of eligible newborns that complete newborn hearing screening by 1 month of age.

Denominator: Number of eligible newborns who complete newborn hearing screening.

3.5. Newborn Hearing Screening Completed

Monitoring the proportion of babies who complete screening when it has been started is important in identifying potential gaps in systems and processes. For example, if a high proportion of babies start screening but do not complete the process, protocols for following-up families and offering outpatient appointments may need to be strengthened, or transfer between DHBs may be an issue. One of the core goals of the programme is for newborn hearing screening to be completed by the time the baby is one month of age (4 weeks corrected age).

Overall, 99.2% of babies who started screening completed, and 92.9% of those babies who had completed screening did so by the time they were one month of age. The high proportion of completion overall is consistent across DHBs, as shown in Figure 7 and Table 11.

There is more variation in the data for completion by one month, shown in Table 12, with the lowest rates being seen in Northland (60.4%).

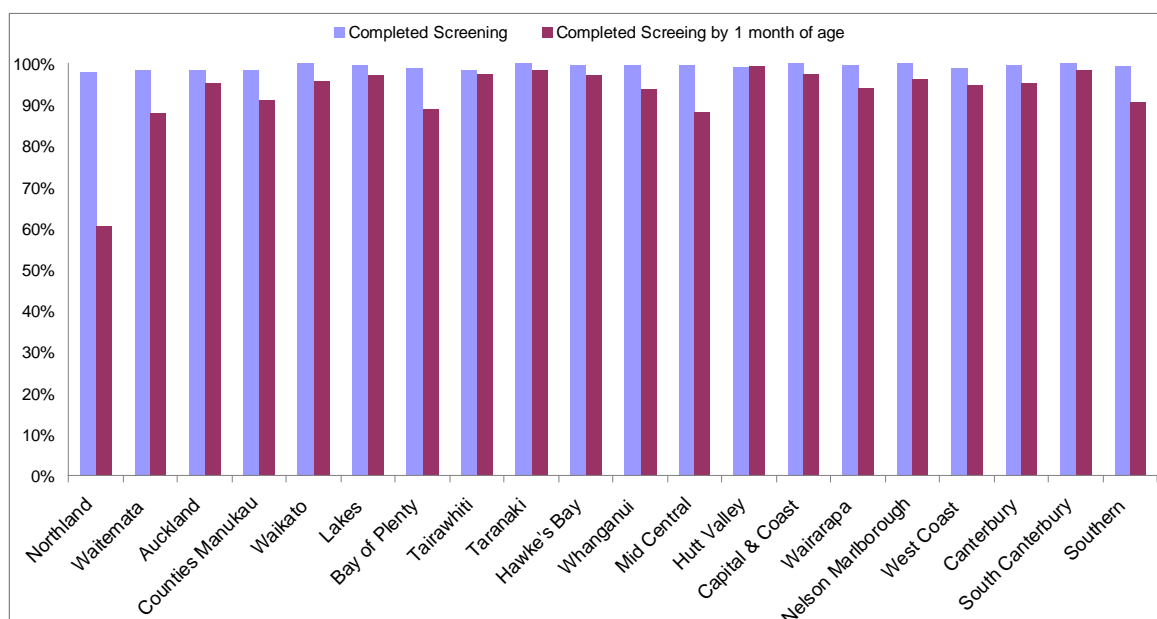


Figure 7 Proportion of babies who complete screening after starting, and the proportion of those who completed screening by the time they were one month of age, October 2010 to March 2011

This information can be seen in greater detail in Tables 11 and 12. It is interesting to note that once again almost all screening started in NICU/SCBU was completed.

Figure 8 shows the spread of screening times for all those who completed screening. There were 57 babies not shown on the graph who had completion times greater than 17 weeks. The completion times for the remaining babies spanned up until 60 weeks in total.

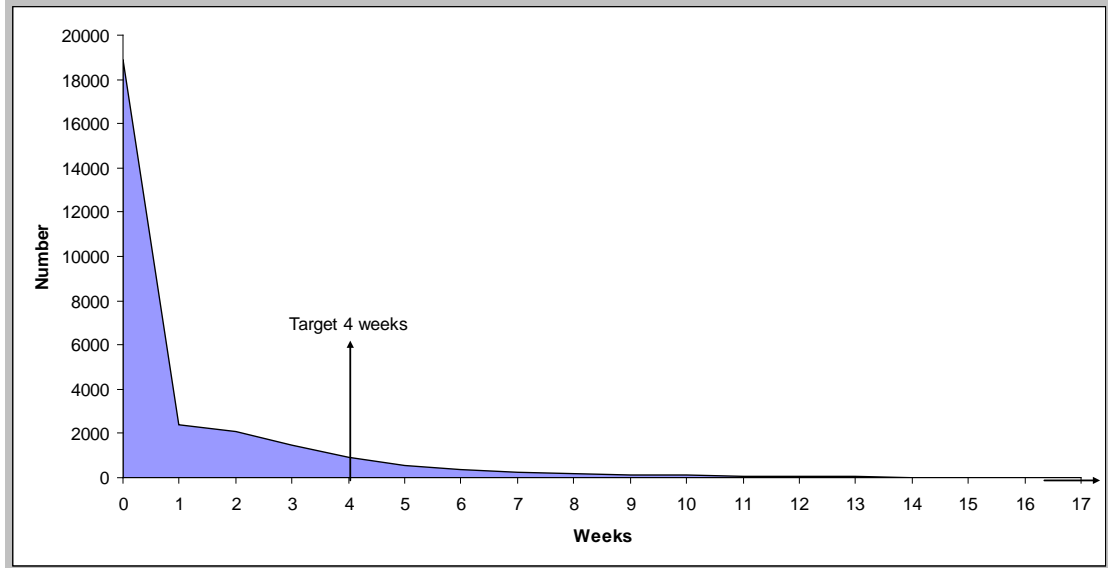


Figure 8 Spread of screening completion times in weeks, October 2010 to March 2011

Table 11 Newborn Hearing Screening Completed compared with Started by DHB, October 2010 to March 2011

DHB of birth	Well Baby			NICU/SCBU			Total		
	Started Screening	Completed Screening	% Started that completed	Started Screening	Completed Screening	% Started that completed	Started Screening	Completed Screening	% Started that completed
Northland	694	676	97.4%	85	85	100.0%	779	761	97.7%
Waitemata	2,655	2,616	98.5%	115	115	100.0%	2,770	2,731	98.6%
Auckland	3,580	3,516	98.2%	203	203	100.0%	3,783	3,719	98.3%
Counties Manukau	2,779	2,737	98.5%	152	152	100.0%	2,931	2,889	98.6%
Waikato	2,410	2,406	99.8%	215	215	100.0%	2,625	2,621	99.8%
Lakes	763	760	99.6%	52	52	100.0%	815	812	99.6%
Bay of Plenty	1,248	1,232	98.7%	92	92	100.0%	1,340	1,324	98.8%
Tairāwhiti	338	334	98.8%	21	19	90.5%	359	353	98.3%
Taranaki	747	746	99.9%	39	39	100.0%	786	785	99.9%
Hawke's Bay	1,033	1,030	99.7%	93	93	100.0%	1,126	1,123	99.7%
Whanganui	379	378	99.7%	18	18	100.0%	397	396	99.7%
MidCentral	755	753	99.7%	87	87	100.0%	842	840	99.8%
Hutt Valley	917	908	99.0%	119	119	100.0%	1,036	1,027	99.1%
Capital & Coast	1,800	1,800	100.0%	127	127	100.0%	1,927	1,927	100.0%
Wairarapa	249	248	99.6%	21	21	100.0%	270	269	99.6%
Nelson Marlborough	736	735	99.9%	48	48	100.0%	784	783	99.9%
West Coast	151	149	98.7%	1	1	100.0%	152	150	98.7%
Canterbury	2,876	2,870	99.8%	194	193	99.5%	3,070	3,063	99.8%
South Canterbury	264	264	100.0%	4	4	100.0%	268	268	100.0%
Southern	1,648	1,636	99.3%	135	135	100.0%	1,783	1,771	99.3%
Total	26,022	25,794	99.1%	1,821	1,818	99.8%	27,843	27,612	99.2%

Table 12 Newborn Hearing Screening Completed by one month of age by DHB, October 2010 to March 2011

