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Contents

Introduction ...........................................................................................................................................3
Main Points ...........................................................................................................................................8
Results and Commentary.....................................................................................................................9
  The proportion of children with a developmental concern recorded at 27-30 months ..........9
  The proportion of children with no developmental concerns recorded .........................11
  Trends over time in developmental concerns .............................................................................11
  Relationship between developmental concerns and children’s characteristics.............13
  Coverage of the 27-30 month child health review and data quality .................................16
List of Tables......................................................................................................................................20
Contact...............................................................................................................................................21
Further Information ..........................................................................................................................21
Rate this publication.........................................................................................................................21
Introduction

The Scottish child health programme and the 27-30 month child health review

The child health programme is offered to all children in Scotland. The programme includes screening for specific medical problems, provision of routine childhood immunisations, and a series of child health reviews. Health Visitors usually provide reviews for preschool children. The reviews involve assessment of children’s growth and development, and provision of advice and support for children and their families. A review for children aged 27-30 months was introduced in Scotland in April 2013. In this publication we report on Health Visitors’ assessment of children’s development at this review. We also report on the coverage of the review (the proportion of children that received their review) and the quality of the data returned on children’s development.

Overall policy on reviews for preschool children is set out in the Scottish Health Visiting Pathway⁹. Specific guidance on the content and delivery of the 27-30 month review is also available⁸. UK wide guidance on effective delivery of the child health programme is available from the Royal College of Paediatrics and Child Health⁷.

The importance of early child development

Early child development is the progressive acquisition of skills and abilities as children grow up. Through the process of development, a child goes from being a new-born entirely dependent on her or his caregivers to a child increasingly capable of making sense of the world, communicating and forming relationships, and planning and carrying out independent actions⁵.

Biological/medical and environmental/social factors act together to influence children’s development⁶. Biological factors include prematurity, conditions such as Down’s syndrome, or severe hearing impairment. Environmental factors include the quality of parenting a child receives, the amount and variety of language they are exposed to, and their opportunities for exploration and play. Specific aspects of parenting that are important for children’s development include warmth, ability to pick up on a child’s needs, and consistency of response.

Children generally acquire developmental skills in a predictable order. Broadly speaking, a child’s development can cause concern if it is disordered or delayed⁶. Disordered development means that certain aspects of a child’s development are not progressing as would be expected. Disordered development is more likely to indicate an underlying biological problem. Delayed development means that a child’s development is progressing in

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the usual fashion, but at a relatively slow rate. Delayed development is more likely to reflect wider environmental problems, particularly if the delay is relatively mild.

Developmental problems can come to light through various routes. More severe problems are likely to be picked up at the new-born examination offered to every baby, or parents may seek medical advice due to obvious problems. More subtle problems are likely to be picked up through the proactive developmental assessments offered as part of child health reviews, including the 27-30 month review.

Problems with early child development are important as they are strongly associated with long-term health, educational, and wider social difficulties. Detecting developmental problems early provides the best opportunity to support children and families to improve outcomes. There is good evidence that parenting support and enriched early learning opportunities can improve outcomes for children with, or at risk of, developmental delay. In addition, there is increasing evidence that intensive early interventions for children with serious developmental problems can also improve outcomes.

Information for parents on early child development, and promoting good development, is available through Ready Steady Baby, Ready Steady Toddler, and Parent Club.

Assessment of child development within the 27-30 month review and information used in this publication

Health Visitors assess children’s development during child health reviews by:

- Asking parents/carers about any concerns they have regarding their child’s development
- Asking about the child’s developmental abilities and attainment of relevant milestones
- Careful observation of the child
- Asking parents to complete a questionnaire about their child’s development

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1 Harvard University Centre on the Developing Child https://developingchild.harvard.edu/resources/
7 Parent Club. https://www.parentclub.scot/
Since April 2017, Health Visitors have been asked to assess the following eight domains of children’s development during 27-30 month reviews:

- Speech, language and communication
- Gross motor
- Fine motor
- Problem solving
- Personal/social
- Emotional/behavioural
- Vision, and
- Hearing

Between April 2013 and March 2017, Health Visitors used a slightly different list of domains, and information was not collected on the Problem solving domain.

