

2007



National Dental Inspection Programme of Scotland

Report of the National Dental Inspection Programme on the detailed inspection of **P7 Children**
and the basic inspections of P1 & P7 throughout Scotland during the school year 2006/2007
prepared for the Scottish Dental Epidemiological Co-ordinating Committee

National Dental Inspection Programme of Scotland

Report of the 2007 Survey of P7 Children

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National Dental Inspection Programme

The 2007 National Dental Inspection Programme (NDIP) undertaken during the school year 2006/2007

It is important that every child's dental wellbeing is assessed so that children and their parents can maintain oral health and take necessary steps to remedy any problems that may have arisen. There is also a need to monitor children's dental health at national and regional levels so that reliable oral health information is available for planning and evaluating initiatives directed towards improvements.

The National Dental Inspection Programme (NDIP) aims to fulfil these functions by providing an essential source of information for keeping track of the changes in the dental health of Scottish children. Combined with the full historical nature of the existing data bank which started to be gathered from 1987 by the Scottish Health Boards' Dental Epidemiological Programme (SHBDEP)¹, NDIP will be able to identify trends and assist in planning future dental services.

Two key child age groups are inspected: at entry into school in primary one (P1) and in primary seven (P7) before their move to secondary education. The Inspection Programme has two levels: a *Basic Inspection* (intended for all children) and a *Detailed Inspection* (for a representative sample of a specific age group in alternate years). In the school year 2006/2007, the main focus of the *Detailed Inspection* programme was P7.

Dental health of P7 children in Scotland in 2007

All young people should hope to enter adult life with a healthy mouth. However, despite improvements in the last thirty years, many children in Scotland still suffer from tooth decay and have already embarked upon a lifelong journey of deteriorating oral health.

Previous surveys have examined children aged 12 years, with the most recent results for that group being presented for the school year 1996/1997². In 2005, the primary seven (P7) age group were surveyed for the first time³. This 2007 NDIP survey is the second in the series and the results can be compared against the figures obtained in the first survey of this age group.

At the end of their primary school career and just prior to secondary school, over 59% of these Scottish children have been found to have no obvious dental decay experience in their permanent teeth. Overall, this 2006/2007 cohort is close to the national target set for this age group by the Scottish Government. This is an improvement compared to 2005 of just over six percentage points.

In previous years, Scotland did not compare well with other home countries in the United Kingdom. In the 2004/2005 BASCD (British Association for the Study of Community Dentistry) survey of eleven-year old children⁴, Scotland had the highest mean number of Decayed, Missing and Filled Teeth (D₃MFT) at 1.29 per school, while Wales had 1.09 and England 0.64. In 2007, the mean D₃MFT in Scotland has now decreased to 1.06 with the percentage number of P7 children across Scotland having obvious decay experience reducing to 40.9%, compared to 47.1% in 2005.

The majority of dental disease continues to be borne by children from more deprived backgrounds where 11-year olds are twice as likely to suffer from obvious decay experience in permanent teeth as children from more affluent homes.

The Scottish Executive consultation document 'Towards Better Oral Health in Children'⁵ sums up the situation by saying, "*Despite some significant improvements, we still have unacceptably poor levels of oral health. Scotland's children still have too many diseased teeth. Dental disease still results in extreme pain and discomfort, infection, social embarrassment and interrupted work and education for a significant part of the Scottish population.*"

Principal aims of the Programme in 2007

The principal aims are to gather appropriate information in order to inform children and parents of their dental/oral health status and, through appropriately anonymised and aggregated data, advise the Scottish Government, NHS Boards and other organisations concerned with children's health of the prevalence of oral disease.



The 2007 NDIP work took place across all areas of Scotland and involved the collaboration of many people and organisations, including the Consultants in Dental Public Health and Chief Administrative Dental Officers Group, the Scottish Association of Community Dental Directors, Community Dental Officers, Scottish NHS Boards, Local Education Authorities and schools and the Chief Scientist Office's Dental Health Services Research Unit (DHSRU) at the University of Dundee.

What did the NDIP Basic Inspection consist of?

The *Basic Inspection* involved a simple assessment of the mouth of each child using a light, mirror and ball-ended probe. Each child was then placed into one of three categories depending on the level of dental health and a letter sent to their parents. More information regarding the data from the NDIP *Basic Inspection* can be seen in part 2 of this report on page 18.

One of three possible letters was sent and each informed the parents about the state of dental health found in the mouth of their child at the time of the school inspection. These letters vary slightly depending on whether a P1 or a P7 child was inspected. The letters were as follows:

- Letter A - should seek immediate dental care on account of severe decay or abscess.
- Letter B - should seek dental care in the near future due to one or more of the following: history of tooth decay, a broken or damaged front tooth, tooth wear, poor oral hygiene or may require orthodontics.
- Letter C - no obvious decay experience but should continue to see the family dentist on a regular basis.

The results of the *Basic Inspection* are then anonymised and aggregated. They are used to monitor the impact of local and national oral health improvement programmes, and to assist in the development of dental services.

What did the NDIP Detailed Inspection consist of?

The *Detailed Inspection* was a more rigorous and comprehensive assessment that involved recording the status of each surface of each tooth in accordance with international epidemiological conventions.

The specific goals of the *Detailed Inspection* were to determine current levels of established tooth decay, and to determine the impact of deprivation on the dental health of primary seven children in Scotland in 2007.

The remainder of this first section of the report gives the results for the *Detailed Inspection*. The results for the *Basic Inspection* can be found at the end of this document.

How was consistency achieved in the conduct of the inspections across Scotland?

An important part of the NDIP process was that the conduct of the *Detailed Inspections* remained consistent with key elements of the previous SHBDEP system all over Scotland and that the participating community dentists recorded their findings in the same manner. In order to ensure this, the dentists were required to undergo training and calibration exercises before the programme began.

Mandatory two-day training courses took place in Perth in November 2006 consisting of illustrated lectures, IT training and discussion sessions on how to record the inspections, in accordance with criteria set down by the British Association for the Study of Community Dentistry (BASCD)⁶, appropriately modified for NDIP.

These were followed by clinical training sessions using P7 children from three local primary schools. When these were completed, the dentists conducted a series of calibration assessments on another group of schoolchildren. The results were then compared so that only dentists falling inside the range of 'substantial agreement'⁷ would participate in the *Detailed Inspections*.

How many P7 children had a Detailed Inspection?

Each NHS Board was required to identify the number of schools needed to obtain a representative sample of a given size from their primary seven population⁸. The sample sizes used provided adequate numbers to allow meaningful comparisons between NHS Boards.

The sampling procedure for NDIP differs from the previous SHBDEP surveys in so far as whole classes are now selected to simplify the process for schools while ensuring that results reflect the P7 population (or P1 population) in Scotland.

Table 1 shows that nearly 12,000 children across Scotland were inspected in detail. This represents 21% of the P7 population. Across all NHS Boards, the percentage of children inspected varied from 9.7% to 100%.

NHS Boards can choose to increase the sample size in order to assist with local planning needs, while some less populated Boards need to include large proportions to achieve statistically meaningful numbers. During the course of the survey, 10% of the children were re-inspected in order to assess the consistency of the examination results of the dentists who were undertaking the inspections.

Table 1 : Primary 7 populations involved and the number of children who received a *Detailed Inspection* by NHS Board across Scotland

NHS Board	Primary 7 populations	Number of children receiving a <i>Detailed Inspection</i>	% of P7 population receiving a <i>Detailed Inspection</i>
Ayrshire & Arran	4305	927	21.5
Borders	1306	414	31.7
Dumfries & Galloway	1463	395	27.0
Fife	4121	869	21.1
Forth Valley	3203	593	18.5
Grampian	5847	595	10.2
Greater Glasgow & Clyde	13048	4083	31.3
Highland	2695	626	23.2
Lanarkshire	6690	641	9.6
Lothian	7986	1245	15.6
Orkney	279	255	91.4
Shetland	257	257	100.0
Tayside	4307	495	11.5
Western Isles	360	334	92.8
Total for Scotland	55867	11729	21.0

This 2007 NDIP Report is the first survey to include the changes in borders and population since the dissolution of NHS Argyll & Clyde in 2006. The area that it occupied is now the responsibility of both the newly enlarged NHS Highland that now includes Argyll & Bute, and NHS Greater Glasgow & Clyde.