DHB	Well Baby			NICU/SCBU			Total		
	Completed Screening	Completed Screening by 1 month of age	% Completed that completed by 1 month of age	Completed Screening	Completed Screening by 1 month of age	% Completed that completed by 1 month of age	Completed Screening	Completed Screening by 1 month of age	% Completed that completed by 1 month of age
Northland	676	399	59.0%	85	61	71.8%	761	460	60.4%
Waitemata	2,616	2,293	87.7%	115	108	93.9%	2,731	2,401	87.9%
Auckland	3,516	3,351	95.3%	203	192	94.6%	3,719	3,543	95.3%
Counties Manukau	2,737	2,481	90.6%	152	148	97.4%	2,889	2,629	91.0%
Waikato	2,406	2,300	95.6%	215	211	98.1%	2,621	2,511	95.8%
Lakes	760	739	97.2%	52	51	98.1%	812	790	97.3%
Bay of Plenty	1,232	1,085	88.1%	92	91	98.9%	1,324	1,176	88.8%
Tairāwhiti	334	326	97.6%	19	18	94.7%	353	344	97.5%
Taranaki	746	734	98.4%	39	39	100.0%	785	773	98.5%
Hawke's Bay	1,030	1,000	97.1%	93	93	100.0%	1,123	1,093	97.3%
Whanganui	378	353	93.4%	18	18	100.0%	396	371	93.7%
MidCentral	753	654	86.9%	87	86	98.9%	840	740	88.1%
Hutt Valley	908	903	99.4%	119	117	98.3%	1,027	1,020	99.3%
Capital & Coast	1,800	1,760	97.8%	127	122	96.1%	1,927	1,882	97.7%
Wairarapa	248	232	93.5%	21	21	100.0%	269	253	94.1%
Nelson Marlborough	735	707	96.2%	48	46	95.8%	783	753	96.2%
West Coast	149	141	94.6%	1	1	100.0%	150	142	94.7%
Canterbury	2,870	2,728	95.1%	193	188	97.4%	3,063	2,916	95.2%
South Canterbury	264	260	98.5%	4	4	100.0%	268	264	98.5%
Southern	1,636	1,475	90.2%	135	129	95.6%	1,771	1,604	90.6%
Total	25,794	23,921	92.7%	1,818	1,744	95.9%	27,612	25,665	92.9%

Factors such as ethnicity, deprivation status and birth location may influence completion rates, and/or the time taken for the completion for newborn hearing screening. The information presented in Tables 13-15 show little difference in overall completion rates. Completion rates by 1 month shows some difference but it is not sufficiently large to note with the exception of babies born at home where screening completed within one month is 70.8%.

Table 13 Newborn Hearing Screening Completed by Ethnicity, October 2010 to March 2011

Ethnicity	Started screening	Completed screening	Completed screening by 1 month of age	% started that completed screening	% completed that completed by 1 month of age
Maori	6,988	6,911	6,262	98.9%	90.6%
Pacific	2,942	2,895	2,653	98.4%	91.6%
Asian	3,299	3,278	3,072	99.4%	93.7%
European	13,811	13,729	12,931	99.4%	94.2%
Not stated/Unspecified	263	262	239	99.6%	91.2%
Other ethnic groups	540	537	508	99.4%	94.6%
Total	27,843	27,612	25,665	99.2%	92.9%

Table 14 Newborn Hearing Screening Completed by Deprivation, October 2010 to March 2011

Decile	Started screening	Completed screening	Completed screening by 1 month of age	% started that completed screening	% completed that completed by 1 month of age
Decile 1-2	4,186	4,151	3,948	99.2%	95.1%
Decile 3-4	4,463	4,434	4,180	99.4%	94.3%
Decile 5-6	5,420	5,393	5,044	99.5%	93.5%
Decile 7-8	6,456	6,394	5,889	99.0%	92.1%
Decile 9-10	7,254	7,178	6,548	99.0%	91.2%
Unknown	64	62	56	96.9%	90.3%
Total	27,843	27,612	25,665	99.2%	92.9%

Table 15 Newborn Hearing Screening Completed by Birth Location, October 2010 to March 2011

Birth Location	Started screening	Completed screening	Completed screening by 1 month of age	% started that completed screening	% completed that completed by 1 month of age
Public Hospital	27,191	26,980	25,176	99.2%	93.3%
Private Hospital	138	130	120	94.2%	92.3%
Home	423	418	296	98.8%	70.8%
Other Location	91	84	73	92.3%	86.9%
Total	27,843	27,612	25,665	99.2%	92.9%

RECOMMENDATION ON NEWBORN HEARING SCREENING COMPLETED

- 3.** The National Screening Unit to follow-up with Northland, Waitemata, Bay of Plenty and MidCentral DHBs about their newborn hearing screening completed by one month of age figures.

1.5 Referral rate to audiology assessment	
Description	The proportion of newborns that do not pass the hearing screening process and are referred for audiology assessment.
Relevant Outcome	Less than 4% of eligible newborns screened in the UNHSEIP will be referred for audiology assessment.
Rationale	<p>An unnecessarily high number of newborns being referred to audiology assessment could lead to potential strain on audiological capacity and parental anxiety issues. Conversely, if the referral rate is too low, newborns with a hearing loss may be being missed. High or low referral rates may indicate that further training of screeners or investigation is needed.</p> <p>Internationally, the referral targets for audiology assessment are generally 4% or less. In keeping with international experience, it is anticipated that referral rates will be higher in the initial stages of implementation and decrease as the programme becomes established.</p> <p>Subsequent reviews of the data and Monitoring Framework will revisit this indicator with respect to improving referral rates and consideration of outcome targets for DHBs.</p>
Methodology	<p>Indicator 1.5</p> <p>Numerator: Number of eligible newborns who complete screening with a referral to audiology assessment (ie do not pass screen).</p> <p>Denominator: The number of eligible newborns who complete screening.</p>

3.6. Referral to Audiology

The maximum referral rate for audiology assessment from newborn hearing screening has been set at 4%, based on international literature. This is generally thought to be quite a high level, and rates of 1-2% are commonly reported by international screening programmes. The average rate of referral to audiology in this period was 1.7 percent as detailed in Table 16 below.

The only DHB in this period which had no referrals was Tairāwhiti. It is not possible to make any valid comments due to the small difference in percentages and small actual number of referrals in many DHBs. The higher rates for Northland (3.9%) and Counties Manukau (4%) are of note, although they are lower than the rates in the previous report (4.6% for Northland and 6.3% for Counties Manukau).

Admission to NICU/SCBU (for 48 hours or more) resulted in a higher proportion of referrals to audiology, at an average of 7.9% as shown in Table 16. More detail on referrals to audiology by ethnicity, deprivation status and birth location are presented in Tables 17-19. The information indicates that none of these factors have an impact at this time.

Table 16 Referral to Audiology by DHB and NICU/SCBU admission, October 2010 to March 2011

DHB of Birth	Well Baby			NICU/SCBU			Total		
	Number completed screening	Number referred to audiology	% completed screening that were referred	Number completed screening	Number referred to audiology	% completed screening that were referred	Number completed screening	Number referred to audiology	% completed screening that were referred
Northland	676	22	3.3%	85	8	9.4%	761	30	3.9%
Waitemata	2,616	15	0.6%	115	5	4.3%	2,731	20	0.7%
Auckland	3,516	59	1.7%	203	21	10.3%	3,719	80	2.2%
Counties Manukau	2,737	93	3.4%	152	23	15.1%	2,889	116	4.0%
Waikato	2,406	17	0.7%	215	11	5.1%	2,621	28	1.1%
Lakes	760	9	1.2%	52	6	11.5%	812	15	1.8%
Bay of Plenty	1,232	17	1.4%	92	4	4.3%	1,324	21	1.6%
Tairāwhiti	334	0	0.0%	19	0	0.0%	353	0	0.0%
Taranaki	746	7	0.9%	39	7	17.9%	785	14	1.8%
Hawke's Bay	1,030	7	0.7%	93	7	7.5%	1,123	14	1.2%
Whanganui	378	4	1.1%	18	3	16.7%	396	7	1.8%
MidCentral	753	2	0.3%	87	1	1.1%	840	3	0.4%
Hutt Valley	908	11	1.2%	119	4	3.4%	1,027	15	1.5%
Capital & Coast	1,800	6	0.3%	127	6	4.7%	1,927	12	0.6%
Wairarapa	248	4	1.6%	21	0	0.0%	269	4	1.5%
Nelson Marlborough	735	8	1.1%	48	10	20.8%	783	18	2.3%
West Coast	149	1	0.7%	1	0	0.0%	150	1	0.7%
Canterbury	2,870	37	1.3%	193	17	8.8%	3,063	54	1.8%
South Canterbury	264	2	0.8%	4	1	25.0%	268	3	1.1%
Southern	1,636	10	0.6%	135	9	6.7%	1,771	19	1.1%
Total	25,794	331	1.3%	1,818	143	7.9%	27,612	474	1.7%

Table 17 Referral to Audiology by Ethnicity, October 2010 to March 2011

Ethnicity	Number completed screening	Number referred to audiology	% completed screening that were referred
Maori	6,911	166	2.4%
Pacific	2,895	75	2.6%
Asian	3,278	53	1.6%
European	13,729	164	1.2%
Not stated/Unspecified	262	7	2.7%
Other ethnic groups	537	9	1.7%
Total	27,612	474	1.7%

Table 18 Referral to Audiology by Deprivation, October 2010 to March 2011

Decile	Number completed screening	Number referred to audiology	% completed screening that were referred
Decile 1-2	4,151	41	1.0%
Decile 3-4	4,434	56	1.3%
Decile 5-6	5,393	81	1.5%
Decile 7-8	6,394	110	1.7%
Decile 9-10	7,178	182	2.5%
Unknown	62	4	6.5%
Total	27,612	474	1.7%

Table 19 Referral to Audiology by Birth Location, October 2010 to March 2011

Birth Location	Number completed screening	Number referred to audiology	% completed screening that were referred
Public Hospital	26,980	462	1.7%
Private Hospital	130	3	2.3%
Home	418	4	1.0%
Other Location	84	5	6.0%
Total	27,612	474	1.7%

RECOMMENDATIONS ON REFERRAL TO AUDIOLOGY

There were no recommendations from the Advisory Group on Referral to Audiology.