Since April 2017, national policy has also been for Health Visitors to ask all parents to complete an Ages and Stages Questionnaire (ASQ-3)™ as part of the 27-30 month review®. Between April 2013 and March 2017, Health Visitors used a wider range of questionnaires, either for all children/parents or if/when they felt it was necessary®.

Since April 2013, Health Visitors have been asked to record their overall assessment of each domain of a child’s development as:

- No concern about this aspect of the child’s development
- Concern newly suspected as a result of the review
- Concern or disorder already known prior to the review, or
- Assessment incomplete

In addition, since April 2017, the child’s scores on the ASQ-3 questionnaire have been recorded for all the domains listed above except Emotional/behavioural, Vision, and Hearing.

This publication reports on reviews provided to children turning 27 months between April 2017 and March 2018. Further information on the details of developmental assessment conducted as part of 27-30 month reviews provided between April 2013 and March 2017, and from April 2017 onwards, is provided in the technical report accompanying this publication.

Other sources of information on early child development

The Scottish Government publishes information on children attending funded early learning and childcare (and, for older children, school®), who have a recognised Additional Support

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™ Scottish Government, Early learning and childcare statistics, https://www2.gov.scot/Topics/Statistics/Browse/Children/Pubs-Pre-SchoolEducation
Need. Information on the number whose need reflects an underlying developmental problem, such as a ‘language, speech or communication problem’, is also provided.

Since academic year 2015/16, the Scottish Government has published information on the proportion of children attaining expected Curriculum for Excellence milestones (based on teachers’ judgement), including achievement of ‘early level’ outcomes by the end of the first year in primary school. Since academic year 2017/18, teachers’ judgement has been supported by national standardised assessment of all children in P1, P4, P7, and S3.

Information on the provision of child health reviews in England, including the 2-2½ year review recommended as part of the English Healthy Child Programme, is provided by both NHS Digital and Public Health England. Information on the use of the ASQ-3 within 2-2½ year reviews, and the proportion of children with scores indicating an appropriate level of development for their age, is also provided. The information from NHS Digital is based on data submitted by health services as part of the Community Services Data Set. This is a relatively new data return (established in 2015) and data quality is still evolving. The information from Public Health England is based on aggregate data returns submitted by Local Authorities. This is intended as an interim alternative source of information which will be stopped once the NHS Digital data return is fully established. These two sources of information are not directly comparable to each other, or to the information reported here on the Scottish 27-30 month child health review.

Detailed information on early child development, factors influencing development, and children’s outcomes is also available from major Scottish and UK birth cohort studies. These studies repeatedly survey a group of children and their families as they grow up. Examples include Growing Up in Scotland, the Millennium Cohort Study, and the Avon Longitudinal Study of Parents and Children.

Interactive visual content

We have provided an interactive display of information along with this publication. This can be found in the data visualisation. The visualisation presents information on coverage and outcome of developmental assessment, by NHS Board, local authority, deprivation level, age at review, ethnicity, whether English is the main language, whether the child is bi/multilingual.

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Amend to UCL Centre for Longitudinal Studies https://cls.ucl.ac.uk/clss-studies/millennium-cohort-study/

and Looked After Child (LAC) status. We would welcome any feedback on this way of presenting information. Please email nss.isdchildhealth@nhs.net.
Main Points

• In 2017/18, 15% of children undergoing a 27-30 month child health review had a concern recorded about at least one area of their development. This has steadily declined from 19% in 2013/14 when the review was introduced.

Percentage of children with any developmental concern recorded at their 27-30 month review, Scotland, 2017/18

• Concerns were most commonly recorded about children’s speech, language and communication (11% of children), and their emotional and behavioural development (5% of children).

