NHS Education for Scotland
NHS National Services Scotland

NHS Education for Scotland

Dentistry

# An Analysis of Dental Workforce in Scotland

September 2008

# Foreword

We are delighted to see the publication of this report on the analysis of dental workforce in Scotland. It is the culmination of two years' hard work and cooperation between NHS Education for Scotland and NHS National Services Scotland and is the fourth report since our joint project began in 2001. As the work stream has progressed the quality and range of data collected has improved considerably and the outcomes are based on increasingly accurate data sets.

The project team works closely with colleagues at the National Workforce Planning Unit and we are grateful for the support and encouragement provided.

The report is intended to provide data and trend analyses to support workforce planning for NHS dental services in Scotland. Since the launch of the *Action Plan for Improving Oral Health and Modernising NHS Dental Services* (2005) and *Better Health, Better Care* (2007), there has been significant investment in the dental workforce in Scotland. The report shows clearly that the numbers of trained dental professionals is rising steeply and that this increase will be sustained for the foreseeable future. It is widely recognised that workforce planning is a difficult and complex task but the data presented in this report provide a sound basis for robust workforce planning and we commend the work of the joint project and this fourth report.

**Malcolm Wright**
Chief Executive
NHS Education for Scotland

**Ian Crichton**
Chief Executive
NHS National Services Scotland

# Contents

# List of Figures

# List of Tables

# Summary points from the report

## A review of recent trends in oral health in Scotland

- Children's oral health in Scotland has improved during the past 30 years, but this improvement slowed during the 1990s. While there has been some improvement more recently, many Scottish children still suffer from tooth decay and have begun 'a journey of deteriorating oral health' to adulthood. Greater deprivation is associated with poorer oral health so there remains a considerable challenge to improve the oral health of children from deprived communities. While Scotland's children still have among the highest levels of decay in the United Kingdom, the significant investment in national oral health programmes represents a unique and major effort to tackle this problem.
- The oral health of adults in Scotland has improved markedly during the past 30 years. If this trend continues, there will be fewer adults with no natural teeth and more adults retaining more teeth into their older years. While there is a data deficit in that recent and detailed oral health data on adults in Scotland is not available, steps are being taken to ensure that these data are collected and will be available in the future.
- There is some evidence of a positive association between oral health and utilisation of dental services. However, there are a number of plausible explanations for this association: an increase in oral health might cause an increase in utilisation; an increase in utilisation might cause an increase in oral health; or changes in other factors, such as income or preferences for oral health, might cause both utilisation and oral health to increase. Identifying the correct explanation remains a key area for future research. Furthermore, it is important to build a more detailed picture of oral health and the association between need, demand and utilisation of dental services.
- The workforce implications of this general improvement in the oral health of both children and adults are not clear and it is difficult to obtain robust evidence on the overall effects of this trend. The indicators seem to point to increasing demand, with significant unmet need, particularly in our most deprived communities.

## The supply of dentists in Scotland

- The number of NHS dentists working in NHSScotland increased by over 25% between 1996 and 2007. Since 2005, this increase has accelerated and is accounted for by the inflow of dentists from VT and, to a much larger extent, by the inflow of dentists without any previous experience in NHSScotland.
- A number of indicators, from the expected number of graduates to the retention rates of VTs in NHSScotland, suggest that there is likely to be a relatively large and sustained increase in the stock of NHS dentists in Scotland in the future.

## The utilisation of dental services in Scotland

- Between 2000 and 2008 children's registration rates were constant but adults' registration rates decreased steadily. In 2008, both children's and adults' registration rates increased. At least in part, this increase is likely to be a result of the extension to the registration period.
- A much greater percentage of the adult population, about 79%, has accessed NHS dental care over nine years than is suggested by NHS registration rates. This is because a large number of individuals access the NHS General Dental Service (GDS) but do so relatively infrequently.
- At national level, there has been little change in the number of claims made by GDS dentists but there are some areas where the number of GDS claims has increased and others where it has decreased.
- Both the British Household Panel Survey (BHPS) and Denplan data show that the private sector continues to grow. These data also show that the private sector attracts patients with higher incomes, relatively good oral health and low future dental care needs. The extent of private sector penetration varies across Scotland.
- Understanding the impact of the recent increases in the supply of dentists on the market for dental services is a key area of future research.

