Universal Newborn Hearing Screening and Early Intervention Programme

Monitoring Framework

19 October 2015

Introduction

This framework outlines the indicators for monitoring the performance of the Universal Newborn Hearing Screening Programme (UNHSEIP). Regular monitoring against standard indicators helps to assess whether programme aims and objectives are being met and informs continuous quality improvement of all components of the programme pathway.

The UNHSEIP was implemented in all district health boards (DHB) over a three year period: 2007- 2010. The aim of the programme is:

> *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 programme, described as '1- 3- 6' goals, are an international benchmark in newborn screening programmes:

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

The programme is jointly overseen by the Ministries of Health and Education. The National Screening Unit (NSU) of the Ministry of Health has responsibility for screening, diagnosis of hearing loss and medical interventions, and the Ministry of Education has responsibility for Early Intervention education services.

This document updates the UNHSEIP Monitoring Framework, September 2009. Consistent with a maturing programme, the new framework shifts the focus of monitoring from the screening process to greater consideration of outcomes across the programme pathway and performance against international benchmarks. Indicators have been aligned with the change in the screening protocol to automated auditory brainstem response (aABR) screening only, commencing in some DHBs in 2015. The other major change impacting on UNHSEIP monitoring will be the introduction of the newborn hearing screening information management system (NHIMS), due to be implemented in DHBs in 2015 and 2016.

Monitoring responsibility and frequency

Monitoring of programme performance using indicators within this framework is undertaken by the Ministry of Health and Ministry of Education, at both national and service levels for each sector.

Annual UNHSEIP monitoring reports on key screening, audiology and early intervention education service indicators are published by the Ministry of Health. These reports are based on babies for whom screening was started within a calendar year, but include screening and audiology completion and education service data for these babies up to six months into the following year. Data are presented for the overall programme and as well as (depending on the indicator) by DHB, ethnicity, deprivation index and other subcategories. Some trend data is included.

UNHSEIP annual monitoring reports are reviewed in draft by a multidisciplinary advisory group who make recommendations to the NSU on quality improvements to

the programme. DHBs are also expected to use these reports as part of their internal quality assurance processes.

Monitoring against selected indicators is also routinely undertaken on a more frequent basis (quarterly and/or biannually) by DHBs and Ministry of Education (MOE) district services (as well as by the NSU). This ongoing monitoring enables the performance of various components of local programmes to be assessed in a timely way so that any issues can be addressed promptly.

Definitions

Completed audiology

A diagnosis has been documented for each ear following audiological assessment

Completed screen *= a final screening outcome has been achieved for the baby with either a 'pass' or 'refer diagnostic' outcome.*

Clear response

Screening test result = pass

Declined screening

Includes two categories:

Active declines - When a parent/guardian explicitly indicates, after an explanation of rationale and process, that they do not wish to proceed following an offer of newborn hearing screening for their newborn.

Disengaged - Where parents/guardians have neither consented nor explicitly declined but indicate they do not wish to be engaged in the programme.

DNA (screening)

Where confirmation (in person or via phone or text) of a screening appointment is received but the appointment is not kept. A baby is classified as a DNA after three attempts have been made for the family to attend a screening appointment by a range of means (attempts may be by letter, phone or text).

Hearing surveillance

The programme of hearing checks for babies who pass screening but are identified with one or more of a defined set of risk factors for late onset or progressive hearing loss.

Incomplete screen = *where a screen has not been able to be completed due to either*

- *three unsuccessful attempts*
- *an ear not tested (e.g. screener not able to get back within a shift to complete screening.*

Lost contact

Where there may have been an initial offer of or commencement of screening, but subsequently no response to letters or telephone calls and/or attempts to establish correct details have been unsuccessful (and documented).

No clear response *= the terminology used for communicating results of a screen to parents when either the test result is 'refer' or the screen is unable to be finished due to too many unsuccessful attempts.*

Permanent congenital hearing loss (PCHL)

Permanent, bilateral, unilateral sensory or permanent conductive hearing loss, including neural hearing loss (e.g. auditory neural spectrum disorder) of > 35 dB.

Refer diagnostic *= where a referral to audiology is indicated because the screening outcome on aABR2 is either 'refer' for one or both ears as shown on the screening device or is an 'incomplete screen' due to too many attempts.*

List of indicators

Table 1: List of indicators, monitoring service and frequency

Stage	Pathway	Indicator and sub-indicators	NSU annual monitoring reports	DHB quarterly reports
1. Screening	Participation	1.1. Newborn hearing screening offered	✓	✓
		1.2 Newborn hearing screening consents and declines	✓	✓
		1.3 Newborn hearing screening coverage a) Screening completed by 1 month *(1 month goal)*	✓	✓
		b) Screening completed	✓	✓
		c) Screening completed of those consented.	✓	✓
		1.4 Newborn hearing screening DNAs and lost contacts	✓	✓
	Outcomes of screening	1.5 Referral rate to audiology assessment	✓	✓
		1.6 Hearing surveillance rate a) Referral for surveillance rate	✓	✓
		b) Distribution of risk factors	✓	✓
	Screening performance	1.7 Second screening rates	✓	✓
		1.8 Positive predictive value of the screening test	✓	×
2. Audiology	Timeliness and completion	2.1 Audiology assessment timeliness a) Audiology appointments within 4 weeks of referral	×	✓
		b) Audiology assessment started	×	✓
		2.2 Audiology assessment completion a) Audiology assessment completion rate *(3 month goal)*	✓	✓
		b) PCHL diagnosed by 3 months	✓	✓
		2.3 Audiology not attended	✓	✓
	Outcomes of audiology	2.4 Hearing loss detected	✓	✓
		2.5 Outcome of hearing surveillance a) Hearing loss detected	✓	✓
		b) Referred for surveillance but not assessed	✓	✓
		2.6 Cases not identified from screening	✓	✓
	Audiology early intervention	2.7 Age at first assistive hearing device *(6 month goal)*	✓	✓