• Boys (20%) were twice as likely as girls (10%) to have a concern recorded about their development.

• Children living in the most deprived areas of Scotland (22%) were much more likely than those living in the least deprived areas (9%) to have a concern recorded about their development.

• Developmental concerns were particularly common for children who were looked after by their Local Authority at the time of their 27-30 month review (29%), reflecting the broader vulnerability, and generally poor health, of this group of children.

• In 2017/18 50,600 children (90% of those eligible) received a 27-30 month review.
Results and Commentary

The proportion of children with a developmental concern recorded at 27-30 months

A total of 50,600 children turning 27 months over the year April 2017 to March 2018 were recorded as receiving their 27-30 month review. Of these, 7,813 (15%) had a newly identified or previously known concern recorded for at least one developmental domain.

Eleven percent (5,428) of children had a concern recorded for the Speech, language and communication domain. Concerns about other aspects of children’s development were less common, with up to 5% of children having a concern recorded for each domain: Gross motor (1,170, 2%); Fine motor (1,458, 3%); Problem solving (1,196, 2%); Personal/social (2,207, 4%); Emotional/behavioural (2,668, 5%); Vision (943, 2%); and Hearing (769, 2%).

The proportion of concerns that were newly identified as a result of the 27-30 month review varied between the different developmental domains. Eighty three percent of the concerns about Speech, language and communication, Fine motor, Problem solving, and Emotional/behavioural domains were new compared to 52% of those about Vision.

Figure 1: Percentage of children with specified developmental concern recorded at 27-30 month review, Scotland, 2017/18

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland
In 2017/18, the proportion of children with a concern recorded for at least one developmental domain varied across NHS Boards from 6% of children living in NHS Grampian to 20% in NHS Greater Glasgow & Clyde. Across Local Authority areas, the proportion varied from 4% of children living in Aberdeenshire to 24% of children living in Inverclyde. It is likely that this degree of variation reflects differences in approaches to assessing child development (see the technical report for further information on developmental tools used at reviews) in addition to differences in population characteristics such as levels of deprivation that influence the underlying risk of developmental problems.

**Figure 2: Percentage of children with any developmental concern recorded at 27-30 month review, by NHS Board of Residence, 2017/18**

| NHS Boards          | Source: CHSP Pre-School February 2019, SIRS, ISD Scotland |
The proportion of children with no developmental concerns recorded

In 2017/18, 42,787 children (85% of all those receiving a 27-30 month review) had no specific concerns recorded for any developmental domain. Of these, 28,900 (57% of all children reviewed) had ‘No concern’ actively recorded for each of the eight developmental domains. The remaining 13,887 had a mixture of ‘No concern’, ‘Assessment incomplete’, and no information recorded for the various domains.

Figure 3: Percentage of children with any developmental concern recorded at 27-30 month review, ‘No concern' actively recorded for every developmental domain, and a mixture of ‘No concern’ and missing information, Scotland, 2013/14 to 2017/18

<table>
<thead>
<tr>
<th>Year</th>
<th>No concern</th>
<th>Other concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/14</td>
<td>51,361</td>
<td></td>
</tr>
<tr>
<td>2014/15</td>
<td>51,310</td>
<td></td>
</tr>
<tr>
<td>2015/16</td>
<td>50,316</td>
<td></td>
</tr>
<tr>
<td>2016/17</td>
<td>51,425</td>
<td></td>
</tr>
<tr>
<td>2017/18</td>
<td>50,600</td>
<td></td>
</tr>
</tbody>
</table>

Note: The number of reviews is shown in the centre of each circle

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland

Trends over time in developmental concerns

The proportion of children recorded as having any developmental concern at their 27-30 month review has steadily declined from 19% in 2013/14 (when the review was introduced) to 15% in 2017/18. This decline is mainly due to

