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Child Health Information

March 2001

This briefing has been specially designed for health professionals who are involved with the Child Health Surveillance Programme: Pre-School (CHSP-PS). We hope that the analyses presented here will serve as an introduction to some of the questions and issues surrounding the data. There is increasing interest in children's health and services, and in the information pertaining to them. The new pre-school forms, clinical guidelines and associated training offer an opportunity to re-emphasise the importance of quality, consistency, accuracy and completeness.

One of our main objectives is to encourage discussion and consultation between the Child Health Information Team (CHIT) and health care professionals regarding data. Presented on these pages are examples of information obtained from the Pre-School dataset. By using breast feeding data we aim to illustrate the types of analysis available at LHCC and health visitor level. Also included are some examples of analyses relating to the recording of problems and issues.

CHIT as established within ISD Scotland during 1999 as a centralised team for information concerning the health of children in Scotland. One of our prime objectives is to facilitate better use of the data collected by the child health surveillance systems. In our first year we focused predominantly on the pre-school dataset, reporting on the hard-coded items at health board level, providing data extracts to health boards and trusts, as well as numerous *ad hoc* enquiries. We now intend to develop more detailed reports and extend analysis to the rest of the pre-school dataset.

Work is underway on the other child health system datasets: school; Scottish immunisation; and special needs. Analyses from these will be available later in the year.

All of our publications can be accessed *via* the *ISD Online* website (http://www.show.scot.nhs.uk/isd) by following the publications link, where they are listed under child health.

- Oct 2000 - Immunisation uptake rates.
- June 2000 - Data on problems relating to hips & undescended testes.
- Nov 1999 - Breast feeding and smoking during pregnancy.

This site also contains a wide range of other information on health and health care, including a section on child health.

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For further information please contact Elaine Strange 0131 551 8669

Information & Statistics Division
part of the
Common Services Agency
for the
National Health Service in Scotland

Information & Statistics Division
Trinity Park House
South Trinity Road
Edinburgh EH5 3SQ

GENERAL ENQUIRIES

phone 0131-551 8899
fax 0131-551 1392

Breast Feeding

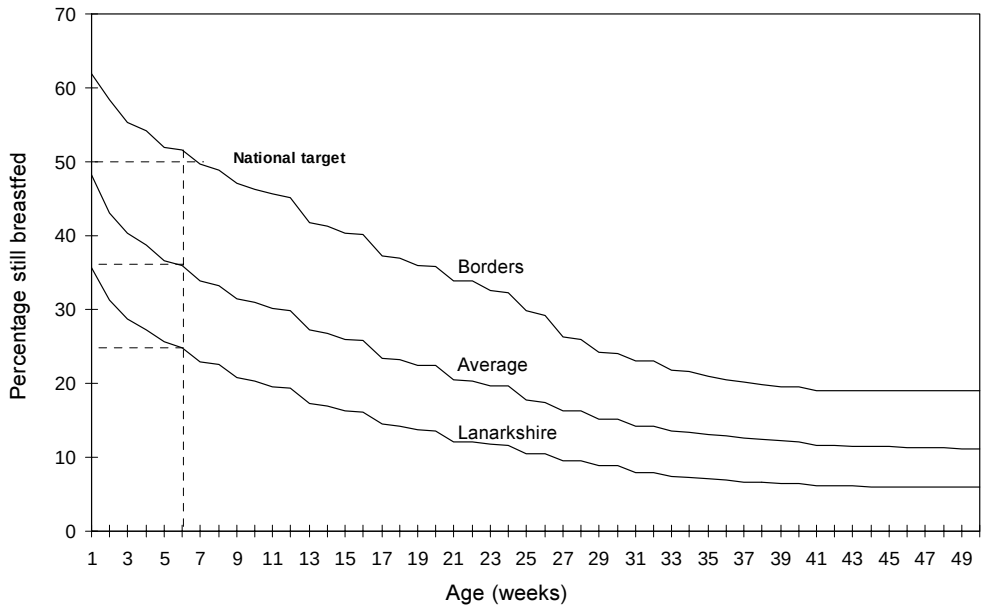
Encouraging and supporting breast feeding is recognised as an important public health activity. The national target, set in 1994, states that by the year 2005 more than 50 percent of women should still be breast feeding their babies at 6 weeks of life.