1.11 Newborns at-risk of delayed-onset or progressive hearing loss	
Description	The proportion of newborns that pass screening, but have risk factors for developing late-onset or progressive hearing loss.
Relevant Outcome	Eligible newborns that passed newborn screening with risk factors for developing late-onset or progressive hearing loss should be followed up as per UNHSEIP recommendations. Although this subset of children do not form part of the primary target group for the UNHSEIP, it is important to monitor the number being referred to audiology assessment services.
Rationale	<p>There are a number of risk factors for developing late-onset or progressive hearing loss eg, family history of permanent childhood hearing loss; in-utero infections such as Cytomegalovirus (CMV) and Rubella; and certain syndromes (Joint Committee on Infant Hearing, 2007).</p> <p>Children who pass newborn hearing screening but who have certain risk factors require follow-up to detect any subsequent development of hearing loss. International programmes generally monitor follow-up of these children.</p>
Methodology	<p>Indicator 1.11</p> <p>Numerator: Number of eligible newborns who passed screening, but have risk factors for developing late-onset or progressive hearing loss.</p> <p>Denominator: Number of eligible newborns who passed screening (as part of the UNHSEIP).</p>

3.7. Targeted Follow-up

An average of 5.3% of babies who passed screening were flagged for targeted follow-up due to the presence of one or more risk factors for delayed onset/progressive hearing loss. This indicator is calculated based on the screening outcome recorded as "Pass Targeted follow-up required" on the Newborn Hearing Screening data from.

Table 20 below indicates that the proportion of babies flagged for targeted follow-up varies between DHBs. The highest proportion of targeted follow-up is seen in Northland (14.2%) and this was similar in the previous report. Improvements in the targeted follow-up proportions are noted for Taranaki (11.1 to 7.5) MidCentral (12.3 to 6.5) Hutt Valley (13.8 to 6.0) and West Coast (10.4 to 5.4).

From August 2010, some minor changes were made to the risk factors, which may have had a flow on effect on the proportion of babies requiring targeted follow-up. This current data will be compared to the data in the next report to monitoring any differences.

As would be expected, admission to NICU/SCBU (for 48 hours or more) resulted in a higher proportion of babies for targeted follow-up.

More detail on targeted follow-up by ethnicity, deprivation status and birth location are presented in Tables 21-23. The information indicates that these factors do not seem to be influencing targeted follow-up rates at this time. The proportion of targeted follow up appears to be slightly higher for Maori babies and slightly lower for Asian babies, however monitoring trends to see if these are valid over time will be important.

Table 20 Proportion of Targeted Follow-up by DHB and NICU/SCBU, October 2010 to March 2011

DHB of birth	Well Baby			NICU/SCBU			Total		
	Passed screening	Passed Targeted Follow-up Required	Targeted Follow-up Proportion	Passed screening	Passed Targeted Follow-up Required	Targeted Follow-up Proportion	Passed screening	Passed Targeted Follow-up Required	Targeted Follow-up Proportion
Northland	654	63	9.6%	77	41	53.2%	731	104	14.2%
Waitemata	2,601	81	3.1%	110	37	33.6%	2,711	118	4.4%
Auckland	3,457	122	3.5%	182	80	44.0%	3,639	202	5.6%
Counties Manukau	2,644	74	2.8%	129	47	36.4%	2,773	121	4.4%
Waikato	2,389	92	3.9%	204	76	37.3%	2,593	168	6.5%
Lakes	751	24	3.2%	46	5	10.9%	797	29	3.6%
Bay of Plenty	1,215	45	3.7%	88	13	14.8%	1,303	58	4.5%
Tairāwhiti	334	13	3.9%	19	1	5.3%	353	14	4.0%
Taranaki	739	46	6.2%	32	12	37.5%	771	58	7.5%
Hawke's Bay	1,023	46	4.5%	86	20	23.3%	1,109	66	6.0%
Whanganui	374	12	3.2%	15	9	60.0%	389	21	5.4%
MidCentral	751	47	6.3%	86	7	8.1%	837	54	6.5%
Hutt Valley	897	32	3.6%	115	29	25.2%	1,012	61	6.0%
Capital & Coast	1,794	45	2.5%	121	42	34.7%	1,915	87	4.5%
Wairarapa	244	10	4.1%	21	9	42.9%	265	19	7.2%
Nelson Marlborough	727	28	3.9%	38	6	15.8%	765	34	4.4%
West Coast	148	8	5.4%	1		0.0%	149	8	5.4%
Canterbury	2,833	67	2.4%	176	27	15.3%	3,009	94	3.1%
South Canterbury	262	2	0.8%	3	3	100.0%	265	5	1.9%
Southern	1,626	77	4.7%	126	52	41.3%	1,752	129	7.4%
Total	25,463	934	3.7%	1,675	516	30.8%	27,138	1450	5.3%

Table 21 Proportion of Targeted Follow-up by Ethnicity, October 2010 to March 2011

Ethnicity	Passed screening	Passed - Targeted Follow-up Required	Targeted Follow-up Proportion
Maori	6,745	465	6.9%
Pacific	2,820	131	4.6%
Asian	3,225	85	2.6%
European	13,565	724	5.3%
Not stated/Unspecified	255	22	8.6%
Other ethnic groups	528	23	4.4%
Total	27,138	1,450	5.3%

Table 22 Proportion of Targeted Follow-up by Deprivation, October 2010 to March 2011

Decile	Passed screening	Passed - Targeted Follow-up Required	Targeted Follow-up Proportion
Decile 1-2	4,110	170	4.1%
Decile 3-4	4,378	206	4.7%
Decile 5-6	5,312	272	5.1%
Decile 7-8	6,284	383	6.1%
Decile 9-10	6,996	415	5.9%
Unknown	58	4	6.9%
Total	27,138	1,450	5.3%

Table 23 Proportion of Targeted Follow-up by Birth Location, October 2010 to March 2011

Birth Location	Passed screening	Passed - Targeted Follow-up Required	Targeted Follow-up Proportion
Public Hospital	26,518	1,414	5.3%
Private Hospital	127	4	3.1%
Home	414	26	6.3%
Other Location	79	6	7.6%
Total	27,138	1,450	5.3%

RECOMMENDATION ON TARGETED FOLLOW-UP

4. The National Screening Unit to follow-up with Northland DHB about their proportion of targeted follow-up.
5. The National Screening Unit to consider testing the statistical significance of differences in ethnicity and deprivation fields.

3.8. Risk Factors

From October 2010 to March 2011 2,466 (8.9%) of babies that completed screening had at least one risk factor recorded, which is less than the 12% of babies in the previous report. As can be seen in the tables above 1,450 (5.3%) of all babies had a screening outcome of “Pass Targeted follow-up required”.

As noted previously, some of this difference is explained because the risk factor of “jaundice phototherapy” does not require targeted follow-up, but this does not account for the complete difference. It is understood that in some areas clinicians are involved in assessing screening information, and making recommendations on whether targeted follow-up was necessary. This process seems to have had an impact and ongoing monitoring of this difference will be needed.

The most frequently reported risk factor was “Family History” (43.2%) followed by “Jaundice Requiring Phototherapy” (26.2%) during this reporting period. For all babies who completed screening these two risk factors accounted for 3.7 and 2.3% of risk factors identified.

There was an expectation that “Family History” may increase as a proportion given the decision to include second degree relatives since August 2010. This is supported by the information in Table 24, where 43.2% of babies with a risk factor had family history. This is an increase from 25% of babies having this risk factor in the previous report. This policy change also clarified the interpretation of ventilation, craniofacial anomalies and TORCHS, and the proportion of these risk factors has decreased as was expected. Ventilation has decreased from 18% to 9.7%, craniofacial anomalies has decreased from 13% to 7.3% and TORCH/S has decreased from 11% to 3.7%. The recording of “other” as a risk factors has also decreased from 23% to 10.9%.

Table 24 Frequency of Risk Factors, October 2010 to March 2011

Risk Factor	Number of babies	Of those babies with a risk factor the proportion for each risk factor	Of those babies who started screening the proportion for each risk factor
Family History	1065	43.2	3.7
Jaundice Requiring Phototherapy	647	26.2	2.3
NICU more than 5 days	339	13.7	1.2
Ventilation	240	9.7	0.9
Cranio-facial Anomalies	181	7.3	0.6
TORCH/S	92	3.7	0.3
Bacterial/Viral Meningitis	78	3.2	0.3
Head Trauma	75	3.0	0.3
Syndrome	35	1.4	0.1
Jaundice Transfusion Level	22	0.9	0.1
Other	270	10.9	1.0

Of the 2,466 babies with one or more risk factors recorded, 83% had just one risk factor, 11% had two, 4% had three, 1% had four and less than one percent had the maximum of five risk factors, as show in Figure 9.