When did the Dental Inspections occur and how old were the children?

The NDIP inspections took place from November 2006 until June 2007. The staff of the Community Dental Service within each NHS Board undertook all the clinical work associated with both *Basic* and *Detailed Inspections*.

The mean age of the children examined in the *Detailed Inspection* across Scotland was 11.5. The mean age for boys was 11.6 and that for girls was 11.5. The range of mean ages across NHS Boards was 11.3 - 11.7 years.

What is meant by ‘obvious decay’ in this report?

It is important to note that when obvious tooth decay (D_3T) is discussed in this report it means *decay that can be seen to involve the dentine* (i.e. the layer below the outer white enamel of permanent teeth) and includes *pulpal decay*. The *Detailed Inspection* measures obvious decay into dentine when seen under school (rather than dental surgery) conditions.

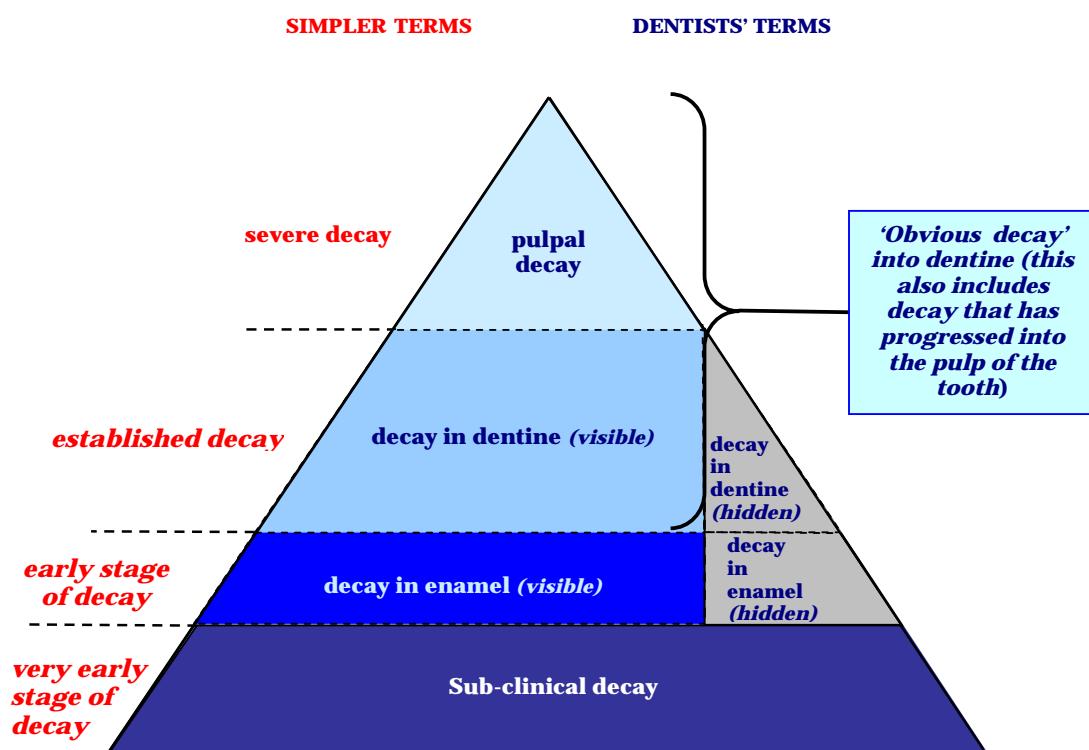
What is meant by ‘obvious decay experience’ in this report?

When the term obvious decay experience (D_3MFT) is discussed in this report it means ‘obvious decay’ (noted above), and in addition includes both missing teeth (extracted due to decay) and filled teeth.

What are the stages of tooth decay?

Dentists use specific professional terms to identify the different stages of tooth decay. However, simpler terms are provided in diagram 1 below to help illustrate the various stages of tooth decay.

Diagram 1 :
Stages of tooth decay



What definitions of decay do the dentists conducting the NDIP Detailed Inspection use?

The definitions of decay used are in accordance with the BASCD guidelines and international epidemiological conventions, thus allowing comparisons to be made with other countries in Europe and beyond.

The data presented for decay only relate to dental decay that clinically appears to have penetrated dentine (the inside of the tooth). This is a different diagnostic level from that used by dentists when examining patients in a dental surgery.

National Dental Inspection Programme (NDIP) 2007

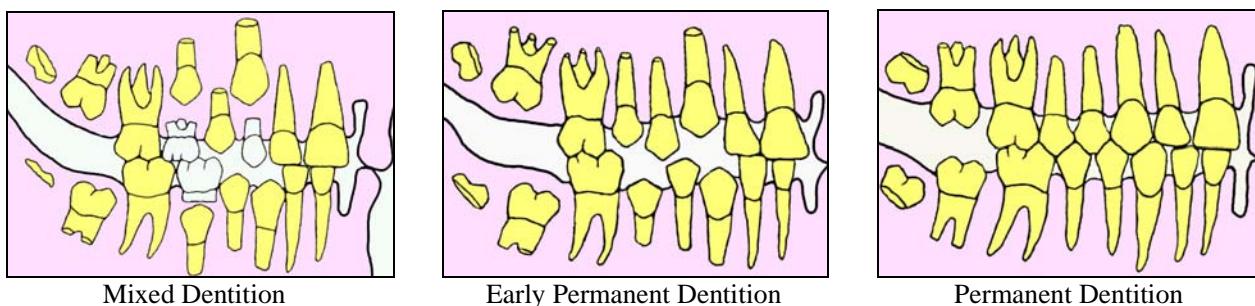
PART 1

DETAILED INSPECTION RESULTS

What is the relevance of age and stage of dental development to this survey?

The dental condition of the P7 children examined during 2006/2007 was found to have either a mixed dentition (both deciduous and permanent teeth) or a permanent dentition. The types of dentitions observed are illustrated as a cross section of the mouth in Diagram 2 (with deciduous teeth represented in white and permanent teeth in yellow).

Diagram 2 : Range of stages of dental development seen in P7 children



In the last report, an analysis of the prevalence of decay experience in the deciduous or first dentition was included. However, due to the range of dental development shown in diagram 2, some or many P7 children had already lost deciduous teeth and consequently the history of the disease experience of these missing teeth was unknown.

Whilst the analysis of caries experience in the deciduous dentition is informative with regard to future caries risk, at the age of eleven years, the first permanent molars have been present in the mouth since the age of six and these, together with other permanent teeth that are present, are more indicative of dental disease experience.

The main intention of this survey was to examine the dental status of permanent teeth in P7 children, and all the analysis of the P7 dentition was concentrated on the permanent dentition alone and not on the state of the remaining deciduous dentition.

What proportion of P7 children in Scotland had no obvious decay experience in their permanent dentition?

One of the targets originally set by the Scottish Executive for the year 2010 was that 60% of P7 children should be free of obvious decay experience⁹.