This section illustrates some information on breast feeding from a previous health briefing (Nov. 1999, available on *ISD Online*) as well as additional analyses which will be of interest to health visitors. In these analyses 'breast fed' includes both children exclusively breast fed and those fed both breast and formula milk.

Duration of Breast Feeding

At the 8-9 month review mothers are asked whether they have ever breast fed, whether they are still breast feeding and, where applicable, the age at which breast feeding stopped. By using these data we can provide further insight into the way breast feeding changes as the baby grows. Figure 1 below shows the pattern of breast feeding for babies who have had their 8-9 month review in 1999. The proportion of babies breast fed at increasing ages are shown for the participating health board areas with the highest and lowest rates. The dotted lines show that at 6 weeks approximately 25 percent in the lowest and 50 percent in the highest area are still breast fed. At 12 weeks, these figures have dropped to 19 percent and 45 percent respectively.

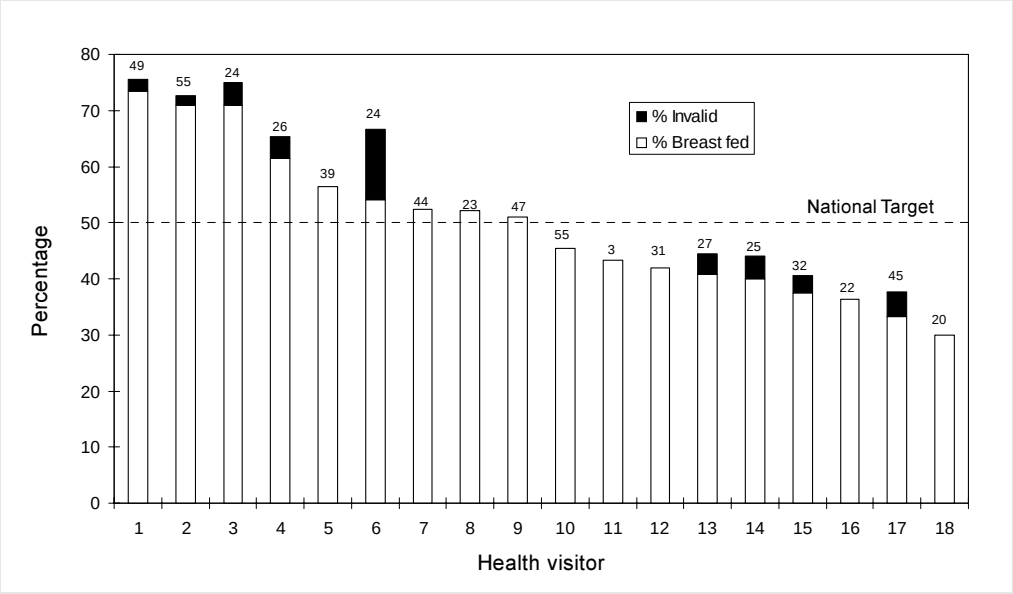
Fig. 1 Breast feeding rates by age (in weeks): 8-9 month review; 1999 examinations



Source: CHSP-PS, ISD Scotland.

Figure 1 also appears to emphasise the importance of having a large proportion of mothers breast feeding initially. Breast feeding rates in the highest and lowest health boards drop off at a similar rate so higher rates early on lead to consistently higher rates at later stages, including the 6-8 week target age.