## Forecasting the dental workforce

- There are several different methods of forecasting the supply of dentists. All the forecasts show that, based on the current evidence of the inflow and outflow of NHS GDPs in Scotland, there is likely to be a relatively large and sustained increase in the stock of NHS dentists in Scotland in the future.
- In the past two years, relatively simple forecasting approaches have outperformed more sophisticated methods.
- There are several different ways of measuring the demand for dentists. Most of the forecasts implied by these different measures suggest there is likely to be an increase in the demand for dentists in the future mainly as a result of the expected increase in Scotland's population.
- The extent to which excess demand or supply is forecast depends crucially upon how the demand for dentists is measured and the method used to forecast supply.

# Section 1

## Introduction

# 1. Introduction

The Dental Workforce Project is a collaboration between NHS Education for Scotland (NES) and the Information Services Division (ISD) of NHS National Services Scotland. The Project aims to inform workforce planning in dentistry by using robust data to analyse trends in the supply of dentists, analyse trends in the utilisation of dental services and forecast the demand for, and supply of, dentists.

This report is the fourth in a series produced by the Dental Workforce Project and builds on the work undertaken in the previous reports. The first report, NES (2002), described the stock and flow of dentists in NHSScotland and used these to forecast the supply of NHS General Dental Practitioners (GDPs). The major innovation in the second report, NES (2004), was to use information on the utilisation of dental services to forecast the demand for NHS GDPs. The third report, NES (2006), updated the NHS GDP demand and supply forecasts in light of the policies outlined in the *Action Plan for Improving Oral Health and Modernising NHS Dental Services in Scotland* (SEHD, 2005).

This report represents an extension of the previous work, and;

- **A review of recent trends in oral health in Scotland** (Section 2) provides the background to the report by describing the latest trends in children's and adults' oral health.
- **The supply of dentists in Scotland** (Section 3) describes recent trends in the stock and flow of dentists in NHSScotland and considers a number of factors that are likely to drive the supply of NHS dentists in the future.
- **The utilisation of dental services in Scotland** (Section 4) examines the utilisation of NHS and private sector dental services.
- **Forecasting the dental workforce** (Section 5) considers several different supply and demand forecasts, including updated versions of the models in NES (2004) and NES (2006):
  - the supply forecasts provide an indication of the variation associated with different approaches to forecasting and allow the accuracy of these forecasts to be compared; and
  - the demand forecasts reflect the workforce implications of a range of measures, including several targets set out in the Dental Action Plan Monitoring forms used by NHS Boards.
- **Avenues for future research** (Section 6) sets out an agenda of research to further improve the information available to the dental workforce project.

As our understanding of this complex area of work increases and the datasets improve and expand an attempt has been made to simplify the report and reduce the number of tables and graphs. However, to ensure consistency with previous reports and to provide as much information as possible, additional data are included as Appendices.

# Section 2

## A Review of Recent Trends in Oral Health in Scotland

# 2. A Review of Recent Trends in Oral Health in Scotland

## 2.1 Introduction

This section provides a review of the latest oral health data on children and adults in Scotland. The assessment of oral health trends is an essential component of determining the need for oral healthcare and the dental workforce required to meet these needs.

## 2.2 Oral Health

The World Health Organisation (Petersen, 2003) emphasised the importance of oral health stating that:

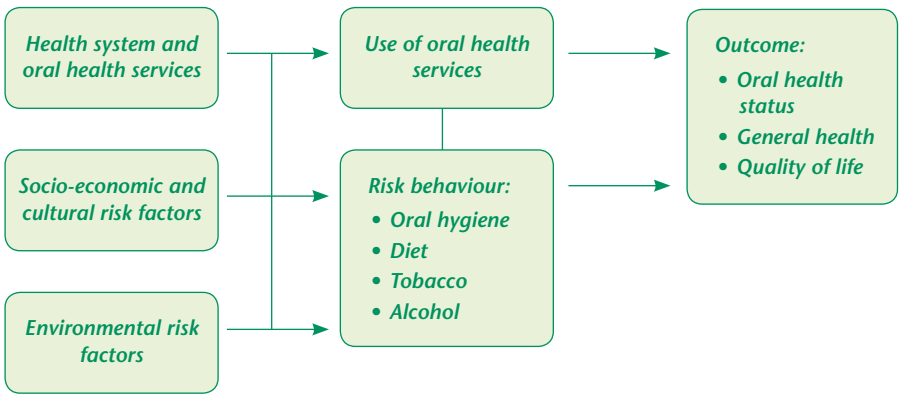
> "oral health means more than 'good teeth' – it is integral to general health, is essential for wellbeing, and is a determinant of quality of life. It allows us to speak, smile, kiss, touch, taste, chew, swallow and cry. Conversely, oral disease can lead to significant time lost from school, work and other activities."