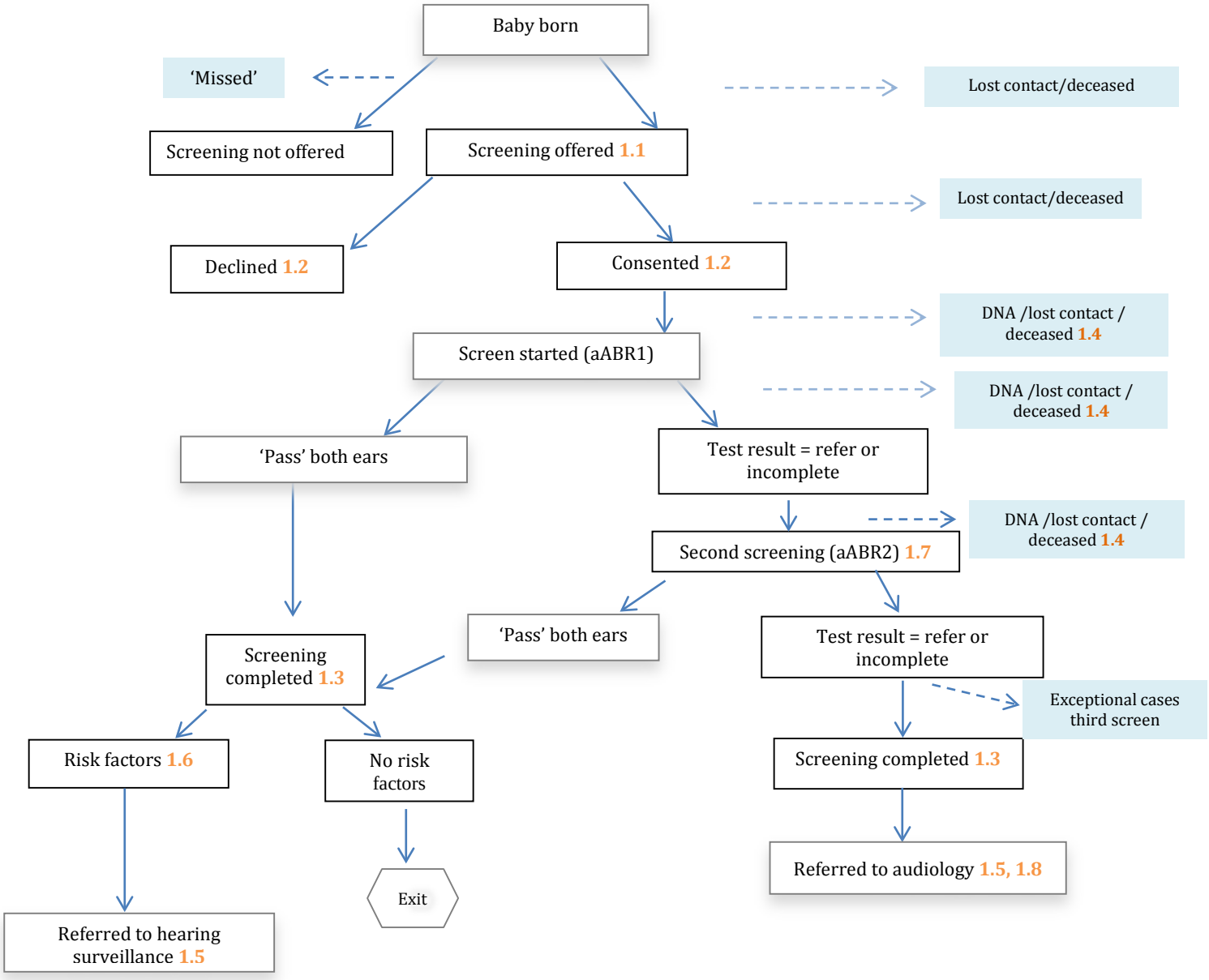
Stage	Pathway	Indicator and sub-indicators	NSU annual monitoring reports	DHB quarterly reports
4. Early Intervention (Ministry of Education)	Participation in Early Intervention	3.1 Contact with families following referral to Early Intervention education services	✓	Ministry of Education services
		3.2 Commencement of in Early Intervention education services (6 month goal)	✓	
		3.3 Continuation of Early Intervention education services	✓	
	Outcomes of early intervention	3.4 Outcome of early intervention	✓	