Fig. 2 Breast feeding rates [1] at the 6-8 week review: one LHCC by health visitor [2]; 1999 examinations

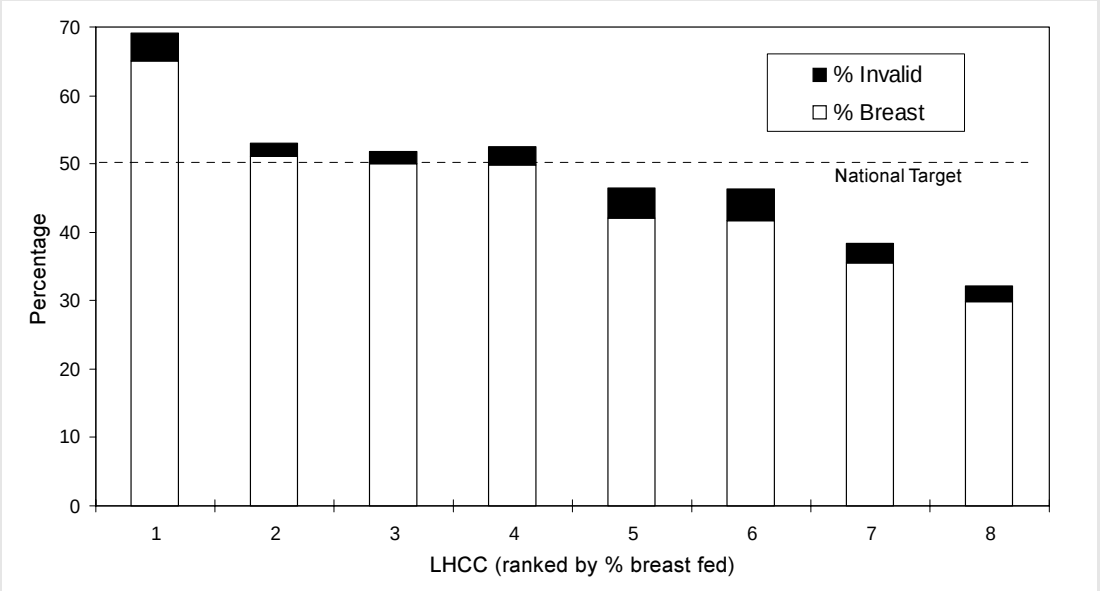


1 "Invalid" includes missing or incorrectly coded records.
2 Excludes health visitors with a caseload of less than 5.

Source: CHSP-PS, ISD Scotland

Health care professionals may be interested in examining rates at local levels. As an example anonymised information on breast feeding rates at health visitor and LHCC level are presented. Figure 2 shows the breast feeding rates by health visitor for one LHCC. There is considerable variation in both breast feeding rates and in the levels of missing/invalid data.

Fig. 3 Breast feeding rates [1] at the 6-8 week review: one health board area by LHCC; 1999 examinations

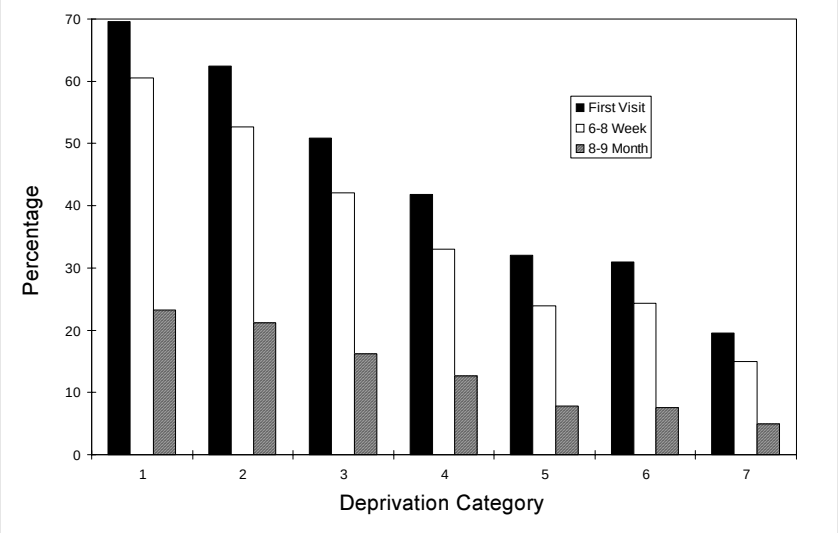


1 "Invalid" includes missing or incorrectly coded records.