This wider definition of oral health should not detract from the importance of the two most important oral diseases: dental caries and periodontal disease. Both can be effectively prevented and treated, but have to be considered in the context of their strong relationship with socioeconomic factors. For example, the incidence of oral disease is higher in people from deprived areas (Sweeney, Nugent & Pitts, 1999). The relationship between oral health and general health is well documented, with oral disease and non-communicable chronic diseases having many common risk factors.

### 2.2.1 Risk Factors for Oral Disease

It is now widely accepted that risk factors for oral disease include more than lifestyle behaviours. Access to and use of oral health services play an important role in preventing oral disease, while socioeconomic deprivation and environmental factors are strongly associated with ill-health, including oral disease. How this relationship is mediated is less well established. Figure 1 highlights the moderating pathways and describes a framework for the common risk factor approach to improving oral health (Sheiham & Watt, 2000). Action can be taken across multiple levels, settings and risk areas.

Figure 1: The common risk factor approach (adapted from Petersen, 2003)



Poor oral hygiene is the main cause of periodontal disease and, together with poor diet, is the main cause of the development of dental caries. Diets high in sugar and fat, and low in fibre and essential vitamins, are also associated with conditions such as coronary heart disease, stroke, obesity, diabetes, cancers and dental caries. Smoking is implicated in many diseases, including cancers of the lung, throat and mouth. Smokers are more likely to have coronary heart disease, diabetes and periodontal disease, as well as other diseases of the soft tissues of the mouth. Alcohol drunk in large quantities increases the risk of general conditions such as high blood pressure, liver disease, coronary heart disease and oral cancers. Alcohol is also a factor in many social problems, and alcohol-fuelled violence often results in fractures of the jaws and teeth.

Preventive approaches that focus on reducing the effects of behavioural risk factors and improving general health can be effective at improving oral health. The converse is also true: preventive care from dental services aimed at improving oral health could have wide-ranging general health benefits.

## 2.3 Policy Context

The main driver of policy concerning dentistry and oral health in Scotland is the *Better Health, Better Care: Action Plan* (SG, 2007). Within this policy document there is a strong emphasis on ensuring the delivery of quality health services. The report adopts the Institute of Medicine's six dimensions of quality as the framework for health services in the NHS in Scotland:

| | |
|---|---|
| **Patient centred** | providing care that is responsive to individual patient preferences, needs and values and assuring that patient values guide clinical decisions |
| **Safe** | avoiding injuries to patients from care that is intended to help them |
| **Effective** | providing services based on scientific knowledge |
| **Efficient** | avoiding waste, including waste of equipment, supplies, ideas and energy |
| **Equitable** | providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location or socioeconomic status |
| **Timely** | reducing waits and sometimes harmful delays for both those who receive care and those who give care |

In addition, the twin priorities of improving health and tackling health inequalities remain, with a renewed emphasis on anticipatory preventive care and a focus on early years.

Policies specifically related to dentistry include:

- grants and allowances to attract practitioners to Scotland and to encourage existing practitioners to expand their practices;
- an undergraduate bursary scheme where students commit to work in NHS dentistry for up to five years following qualification;
- funding under the Primary and Community Care Premises Modernisation Programme to provide new or substantially improved premises to support the delivery of NHS dentistry in areas with gaps in provision; and
- the planned opening of a third dental school in Scotland by expanding the Aberdeen Dental Institute.

The Scottish Government's national target for dentistry is that:

- 80% of all children aged 3-5 are to be registered with an NHS dentist by 2010-11[1].

### 2.3.1 Oral Health Initiatives

In recent years there has been major investment in a national prevention programme to improve the oral health of Scotland's children. The *Childsmile* Programme has been developed from a demonstration project and aims to improve oral health and tackle oral health inequalities by redesigning dental services for children across a range of locations including dental practices, nurseries, schools and community settings.

*Childsmile Core* is the Scotland-wide initiative, which makes provision for the distribution of free toothbrushes, fluoride toothpaste and a feeding cup (to encourage healthy weaning) to all children via health visitors and nurseries. Furthermore, all children in local authority and private nurseries now participate in supervised toothbrushing schemes.