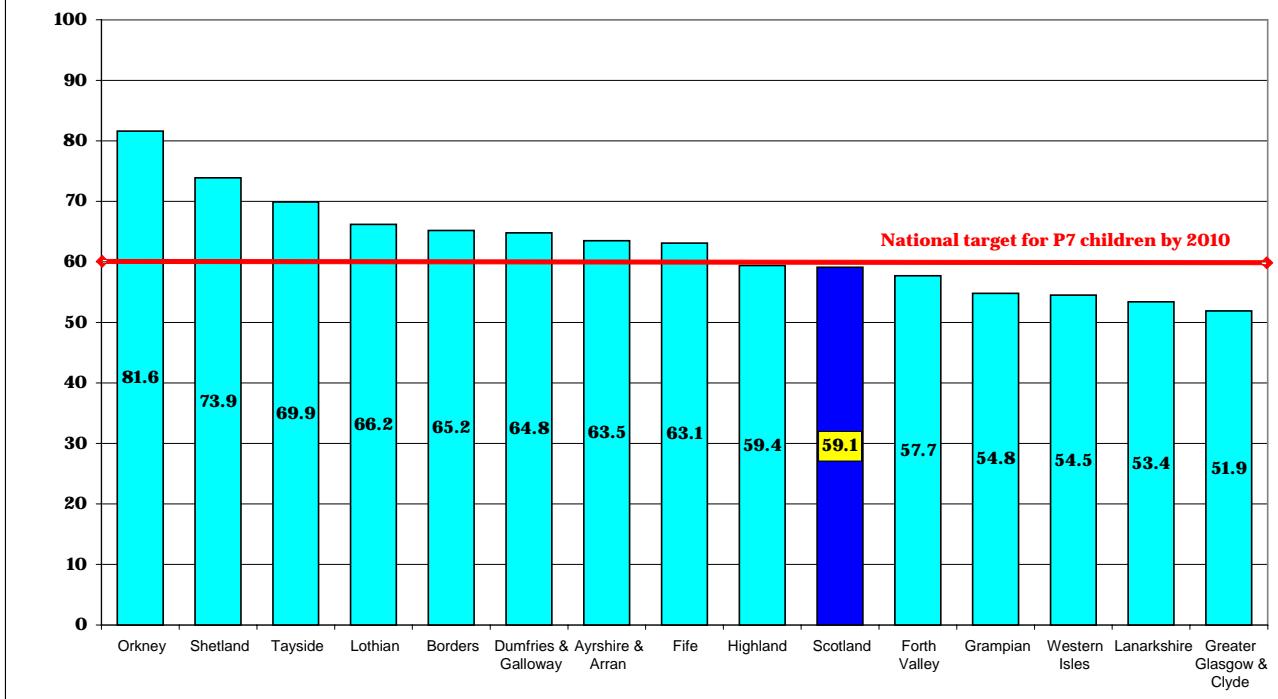
Figure 1 shows the proportion of P7 children in NHS Boards who showed no signs of obvious decay experience in their permanent teeth. Across Scotland, 59% of P7 children fall into this category, with a range of 51.9% to 81.6% across the fourteen NHS Boards.

These findings illustrate the extent to which some NHS Boards have already achieved the 2010 target and how close other NHS Boards are to achieving that same target.

The value for Scotland of 59.1% with no obvious decay experience is a benchmark figure against which future P7 *Detailed Inspection* results will be measured and is an improvement over the 2005 P7 NDIP Report where the figure for Scotland was 52.9%

Figure 1 illustrates the range of no obvious decay experience in the permanent dentition across all of the fourteen NHS Boards and Scotland as a whole.

Figure 1 : Proportion of P7 children with no obvious decay experience in their permanent dentition



What levels of decay experience in permanent teeth were seen in P7 children in 2007?

A more detailed description of the decay experience distribution is shown in Table 2 below.

Table 2 : Overall obvious decay experience in permanent teeth of P7 children in Scotland

	%	NHS Boards
Free of obvious decay experience at the dentinal level ($D_3MFT = 0$)	59.1	51.9 – 81.6
With obvious decay experience, $D_3MFT > 0$ (as per BASCD)	40.9	18.4 – 48.1
With 'current decay', $D_3 > 0$ (as per BASCD)	18.9	7.8 – 26.9
With severe decay	3	
Care index (FT/ D_3MFT)	49.1	39.8 – 58.3
	Mean	NHS Boards
Obvious decay experience (D_3MFT) across Scotland	1.06	0.42 – 1.28
Decayed teeth (D_3T) across Scotland	0.40	0.17 – 0.54
Missing teeth (MT) across Scotland	0.15	0.06 – 0.21
Filled teeth (FT) across Scotland	0.52	0.18 – 0.74
Decayed, missing and filled teeth for those with obvious decay experience ($D_3MFT > 0$)	2.60	1.94 – 2.83

It should be noted that, although the average number of decayed, missing and filled teeth across primary seven children examined in Scotland was 1.06, for the 41% of this age group who have experienced dental decay, the average number of affected teeth was more than double this figure at 2.60.

How has the dental health of P7 children in Scotland changed since the last survey in 2005?

The data show a rise in the number of P7 children with no obvious decay experience (i.e. a decline in the prevalence of decay) during the two-year period between the 2005 and 2007 NDIP surveys – a change from 52.9% to 59.1%. It is hoped that this will continue but, with only two data points, it is too early to say if this is a positive trend or not. Further data from the proposed 2009 NDIP survey will add to this database.

It is important to monitor the dental health of children and be able to make comparisons over a period of time. Future surveys of this age group will continue to add important information regarding trends in the level of dental disease over time.

What proportion of obvious decay experience among P7 children was treated with fillings?

The Care Index is used to describe the proportion of obvious decay experience which has been treated restoratively [(FT÷DMFT) x 100]. In Scotland, the Care Index for this age group is 49%. There is concern in Scotland that children will enter adulthood with untreated dental disease.

This survey has recorded that 38% of the decay experience is apparently unrestored [(DT÷DMFT) x 100]. Every effort should be made to encourage regular routine dental care, so that oral health is restored and maintained, thus establishing a more sound foundation into adult life.

Was the level of obvious decay experience in permanent teeth spread evenly throughout the P7 population?

The results shown in Table 3 demonstrate that decay experience was not spread evenly throughout the P7 population. Some 41% of P7 children had 100% of the obvious decay experience while an unfortunate 11% had 50% of the recorded decay experience.

Even more of note was that 1% of the P7 population had 50% of the observed severe decay into the pulp of their permanent teeth.

Table 3: Skewed prevalence of obvious decay experience in the permanent teeth of P7 children in Scotland

Share of disease		Proportion of P7 population
Established decay experience (D₃MFT)		
100% of teeth with established decay experience	occurred in	41% of population
90% of teeth with established decay experience	occurred in	30% of population
50% of teeth with established decay experience	occurred in	11% of population
25% of teeth with established decay experience	occurred in	4% of population
Established decay (D₃T)		
100% of teeth with established decay	occurred in	19% of population
90% of teeth with established decay	occurred in	15% of population
50% of teeth with established decay	occurred in	5% of population
25% of teeth with established decay	occurred in	2% of population
Severe decay into the pulp		
100% of teeth with severe decay	occurred in	3% of population
90% of teeth with severe decay	occurred in	3% of population
50% of teeth with severe decay	occurred in	1% of population

What are the obvious decay experience results in permanent teeth of P7 children across Scotland?

Table 4 shows the results of the prevalence of decay for NHS Boards across Scotland. It details a measure of the total obvious decay experience (decayed, missing and filled teeth [D₃MFT]) and a breakdown of that figure into each of these individual components.

Table 4 : Obvious decay experience in permanent teeth for each NHS Board in Scotland

NHS Board	% with no obvious decay experience (D ₃ MFT=0)	Mean no. of decayed missing and filled teeth (D ₃ MFT)	Mean no. of decayed teeth (D ₃ T)	Mean no. of missing teeth (MT)	Mean no. of filled teeth (FT)	D ₃ MFT in those where decay greater than zero (D ₃ MFT>0)
	63.5	0.85	0.30	0.11	0.44	2.33
	65.2	0.79	0.30	0.06	0.43	2.28
Ayrshire & Arran	64.8	0.77	0.31	0.13	0.32	2.18
Borders	63.1	0.90	0.34	0.12	0.43	2.42
Dumfries & Galloway	57.7	1.13	0.48	0.21	0.45	2.68
Fife	54.8	1.28	0.53	0.17	0.57	2.83
Forth Valley	51.9	1.34	0.54	0.20	0.60	2.78
Grampian	59.4	0.99	0.31	0.19	0.50	2.44
Greater Glasgow & Clyde	53.4	1.27	0.43	0.10	0.74	2.73
Highland	66.2	0.82	0.26	0.13	0.43	2.41
Lanarkshire	81.6	0.42	0.17	0.07	0.18	2.26
Orkney	73.9	0.51	0.23	0.07	0.21	1.94
Shetland	69.9	0.69	0.19	0.16	0.35	2.31
Tayside	54.5	1.11	0.50	0.09	0.52	2.43
Western Isles	59.1	1.07	0.40	0.15	0.52	2.61
SCOTLAND						

What is the picture of dental health in the permanent teeth of P7 children across Scotland?