Source: CHSP-PS, ISD Scotland.

As figure 3 shows, when health visitor caseloads are aggregated up to LHCC level, there is still wide variation in breast feeding rates within a single health board area.

Fig. 4 Breast feeding [1,2] rates at 6-8 week review: by deprivation category; children born in 1999



1 Missing and unknown data excluded.
2 Exclusively breast fed or fed both breast and formula milk.

Source: CHSP-PS, ISD Scotland.

There are a number of factors, including social and cultural issues that may influence new mothers' decisions as to whether or not to breast feed.

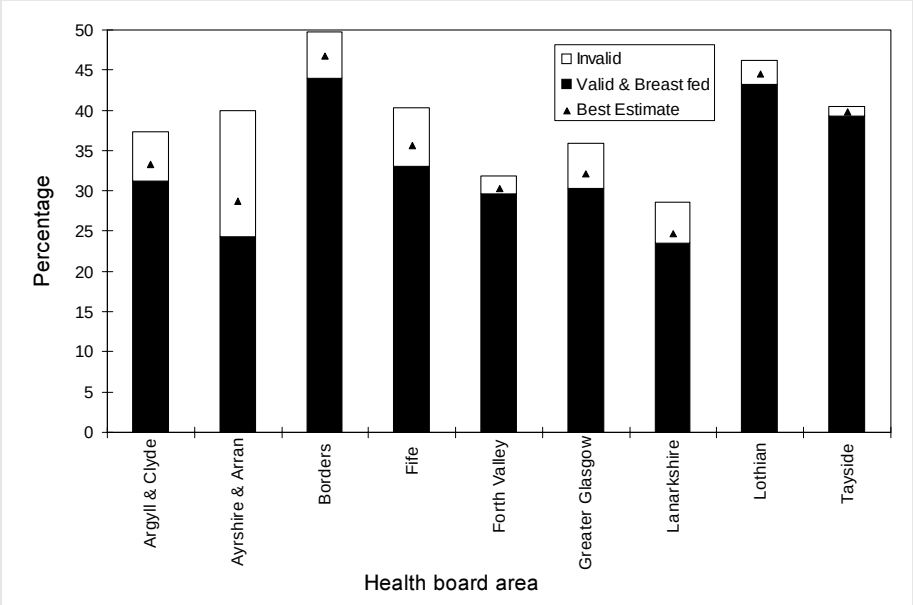
Some of the variation between the health visitor caseloads may be due to differences in the characteristics of the mothers, such as deprivation. Breast feeding rates by deprivation category, as illustrated in Figure 4, show that the more deprived populations demonstrated lower breast feeding rates than the less deprived.

Variation in missing and invalid data levels is more attributable to health visitor practice.

General notes on Deprivation categories

Deprivation category is an area based measure, calculated at postcode sector level (e.g. EH3 5) and is derived from four census variables: over crowding, male unemployment, social class and car ownership. These items are combined to create a composite score. The deprivation score is divided into seven categories, ranging from very high (depcat 7) to very low (depcat 1). The Scottish population is unevenly distributed between these seven groups, with the middle range (depcat 3 & 4) holding a greater proportion than the extremes (1, 2, and 7).

Fig. 5 Breast feeding [1] rates [2] at 6-8 week review: by health board area; children born in 1999



1 Best estimate shows the proportion breast fed after excluding invalid responses from denominators.
2 Exclusively breast fed or fed both breast and formula milk.

Source: CHSP-PS, ISD Scotland.