*Childsmile Practice* is focused on children (and parents) from socioeconomically deprived areas. This project targets newborn children who are assessed to be at risk of developing tooth decay. The children are referred to the programme by health visitors. Additional support provided by dental health support workers facilitates regular attendance at a local dental practice, provides additional dental health advice and information, and links families into other community health initiatives. On attendance at dental practices, trained dental nurses provide toothbrushing instruction and diet advice. As children get older, the dental practice team will provide additional preventive care such as fluoride varnish and fissure sealants.

*Childsmile Nursery and School* focuses on children attending nursery schools in deprived areas. Childsmile teams, which comprise dental nurses and dental health support workers, apply fluoride varnish to children's teeth every six months in the nursery schools. The teams also deliver oral health promotion advice.

A robust evaluation of Childsmile is underway, and the results are informing the national roll-out of the Childsmile Programme.



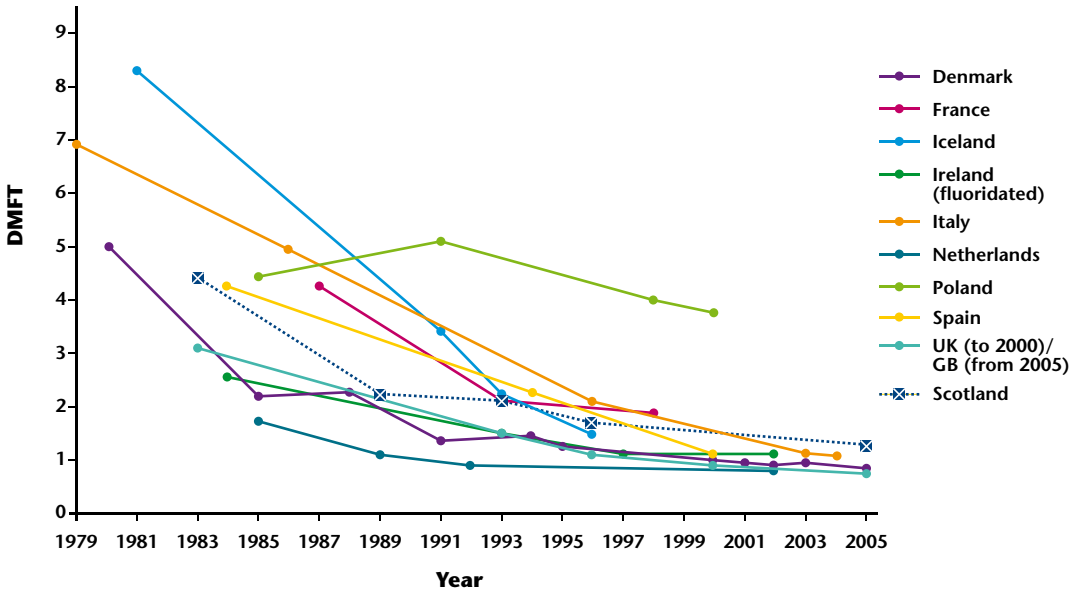
1 http://www.scotland.gov.uk Publications/2007/12/11103453/6

## 2.4 Children's Oral Health

Although much progress has been made, within a European and UK context, improving the dental health of Scotland's children remains a challenge. There are significant inequalities in the distribution of dental caries.

International data are available for 11-12-year-olds, which show trends in dental health during a period of nearly 30 years. Figure 2 compares the mean DMFT of several European countries for which data were available with mean DMFT in GB/UK and Scotland[2].

Figure 2: Mean number of decayed, missing and filled teeth (DMFT) per child, 12-year-olds, by selected European country, 1979-2005[3]