- Small decreases over time in the proportion of children recorded as having a concern about their Speech, language and communication development in most NHS Board areas
- Small decreases over time in the proportion of children recorded as having a concern about their Emotional/behavioural development in most NHS Board areas, with a more marked decrease seen in NHS Greater Glasgow and Clyde (from 14% in 2013/14 to 8% of children in 2017/18)

It is helpful to consider whether these declines are likely to reflect changes in how children’s development is assessed within 27-30 month reviews, the quality of data recording, the thresholds used by Health Visitors to identify a ‘concern’, or a genuine decline in the proportion of toddlers with delayed development.
Looking at the results for Speech, language and communication development in more detail: four NHS Board areas (NHS Ayrshire & Arran, NHS Fife, NHS Lothian, and NHS Tayside) have consistently used the ASQ-3 in a high proportion (>80%) of 27-30 month reviews since the reviews were introduced in 2013/14. Each of these Board areas has seen broadly stable review coverage and quality of data recording on this developmental domain over time. Each of these Boards has seen a decline in the proportion of children identified as having a concern about their Speech, language and communication development in 2017/18 compared to earlier years.

Similarly, looking at the results for Emotional/behavioural development in more detail: NHS Greater Glasgow & Clyde has consistently used the Strengths and Difficulties questionnaire to assess this aspect of children’s development since 27-30 month reviews were introduced. In addition, the Board has seen consistent or improving review coverage and quality of data recording on this developmental domain over time.

In these specific examples, therefore, changes in review coverage, in the approach to assessing children’s development within reviews, or in the quality of data recording on review records do not appear to explain the decline seen in the proportion of children identified as having a concern about these aspects of their development. The declines may therefore reflect changes over time in the thresholds used by Health Visitors to identify a ‘concern’, and/or a genuine decline in the proportion of toddlers with delayed development. More data reflecting findings for 2018/19 and beyond, and in particular objective data on ASQ-3 scores in addition to the more judgement based ‘concern’ data, will help to disentangle these issues over time.

The proportion of children with ‘No concern’ actively recorded for each developmental domain was broadly stable over 2013/14 to 2015/16 (at 71-72%). Despite the decline in the number/proportion of children having developmental concerns recorded, the proportion of children with ‘No concern’ actively recorded for each developmental domain then declined somewhat in 2016/17 (to 66%) and further declined in 2017/18 (to 57%). As shown in Figure 3 above, this is because the proportion of children with missing information for at least one developmental domain (who cannot ‘count’ towards the number with ‘No concern’ actively recorded for each domain) increased in 2016/17 and 2017/18. Further information on this is provided in the section on review coverage and data quality below and in the accompanying technical report.
Relationship between developmental concerns and children’s characteristics

Sex

Boys are much more likely than girls to have a concern recorded about their development at the 27-30 month review. In 2017/18, 20% of boys had a concern recorded for at least one developmental domain compared to 10% of girls. Boys are around twice as likely as girls to have a concern recorded for every specific developmental domain. The absolute difference between boys and girls is most marked for the Speech, language and communication, Emotional/behavioural, and Personal/social domains.

Deprivation

In 2017/18, 22% of children living in the most deprived areas of Scotland (SIMD quintile 1) had a concern recorded for at least one developmental domain compared to 9% of children living in the least deprived areas (SIMD quintile 5). There is a clear deprivation gradient across all domains, but this is most pronounced in the Speech, language & communication and Emotional/behavioural domains.

Figure 4: Percentage of children with any developmental concern recorded at 27-30 month review by deprivation level, Scotland, 2017/18

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland
Information from the Scottish Government has also shown that boys, and children from more deprived areas, are more likely to have an Additional (educational) Support Need identified whilst in nursery or primary school, and are less likely to have achieved the Curriculum for Excellence early level by the end of P1.

**Ethnicity**

The proportion of children with a developmental concern recorded varies by ethnicity. In 2017/18, children of Asian (20%) and Black, Caribbean, or African ethnicity (20%) were more likely to have a developmental concern recorded than children of White Scottish ethnicity (16%). Note that ethnicity status was unknown for a higher proportion of children receiving a 27-30 month review in 2017/18 (9%) than in previous years (3-4% in 2013/14-2016/17) (see technical report for further details).