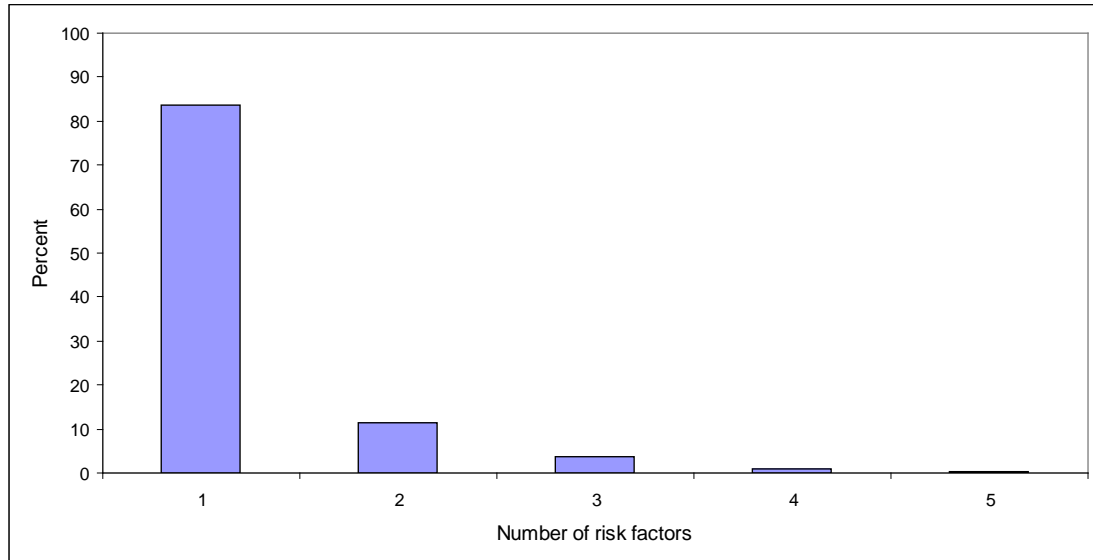


Figure 9 Of those babies with a risk factor the proportion with one or more risk factors, October 2010 to March 2011

RECOMMENDATIONS ON RISK FACTORS

6. The National Screening Unit to continue to monitor the frequency of risk factors, and consider review if/when there is new evidence published.

1.6 Audiology assessment started
<p>Description</p> <p>The average time from completing screening to commencing audiology assessment.</p> <p>The proportion of eligible newborns that are referred from screening who commence audiology assessment.</p>
<p>Relevant Outcome</p> <p>“Audiology assessment is completed by 3 months of age” is a core goal of the UNHSEIP ie: the 3 part of the 1-3-6 goals. Eligible newborns that <i>do not pass</i> hearing screening should have the audiology assessment completed by 3 months of age.</p>
<p>Rationale</p> <p>The UNHSEIP has the core goals of screening completed by 1 month of age and audiology assessment completed by 3 months of age.</p> <p>This indicator will monitor the time period between the two stages. Prolonged delays, or inequalities amongst groups, in this indicator would warrant investigation.</p>
<p>Methodology</p> <p><i>Indicator 1.6a</i></p> <p>Average time (in days) from when screening was completed for newborns to when audiology assessment commences¹.</p> <p><i>Indicator 1.6b</i></p> <p>Numerator: Number of eligible newborns who start audiology assessment.</p> <p>Denominator: Number of eligible newborns who were referred from screening for audiology assessment.</p>

¹It is expected that this average time should be approximately 4 weeks.

3.9. Audiology Assessment Started

This report presents the second six months of data available for the audiology indicators. This is still largely illustrative of what the Programme reporting expectations will be for the future. Only approximately 47% of the expected amount of information on audiology was recorded in the national database for this reporting period. This poor level of information capture was mostly due to DHBs not submitting forms to the National Screening Unit, and also some information was not able to be entered because it was incomplete.

Data in this section is for babies who were referred from screening to audiology (did not pass screening) and the audiology assessment was then started (n=223). As per Table 16, 474 babies did not pass screening and were referred to audiology, however audiology information was provided to the NSU and available for just 223 of these babies. This does not necessarily mean that only 47% of referred babies were seen by audiology, but it does mean that DHB audiologists must be encouraged to complete and submit the audiology forms.

For this six month period there were no audiology referrals from Tairāwhiti hence no data for this DHBs is included in this section. While there were some referrals from all other DHBs, a further five DHBs had no audiology assessment data reported (Waitemata, Hawkes Bay, Whanganui, and Wairarapa and West Coast).

Table 25 below shows where babies who had an initial screening test and where their audiology test was performed. The data in the table is based on the 223 completed audiology tests. It can be seen that the majority of audiology tests occur in the same DHB as the initial screening.

Table 26 below indicates that of those babies referred to audiology, the Programme had information in the national database for 47% of these babies. The incomplete nature of this audiology information contributes to the variable rates of audiology assessment started between the DHBs. Also in many cases the actual numbers are small and statistical comparisons are not valid or useful.

For this indicator, the DHB of birth has been used so that DHBs are able to track their referrals. For the other audiology indicators, DHB of audiology has been used, as the responsibility of completing audiology rests with the DHB carrying out the audiology assessments.

Table 25 Comparison of DHB of screening with DHB of Audiology assessment, October 2010 to March 2011

DHB of initial screening	Number of babies	DHB of Audiology Test	Number of babies
Northland	12	Northland	11
		Waikato	1
Waitemata	2	Auckland	2
Auckland	43	Auckland	40
		Bay of Plenty	1
		Counties Manukau	1
		Northland	1
Counties Manukau	40	Counties Manukau	40
Waikato	21	Waikato	21
Lakes	11	Lakes	11
Bay of Plenty	10	Bay of Plenty	8
		Waikato	2
Taranaki	9	Taranaki	9
Hawke's Bay	1	Canterbury	1
Mid Central	3	Mid Central	3
Hutt Valley	15	Hutt Valley	15
Capital & Coast	3	Capital & Coast	3
Wairarapa	1	Hutt Valley	1
Nelson Marlborough	16	Nelson Marlborough	16
Canterbury	22	Canterbury	22
South Canterbury	2	South Canterbury	2
Southern	12	Southern	12
Total	223	Total	223

DHBs are responsible for screening babies born within their DHB, and if they are referred to audiology the DHB of audiology is responsible for seeing the audiology assessment through to completion. Table 26 below outlines those babies that were referred for audiology and those that commenced. Tables 27 to 29 show the information by ethnicity, decile and birth location. Just over half of babies categorised as European that are referred to audiology do start assessment. Percentages in other ethnic groups are lower but not significantly different from each other given the number of babies included. There is no consistent trend by decile, though decile 7-10 do appear to have slightly less babies starting audiology.

Table 26 Commenced audiology assessment by DHB and NICU/SCBU admission, October 2010 to March 2011

DHB of birth	Well Baby			NICU/SCBU			Total		
	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology
Northland	22	10	45.5%	8	3	37.5%	30	13	43.3%
Waitemata	15	5	33.3%	5	0	0.0%	20	5	25.0%
Auckland	59	30	50.8%	21	8	38.1%	80	38	47.5%
Counties Manukau	93	33	35.5%	23	7	30.4%	116	40	34.5%
Waikato	17	12	70.6%	11	9	81.8%	28	21	75.0%
Lakes	9	8	88.9%	6	3	50.0%	15	11	73.3%
Bay of Plenty	17	8	47.1%	4	3	75.0%	21	11	52.4%
<i>Tairāwhiti</i>									
Taranaki	7	1	14.3%	7	7	100.0%	14	8	57.1%
Hawke's Bay	7	0	0.0%	7	1	14.3%	14	1	7.1%
Whanganui	4	0	0.0%	3	1	33.3%	7	1	14.3%
MidCentral	2	2	100.0%	1	1	100.0%	3	3	100.0%
Hutt Valley	11	11	100.0%	4	4	100.0%	15	15	100.0%
Capital & Coast	6	3	50.0%	6	0	0.0%	12	3	25.0%
Wairarapa	4	1	25.0%	0	0	0.0%	4	1	25.0%
Nelson Marlborough	8	8	100.0%	10	8	80.0%	18	16	88.9%
West Coast	1	0	0.0%	0	0	0.0%	1	0	0.0%
Canterbury	37	15	40.5%	17	7	41.2%	54	22	40.7%
South Canterbury	2	2	100.0%	1	0	0.0%	3	2	66.7%
Southern	10	5	50.0%	9	7	77.8%	19	12	63.2%
Total	331	154	46.5%	143	69	48.3%	474	223	47.0%

Table 27 Commenced audiology assessment by ethnicity, October 2010 to March 2011

Ethnicity	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology
Maori	166	75	45.2%
Pacific	75	32	42.7%
Asian	53	20	37.7%
European	164	85	51.8%
Not stated/Unspecified	7	5	71.4%
Other ethnic groups	9	6	66.7%
Total	474	223	47.0%

Table 28 Commenced audiology assessment by decile, October 2010 to March 2011

Decile	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology
Decile 1-2	41	21	51.2%
Decile 3-4	56	29	51.8%
Decile 5-6	81	44	54.3%
Decile 7-8	110	51	46.4%
Decile 9-10	182	78	42.9%
Unknown	4	0	0.0%
Total	474	223	47.0%

Table 29 Commenced audiology assessment by birth location, October 2010 to March 2011

Birth Location	Refer for Audiology	Commenced Audiology Assessment	Commenced Audiology Assessment to Refer for Audiology
Public Hospital	462	220	47.6%
Private Hospital	3	1	33.3%
Home	4	1	25.0%
Other location	5	1	20.0%
Total	474	223	47.0%

RECOMMENDATIONS ON AUDIOLOGY ASSESSMENT STARTED

7. The National Screening Unit to follow-up with Hawke's Bay DHB to encourage them to send in their audiology forms.
8. The National Screening Unit to consider if reporting on the age of starting audiology is possible.