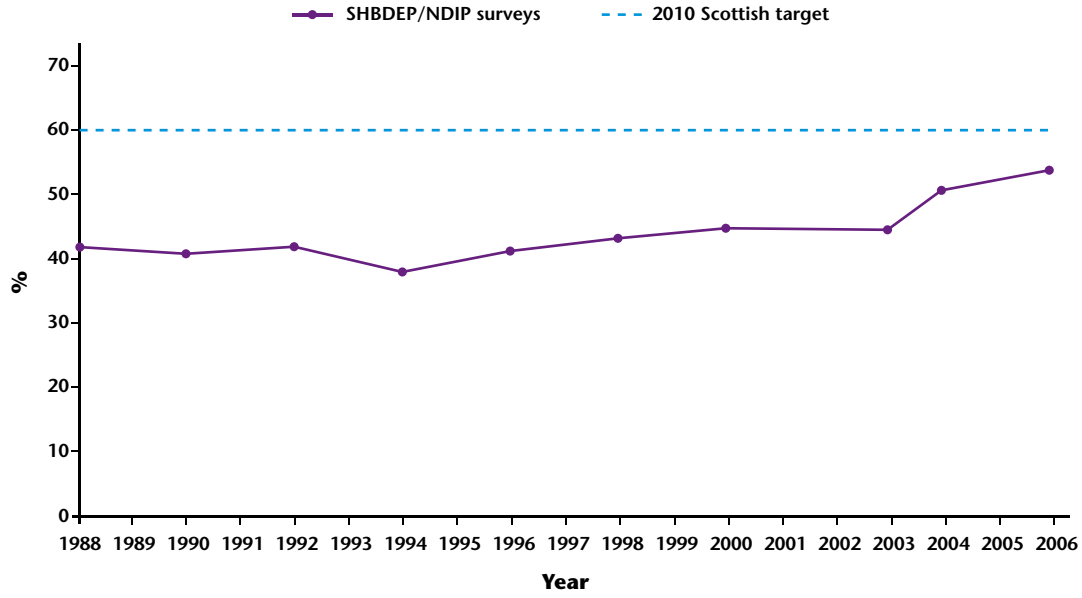



It can be seen that in Scotland, in common with many other countries, there was a steep decline in the prevalence of dental caries among 11-12-year-olds between 1983 and 1989. This rapid improvement has been followed by more gradual improvement since 1989. Dental epidemiology surveys regularly demonstrate that children in Scotland and Northern Ireland have more caries than their peers elsewhere in the United Kingdom (BASCD, 2008).

Surveys of 5-year-olds provide the most sensitive barometer of change in the oral health of the population. Figure 3 shows the trend in the percentage of 5-year-olds in Scotland with no obvious decay using data from the Scottish Health Boards' Dental Epidemiological Programme (SHBDEP) and the National Dental Inspection Programme (NDIP). The latest data from NDIP (NDIP, 2006) appear to show a marked improvement in the oral health of 5-year-olds in Scotland from 44.6% in 2003 with no obvious decay, to 50.7% in 2004 and 54.1% in 2006.

2 http://www.scotpho.org.uk/, accessed August, 2008.
3 From 2005 the children inspected in Scotland were 11 (rather than 12) years old.

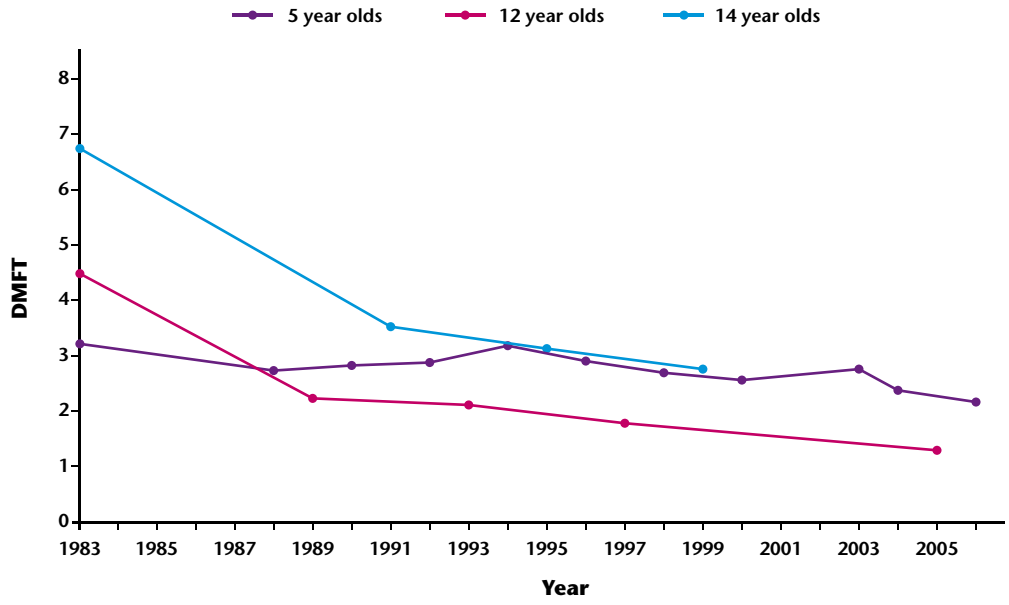
Figure 3: The percentage of 5-year-old children in Scotland with no obvious dental decay, 1983-2006[4]




This improvement contrasts favourably with the fairly steady pattern for previous years in Scotland, and for recent years in other areas of Europe (Marthaler et al.,1996).