Key performance indicators

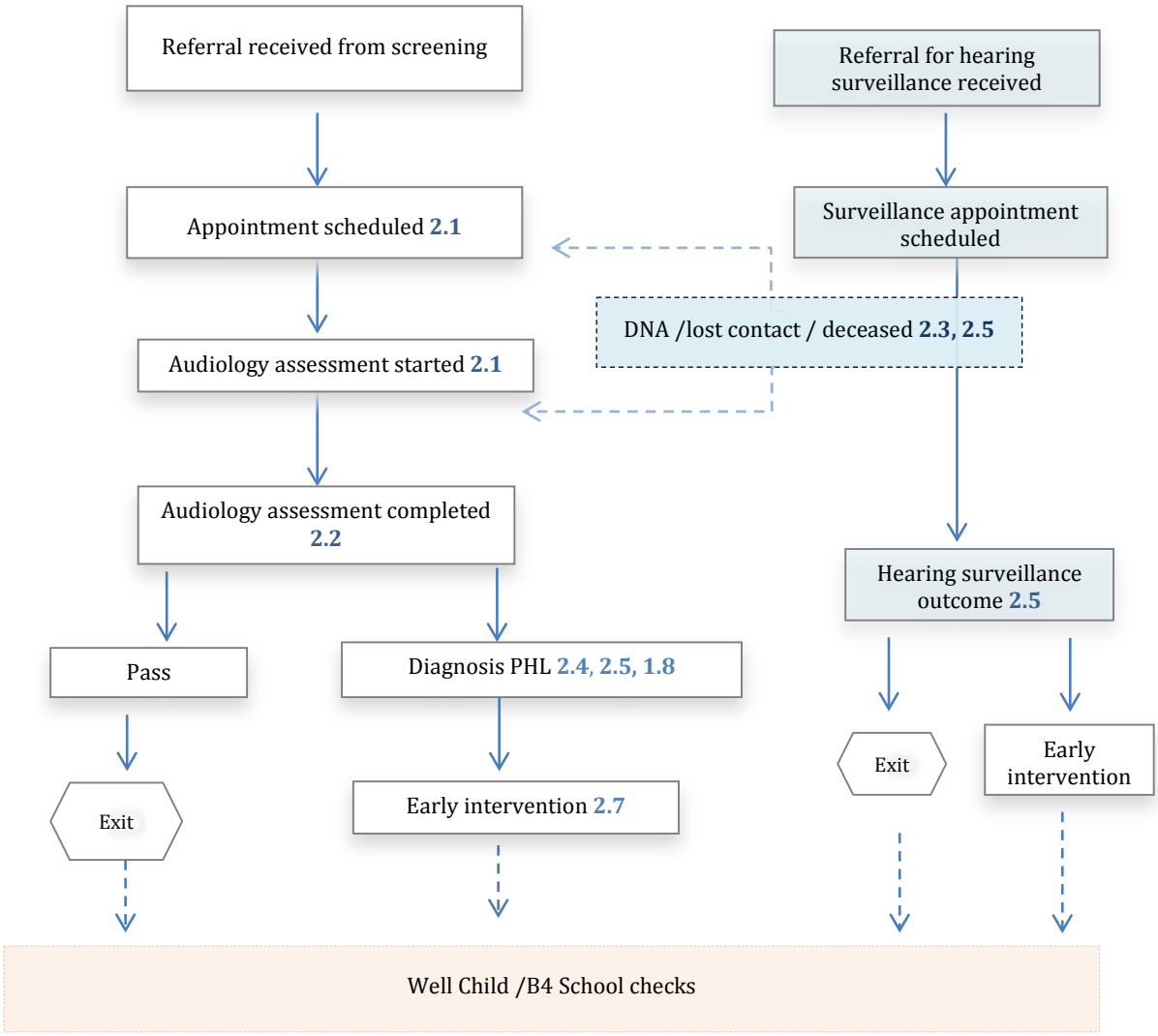
The following are considered to be key indicators for the programme.

1.3 Newborn hearing screening coverage
1.5 Referral rate to audiology
1.8 Positive predictive value of the screening test
2.2 Audiology assessment completion
2.4 Hearing loss detected
2.7 Age at first assistive hearing device
3.2 Commencement of Early Intervention education services

Screening steps and related indicators (numbered in orange)



Audiology steps and related indicators (numbered in blue)



1. Screening indicators

Indicators 1.1 – 1.5: Participation in newborn hearing screening

1.1 Newborn hearing screening offers
Description The number of babies whose parents/guardians were offered screening as a proportion of live births.
Rationale The UNHSEIP has a principle of 'universality' — all parents/guardians of newborn babies should be offered newborn hearing screening. A high screen offered rate should result in high screening coverage rate.
Frequency and stratifications ***NSU annual monitoring*** Reported by: • Total – ethnicity – deprivation status • DHB (of residence at birth) ***DHB monitoring*** Three monthly
Methodology ***Indicator 1.1*** Numerator: Number of babies whose parents/guardians were offered screening. Denominator: Number of live births
Notes There will be a very small number of babies ineligible for screening for medical reasons.
Target 100% of parents/guardians of newborn babies are offered screening.