Not all data items collected on the Pre-School Surveillance System are mandatory. In some cases the system may accept blanks or invalid codes or combinations of codes which may signify different responses according to local practice. Figure 5 shows the proportion of 6-8 week reviews where the response to the breast feeding questions were missing or invalid by health board area. The highest proportion (16 per cent) was in Ayrshire and Arran and the lowest in Tayside (1 per cent).

Figure 5 also highlights the impact of missing data. The best estimate of breast feeding rates, obtained by excluding invalid responses from the denominator are shown. These lie between a minimum and a maximum value derived by assuming that the missing /invalid responses are either all 'bottle fed' or all 'breast fed', respectively. The difference between this minimum and maximum depends on the proportion of missing data. Clearly these best estimates are closer to the actual rates for health boards with the lowest proportion of missing/ invalid responses, such as Tayside.

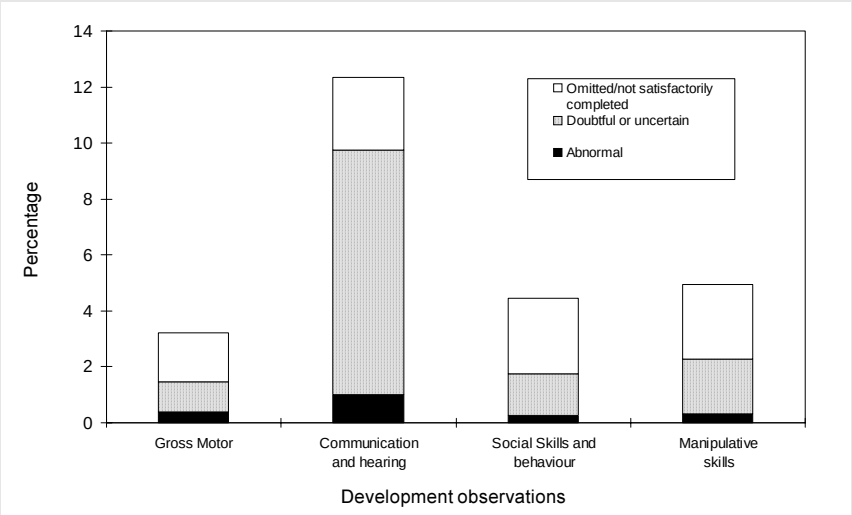
Problems and issues identified

A child surveillance programme encourages monitoring and documentation of a child's development. Hall[1] *et al* state that the aims of a child surveillance programme include "the recognition of and if possible elimination of potential problems affecting development, behaviour and education and, the early detection of any abnormality in order to offer investigation and treatment".

The CHSP pre-school form therefore includes many opportunities for the recording of possible problems and abnormalities. This section explores data recorded within the age appropriate developmental observations and the problem/concern area. The latter is where any concerns or problems that are pertinent to the child's development may be recorded. These problems are noted in free text by health care professionals and are later coded using Read codes. The Read code and the description, in words, are preprinted on the next review form, and serve as a prompt for the health visitor, as well as a record for the parent.

Hard-coded items would appear to be straightforward to analyse and report on. There may however be some questions as to what they represent particularly when applied to a parent-held record, and how they relate to the problems/concerns part of the form.

Fig. 6 Developmental observation categories at the 21-24 month review; 1999 examination



Source: CHSP-PS, ISD Scotland.