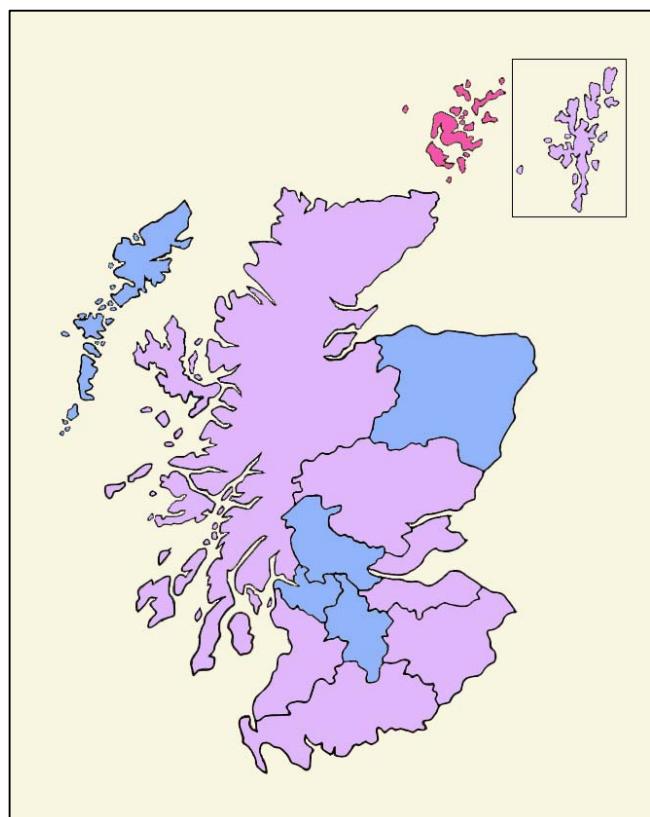


Figure 2 :

**Obvious decay experience (D₃MFT)
in permanent teeth
of P7 children in Scotland
by NHS Board**

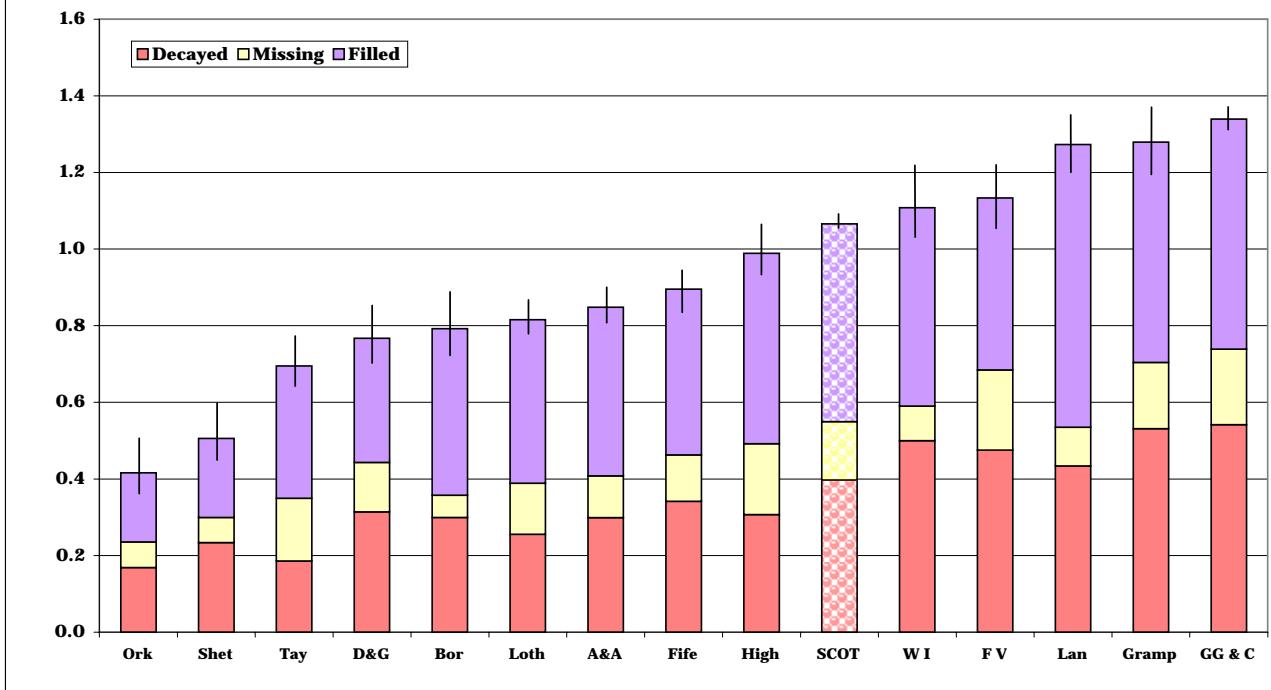
Mean number of decayed, missing and filled teeth
(D₃MFT)



Figure 2 illustrates the mean level of obvious decay experience in permanent teeth across Scotland. The contrast between Orkney and Shetland in the north, compared to Grampian, Greater Glasgow & Clyde and Lanarkshire, shows the variation in dental health that exists for this age group across the country.

The amount of obvious decay experience for each of the NHS Boards in Scotland can be viewed in Figure 3.

Figure 3 : Mean number of obviously decayed, missing and filled teeth (D₃MFT) in Scotland and for each NHS Board



The results in Figure 3 show the average number of decayed, missing and filled teeth per P7 child for the fourteen NHS Boards across Scotland and that for Scotland as a whole. The mean obvious decay experience in the permanent dentition of children in this age group varies widely between the different areas: for example, the average child in Greater Glasgow & Clyde has on average three times more dental disease than their counterparts in Orkney.

The vertical lines indicate the 95% confidence limits associated with each value and illustrate the limited extent to which the figure can be interpreted as a “league table”. While there is a difference between those NHS Boards at the extreme left of the figure and those on the extreme right, it would be unwise to ascribe too much importance to minor variation in the detailed ranking positions of NHS Boards in close proximity to one another.

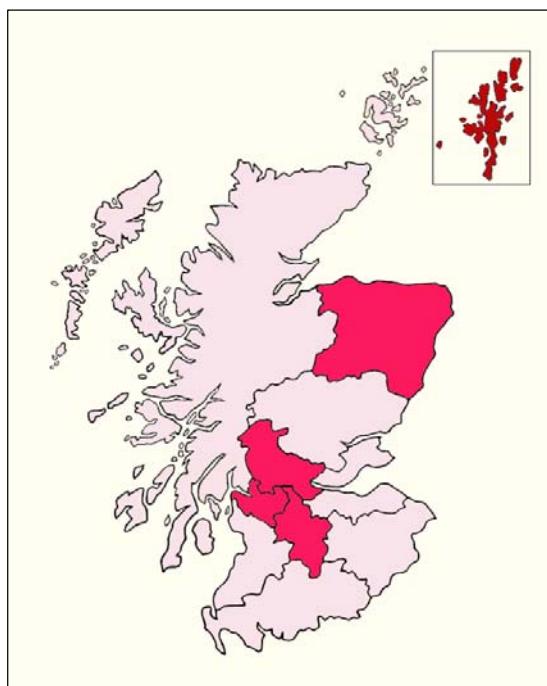
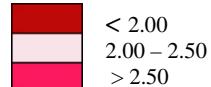


Figure 4 :

**Decay experience
in the permanent teeth
of P7 children
with obvious decay experience
(D₃MFT for those where D₃MFT>0)**

Mean number of decayed, missing and filled teeth
(D₃MFT)



In this 2007 survey, 40.9% of P7 children had obvious decay experience in their permanent teeth. For those children, the mean number of affected teeth ranged from 1.9 to 2.8 across the fourteen NHS Boards (as detailed in Table 4). Since the last survey in 2005, this is a reduction in the mean number of teeth affected. However, it is of concern that such a high number of permanent teeth have experienced decay at this age.