1.2 Newborn hearing screening consents and declines

Description

1.2a The number of babies whose parents/guardians consented to screening as a proportion of those offered.

1.2b The number of babies whose parents/guardians declined screening as a proportion of those offered.

Rationale

Parents/guardians have the right to accept or decline hearing screening or any follow-up audiology services for their baby. The proportion of consents and declines is a measure of the reach and acceptability of the programme.

The proportion of newborn babies whose parents/guardians decline screening is expected to be very low and in keeping with international programmes. A high decline rate (for an individual DHB, for the programme relative to international figures, or for particular ethnic groups) will warrant further investigation.

Frequency and stratifications

Indicators 1.2 a and b

NSU annual monitoring

Reported by:

- Total
  - ethnicity
  - deprivation status
- DHB (of screening)
  - ethnicity

DHB monitoring

Three monthly

Methodology

Indicator 1.2a

Numerator: Number of babies whose parents/guardians consent to screening.

Denominator: Number of babies whose parents/guardians were offered screening.

Indicator 1.2b

Numerator: Number of babies whose parents/guardians declined screening. (NB: includes 'disengaged')

Denominator: Number of babies whose parents/guardians were offered screening.

Notes

Target

No targets set.

UNHSEIP monitoring reports 2010-2013 suggest an overall decline rate of 1- 1.5%

1.3 Newborn hearing screening coverage

Description

1.3a The number of babies for whom screening is completed by 1 month of age as a proportion of live births. (***1 month goal)***

1.3b The number of babies for whom screening is completed as a proportion of live births.

1.3c The number of babies for whom screening is completed as a proportion of those who have been consented.

Rationale

Coverage is an important performance indicator for screening programmes.

A core goal of the UNHSEIP is to screen babies by 1 month of age.

Indicator 1.3 c looks at the extent to which screening is actually completed for those parents/guardians who wish to have their baby's hearing screened.

Frequency and stratifications

Indicators 1.3 a, b, c

NSU annual monitoring

Reported by:

- Total
  - ethnicity
  - deprivation status
- DHB (of residence at birth)
  - ethnicity

DHB monitoring

Three monthly

Methodology

Indicator 1.3a

Numerator: Number of babies who complete screening by 1 month of age (where age has been corrected for prematurity[1]).

Denominator: Number of live births.

Indicator 1.3 b

Numerator: Number of babies who complete screening

Denominator: Number of live births.

Indicator 1.3 c

Numerator: Number of babies who complete screening

Denominator: Number of babies whose parents/guardians consent to screening.

[1] Ages are corrected for prematurity for all screening and audiology indicators.

Notes

Screening must be completed by 3 months of age (corrected for prematurity).

Target

Indicator 1.3a

≥95% of live births complete screening by 1 month of age (Joint Committee on Infant Hearing, 2000)[i].

Indicator 1.3 b

No target set.

Indicator 1.3 c

97%

1.4 Newborn hearing screening DNAs and lost contact

Description

The number of babies that do not complete screening due to not attending or the service losing contact as a proportion of all babies whose parents/guardians consented to screening.

Rationale

Monitoring the proportion of screens incomplete due to non-attendance at screening appointments or other loss to follow-up is an important measure of the success of the programme and the messages given to parents/guardians about screening.

Frequency and stratifications

NSU annual monitoring

Reported by:

- Total
  - ethnicity
  - deprivation status
- DHB (of screening)
- numbers with aABR1 completed.

DHB monitoring

Three monthly

Methodology

Numerator: Number of babies classified as DNAs or lost contact

Denominator: Number of consents

Notes

There will occasionally be an initial offer with subsequent loss of contact prior to either consent or decline. These babies are not covered by the denominator, however the numbers are very small.

Target

No target set.

Indicators 1.5 – 1.6: Outcomes of newborn hearing screening

1.5 Referral rate to audiology

Description

1.5a The number of babies that are referred from screening to audiology as a proportion of all completed screens.

1.5b The number of babies that are referred to audiology due to an incomplete screen as a proportion of all referrals to audiology.

Rationale

Along with positive predictive value, referral rate provides an indication of how well the screening test is functioning as a test of potential PCHL. An unnecessarily high number of newborns being referred for audiology assessment is associated with a high screening false positive rate, leading to unnecessary parental anxiety and a strain on audiology service capacity. Conversely, if the referral rate is too low, newborns with a hearing loss may be being missed (false negatives). High or low referral rates may indicate that further investigation or training of screeners is needed.

Frequency and stratifications

Indicator 1.5a

NSU annual monitoring

Reported by:

- Total
  - ethnicity
  - deprivation index
- Unilateral referral
- Bilateral referral
- Age of baby (days) on referral
- DHB (of screening).

DHB monitoring

Three monthly

Indicator 1.5b

NSU annual monitoring

Reported by:

- Total
- DHB of screening

Methodology

Indicator 1.5a8

Numerator: Number of babies who complete the screening process with a referral for audiology assessment (NB: does not include those who pass with a referral for surveillance).

Denominator:	The number of babies who complete screening.