1.7 Audiology assessment completed
<p>Description</p> <ol style="list-style-type: none"> 1. The proportion of eligible newborns that are referred from screening who complete the audiology assessment. 2. The number of eligible newborns that are referred from screening who complete the audiology assessment by 3 months of age.
<p>Relevant Outcome</p> <p>Eligible newborns that do not pass hearing screening should have the initial audiological assessment completed by 3 months of age.</p>
<p>Rationale</p> <p>The audiology assessment by 3 months of age is a core goal for the UNHSEIP (ie the 3 in the 1-3-6 goals) and is based on international benchmarks.</p> <p>There is, however, some variation with regards to international benchmarks as to whether the 3 months refers to audiology assessment <i>completed</i> or <i>started</i>. After discussion by the Monitoring, Policy and Indicators working group it was agreed that that completion of audiology assessment by 3 months of age should be the desired outcome.</p> <p>Providers should strive to complete the audiology assessment by 3 months of age for all newborns requiring this service.</p> <p>DHB and programme performance data for this indicator will be regularly reviewed, particularly from an inequalities perspective. The programme will work collaboratively with DHBs to improve performance as well as negotiating specific percentage targets if required.</p>
<p>Methodology</p> <p><i>Quantitative indicator 1.7a</i></p> <p>Numerator: Number of eligible newborns who complete audiology assessment.</p> <p>Denominator: Number of eligible newborns who commence audiology assessment.</p> <p><i>Quantitative indicator 1.7b</i></p> <p>Numerator: Number of eligible newborns who complete audiology assessment by 3 months of age.</p> <p>Denominator: Number of eligible newborns who complete audiology assessment.</p>

3.10. Audiology Assessment Completed

The number of audiology assessments completed and started is the same, as shown in Table 30. This is because audiology forms are sent to the NSU only when the audiology assessment is complete. As shown in Table 31, data on audiology assessment completion by three months is variable, although with small numbers in many DHB's it is not useful to make any strong statements. Figure 10 below shows the percentage of babies who completed audiology along with the percent of those that completed who did so by 3 months.

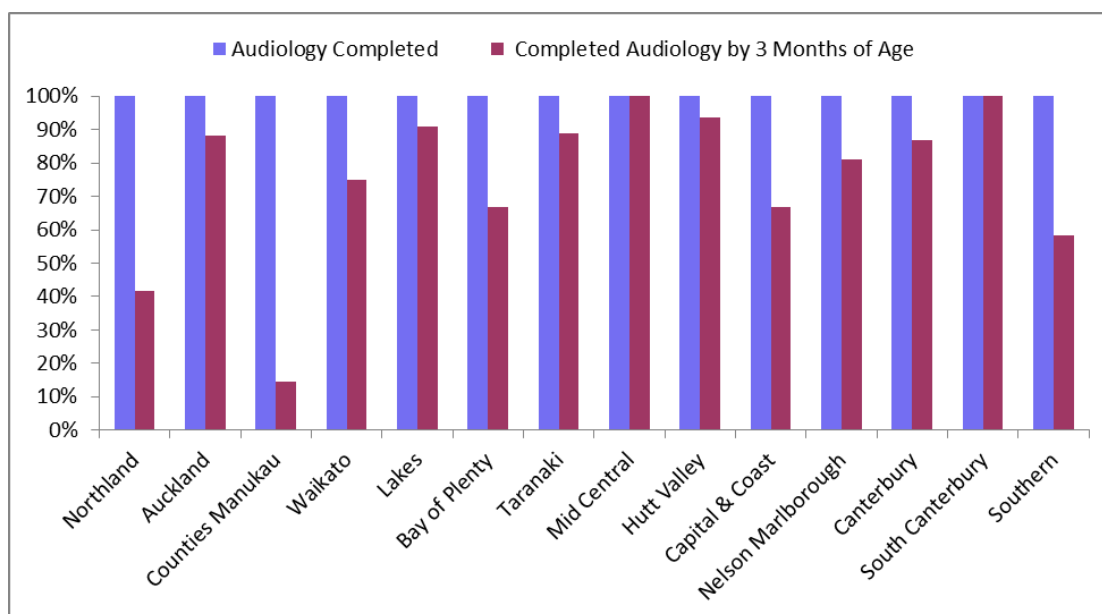


Figure 10 Proportion of babies who complete audiology, and the proportion who had completed audiology by the time they were three months of age October 2010 to March 2011, by DHB of Audiology

Figure 11 shows the range of completion times for babies who underwent audiology assessment. There were 6 babies who took longer than 30 weeks, with two taking between 54 and 56 weeks. .

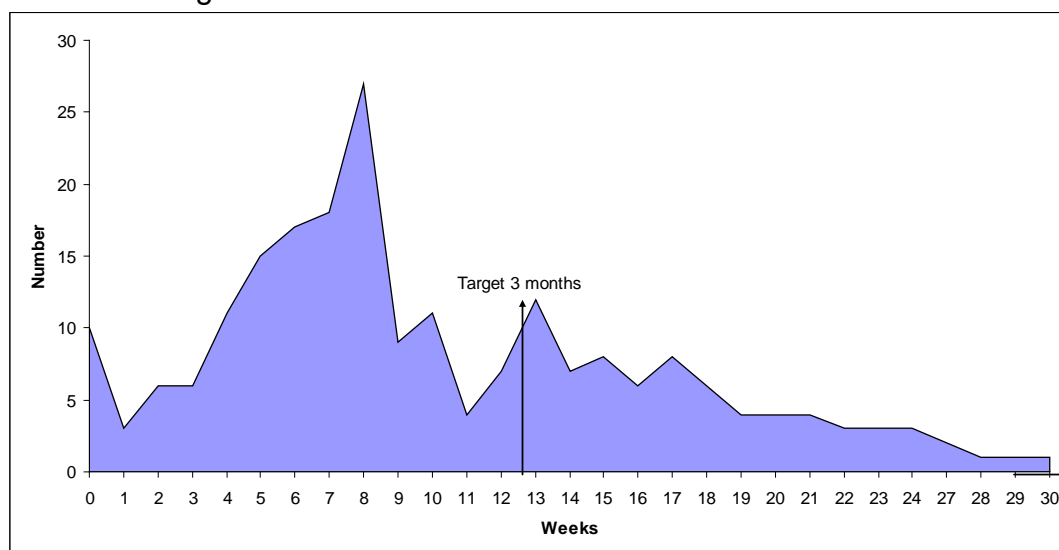


Figure 11 Audiology completion times, October 2010 to March 2011

Table 30 Audiology Completed by DHB, October 2010 to March 2011

DHB of Audiology	Well Baby			NICU/SCBU			Total		
	Audiology Commenced	Audiology Completed	% Completed that commenced	Audiology Commenced	Audiology Completed	% Completed that commenced	Audiology Commenced	Audiology Completed	% Completed that commenced
Northland	9	9	100.0%	3	3	100.0%	12	12	100.0%
<i>Waitemata</i>									
Auckland	34	34	100.0%	8	8	100.0%	42	42	100.0%
Counties Manukau	34	34	100.0%	7	7	100.0%	41	41	100.0%
Waikato	15	15	100.0%	9	9	100.0%	24	24	100.0%
Lakes	8	8	100.0%	3	3	100.0%	11	11	100.0%
Bay of Plenty	6	6	100.0%	3	3	100.0%	9	9	100.0%
<i>Tairāwhiti</i>									
Taranaki	1	1	100.0%	8	8	100.0%	9	9	100.0%
<i>Hawke's Bay</i>									
<i>Whanganui</i>									
MidCentral	2	2	100.0%	1	1	100.0%	3	3	100.0%
Hutt Valley	12	12	100.0%	4	4	100.0%	16	16	100.0%
Capital & Coast	3	3	100.0%	0	0	-	3	3	100.0%
<i>Wairarapa</i>									
Nelson Marlborough	8	8	100.0%	8	8	100.0%	16	16	100.0%
<i>West Coast</i>									
Canterbury	15	15	100.0%	8	8	100.0%	23	23	100.0%
South Canterbury	2	2	100.0%	0	0	-	2	2	100.0%
Southern	5	5	100.0%	7	7	100.0%	12	12	100.0%
Total	154	154	100.0%	69	69	100.0%	223	223	100.0%