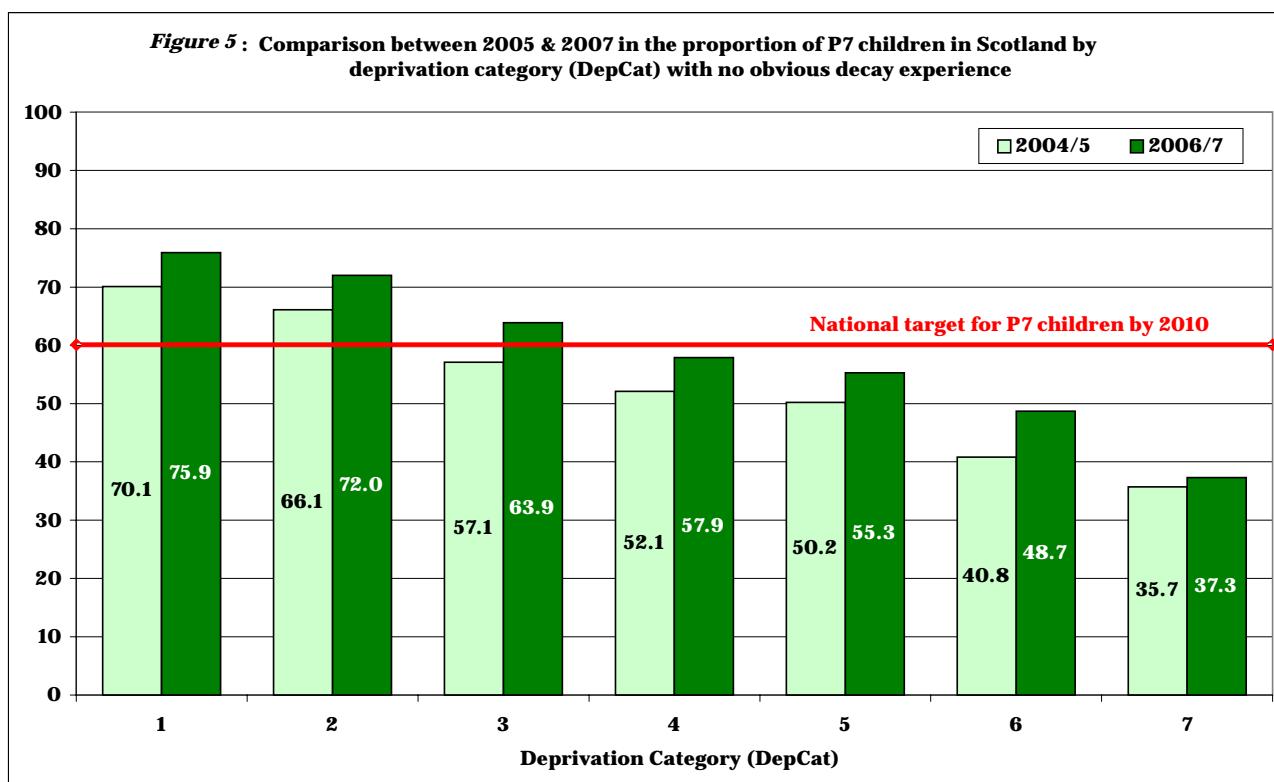
Is there a link between social deprivation and poor dental health among P7 children in Scotland?

A measure of social deprivation often used in Scotland has been DepCat (deprivation category)¹⁰. This is a scale of deprivation based on information gathered in the national census every ten years and describes the socio-economic status of communities in postcode sectors. DepCat scores for each postcode sector in Scotland are calculated from the percentage of unemployed males, overcrowded households, lack of car ownership and the Registrar General social class. The scale ranges from DepCat 1 (least deprived) to DepCat 7 (most deprived).

The index has been shown to be closely linked with measures of death, illness and use of the health service, and a clear association has been established between DepCat measured social deprivation and dental decay in children.

It was possible to attribute DepCat values to the data for 89% of the 11,729 children who were examined in this *Detailed Inspection*. Postcode sector information was absent from two NHS Boards, incomplete for ten NHS Boards and 100% complete in only two NHS Boards.

Figure 5 graphically illustrates the inequality in dental health status of the permanent dentition between P7 children in the most deprived areas (DepCat 7) compared to that of their more fortunate contemporaries in DepCat 1 and 2.



In 2007, the children from DepCats 1, 2 and 3 have already reached the 2010 National Target of 60% with no obvious decay experience. However, those in DepCat 7 are still only at 37%, i.e. 63% of the P7 children in DepCat 7 have already experienced the effects and subsequent consequences of decay in their permanent teeth at this young age.

In figure 5 (above), when comparing the 2007 P7 NDIP Report with the last P7 Report in 2005, it is encouraging to note that all seven categories of deprivation show an improvement in the proportion of those with no obvious decay experience. Those in DepCat 6 show the greatest improvement of nearly eight percentage points while those in DepCat 7 show the least improvement at just below two percentage points.

Deprivation data have been presented by this DepCat index in previous surveys and are being utilised in this report for the last time. Future data will use the newer Scottish Index of Multiple Deprivation (SIMD). This identifies small area concentrations of multiple deprivation across all of Scotland and is presented at data zone level. It has seven domains (income, employment, education, housing, health, crime and geographical access) which have been combined into an overall index to pick out area concentrations of multiple deprivation.

What do the findings of this P7 NDIP Detailed Inspection Survey show?

This was the second survey to examine the specific age group of P7 children and it enables a first comparison to be made with the initial survey of this age group in 2005. The Dental Action Plan of the Scottish Government requires regular data reporting of this P7 age group and has set a national target of 60% being free of obvious decay experience by the year 2010.

Results show that the amount of obvious decay experience in permanent teeth of P7 children still varies widely between NHS Boards, with high levels of decay still associated with children from socially deprived backgrounds. However, since the last survey in 2005, there has been an improvement in the dental health of this age group. It is important to note that the national dental target has nearly been achieved. Improvement in dental health is across all seven deprivation categories, with the result that the proportion of P7 children with no obvious decay experience across Scotland has risen by six percentage points since 2005 and now stands at 59%. However, that rise is minimal in DepCat 7. As seen in the appendix of this report, the major improvement would seem to be the decrease in the level of dental decay seen in the *first permanent molars*.

Initiatives that are both population-based and targeted at children at high risk from dental disease have been initiated by the Scottish Government and NHS Boards to prevent dental disease from an early age. These initiatives have been introduced to prevent dental disease in primary school-aged children and seem to be improving the dental health in this P7 age group. It is to be hoped that, with the continuing support of parents, healthcare professionals and others, these good oral health regimes for young children will be carried through school life into adulthood.

Appendix

Dental Health of the *First Permanent Molar* teeth only

The main report has analysed the data relating to all the permanent teeth in the dentition of P7 children. However, as noted in the 2005 P7 NDIP Report and again in 2007, there is a considerable variation in the eruption dates, particularly of premolar teeth, with some teeth being exposed to the risk of dental decay for longer periods of time than others. *First permanent molars*, however, as they have no predecessors, are most likely to have erupted within a twelve month window around the age of six years and to have been exposed to the rigours of the oral cavity for some five years.

The analysis of only the *first permanent molars* first began in the 2005 Report and this appendix is associated with the analysis of the 2007 results from these four *first permanent molar teeth* only.

What is the level of dental health in P7 children in *first permanent molars* only?

The average number of decayed, missing and filled *first permanent molars* in Scotland was 0.88, a reduction from 1.08 found in this age group in 2005. There was a broad range across NHS Boards of 0.35 - 1.08.

What is the obvious decay experience in P7 children in *first permanent molars* only?