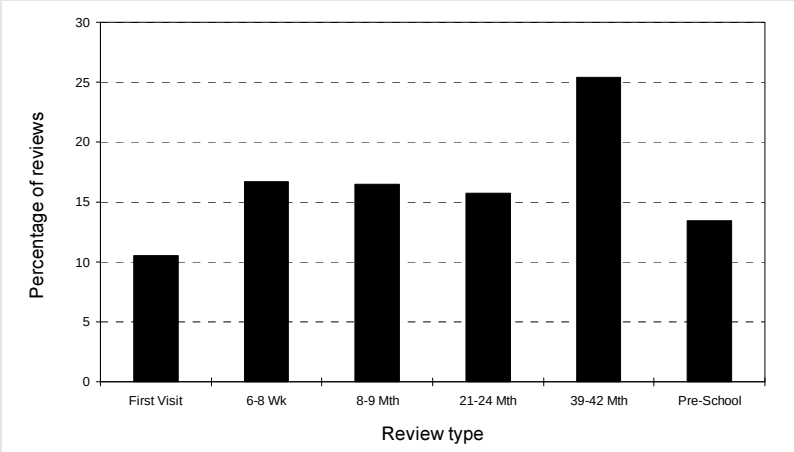
The four developmental observations recorded at the 21-24 month review are shown in Figure 6. The percentage classified as abnormal is very small for each of the four developmental assessments, less than 1 percent.

The proportion of reviews where development in communication and hearing was assessed as abnormal, doubtful or uncertain is approximately 10 percent. This area of development accounts for the largest proportion of abnormal or doubtful observations at this age.

The proportion of reviews at which new problems were recorded increases from the first visit to the 39-42 month review. As shown above, communication and hearing is an area of development where early problems may start to be noticed at the 21-24 month review. It is likely that other developmental problems will become apparent at different reviews.

To confirm this and to describe the nature and incidence of the problems and concerns referred to in figure 7, it is necessary to develop some sort of Read-code groupings.

Fig. 7 When new Read-coded problems are first recorded: 1999 examinations



Source: CHSP-PS, ISD Scotland.

1 Hall D, Hill P, Elliman D. The Child Surveillance Handbook. 1999. Radcliffe Medical Press.

Read Version 2 codes are extensive and can be used to describe many facets of health care. Over 7,500 Read codes have been used in the pre-school system. It is quite possible within the Read system for two identical patients with identical conditions to be correctly coded using different codes, by different practitioners.

CHIT have begun work on a set of groupings which relate to child health issues. So far the Team have derived the following groupings: developmental delay, speech and language development; hearing; vision and squint. A full list of the Read codes included in these groups will be available from the child health website (http://www.show.scot.nhs/uk/isd/child_health/child_health.htm).

Table 1 lists the Read codes relating to "developmental delay" and "speech and language development". The groups have been derived by gathering all the Read codes in the system which appear to relate to these group headings. By applying clinical coding expertise the Read coded problems have then been subdivided into "definite", "possible" and "other - not developmental". There is much variation in the type of problems recorded within each group. For example, in the speech and language group "child examination: speech" may be a less obvious developmental problem than "developmental aphasia".

Table 1 Read Code Groupings

Developmental problems

Definite		**Other - not developmental**	
13Z4E	Learning difficulties	22I..	O/E -physiological development
E2F..	Specific delays in development	22I2.	O/E - failure to thrive
E2F0.	Specific reading disorder	22I5.	O/E - lack of growth
E2F00	Reading disorder unspecified	22I6.	O/E - short stature
E2F03	Specific spelling difficulty	64P..	Child exam.: development
E2F1.	Dyscalculia	64P1.	Child exam.:gross motor devel.
E2F2.	Other specific learning diffic	64P2.	Child exam.: fine motor devel.
E2F4.	Coordination dis. (dyspraxia)	64P3.	Child exam.:social development
E2F5.	Mixed development disorder	64PZ.	Child exam.: development NOS
E2Fy.	Other development delays	R0341	[D]Failure to gain weight
E2Fz.	Developmental disorder NOS	R0342	[D]Failure to thrive
Eu8..	[X]Disorders psycholog develop	R0343	[D]Lack of growth
Eu81.	[X]Specif scholastic devel dis	R0344	[D]Physical retardation
Eu812	[X]Specific disord arithmetic	R0345	[D]Short stature
Eu81y	[X]Oth dis scholastic skills	R0346	[D]Short stature, constitution
Eu81z	[X]Dev dis scholas skills unsp	R034y	[D]Physiol.developmnt.fail. OS
Eu82.	[X]Spec devel disor motor func	R034z	[D]Physiol.developmnt.fail.NOS
Eu83.	[X]Mix specific develop disord		
R034.	[D]Physiol.development failure		
Possible			
22I3.	O/E - delayed milestones		
8HT6.	Referral developmental clinic		
R0340	[D]Delayed milestone		
ZV400	[V]Problems with learning		