Figure 4 shows that oral health has improved continuously since 1983 for 11-12- and 14-year-old children. Since 2003 the oral health of 5-year-olds has again started to improve. Recent major investments in national prevention programmes (e.g. Childsmile) are likely to sustain this steady improvement.

Figure 4: Mean numbers of decayed, missing and filled teeth (dmft/DMFT) per child in Scotland, by age group, 1983 - 2006[5]




4 Sources: SHBDEP (1988-2000) and NDIP (2003 onwards).
5 Sources: Office for Population Census and Statistics OPCS (1983), SHBDEP (1988-2000) and NDIP (2003 onwards). From 2005 the children inspected were 11 (rather than 12) years old.

### 2.4.1 Inequalities

The overall trends in caries experience mask a polarisation of the caries problem in Scotland. Figure 5, from the NDIP 2006 survey of P1 children (NDIP, 2006), shows there has been a relatively large improvement in the oral health of P1 children in all Carstairs Deprivation Categories (DEPCATs) since 2003[6]. However, Figure 5 also shows that greater deprivation is associated with poorer oral health. This means that while the Scottish target for 2010 of 60% of 5-year-old children with no obvious decay has been met for children from more affluent areas, there remains a considerable challenge to improve the oral health of children from deprived communities.

Figure 5: Percentage of P1 children by deprivation category (DEPCAT) with no obvious decay experience 1996 – 2006

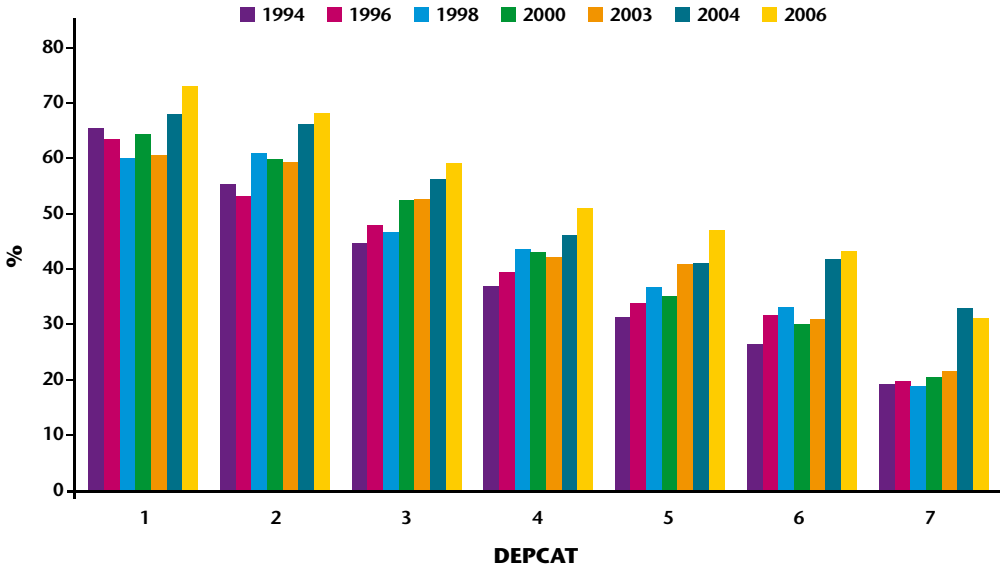
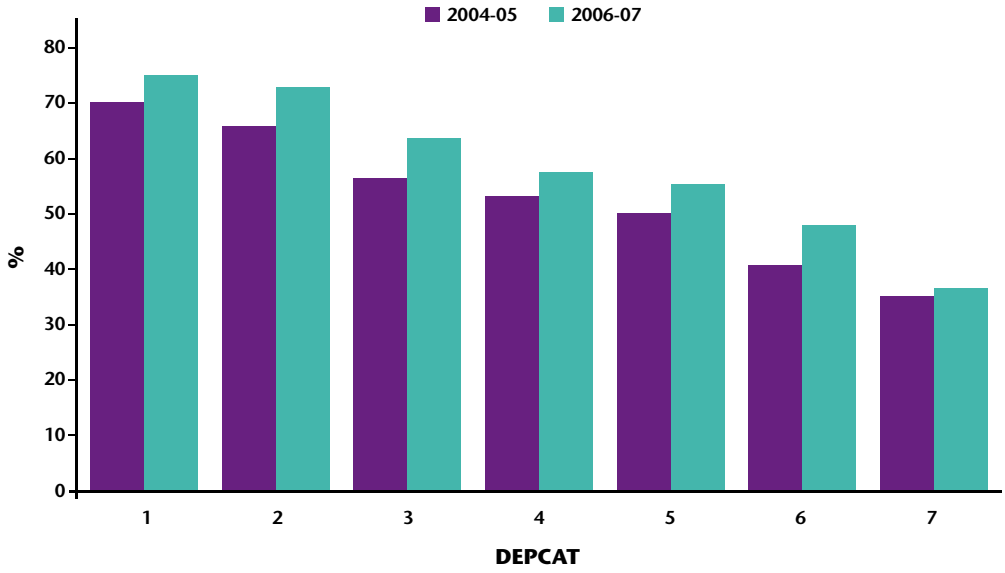