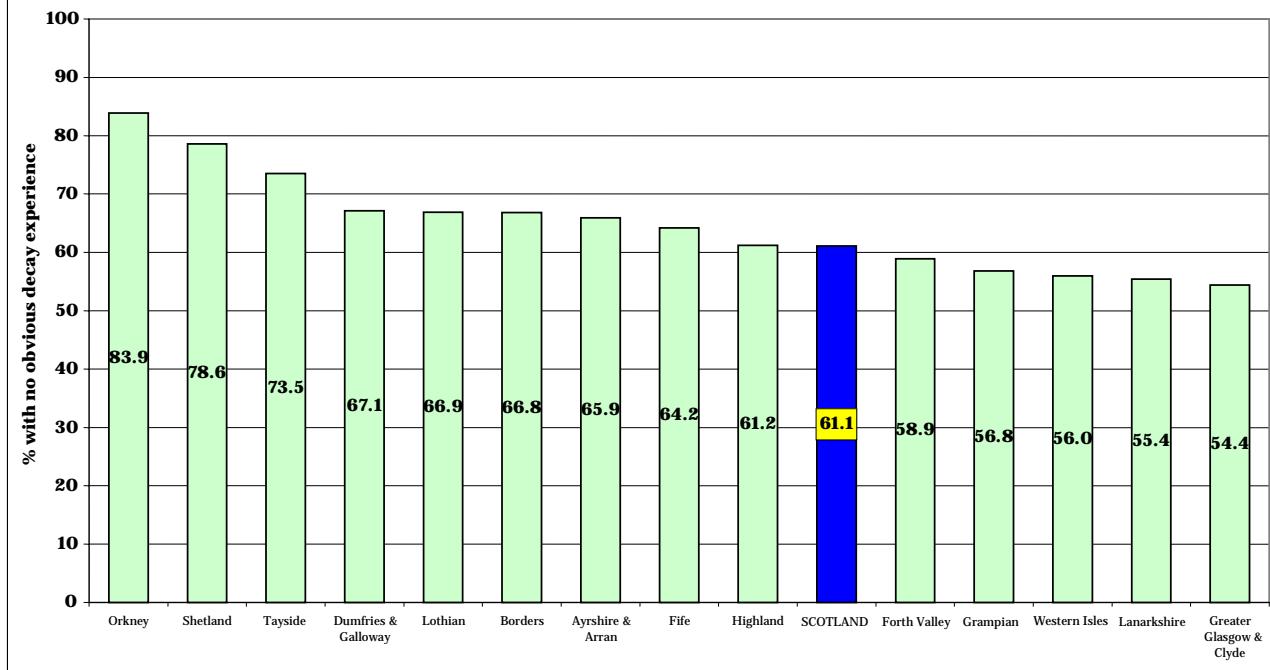
Table 5 shows the results of the data collected from *first permanent molar* teeth across the fourteen NHS Boards in Scotland.

Table 5: Obvious decay experience in *first permanent molars* for each NHS Board in Scotland

NHS Board	% with no obvious decay experience in <i>first permanent molar teeth</i>	Mean no. of decayed, missing and filled <i>first permanent molar teeth</i> (D_3MFT)	Mean no. of decayed <i>first permanent molar teeth</i> (D_3T)	Mean no. of missing <i>first permanent molar teeth</i> (MT)	Mean no. of filled <i>first permanent molar teeth</i> (FT)
Ayrshire & Arran	65.9	0.69	0.19	0.11	0.39
Borders	66.2	0.64	0.20	0.06	0.39
Dumfries & Galloway	67.1	0.65	0.23	0.13	0.30
Fife	64.2	0.76	0.25	0.12	0.41
Forth Valley	58.9	0.96	0.35	0.21	0.41
Grampian	56.8	1.04	0.39	0.17	0.50
Greater Glasgow & Clyde	54.5	1.08	0.36	0.19	0.55
Highland	61.2	0.89	0.24	0.19	0.48
Lanarkshire	55.4	1.03	0.30	0.10	0.64
Lothian	66.9	0.72	0.20	0.13	0.40
Orkney	83.9	0.35	0.13	0.07	0.16
Shetland	78.6	0.37	0.15	0.07	0.16
Tayside	73.5	0.58	0.12	0.15	0.31
Western Isles	56.0	0.95	0.40	0.09	0.50
Scotland	61.1	0.88	0.28	0.15	0.47

Across Scotland, the percentage of P7 children with no obvious decay experience in their *first permanent molars* was 61% (an improvement on the 2005 figure, 54.5%), with a similar broad range across NHS Boards of 54.4% - 83.9%. This range is illustrated in Figure 6 on the opposite page.

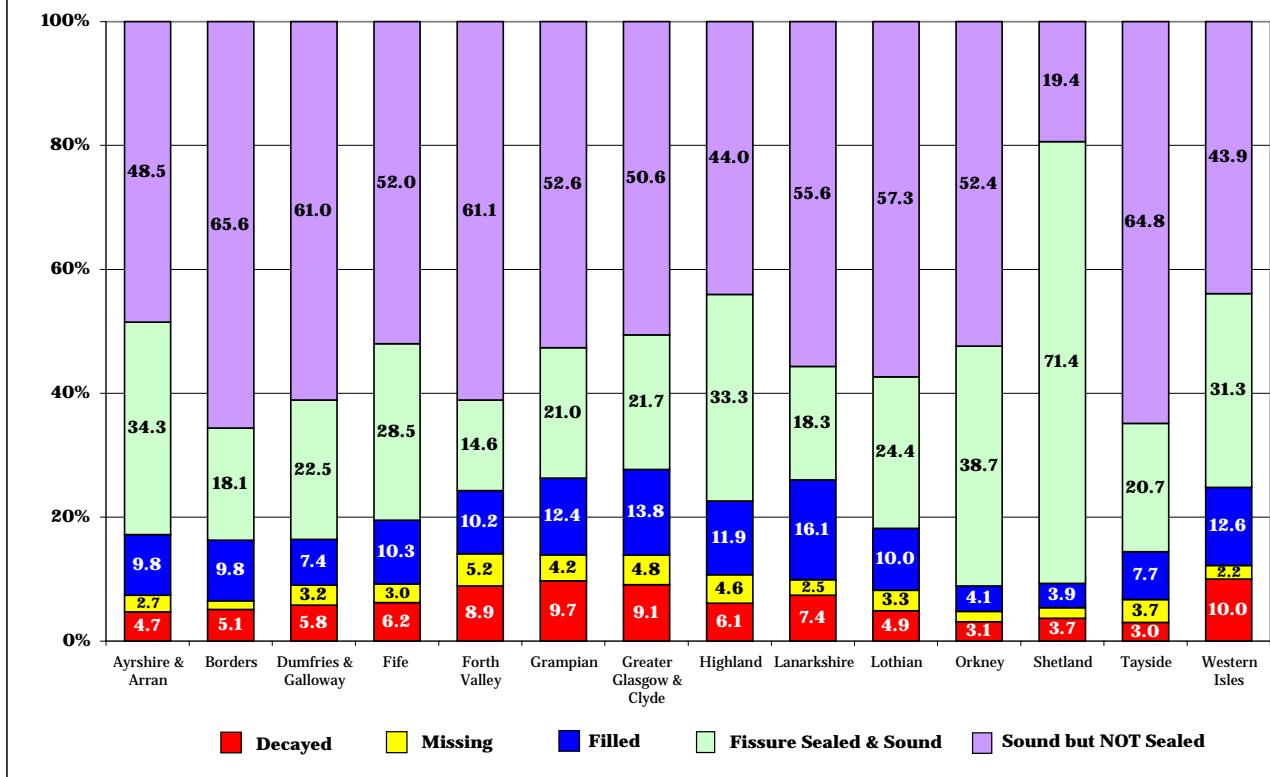
Figure 6 : Proportion of P7 children with no obvious decay experience in their first permanent molars by NHS Board



What was the level of dental disease or treatment performed on the first permanent molars of P7 children across Scotland?