Speech and language development

Definite		**Possible**	
E2F3.	Speech/language develop.disord	03J6.	Speech therapist
E2F3z	Speech developmental dis. NOS	13ZA.	Language difficulty
E2F30	Developmental aphasia	1B441	Speech limited
Eu80.	[X]Spec develop dis speech/lan	1B9..	Speech problem
Eu800	[X]Specif speech articulat dis	1B93.	Has difficulty with speech
Eu801	[X]Expressive language disordr	1B94.	Speech limited
Eu802	[X]Receptive language disorder	1B9Z.	Speech problem NOS
Eu80y	[X]Oth develop dis speech/lang	2B4..	O/E - speech defect
Eu80z	[X]Dev disord speech/lang unsp	2B42.	O/E - motor aphasia
		2B44.	O/E - aphasia NOS
Other -not developmental		2B45.	O/E - dysphasia - motor
1B92.	Has a stammer/stutter	2B4Z.	O/E - speech defect NOS
2B49.	O/E - stammer/stutter	64M6.	Child exam.: speech
E270.	Stammering or stuttering	64P4.	Child exam.: language develop.
E29y3	Elective mutism - adjust.react	64R3.	Child: speech therapy
E2D22	Child/adolesc. elective mutism	8E2..	Speech defect remedial therapy
Eu9y5	[X]Stuttering [stammering]	8E21.	Speech therapy
R044.	[D]Voice disturbance	8H7G.	Refer to speech therapist
R0445	[D]Hoarseness	9N0Q.	Seen speech & language clinic
R044z	[D]Other voice disturbance NOS	E2F31	Dyslalia
R045.	[D]Other speech disturbance	Eu803	[X]Acquired aphasia + epilepsy
R0450	[D]Dysarthria	R043.	[D]Aphasia
R0452	[D]Slurred speech	R0451	[D]Dysphasia
R045z	[D]Other speech disturb.NOS	ZV401	[V]Problems with communication
		ZV573	[V]Speech therapy

Source: ISD Scotland

The Team requires input and feedback from the service on such Read code groupings so that they can provide meaningful analysis. There is also a need for discussion concerning the consistency of coding to ensure that similar problems are coded in a similar fashion.

In 1999, a new problem/concern was recorded in almost 16 percent of all children attending the 21-24 month review. Table 2 shows that over half of the new problems recorded at this review fall into one of the five groupings, with the speech and language grouping accounting for the highest number. It is also interesting to look at the variation across health boards areas. In Tayside 200.7 per thousand review had a new problem recorded compared with 90.7 in Lanarkshire and approximately 49.3 in Ayrshire and Arran. It is possible that any variation may be due to differences in recording practices. For instance, we know that Lanarkshire has an additional review at approximately 16 months of age.

Table 2 New Read-coded problems recorded at the 21-24 month review; by health board area: 1999 examinations