**Figure 5: Percentage of children with any developmental concern recorded at 27-30 month review by ethnicity, Scotland, 2017/18**

Note: The number of reviews is shown in the centre of each circle.

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland

Information from the Millennium Cohort Study has also shown that children from Asian and Black ethnic groups achieve substantially lower scores on tests of cognitive development at age 3 than children of White ethnicity. These ethnic inequalities in early child development are likely to reflect the wider disadvantages experienced by some ethnic minority groups, and

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possibly also variation in how reliable developmental assessments are for children from different cultural and language backgrounds.

Language spoken at home

In 2017/18, the proportion of children with a concern recorded for at least one developmental domain was slightly higher for children living in a household where English was not (17%) compared to was (16%) the main language spoken, and was similar for those living in a bi- or multi-lingual (16%) compared to a mono-lingual (16%) household.

Children living in households where English is not the main language spoken are likely to come from a wide range of ethnic groups, with some groups being at relatively high risk of developmental concerns, and some at relatively low risk, as shown above. Note that first language and mono/multi-lingual status was unknown for a higher proportion of children receiving a 27-30 month review in 2017/18 (8 and 9% respectively) than in previous years (4-5% and 4-7% respectively in 2013/14-2016/17) (see technical report for further details).

Looked after children

The ‘looked after’ status of children at the time of their 27-30 month review is recorded on the review record. Looked after children are those under the care of their Local Authority due to care, protection, and/or (for older children) offending needs. Looked after children may live at home with their parents under social work supervision, with other family members or friends, with foster carers or prospective adopters, or (again generally for older children) in residential units. In 2017/18, children who were looked after (29%) were much more likely than non-looked after children (15%) to have a concern recorded about their development at the 27-30 month review. This reflects the broader vulnerability (and generally poor health) of this group of children\(^x\). Note that the quality of recording of children’s looked after status at the time of their 27-30 month review has improved over time (see technical report for further details).

Coverage of the 27-30 month child health review and data quality

Interpreting information on the proportion of children with (or without) developmental concerns recorded

This report presents information on the proportion of children with (or without) a developmental concern recorded on their 27-30 month review record. The extent to which this reflects the true proportion of children in the population with (or without) developmental problems depends on a number of factors, in particular

- The coverage of the 27-30 month reviews (What proportion of children eligible for a 27-30 month review actually received one?)
- Any systematic differences between children who did and did not receive their 27-30 month review (Were children who missed their review more or less likely than those who received it to have a developmental problem?)
- The quality of developmental assessment undertaken within reviews (Were all developmental domains systematically assessed using professional judgement supported by use of a validated developmental questionnaire?)
- The completeness of data recording within 27-30 month review records (Was a meaningful outcome recorded for each developmental domain? Were other factors such as the child’s ethnicity also well recorded?)

The following sections therefore provide information on coverage of the 27-30 month review and the quality of data recording within review records. This information supports interpretation of the headline results on developmental concerns. Further information is provided in the technical report.

Review coverage

Coverage of the 27-30 month review is calculated as the proportion of children eligible for the review – those turning 27 months in the period of interest, most recently April 2017 to March 2018 – who were recorded as receiving their review. All reviews were counted, providing they were completed when the child was aged 24 to 35 months inclusive (i.e. from their second up to their third birthday), and the review was recorded on the national child health information system before the information was extracted for this publication in February 2019.

In 2017/18, a total of 56,088 children were eligible for the 27-30 month review, of whom 50,600 were recorded as receiving their review, giving an overall review coverage of 90%. Coverage has increased slightly over time, up from 87% for children turning 27 months in 2013/14.