The proportion of decayed, missing and filled, fissure sealed, and sound first permanent molar teeth that were seen

Figure 7 : Proportion of D₃MFT, fissure sealed and sound first permanent molar teeth

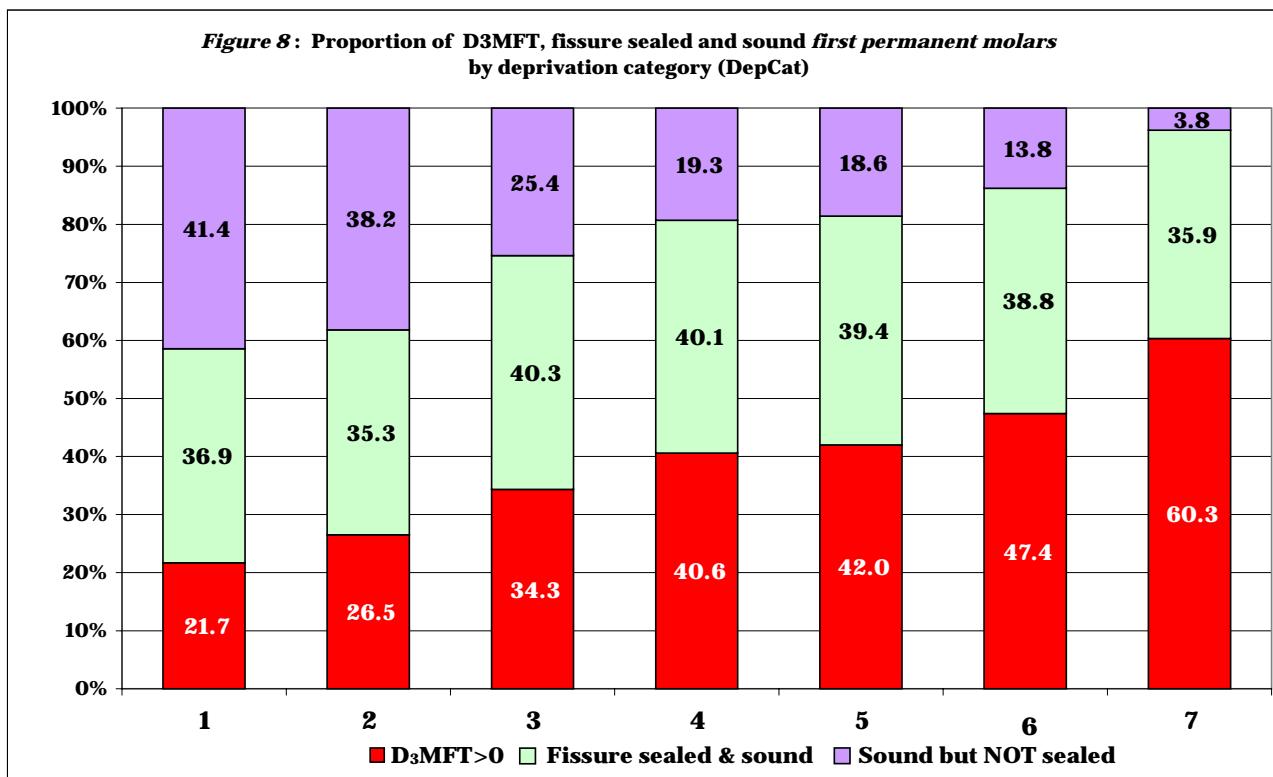


across all fourteen NHS Boards in Scotland is shown in figure 7. A similar figure on the condition of the *first permanent molars* was also documented in the 2005 NDIP Report on P7 children.

Figure 7 shows in detail not only the proportion of obvious decay experience in the *first permanent molars* and those that are sound, but also the level of sound teeth that have received fissure sealant treatment. The proportion of fissure sealant treatment carried out across NHS Boards ranged widely from 14.6% in Forth Valley to a high of 71.4% in Shetland. As a preventive measure, the placement of fissure sealants has been recommended in children of high caries risk to help reduce the level of dental decay¹¹.

Is there a difference between the level of dental disease or treatment performed on *first permanent molars* of P7 children across Scotland in relation to social deprivation?

Of all the permanent teeth present in the oral cavity of P7 children, the *first permanent molars* have been exposed to the rigours of the mouth for the longest period of time. Additional analysis of the data of *first permanent molars* was also undertaken in respect of social deprivation and is shown in figure 8 below.



As may have been expected, there is an increase in the level of obvious decay experience (D₃MFT>0), and a corresponding decrease in the level of sound (but not fissure sealed) teeth, as the level of social deprivation rises. However, the placement of fissure sealants in *first permanent molar* teeth occurs across all seven categories and is indicative that some 36% - 40% of all P7 children have had this recommended preventive measure. This is the first time that these data have been noted and future NDIP reports will continue to monitor the application of this type of preventive treatment.

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National Dental Inspection Programme (NDIP) 2007

PART 2

Basic Inspection Results

The *Basic Inspection* of the NDIP programme aims to inform the parents/carers of individual P1 or P7 children by letter of the oral health of their child. These letters record the principal clinical findings of the dental inspection of the child and convey the degree of urgency with which an appointment for attendance at a dentist is suggested.

One of three possible letters was sent but all informed the parents about the state of dental health seen in their child at the time of the school inspection. These letters vary slightly depending on whether a P1 or a P7 child was inspected. The three letters were as follows:

- Letter A - severe decay and they should seek immediate dental care
- Letter B - should seek dental care in the near future due to one or more of the following: history of tooth decay, a broken or damaged front tooth, tooth wear, poor oral hygiene or may require orthodontics.
- Letter C - no obvious decay experience but they should continue to see the family dentist on a regular basis

The results of the *Basic Inspection* are then anonymised and aggregated. They are used to monitor the impact of both local and national oral health improvement programmes, and to assist in the development of dental services. In the school year 2006/2007, the aim of the *Basic Inspection* of NDIP was to invite children in all P1 and P7 classes of Scottish Local Authority (LA) schools to participate.

Primary 1 Data

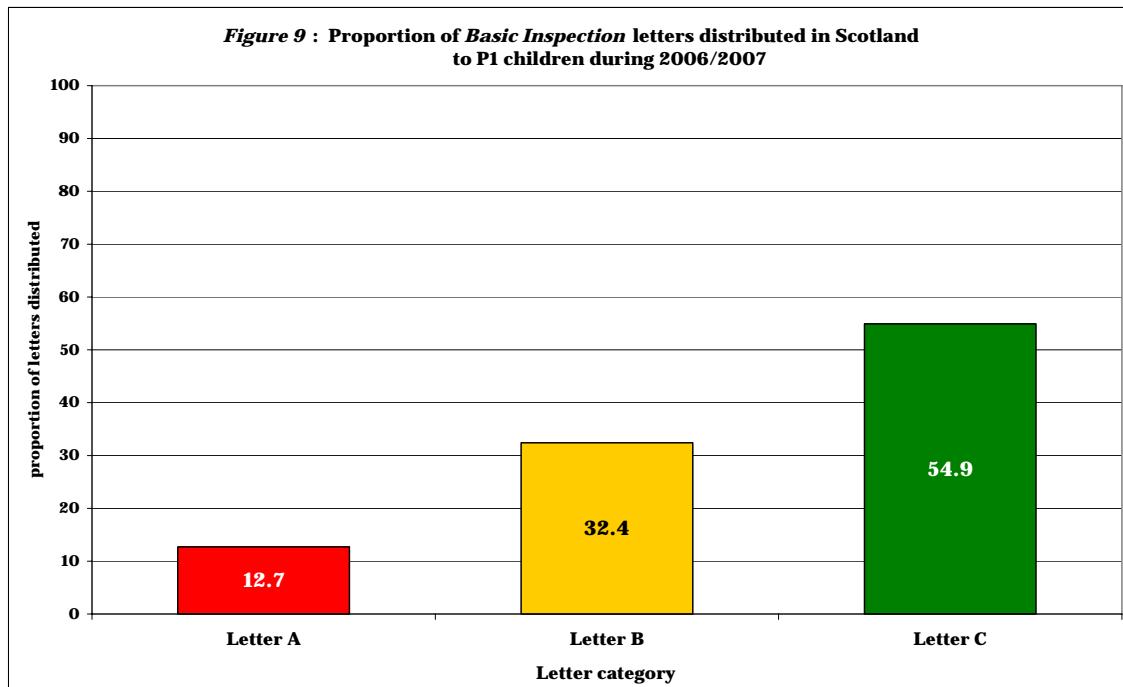
During 2006/2007, all P1 classes of Scottish Local Authority schools were invited to participate. The *Basic Inspections* were conducted in primary schools in all NHS Boards, and overall 42,480 P1 children were inspected (Table 6). This represents 83% of P1 children who attended mainstream Local Authority schools across Scotland in the 2006/2007 school year and whose parents/guardians were advised by letter of the oral health of their child.