Indicator 1.5b

Numerator:	Number of babies who do not complete the screening process and require referral to audiology
Denominator:	Number of babies who were referred for audiology assessment

Target

Indicator 1.5a

<2% of babies screened are referred for audiology assessment**.**

NB: The Joint Committee on Infant Hearing benchmark is < 4% of infants referred from screening to audiology, however based on past UNHSEIP monitoring reports and achievements of comparable programmes < 2% is appropriate for aABR screening.

Indicator 1.5b

No target set.

1.6 Hearing surveillance rate

Description

1.6a The number of babies who were referred to hearing surveillance as a proportion of all babies that completed screening with a pass result.

1.6b The distribution of risk factors for babies referred to hearing surveillance.

Rationale

There are a number of risk factors for developing late-onset or progressive hearing loss that require hearing surveillance. These include; craniofacial anomalies, in-utero infections such as cytomegalovirus (CMV) and rubella, and certain syndromes.

Children who pass newborn hearing screening but who have certain risk factors require follow-up to detect any subsequent development of hearing loss.

Frequency and stratifications

NSU annual monitoring

Indicator 1.6a

Reported by:

- Total
  - ethnicity
  - deprivation index
- DHB (of screening)

Indicator 1.6b

Reported by:

- Total

DHB monitoring

Three monthly

Methodology

Indicator 1.6a

Numerator:	Number of babies who passed screening, but have risk factors and are referred for surveillance
Denominator:	Number of babies who completed screening with a pass result.

Indicator 1.6b

Of babies referred for hearing surveillance, number and proportion of each risk factor.

Notes

Target

No target set.

Indicators 1.7 – 1.8: Performance of newborn hearing screening

1.7 First refer rates

Description

The number of babies referred from first to second aABR screening as a proportion of all babies that completed first aABR screens.

Rationale

First refer rates may be linked to screener performance, test performance or clinical factors. Rates of referral for a second screen help to assess impact on families, screener performance and costing of the programme.

Frequency and stratifications

NSU annual monitoring

Reported by:

- Total
- DHB of screening
- Number of exceptional case third screens by DHB

DHB monitoring

Three monthly

Methodology

Numerator: Number of babies who are referred for aABR2

Denominator: The number of babies who complete aABR1

Target

No target has been set.

Note: First refer rates in some comparable aABR programmes are reportedly approximately 6-7%[2]

[2] Young Futures, 2014 Review of Screening Regimes and Associated Devices.

1.8 Positive predictive value of the screening test

Description

The proportion of babies who are referred from screening and on audiology assessment are subsequently diagnosed with PCHL.

Rationale

Positive predictive value (PPV) is a measure of the performance of the screening test. It indicates the probability that in case of a referral from screening (due to not passing or incomplete test) the child actually has a significant permanent hearing loss. These data can also be used to calculate the number of false positives from screening.

If the PPV is high, there are few unnecessary referrals to audiology. If low, many children with no hearing loss will be referred for assessment, with associated costs and anxiety for families.

PPV should be interpreted in conjunction with 1.5: Refer rate to audiology.

Frequency and stratifications

NSU annual monitoring

Reported by

- Total referrals from screening
- Referrals due to positive screening test
  - —Bilateral referrals
  - —Unilateral referrals
- Referrals due to incomplete screening

Methodology

Numerator: Number of babies who refer on the screening test (positive test/ incomplete screens) and who have permanent congenital hearing loss confirmed by audiology assessment.

Denominator: Number of babies who refer on the screening test (refer either ear + incomplete screens)

Notes

Target

No target set.

NB PPV in the Netherlands programme was reported as being 45% in 2010
van der Ploeg C. Rijpstra A. 2010 *TNO Kwaliteit van Leven*

2. Audiology indicators

Indicators 2.1 – 2.2: Audiology timeliness and completion

2.1 Audiology assessment commencement
Description 2.1a The proportion of babies referred from screening who are offered audiology appointments dated within 4 weeks of referral. 2.1b The proportion of babies referred from screening who start audiology assessment – within 4 weeks of referral – within the reporting period.
Rationale Timely commencement of audiology assessment is critical to the achievement of programme goals. Monitoring wait times for appointments is important to identify capacity of audiology departments to manage the referrals from screening. A high proportion of babies commencing within four weeks of referral but poor achievement of the 3 month programme goal (Indicator 2.2 a) may indicate either that there is a delay in babies being referred to audiology, leaving little time for audiology department to achieve the 3 month goal, or that once audiology assessment has started there is a delay in completing it.
Frequency and stratifications ***Indicator 2.1a*** ***DHB monitoring only*** Three monthly ***Indicator 2.1b*** ***DHB monitoring only*** Three monthly Reported by: – ethnicity – DHB – Total/bilateral referrals/unilateral referrals

Methodology

Indicator 2.1a

Numerator: Number of babies referred to audiology from screening who are offered audiology appointments dated within 4 weeks of completing screening

Denominator: Number of babies who were referred for audiology assessment

Indicator 2.1b

Numerator: The number of babies who start audiology assessment within 4 weeks of being referred from screening/within the reporting period

Denominator: Number of babies who were referred for audiology assessment

Notes

Age is corrected for prematurity.

Targets

Indicator 2.1a

Target: 100% of babies have audiology appointments within 4 weeks of referral from screening. (NPQS: programme standard)

Indicator 2.1b

No target set.