In 2017/18, review coverage varied across NHS Boards from 87% for children living in NHS Fife and NHS Lothian to 94% living in NHS Ayrshire & Arran & NHS Dumfries & Galloway. Across Local Authority areas, coverage varied from 83% of children living in Argyll & Bute to 97% of children living in East Dunbartonshire and Inverclyde. In general, the degree of
variation in coverage across Scotland has reduced over time, as areas with initially low coverage have improved uptake of the review.

**Figure 6: Coverage of the 27-30 month review, children turning 27 months between April 2017 and March 2018, by NHS Board of Residence**

![Coverage of the 27-30 month review](image)

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland

In 2017/18, review coverage was similar for girls (90%) and boys (90%). Coverage was also similar for children living in the most deprived areas of Scotland (90%, SIMD quintile 1) compared to the least deprived areas (90%, SIMD quintile 5). Coverage cannot be calculated for other groups of children, such as those whose first language is not English, as this information is only recorded for children who actually have a review.

**Quality of data returned on child development**

In 2017/18, 33,716 (67%) of the 50,600 27-30 month review records contained meaningful information for every developmental domain. This means having ‘No concern’, ‘Concern newly suspected’, or ‘Concern or disorder previously known’ recorded for each of the eight domains assessed during reviews provided from April 2017 onwards (including the new domain of Problem solving), or for each of the nine developmental domains assessed during reviews provided up to March 2017 (see [technical report](#) for further information). The remaining 16,884 children had ‘Assessment incomplete’ or no information recorded against at least one of the developmental domains.
The proportion of reviews containing meaningful information for every developmental domain was lower in 2017/18 (67%) than it has been in previous years (87-88% in 2013/14 to 2015/16 and 80% in 2016/17). This is due to a high proportion of records for reviews provided from April 2017 onwards having missing information for the new Problem solving developmental domain. We expect the completeness of information recorded for this aspect of children’s development to improve over time as Boards consistently use the ASQ-3 questionnaire and the new review forms which together support capturing and recording information on this domain. Further information is provided in the technical report. As noted above, this interruption in data completeness means that the proportion of children with ‘No concern’ recorded for each developmental domain is lower for 2017/18 than for previous years.

In 2017/18, the proportion of review records containing meaningful information for every developmental domain varied widely between NHS Boards from 2% for children living in NHS Greater Glasgow & Clyde to 97% for children living in NHS Dumfries & Galloway. Across Local Authority areas, the proportion varied from less than 1% of children living in Renfrewshire and West Dunbartonshire to 98% of children living in Dundee City. This reflects almost complete absence of recording of information against the Problem solving developmental domain for reviews provided in NHS Greater Glasgow & Clyde in 2017/18. Again, further information is provided in the technical report.

Figure 7: Percentage of 27-30 month reviews with meaningful information recorded for every developmental domain, 2017/18, by NHS Board of Residence

Source: CHSP Pre-School February 2019, SIRS, ISD Scotland
In 2017/18, the proportion of review records containing meaningful information for every developmental domain was similar for girls (67%) and boys (66%). It was lower for children living in the most deprived areas of Scotland (52%, SIMD quintile 1) compared to the least deprived areas (68%, SIMD quintile 5).

In addition, the proportion of review records containing meaningful information for every developmental domain was noticeably lower for children from certain ethnic groups (for example 41% for Asian children compared to 67% for White Scottish children); those living in a household where English was not main language spoken (55% compared to 67% for children from English speaking households); and those living in a bi- or multi-lingual household (59% compared to 67% for children in a mono-lingual household). This is likely to reflect difficulties in completing and interpreting a comprehensive assessment of a child’s development when there is a language barrier between the family and health professional. This therefore emphasises the importance of Health Visitors having access to appropriate translation and interpretation services.
## List of Tables

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Further information is available in the interactive [data visualisation](#) and in the [open data tables](#).
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Further Information

ISD Scotland publishes a wide range of information on Child Health including infant feeding, immunisations, and Primary 1 Body mass Index (BMI). Further information is available on our website.

The next release of this publication will be in February 2020.

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