Figure 6, from the NDIP 2007 survey of P7 children (NDIP, 2007), shows that there has been an improvement in the oral health of P7 children in all DEPCATs since 2004-05. More detailed research into oral health inequalities is currently being conducted by the Dental Public Health Unit, University of Glasgow.

6 It was not possible to use the new Scottish Index of Multiple Deprivation (SIMD) with the present data but should be in the future.

Figure 6: The percentage of P7 children in Scotland with no obvious decay experience by DEPCAT




## 2.5 Adults' Oral Health

There are limited data on the oral health status of adults in Scotland. Unfortunately, the best source of data, the *UK Adult Dental Health Survey* (Kelly et al., 2000), was last conducted in 1998. However, it is expected that more detailed adult oral health data will be available in Scotland from the Scottish Health Survey from 2009. Furthermore, the potential to obtain oral health data in addition to treatment activity from the dental services in Scotland is also being explored by National Services Scotland.

Nuttall (2001) and SNAP (1997) report that the dental health of adults is poorer in Scotland than in the rest of the UK, but considerable improvements have been seen since 1972. Figure 7 shows that 18% of adults in Scotland were found to be without natural teeth (edentate) in 1998, compared with 44% in 1972.

Figure 7: Oral health status of adults in Scotland 1972-1998

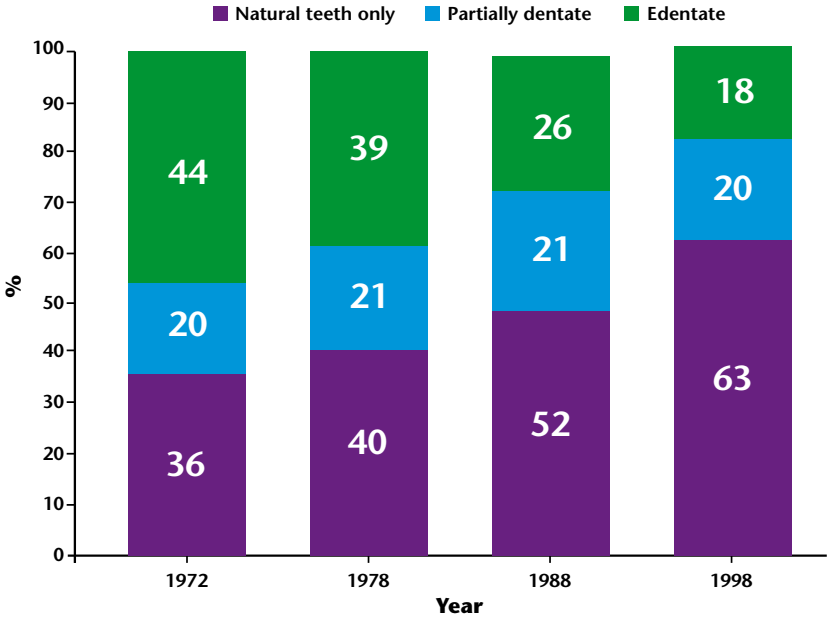
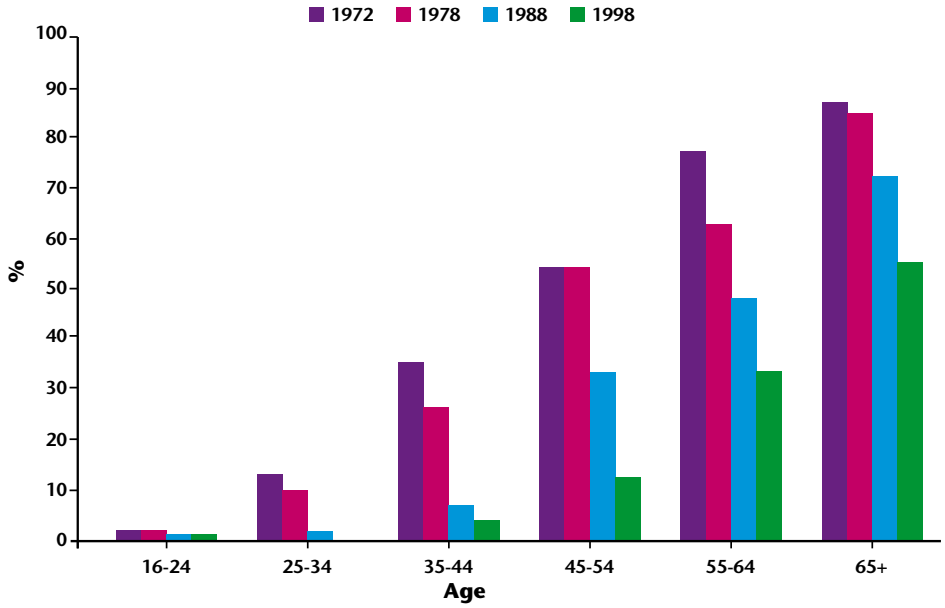