2.2 Audiology assessment completion

Description

2.2a The proportion of babies referred from screening who complete audiology assessments

- within 3 months of (corrected) age (***3 month goal)***
- within the reporting time period.

2.2b The proportion of babies with confirmed PCHL who have a diagnosis by 3 months of (corrected) age.

2.2c The duration of audiology diagnosis from first assessment to completion.

Rationale

Prolonged delays or inequity between groups demonstrated by this indicator impacts on the goal of early intervention to improve linguistic, educational and social outcomes.

'Audiology assessment is completed by 3 months of age' is a core goal of the UNHSEIP i.e.: the 1-3-6 goals.

Of particular interest is the timeliness of assessment of those babies with PCHL.

Frequency and stratifications

Indicator 2.2a

NSU annual monitoring

Reported by:

- Audiology assessment completed by
  - < 3 months
  - 3-6 months
  - > 6 months
    - ethnicity
    - deprivation index
    - DHB

DHB monitoring

Three monthly

Indicator 2.2b

NSU annual monitoring

Total PCHL diagnosed by 3 months

Indicator 2.2c

NSU annual monitoring

- National median duration of assessment
- Duration of assessments in days (figure format)
- Median duration of assessment by DHB

Methodology

Indicator 2.2a

Numerator: Number of babies referred to audiology from screening who complete audiology assessment by 3 months of (corrected) age/within reporting period

Denominator: Number of babies who were referred for audiology assessment

Indicator 2.2b

Numerator: Number of babies referred to audiology from screening who have permanent congenital hearing loss confirmed by 3 months of (corrected) age.

Denominator: Number of babies who have permanent congenital hearing loss confirmed.

Note

'Complete' audiology assessment is defined as having a diagnosis documented for each ear.

Target

Indicator 2.2a

90% of babies who are referred from screening complete audiological evaluation by 3 months of age (Joint Committee on Infant Hearing, 2000[i])

Indicator 2.2b

No target set.

Indicator 2.2c

No target set.

2.3 Audiology not attended

Description

The proportion of babies referred from screening who did not complete audiology assessments due to DNA, lost contact, decline or deceased.

Rationale

Attendance at audiology assessments is a key factor in success of the programme.

Frequency and stratifications

NSU annual monitoring

Reported by:

- Total
  - Ethnicity
  - Deprivation index
  - DHB
- DNA/lost contact
  - DHB
- Decline
  - total numbers
- Deceased
  - total numbers

DHB monitoring

Three monthly

Methodology

Indicator

Numerator:	Number of babies classified as DNA /declined/lost contact/deceased
Denominator:	Number of babies referred from screening

Note

DHBs vary in their policies on the number of attempts to contact before classifying as DNA.

Target

No target has been set.

(Note Aust. target - 95% of babies referred for diagnostic audiological testing attend audiology

Indicators 2.4 – 2.6: Audiology outcome

2.4 Hearing loss detected

Description

The number of babies screened that have hearing loss identified as a proportion of all babies screened.

Rationale

The detection of PCHL via newborn hearing screening is a key indicator of programme performance, and should be in line with international evidence on PCHL prevalence in comparable programmes.

Frequency and stratifications

NSU monitoring

Annually
Reported by:

- PCHL by
  - total
    - ethnicity
    - deprivation index
    - DHB
  - bilateral/unilateral
    - ethnicity
    - deprivation index
    - DHB
  - severity
    - ethnicity
    - deprivation index
    - DHB
  - type (sensorineural, auditory neuropathy, conductive permanent, mixed)

- Conductive temporary
  - total
    - ethnicity
    - deprivation index
    - DHB
  - bilateral
  - unilateral

DHB monitoring

Three monthly

Methodology

Numerator: Number of babies who have hearing loss confirmed by audiology assessment.

Denominator: Number of babies that completed screening.

Notes

Target

No target is set for this indicator but it is anticipated between 1 and 2 babies per 1000 screened will have moderate or more severe permanent congenital hearing loss identified.

2.5 Outcome of hearing surveillance

Description

2.5a The proportion of babies with identified risk factor(s) that have permanent hearing loss identified

- of those referred for hearing surveillance
- of those referred for surveillance and who completed audiology.

2.5b The proportion of babies who are referred for hearing surveillance that do not have an audiology assessment. [*DNA, lost contact, decline*]

Rationale

These indicators will measure the effectiveness of the UNHSEIP policy for following up babies with identified risk factors.

Frequency and scope

Indicator 2.5a:

NSU annual monitoring

Reported by (for the reporting period):

- Total permanent hearing loss detected
  - severity
  - of those who complete audiology assessment
  - number in each risk factor category

- Numbers in hearing loss categories
  - sensorineural /mixed
    - severity
    - unilateral, bilateral
  - auditory neuropathy
    - severity
    - unilateral, bilateral
  - conductive permanent
    - severity
    - unilateral, bilateral
  - conductive temporary

NB: data also presented as cumulative for period of most recently implemented hearing surveillance programme.

DHB monitoring

Three monthly

Indicator 2.5b:

NSU annual monitoring

Reported by:

- total
  —ethnicity
- DNA
- lost contact
- decline

DHB monitoring

Three monthly

Reported by:

- total
- DNA
- lost contact
- decline.