Table 31 Audiology Completed by three months of age by DHB October 2010 to March 2011

DHB of Audiology	Well Baby			NICU/SCBU			Total		
	Audiology Completed	Completed Audiology by 3 months of age	% of completed by 3 month of age	Audiology Completed	Completed Audiology by 3 months of age	% of completed by 3 month of age	Audiology Completed	Completed Audiology by 3 months of age	% of completed by 3 month of age
Northland	9	4	44.4%	3	1	33.3%	12	5	41.7%
<i>Waitemata</i>									
Auckland	34	30	88.2%	8	7	87.5%	42	37	88.1%
Counties Manukau	34	4	11.8%	7	2	28.6%	41	6	14.6%
Waikato	15	9	60.0%	9	9	100.0%	24	18	75.0%
Lakes	8	7	87.5%	3	3	100.0%	11	10	90.9%
Bay of Plenty	6	4	66.7%	3	2	66.7%	9	6	66.7%
<i>Tairāwhiti</i>									
Taranaki	1	1	100.0%	8	7	87.5%	9	8	88.9%
<i>Hawke's Bay</i>									
<i>Whanganui</i>									
MidCentral	2	2	100.0%	1	1	100.0%	3	3	100.0%
Hutt Valley	12	11	91.7%	4	4	100.0%	16	15	93.8%
Capital & Coast	3	2	66.7%	0	0	-	3	2	66.7%
<i>Wairarapa</i>									
Nelson Marlborough	8	6	75.0%	8	7	87.5%	16	13	81.3%
<i>West Coast</i>									
Canterbury	15	13	86.7%	8	7	87.5%	23	20	87.0%
South Canterbury	2	2	100.0%	0	0	-	2	2	100.0%
Southern	5	1	20.0%	7	6	85.7%	12	7	58.3%
Total	154	96	62.3%	69	56	81.2%	223	152	68.2%

Factors such as ethnicity, deprivation status and birth location may influence completion rates, and/or the time taken for the completion for newborn hearing screening. The information presented in Tables 32-34 indicates some difference by ethnicity and decile. Namely the percentage of Pacific and Maori babies that complete by 3 months and those in decile groups 9-10 appears to be lower than for others.

Table 32 Audiology Screening Completed by Ethnicity, October 2010 to March 2011

Ethnicity	Audiology Commenced	Audiology Completed	Completed Audiology by 3 months of age	% Completed that commenced	% commenced that completed by 3 month of age
Maori	75	75	43	100.0%	57.3%
Pacific Island	32	32	19	100.0%	59.4%
Asian	20	20	13	100.0%	65.0%
European	85	85	68	100.0%	80.0%
Not Stated/Unspecified	5	5	4	100.0%	80.0%
Other ethnic groups	6	6	5	100.0%	83.3%
Total	223	223	152	100.0%	68.2%

Table 33 Audiology Screening Completed by Deprivation, October 2010 to March 2011

Decile	Audiology Commenced	Audiology Completed	Completed Audiology by 3 months of age	% Completed that commenced	% commenced that completed by 3 month of age
Decile 1-2	21	21	14	100.0%	66.7%
Decile 3-4	29	29	24	100.0%	82.8%
Decile 5-6	44	44	34	100.0%	77.3%
Decile 7-8	51	51	42	100.0%	82.4%
Decile 9-10	78	78	38	100.0%	48.7%
Total	223	223	152	100.0%	68.2%

Table 34 Audiology Screening Completed by Birth Location, October 2010 to March 2011

Birth Location	Audiology Commenced	Audiology Completed	Completed Audiology by 3 months of age	% Completed that commenced	% commenced that completed by 3 month of age
Public Hospital	220	220	150	100.0%	68.2%
Private Hospital	1	1	0	100.0%	0.0%
Home	1	1	1	100.0%	100.0%
Other location	1	1	1	100.0%	100.0%
Total	223	223	152	100.0%	68.2%

RECOMMENDATIONS ON AUDIOLOGY ASSESSMENT COMPLETED

- 8.** The National Screening Unit to follow-up with Counties Manukau DHB about their audiology completed by three months figures.

1.8 Hearing loss detected by audiology assessment

Description

This indicator reports the numbers/rate for permanent childhood hearing loss and classifies the loss into several categories (ie by severity and type of hearing loss).

Relevant Outcome

No minimum hearing loss detection outcome target for UNHSEIP at present (see rationale section). To be reviewed with subsequent reviews of Monitoring Framework.

Rationale

New Zealand Deafness Notification data on childhood hearing loss suggests that New Zealand's incidence of hearing loss is similar to international reports. However, there are some limitations to the data and the true extent of congenital hearing loss in New Zealand is currently unknown.

The New Zealand Deafness Notification data also suggests that Māori children are disproportionately represented in deafness notifications and are more likely to have mild hearing losses than other ethnic groups. Again, there are some uncertainties regarding these data.

Collecting detailed data on hearing loss will enable more accurate analyses, including assessing if there are inequalities in hearing loss with regards to ethnicity or deprivation status.

Most international programmes do not have a minimum detection of hearing loss rate. The potential requirement for a minimum detection rate will be revisited with subsequent reviews of the Monitoring Framework.

Methodology

Indicator 1.8

Numerator: Number of eligible newborns who had permanent childhood hearing loss confirmed by audiology assessment (and were referred through the UNHSEIP).

Denominator: Number of eligible newborns who completed audiology assessment (and were referred through the UNHSEIP).

3.11. Permanent/Congenital Hearing Loss Detected By Audiology Assessment

For this indicator, permanent/congenital hearing loss is defined by an audiology outcome of either 'Auditory Neuropathy' or 'Sensorineural' in at least one ear. Table 35 below summaries the results for the 16 babies identified within this indicator.

Table 35 Audiology Test Results by DHB October 2010 to March 2011

DHB of Audiology	Right Test Result	Left Test Result	Number of babies
Auckland	Sensorineural	Normal	2
Waikato	Normal	Sensorineural	1
Waikato	Sensorineural	Normal	1
Waikato	Sensorineural	Sensorineural	2
Lakes	Sensorineural	Sensorineural	1
Bay of Plenty	Auditory Neuropathy	Auditory Neuropathy	1
Bay of Plenty	Sensorineural	Sensorineural	2
Taranaki	Sensorineural	Sensorineural	1
Hutt Valley	Auditory Neuropathy	Auditory Neuropathy	1
Hutt Valley	Sensorineural	Sensorineural	1
Nelson Marlborough	Sensorineural	Sensorineural	2
Canterbury	Sensorineural	Sensorineural	1
Total			16

Table 36 below indicates that 7.2% of babies that completed an audiology assessment had a permanent/congenital hearing loss detected.

Tables 37 to 39 outline the data by ethnicity, decile and birth location but again due to small numbers these are included as background information only. The numbers are too small to draw any conclusions.

Table 36 Permanent/Congenital Hearing Loss by DHB and Birth Location, October 2010 to March 2011

DHB of Audiology	Well Baby			NICU/SCBU			Total		
	Completed audiology	Permanent/Congenital hearing loss	Permanent hearing loss to completed audiology	Completed audiology	Permanent/Congenital hearing loss	Permanent hearing loss to completed audiology	Completed audiology	Permanent/Congenital hearing loss	Permanent hearing loss to completed audiology
Northland	9	0	0.0%	3	0	0.0%	12	0	0.0%
<i>Waitemata</i>									
Auckland	34	2	5.9%	8	0	0.0%	42	2	4.8%
Counties Manukau	34	0	0.0%	7	0	0.0%	41	0	0.0%
Waikato	15	2	13.3%	9	2	22.2%	24	4	16.7%
Lakes	8	1	12.5%	3	0	0.0%	11	1	9.1%
Bay of Plenty	6	2	33.3%	3	1	33.3%	9	3	33.3%
<i>Tairāwhiti</i>									
Taranaki	1	1	100.0%	8	0	0.0%	9	1	11.1%
<i>Hawke's Bay</i>									
<i>Whanganui</i>									
MidCentral	2	0	0.0%	1	0	0.0%	3	0	0.0%
Hutt Valley	12	1	8.3%	4	1	25.0%	16	2	12.5%
Capital & Coast	3	0	0.0%	0	0	-	3	0	0.0%
<i>Wairarapa</i>									
Nelson Marlborough	8	1	12.5%	8	1	12.5%	16	2	12.5%
<i>West Coast</i>									
Canterbury	15	1	6.7%	8	0	0.0%	23	1	4.3%
South Canterbury	2	0	0.0%	0	0	0.0%	2	0	0.0%
Southern	5	0	0.0%	7	0	0.0%	12	0	0.0%
Total	154	11	7.1%	69	5	7.2%	223	16	7.2%

Table 37 Permanent/Congenital Hearing Loss by Ethnicity, October 2010 to March 2011

Ethnicity	Completed audiology	Permanent/ Congenital hearing loss	Permanent hearing loss to completed audiology
Maori	75	7	9.3%
Pacific	32	0	0.0%
Asian	20	2	10.0%
European	85	6	7.1%
Not Stated/Unspecified	5	1	20.0%
Other ethnic groups	6	0	0.0%
Total	223	16	7.2%

Table 38 Permanent/Congenital Hearing Loss by Deprivation, October 2010 to March 2011

Decile	Completed audiology	Permanent/ Congenital hearing loss	Permanent hearing loss to completed audiology
Decile 1-2	21	1	4.8%
Decile 3-4	29	2	6.9%
Decile 5-6	44	2	4.5%
Decile 7-8	51	4	7.8%
Decile 9-10	78	7	9.0%
Total	223	16	7.2%

Table 39 Permanent/Congenital Hearing Loss by Birth Location, October 2010 to March 2011

Birth Location	Completed audiology	Permanent/ Congenital hearing loss	Permanent hearing loss to completed audiology
Public Hospital	220	16	7.3%
Private Hospital	1	0	0.0%
Home	1	0	0.0%
Other location	1	0	0.0%
Total	223	16	7.2%

RECOMMENDATIONS ON HEARING LOSS DETECTED BY AUDIOLOGY ASSESSMENT

There were no recommendations from the Advisory Group on Hearing Loss Detected by Audiology Assessment.