Table 6 : Number of P1 children inspected by NHS Boards during the school year 2006/2007

NHS Board	Total no. of P1 children in Local Authority schools 2006/2007	Total no. of P1 children inspected 2006/2007	Proportion of P1 children inspected 2006/2007	Total no. of A Letters issued	Total no. of B Letters issued	Total no. of C Letters issued
Ayrshire & Arran	3,765	3,315	88.1	338	1,144	1,833
Borders	1,162	972	83.7	60	262	650
Dumfries & Galloway	1,375	1,097	79.8	85	402	610
Fife	3,750	3,138	83.7	312	954	1,872
Forth Valley	3,327	1,495	44.9	190	448	857
Grampian	5,091	3,227	63.4	321	1,047	1,859
Greater Glasgow & Clyde	11,466	10,629	92.7	1,988	3,645	4,996
Highland	2,281	1,891	82.9	193	677	1,021
Lanarkshire	6,095	5,565	91.3	641	2,053	2,871
Lothian	7,714	6,908	89.6	804	1,854	4,250
Orkney	224	183	81.7	5	54	124
Shetland	231	217	93.9	22	67	128
Tayside	4,267	3,635	85.2	421	1,107	2,107
Western Isles	224	208	92.9	35	63	110
SCOTLAND	50,972	42,480	83.3	5,415	13,777	23,288



The proportion of letters distributed in the three categories across Scotland is shown below in figure 9. Within NHS Boards, similar comparisons can be made at CHP and Local Authority level, or for each primary school or clusters of schools.



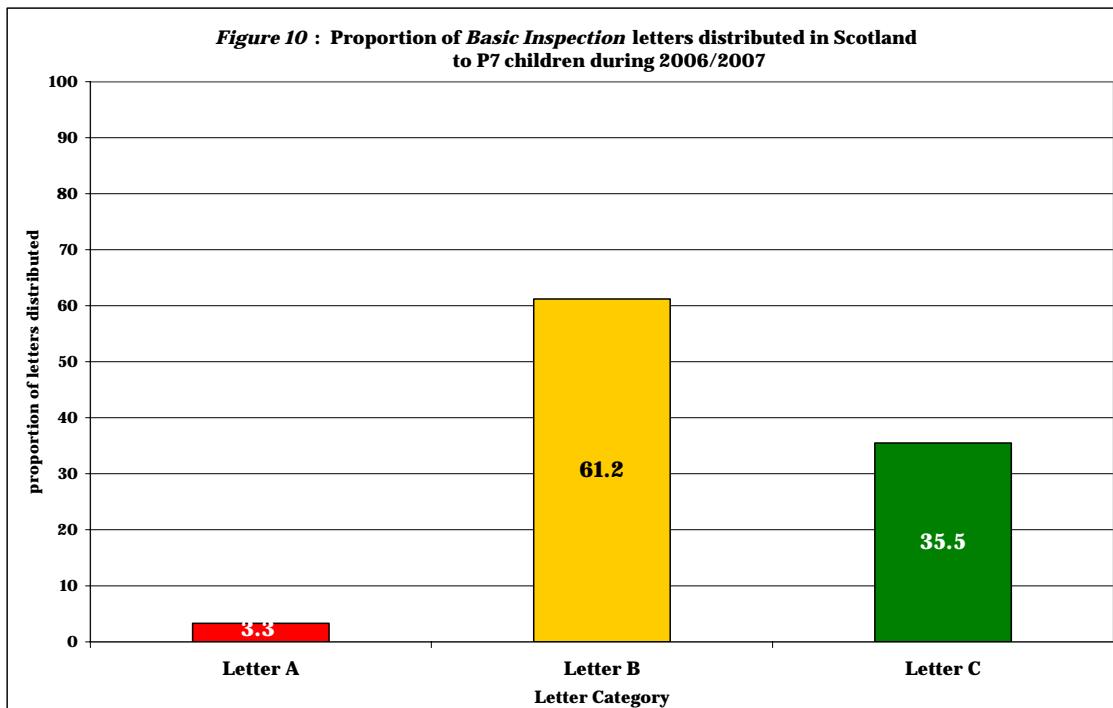
Primary 7 Data

All NHS Boards were required to undertake *Basic Inspections* on not only P1 but also P7 children during the school year 2006/2007. In total, 45,171 P7 children received a *Basic Inspection*. This represented 80% of P7 children attending mainstream Local Authority schools across Scotland (Table 7). As with the P1 children, all the parents of the P7 children who received a *Basic Inspection* were advised by letter of the oral health of their child.

Table 7 : Number of P7 children inspected by NHS Boards during school year 2006/2007

NHS Board	Total no. of P7 children in Local Authority schools 2006/2007	Total no. of P7 children inspected 2006/2007	Proportion of P7 children inspected 2006/2007	Total no. of A Letters issued	Total no. of B Letters issued	Total no. of C Letters issued
Ayrshire & Arran	4,352	3,829	88.0	102	2,265	1,462
Borders	1,306	1,068	81.8	16	575	477
Dumfries & Galloway	1,810	1,391	76.9	17	891	483
Fife	4,119	3,506	85.1	125	1,826	1,555
Forth Valley	3,609	1,414	39.2	63	769	582
Grampian	5,847	2,695	46.1	57	1,403	1,235
Greater Glasgow & Clyde	12,873	11,520	89.5	616	7,991	2,913
Highland	2,695	2,196	81.5	35	1,678	483
Lanarkshire	6,690	6,012	89.9	170	3,985	1,857
Lothian	8,112	7,347	90.6	209	3,855	3,283
Orkney	279	225	80.6	3	130	92
Shetland	278	257	92.4	9	166	82
Tayside	4,307	3,711	86.2	82	2,099	1,530
Western Isles	no reported data					
SCOTLAND	56,277	45,171	80.3	1,504	27,633	16,034

The distribution of these letters across Scotland for P7 children is shown in figure 10 and, as with the data in figure 9, these can be analysed within NHS Boards according to local requirements.



Were there any difficulties experienced in collecting the Basic Inspection data?

A range of logistical issues impacted upon the ability of several NHS Boards to deliver comprehensive inspection coverage of all schools. These included limitations in professional manpower in some Community Dental Services in meeting conflicting service demands and difficulties with some of the computer software. However, NHS Boards, CHPs and Local Authorities across Scotland continue to work in partnership to improve the NDIP programme. The coverage of both P1 and P7 classes has continued to improve, helped as it is by the introduction of better NDIP software specifically designed to collect and analyse the dental inspection data. For the interpretation of any local results contained in tables 6 and 7, readers are advised to contact the NHS Board concerned.

While the target is that all P1 and P7 children should receive a *Basic Inspection*, it is improbable that this will be conducted on every child within a target population in participating schools for the following reasons: parental permission not given, child unable/unwilling to co-operate or child not at school on the day of the dental inspection. The variation in the size of the P7 population between the *Basic* and *Detailed Inspections* in some areas is a reflection of the different times that the fluctuating numbers of children attending school were assessed during the school year.

Readers are advised that if more precise and consistent details of dental health are required at either national or sub-national level, they should refer to the Detailed Inspection results recorded in Part 1 of this Report.

How can the NDIP Programme results be applied to local NHS services, CHPs' and Local Authorities?

As noted above, the information from the NDIP programme can be utilised at both NHS Board and at Community Health Partnership (CHP) level. These data can be useful in highlighting areas that require health promotion or dental services input and will be a useful monitoring tool over time. Local Authorities can also receive the anonymised and aggregated data at both individual primary school or 'cluster' levels.

With the Scottish Government Dental Action Plan and other appropriate local oral health strategies of NHS Boards either in place or being initiated, an improvement in the level of dental health is expected in both nursery and primary schools, with sustained progress being seen at each of the monitoring levels.

Acknowledgements

The National Dental Inspection Programme would not have been possible without the efforts of many people throughout Scotland who worked together to ensure its success.

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