Methodology

Indicator 2.5a

Numerator:	Number of babies with identified risk factor/s referred for hearing surveillance who have permanent hearing loss identified.
Denominator:	Number of babies with identified risk factor/s referred for hearing surveillance.

Numerator:	Number of babies referred for hearing surveillance who have permanent hearing loss identified.
Denominator:	Number of babies who are referred for hearing surveillance and who complete audiology assessment.

Indicator 2.5b

Numerator:	Number of babies referred for hearing surveillance who do not receive audiology assessment.
Denominator:	Number of babies referred for hearing surveillance

Notes

Target

No target is set for these indicators.

2.6 Cases not identified from screening

Description *NB data sources are being explored*

The number of cases of moderate or more severe permanent hearing loss identified in the reporting period in children under 6 years that were not referred from screening to audiology.

Rationale

This indicator helps to consider the newborn screening programme in the context of broader measures to identify children with significant hearing loss.

In rare cases false negatives from the screening programme may be identified.

Frequency and stratifications

Indicator 2.6a:
NSU annual monitoring
Reported by:

- total
  - ethnicity
  - DHB
  - newborn screening status
    - screened/not screened/outcome
  - referred by
    - health professional
    - B4 school check
    - other
  - bilateral/unilateral
  - type and level of hearing loss

Methodology

Number of children under six years diagnosed with permanent moderate or more severe hearing loss in the reporting period in each of the above categories.

Notes

Implementation of this indicator is in development.

Target

No target set.

Audiology early intervention

2.7 Age at first assistive hearing device or NZSL intervention

Description *NB indicator still under development*

The proportion of babies referred from screening and diagnosed with PCHL who have an assistive hearing device fitted, or other intervention (e.g. NZ sign language services), by six months of age ***(6 month goal)***/within the reporting period.

Rationale

'Initiation of appropriate medical and audiological services; and early intervention education services by 6 months of age' is a core goal of UNHSEIP: i.e. the 1-3-6 goals.

Audiological management of a baby with PCHL may not always involve fitting of an assistive device. Families/whanau may also elect to learn NZ sign language. Monitoring this indicator will assist in understanding the types of intervention used.

Frequency and scope

Indicator 2.6

NSU annual monitoring

Reported by:

- Assistive hearing device fitted by:
  - < 4 months
  - < 6 months
  - 6-12 months
    - ethnicity
    - deprivation index
    - DHB
- Hearing aids
- Cochlear implants (number and ages of babies)
- Decline of hearing aids (number)

DHB monitoring

Three monthly

Methodology

Indicator 2.6a

Numerator: Number of babies who are first fitted with assistive hearing devices by six months of age

Denominator: Number of babies diagnosed with PCHL

Notes

Target

To be set. The Joint Committee on Infant Hearing (2000[i]) benchmark is that 95% of infants with confirmed bilateral hearing loss whose families elect to use amplification receive amplification devices within one month of hearing loss confirmation.

3. Early intervention indicators

3.1 – 3.4: Participation in early intervention services

3.1 Making initial contact with families

Description

The number of working days taken for Early Intervention education services to make contact with the family / whānau.

Rationale

The earlier contact is made the greater the opportunity to meet the international standard of screening by 1 month, diagnosis by 3 months and intervention by 6 months. The Ministry of Education Special Education Service Model for children with hearing loss diagnosed following newborn hearing screening states that two working days is the desired time period, however the Ministry of Education allows 10 working days for all other referrals received.

Frequency and scope

Published annually in UNHSEIP reports

Reported by

- Total
  - <2 working days
  - <5 working days
  - 6 t0 10 working days
  - 11 to 20 working days
  - >20 working days
- Ethnicity
- Ministry of Education district

Monitored by Ministry of Education

- Six monthly
  - Ministry of Education district

Methodology

Numerator: Number of families and whānau of children eligible for, and referred to, the Early Intervention education service through newborn hearing screening, who staff contact within <2, <5, 6 to 10, 11 to 20, >20 full working days of receipt of referral at a district Ministry of Education Special Education office.

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

Notes

Some families / whānau do not have access to telephones, cell phones, 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 /whānau in the Far North and 4% of families / whānau in Gisborne. In these instances, Early Intervention staff will attempt to contact families / whānau by letter or by visiting the home.
Target 95% of families / whānau eligible for and referred to Early Intervention education services through newborn hearing screening were contacted within 10 working days.

3.2 Commencement of Early Intervention education services

Description

3.2a Proportion of children eligible for and referred to Early Intervention education services who began receiving a service within one month following receipt of referral. Number of months following receipt of referral that other families/whānau and children began receiving a service.

3.2b Proportion of children up to six months of age eligible for and referred to Early Intervention education services who began receiving a service by six months of age.

3.2c Proportion of children eligible for and referred to Early Intervention education services after six months of age.

Rationale

Outcome 3.2a measures the timeliness with which all children diagnosed following screening are engaged in Early Intervention education services. It reflects the responsiveness of Early Intervention services.

Outcome 3.2b is in accordance with the international standard of screening by 1 month, diagnosis by 3 months and intervention by six months. This allows us to compare our response rates with overseas programmes which report on their success or otherwise of the meeting the 1-3-6 standard.