3.12. Newborns with Conductive or Mixed Hearing Loss

This indicator has been used to capture all the outcomes from audiology which were not 'Auditory Neuropathy' or 'Sensorineural' in at least one ear, or "Normal". In this early stage of reporting audiology, all information will be presented, however over time, some amalgamation of categories may be recommended. Table 40 summarises the audiology results for these 57 babies.

Table 40 Audiology Test Results by DHB of Audiology October 2010 to March 2011

DHB of Audiology	Right Test Result	Left Test Result	Number of Babies
Northland	Conductive Temporary	Conductive Temporary	4
Northland	Conductive Temporary	Normal	2
Northland	Normal	Conductive Temporary	1
Auckland	Conductive Permanent	Normal	1
Auckland	Conductive Temporary	Conductive Temporary	6
Auckland	Conductive Temporary	Normal	3
Auckland	Normal	Conductive Temporary	3
Counties Manukau	Conductive Temporary	Conductive Temporary	2
Counties Manukau	Conductive Temporary	Normal	1
Counties Manukau	Normal	Conductive Temporary	1
Waikato	Conductive Temporary	Conductive Temporary	3
Waikato	Conductive Temporary	Normal	1
Waikato	Mixed	Mixed	1
Waikato	Normal	Conductive Temporary	2
Waikato	Not Yet Determined	Conductive Temporary	1
Lakes	Conductive Temporary	Normal	1
Bay of Plenty	Conductive Permanent	Normal	1
Bay of Plenty	Normal	Conductive Temporary	1
Taranaki	Normal	Conductive Temporary	1
MidCentral	Conductive Temporary	Conductive Temporary	2
Hutt Valley	Conductive Temporary	Conductive Temporary	3
Hutt Valley	Mixed	Mixed	1
Hutt Valley	Normal	Conductive Permanent	1
Hutt Valley	Normal	Conductive Temporary	1
Canterbury	Conductive Temporary	Conductive Temporary	3
Canterbury	Conductive Temporary	Normal	3
Southern	Conductive Permanent	Normal	1
Southern	Conductive Temporary	Conductive Temporary	3
Southern	Conductive Temporary	Normal	2
Southern	Normal	Conductive Temporary	1
Total			57

Table 41 identifies 25.6% of babies that completed audiology assessment had some kind of hearing loss, excluding sensorineural and auditory neuropathy. As with other data in the audiology section of this report numbers are too

small to make and clear comments though it appears there is little difference in the total rates for NICU/SCBU and all babies.

No strong differences appear around ethnicity, deprivation or birth location Tables 42 to 44.

RECOMMENDATIONS ON CONDUCTIVE OR MIXED HEARING LOSS

There were no recommendations from the Advisory Group on Conductive or Mixed Hearing Loss.

Table 41 Conductive or Mixed Hearing Loss by DHB, October 2010 to March 2011

DHB of Audiology	Well Baby			NICU/SCBU			Total		
	Completed audiology	Conductive / Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology	Completed audiology	Conductive/ Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology	Completed audiology	Conductive / Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology
Northland	9	6	66.7%	3	1	33.3%	12	7	58.3%
<i>Waitemata</i>									
Auckland	34	11	32.4%	8	2	25.0%	42	13	31.0%
Counties Manukau	34	4	11.8%	7	0	0.0%	41	4	9.8%
Waikato	15	6	40.0%	9	2	22.2%	24	8	33.3%
Lakes	8	1	12.5%	3	0	0.0%	11	1	9.1%
Bay of Plenty	6	2	33.3%	3	0	0.0%	9	2	22.2%
<i>Tairāwhiti</i>									
Taranaki	1	0	0.0%	8	1	12.5%	9	1	11.1%
<i>Hawke's Bay</i>									
<i>Whanganui</i>									
MidCentral	2	1	50.0%	1	1	100.0%	3	2	66.7%
Hutt Valley	12	5	41.7%	4	1	25.0%	16	6	37.5%
Capital & Coast	3	0	0.0%	0	0	-	3	0	0.0%
<i>Wairarapa</i>									
Nelson Marlborough	8	0	0.0%	8	0	0.0%	16	0	0.0%
<i>West Coast</i>									
Canterbury	15	4	26.7%	8	2	25.0%	23	6	26.1%
South Canterbury	2	0	0.0%	0	0	-	2	0	0.0%
Southern	5	2	40.0%	7	5	71.4%	12	7	58.3%
Total	154	42	27.3%	69	15	21.7%	223	57	25.6%

Table 42 Conductive or Mixed Hearing Loss by Ethnicity, October 2010 to March 2011

Ethnicity	Completed audiology	Conductive/ Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology
Maori	75	22	29.3%
Pacific	32	6	18.8%
Asian	20	2	10.0%
European	85	24	28.2%
Not Stated/Unspecified	5	0	0.0%
Other ethnic groups	6	3	50.0%
Total	223	57	25.6%

Table 43 Conductive or Mixed Hearing Loss by Deprivation, October 2010 to March 2011

Decile	Completed audiology	Conductive/ Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology
Decile 1-2	21	5	23.8%
Decile 3-4	29	8	27.6%
Decile 5-6	44	14	31.8%
Decile 7-8	51	12	23.5%
Decile 9-10	78	18	23.1%
Total	223	57	25.6%

Table 44 Conductive or Mixed Hearing Loss by Birth Location, October 2010 to March 2011

Birth Location	Completed audiology	Conductive/ Mixed hearing Loss	Conductive / Mixed hearing loss to completed audiology
Public Hospital	220	56	25.5%
Private Hospital	1	1	100.0%
Home	1	0	0.0%
Other Location	1	0	0.0%
Grand Total	223	57	25.6%

1.9 Age at identification of hearing loss
<p>Description</p> <p>The average age at which hearing loss is confirmed by audiology assessment.</p>
<p>Relevant Outcome</p> <p>The relevant outcome is the UNHSEIP aim of lowering the age at which hearing loss is detected to 3 months of age or less.</p>
<p>Rationale</p> <p>With newborn hearing screening, the internationally recommended age for the diagnosis of hearing loss is three months, with intervention commencing by six months.</p> <p>While New Zealand's incidence of hearing loss is likely to be similar to international reports, New Zealand Deafness Notification data (National Audiology Centre, 2005; 2007) showed that the age of identification has been late, particularly when compared with countries that have introduced newborn hearing screening programmes.</p> <p>Data from the 2004 New Zealand Deafness Notification Database indicated that only 6% of babies with hearing loss are identified by six months of age, and that the average age of detection was nearly four years of age (National Audiology Centre, 2005). There is also evidence of inequalities with the identification of hearing loss in Māori and Pacific children occurring even later.</p> <p>This indicator will assess if the UNHSEIP is achieving its aim of lowering the age at which hearing loss is detected to 3 months of age or less.</p>
<p>Methodology</p> <p><i>Indicator 1.9</i></p> <p>Average age of eligible newborns (in weeks) at which hearing loss was confirmed by audiology assessment.</p>

3.13. Age at Identification of Hearing Loss

The aim of the UNHSEIP is to have hearing loss detected by the time the baby is 3 months of age. As was seen in Table 31, around 68 percent of those babies that completed audiology in this period had their audiology assessment completed by three months of age. Table 45 below identifies how the age of identification is spread across months, based on the corrected age of the baby.