	Total number of reviews	*Rate per 1000 reviews*						
		All problems	Developmental delay	Speech/ language	Hearing	Vision(excl Squint)	Squint	Other
Health Boards on system	**44 238**	***157.8***	***11.3***	***46.6***	***5.4***	***2.7***	***14.4***	***77.4***
Ayrshire & Arran	3 309	*49.3*	*2.4*	*17.8*	*1.2*	*1.2*	*4.2*	*22.4*
Borders	1 079	*197.4*	*6.5*	*52.8*	*8.3*	*1.9*	*13.0*	*114.9*
Argyll & Clyde	4 396	*175.4*	*8.9*	*60.3*	*5.7*	*1.1*	*12.7*	*86.7*
Fife	3 725	*186.3*	*16.6*	*50.5*	*7.8*	*5.1*	*14.5*	*91.8*
Greater Glasgow	9 508	*160.2*	*11.1*	*41.8*	*7.7*	*3.2*	*18.9*	*77.5*
Lanarkshire	6 338	*90.7*	*5.2*	*30.8*	*1.4*	*1.3*	*7.1*	*45.0*
Lothian	8 499	*186.1*	*13.5*	*53.9*	*4.9*	*3.2*	*17.1*	*93.5*
Tayside	4 279	*200.7*	*17.1*	*71.3*	*7.5*	*2.1*	*12.2*	*90.7*
Forth Valley	3 105	*192.9*	*18.4*	*44.4*	*5.5*	*4.5*	*24.5*	*95.7*

Source: CHSP-PS, ISD Scotland.

Table 3 shows the association between two areas of developmental assessment and Read coded problems. There were 3863 children whose development in communication and hearing was recorded as doubtful or uncertain. It might be expected that these children would be kept under review or monitored in some way, and that this may be recorded on the form. However, 2358 had no developmental delay, speech & language or hearing Read coded problem noted.

Table 3 Association between developmental observations and Read coded problems; at the 21-24 month review

Developmental assessment type	Total number of reviews	READ Code Grouping		
		Developmental delay	Speech/ language	Hearing
Total	**44 238**	**438**	**2 050**	**237**
Communication and hearing				
Abnormal	444	76	243	33
Doubtful or uncertain	3 863	190	1 232	83
Omitted/not satisfactorily completed	1 156	18	68	11
Normal	38 775	154	507	110
Social Skills and behaviour				
Abnormal	117	25	18	7
Doubtful or uncertain	665	123	146	17
Omitted/not satisfactorily completed	1 188	18	52	7
Normal	42 268	272	1 834	206

Source: CHSP-PS, ISD Scotland.

This table is another example of how data relating to child health can be provided at LHCC level. It shows data extracted from SMR02 (which records maternity inpatients and day cases) and details the number of live births in Argyll and Clyde Health Board area. The LHCCs have been anonymised for the purposes of this publication.

Table 4 Live births in Argyll & Clyde Health Board [1] by age of mother, low birthweight and preterm; by LHCC; 1998/99

	Live Births	Age of Mother			Low Birth-weight[2]	Pre-term[3]
		< 20	20-34	>= 35		
Scotland	**56180**	**4813**	**43403**	**7964**	**3921**	**4021**
Argyll and Clyde	**4640**	**389**	**3606**	**645**	**344**	**360**
ACHB LHCCs						
1	174	16	132	26	19	13
2	192	16	156	20	12	18
3	745	53	575	117	60	66
4	814	77	632	105	60	55
5	985	82	777	126	81	85
No LHCC	1 730	145	1 334	251	112	123

1 Excludes home births and births at non-NHS hospitals.
2 Low birthweight is defined as any birthweight below 2,500 grammes
3 Preterm births are defined as those occurring before 37 completed weeks gestation.

Source: SMR02, ISD Scotland.

The examples given in this publication demonstrate how information may be presented at more local levels instead of health board area. Many health boards and trusts have already obtained extracts of the pre-school dataset and can produce these analyses locally. We would welcome feedback as to any information that has been particularly useful or informative. We are also seeking input and guidance from health care professionals in regarding the recording of problems, concerns and diagnoses.

Initial analyses on immunisation, school and special needs data, as well as further work on the pre-school dataset, will be published on *ISD Online* and may be found *via* the child health pages.

Comments regarding the content and interpretation of this briefing are welcome. These and any other enquiries relating to child health information should be directed to:

Child Health Information Team (CHIT)
Telephone: 0131 551 8669
Fax: 0131 551 1392
E-mail: Child.Health@isd.csa.scot.nhs.uk