Outcome 3.2c monitors the age of babies at the time of referral to the Ministry of Education.

Frequency and scope

Published annually in UNHSEIP reports

Indicator 3.2a

Reported by

- Total
    - 1 month
    - 1 to 2 months
    - 2 to 3 months
    - 3 to 4 months
    - 4+ months
- Ethnicity

Indicator 3.2b

Reported by

- Total
- Ethnicity

Indicator 3.2c

Reported by

- Total
- Ethnicity

Monitored by Ministry of Education

- Six monthly
    - Ministry of Education district

Methodology

Indicator 3.2a

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

Denominator: Number of children eligible for, and referred to, the Early Intervention education service through newborn hearing screening.

Indicator 3.2b

Numerator: Number of children eligible for, and referred to, the Early Intervention education service through newborn hearing screening who began receiving a service by six months of age

Denominator: Number of children under six months of age eligible for, and referred to, the Early Intervention education service through newborn hearing screening.

Indicator 3.2c

Numerator: Number of children eligible for, and referred to the Early Intervention education service after 6 months of age

Denominator: Number of children eligible for, and referred to, the Early Intervention education service through newborn hearing screening.

Note

Age correction is not applied to Ministry of Education data.

Target

Indicator 3.2a

90% of children referred to the Early Intervention education service through newborn hearing screening will have begun receiving a service by one month following receipt of referral.

Indicator 3.2b

90% of children referred up to six months of age will have begun receiving a service by six months of age.

Indicator 3.2c

There is no target for this indicator. The outcome required is to receive referrals before the baby reaches six months of age.

3.3 Continuation of Early Intervention services

Description

3.3a The proportion of children referred as a result of newborn hearing screening and eligible for the Early intervention education service who exited services prior to three years of age.

3.3b The proportion of children referred as a result of newborn hearing screening and eligible for the Early Intervention education service who exited services prior to five years of age.

Rationale

Provides information about the percentage of children who do not remain in the service through the foundation stage of communication development, birth to three years and through to school entry (5 years of age used as proxy for school entry).

Methodology

Indicator 3.3a

Numerator: Number of children referred to, and eligible for, the Early Intervention education service (through newborn hearing screening) who exited from services during the period and were less than three years of age when exited/completed.

Denominator: Total number of children referred to, and eligible for, the Early Intervention education service (through newborn hearing screening) that exited from services during the reporting period.

Indicator 3.3b

Numerator: Total number of children referred to, and eligible for the Early Intervention education service (through newborn hearing screening) who exited services during the period and were less than 5 years of age when exited/completed.

Denominator: Number of children eligible for, and referred to, Early Intervention education service (through newborn hearing screening) that exited from services during the reporting period.

Frequency and scope

Published annually in UNHSEIP report.

Notes

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

The early intervention programme will be tailored for the child and family, agreed to by the

family and Adviser on Deaf Children and provided at a level consistent with best practice and progress monitored.
Target No target has been set.

3.4 Outcome of Early Intervention

Description

3.4a Proportion of children referred as a result of newborn hearing screening and eligible for the Early intervention education service who received a language assessment between four years six months and five years of age.

3.4b Proportion of children referred as a result of newborn hearing screening and eligible for the Early intervention education service whose language level was within six months of their chronological age at four years six months to five years of age.

3.4c Proportion of children referred as a result of newborn hearing screening and eligible for the Early intervention service whose language level was delayed six months or more for their chronological age at four years six months to five years of age.

Rationale

All children receiving intervention services receive ongoing assessment to inform planning. For children identified through (newborn hearing screening) language assessment data will be aggregated for children prior to school entry.

Methodology

Indicator 3.4a

Numerator: Number of children referred to, and eligible for the Early Intervention education service (through newborn hearing screening) who reached the age of four years six months during the reporting period and received a language assessment between four years 6 months and five years of age.

Denominator: Number of children eligible for, and referred to, Early Intervention education service (through newborn hearing screening) who reached the age of four years six months during the reporting period.

Indicator 3.4b

Numerator: Number of children referred to, and eligible for the Early Intervention education service (through newborn hearing screening) whose language level was within six months of their chronological age at four years six months to five years of age.

Denominator: Number of children eligible for, and referred to, Early Intervention education service (through newborn hearing screening) who reach the age of four years six months during the reporting period.

Indicator 3.4c

Numerator: Number of children referred to, and eligible for the Early Intervention education service (through newborn hearing screening) whose language level was delayed six months or more for their chronological

at four years six months to five years of age.

Denominator: Number of children eligible for, and referred to, Early Intervention education service (through newborn hearing screening) who reach the age of four years six months during the reporting period.

Frequency and scope

Published annually in UNHSEIP reports.

Notes

This data will be available from the reporting period2015 onwards for the Ministry of Education Central North Region. Data for the Northern, Central South and Southern Ministry of Education Regions should be available from the reporting period 2016 onwards. It may also be possible to aggregate functional language data for children at three years of age in the future.

Target

No target has been set.

[i] Joint Committee on Infant Hearing. (2000). Special Article, Year 2000 Position Statement. http://www.jcih.org/posstatemts.htm