Table 45 Count of average age at identification of hearing loss, by DHB and Protocol, October 2010 to March 2011

DHB of Audiology test	Well Baby				NICU/SCBU				All Babies				Total
	By 4 weeks	By 8 weeks	By 12 weeks	Over 12 weeks	By 4 weeks	By 8 weeks	By 12 weeks	Over 12 weeks	By 4 weeks	By 8 weeks	By 12 weeks	Over 12 weeks	
Northland	0	1	2	3	0	0	0	1	0	1	2	4	7
Auckland	1	8	2	2	1	1	0	0	2	9	2	2	15
Counties Manukau	0	0	0	4	0	0	0	0	0	0	0	4	4
Waikato	1	2	0	5	0	3	1	0	1	5	1	5	12
Lakes	1	1	0	0	0	0	0	0	1	1	0	0	2
Bay of Plenty	0	2	0	2	0	1	0	0	0	3	0	0	5
Taranaki	1	0	0	0	0	1	0	0	0	1	0	0	2
MidCentral	1	0	0	0	0	1	0	0	1	1	0	0	2
Hutt Valley	1	5	0	0	0	2	0	0	1	7	0	0	8
Nelson Marlborough	0	0	1	0	0	1	0	0	0	1	1	0	2
Canterbury	0	2	2	1	0	1	1	0	0	3	3	1	7
Southern	0	0	0	2	1	3	1	0	1	3	1	2	7
Total	6	21	7	19	2	14	3	1	8	35	10	20	73

RECOMMENDATIONS ON AGE AT HEARING LOSS DETECTED

There were no recommendations from the Advisory Group on Age at Hearing Loss Detected.

4. Indicators not yet included in monitoring

Comment: this will be possible to report in the future, but the data is not yet available

1.10 Age at first assistive hearing device
Description The age at which the first assistive hearing device ² is fitted.
Relevant Outcome No outcome target for the programme at present (see rationale section).
Rationale <p>“Initiation of appropriate medical and audiological services; and Early Intervention education services by 6 months of age” is a core goal of UNHSEIP: ie the 6 part of the 1-3-6 goals.</p> <p>It is common for international programmes to monitor factors around hearing aid fitting, cochlear implants and follow-up.</p> <p>This indicator will be reviewed as data are collected, as well as, consideration of other potential medical indicators and the introduction of specific age/percentage outcome targets.</p>
Methodology <p>Indicator 1.10a – All Devices</p> <p>Average age of eligible children at which the first assistive hearing device was fitted.</p> <p>Indicator 1.10b – Hearing Aids</p> <p>Average age of eligible children at which a hearing aid was first fitted.</p> <p>Indicator 1.10c – Cochlear Implants</p> <p>Average age of eligible children at which a cochlear implant was first fitted³.</p>

² An assistive hearing device includes: hearing aids, cochlear implants, or FM amplification systems.

³ It is expected that the average age for cochlear implants (Indicator 10c) would be much later than the average age for hearing devices (Indicator 10b).

1.12 Newborns with mild or unilateral hearing loss	
Description	The number of newborns with confirmed mild or unilateral hearing loss by audiology assessment.
Relevant Outcome	Eligible newborns with hearing loss detected through the UNHSEIP, but who do not require medical intervention or who are not eligible for Early Intervention education services (ie children with mild or unilateral hearing loss), need to be followed-up in the long-term.
rationale	The UNHESIP needs to monitor the number of children who have had hearing loss confirmed by audiology assessment, but who did not require immediate medical intervention and who did not meet the eligibility criteria for Early Intervention services (ie children with mild or unilateral hearing loss).
Methodology	<p><i>Indicator 1.12</i></p> <p>Numerator: Number of newborns who had hearing loss confirmed by audiology assessment, but did not require medical intervention or meet the eligibility criteria for Early Intervention services.</p> <p>Denominator: Number of newborns who completed audiology assessment (and were referred through the UNHSEIP).</p>

Indicators for the Early Intervention Education Service

This section outlines the draft Early Intervention education service measures, developed by Group Special Education from the Ministry of Education.

2.1 Responsiveness following referral to EI education services

Description

The time taken for the Early Intervention education service to attempt to contact the families and whānau of children eligible for, and referred to, the service following diagnosis through Universal Newborn Hearing Screening (UNHS).

Relevant Outcome (Target)

Early Intervention staff will attempt to contact 95% of families and whānau of children eligible for, and referred to, the Early Intervention education service following diagnosis through UNHS within two full working days of receipt of referral at a district MoE Special Education office.

Rationale

The MoE Special Education Service Model for children with hearing loss diagnosed following newborn hearing screening states that two working days is the desired protocol.

The target is worded as “attempt to contact” as despite the best efforts of staff, a family or whānau may be away from their usual place of residence or not answering their phone during these first 2 days. It is important that the efforts of staff to follow the protocol is measured, not the availability of families and whānau.

Two working days has been chosen rather than one to reduce the impact of factors beyond the control of staff on the indicator, for example, sickness, attendance at professional development events and the considerable out-of-office time involved in delivering a home and school-based service over a sometimes large geographic area.

Some families and whānau do not have access to telephones, cellphones, fax or email. Nationally, 2% of families and whānau do not have access to telecommunications. In some districts this is higher, for example, 4.9% of families and whānau in the Far North and 4% of families and whānau in Gisborne. In these instances, Early Intervention staff will attempt to contact families and whānau by letter or by visiting the home.

Methodology

Indicator 2.1

Numerator: Number of families and whānau of children eligible for, and referred to, the Early Intervention education service (through

UNHS) who staff attempt to contact within two full working days of receipt of referral at a district MoE Special Education office.

Denominator: Number of families and whānau of children eligible for, and referred to, the Early Intervention education service (through UNHS).

Notes:

- Staff are required to record and date the attempts made to contact the families and whānau of children referred following diagnosis from the screening programme. This information is recorded in the individual child's file and on the district UNHSEIP data sheet.
- This data will be broken down by ethnicity to allow progress toward reducing inequalities to be assessed.
- When the target is not met, staff will be asked to report the reasons why. This information will be used to inform the refinement of the Monitoring Framework and inform service delivery protocols and practices.

2.2 Engagement in EI education service

DESCRIPTION

The time taken for children eligible for, and referred to, the Early Intervention education service following diagnosis (through UNHS) to be enrolled in Early Intervention education services.

RELEVANT OUTCOMES (TARGETS)

Outcome One - 90% of children referred to, and eligible for, the Early Intervention education service will have begun receiving a service by one month following the receipt of the referral in a district MoE Special Education office.

Outcome Two - 90% of children referred to the Early Intervention education service by 5 months of age, and eligible for a service, will have begun receiving a service by 6 months of age.

RATIONALE

The MoE Special Education Service Model for children with hearing loss diagnosed following newborn hearing screening states that on contacting the family or whānau, staff offer to visit them at home or to meet them at the information sharing appointment, depending on parental preference. Initial informed consent is then obtained from the family or whānau. Once consent is given, the family or whānau are considered to be in receipt of Early Intervention services.

A benchmark of 90% aligns with the JCIH 2007 Position Statement recommendation that 90% of infants who qualify for Part C have an IFSP (Individualized Family Service Plan) signed by their parents by 6 months of age.

Outcome one measures the timeliness with which all children diagnosed following screening are engaged in Early Intervention education services.

Outcome two is in accordance with the international standard of screening by 1 month of age, diagnosis by 3 months and intervention by 6 months. This allows us to compare our programme with overseas programmes which report on their success or otherwise of meeting the 1-3-6 standard.

METHODOLOGY

Indicator 2.2a

Numerator: Number of children eligible for, and referred to, the Early Intervention education service who began receiving a service by one month following receipt of the referral at a district MoE Special Education office.

Denominator: Number of children eligible for, and referred to, the Early Intervention education service following diagnosis through UNHS.

Indicator 2.2b

Numerator: Number of children under 5 months of age who were eligible for, and referred to, the Early Intervention education service who began receiving a service by 6 months of age.

Denominator: Number of children under 5 months of age eligible for, and referred to, the Early Intervention education service following diagnosis through UNHS.

NOTE:

This data would be broken down by ethnicity to allow progress toward reducing inequalities to be assessed.

2.3 Retention of children in the EI education service through the early childhood years

Description

The percentage of children referred to, and eligible for, the Early Intervention education service following UNHS who are still receiving a service at 3 years and at school entry.

Relevant Outcome

The percentage of children referred to, and eligible for, the Early Intervention education service following UNHS will still be receiving a service at 3 years and at school entry.

Rationale

This measure provides information about the percentage of children who enter the Early Intervention service following diagnosis who remain in the service through the foundation stage of communication development, birth to three years, and through to school entry.

Methodology

Indicator 2.3a

Numerator: Number of children referred to, and eligible for, the Early Intervention education service (through UNHS) still receiving a service at 3 years of age.

Denominator: Number of families and whānau of children eligible for, and referred to, the Early Intervention education service (through UNHS).

Indicator 2.3b

Numerator: Number of children referred to, and eligible for, the Early Intervention education service (through UNHS) still receiving a service at school entry.

Denominator: Number of families and whānau of children eligible for, and referred to, the Early Intervention education service (through UNHS).

NOTES:

Measuring this indicator presents a challenge to the MoE Special Education given its current information system. This system was set up to report on particular aspects of service delivery required by the organisation, and the above measure is different to those supported by current systems. MoE Special Education will investigate how this might be achieved, and if necessary, the wording of the retention measure may need to be altered to reflect the information we are able to retrieve from our information systems.

As the Early Intervention education service is a national service, families and

whānau moving within New Zealand are able to continue receiving service.

Most current families and whānau of children with hearing loss remain involved with the service throughout the early childhood and school years.

Interpretation of the data highlighted by this measure needs to be done so in a considered way. The reasons for withdrawal will be noted. For example, families and whānau may withdraw from the service because they are emigrating or because their child has age-appropriate development.