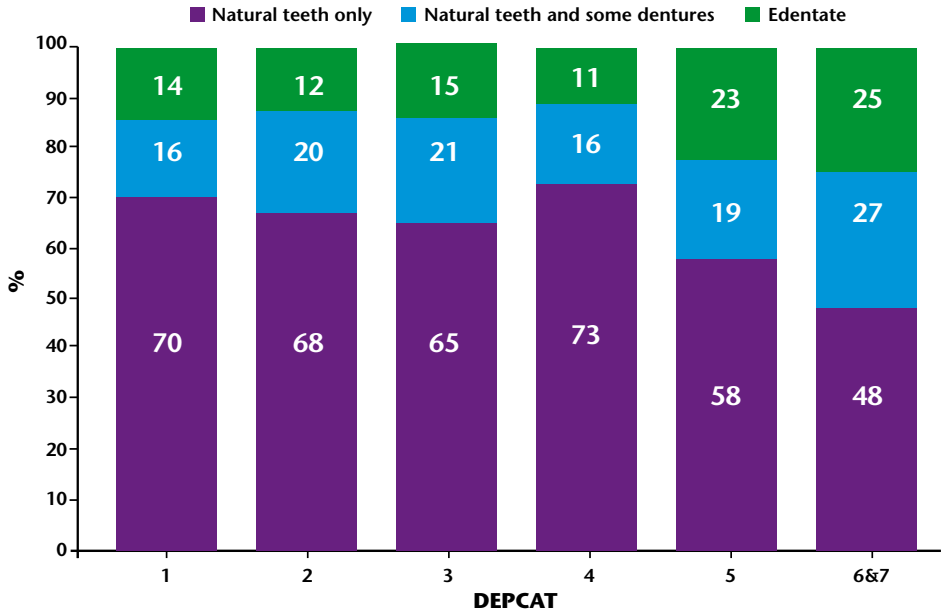
Figure 8 shows that the reduction in the proportion of edentate adults is common across all age groups. However, the percentage of edentate adults increases with increasing age, and, as recently as 1998, more than half of all people aged over 65 had lost all their teeth.

Figure 8: Percentage edentate by age-group in Scotland




Within these overall trends, there is a tendency for a slightly greater proportion of males than females to be edentate. The association between tooth loss and socioeconomic characteristics consistently shows that those from the most deprived backgrounds are more likely to be edentate (Figure 9).

Figure 9: Oral health of adults in Scotland in 1998



## 2.6 Summary

- Children's oral health in Scotland has improved during the past 30 years, but this improvement slowed during the 1990s. While there has been some improvement more recently, many Scottish children still suffer from tooth decay and have begun 'a journey of deteriorating oral health' to adulthood. Greater deprivation is associated with poorer oral health so there remains a considerable challenge to improve the oral health of children from deprived communities. While Scotland's children still have among the highest levels of decay in the United Kingdom, the significant investment in national oral health programmes represents a unique and major effort to tackle this problem.
- The oral health of adults in Scotland has improved markedly during the past 30 years. If this trend continues, there will be fewer adults with no natural teeth and more adults retaining more teeth into their older years. While there is a data deficit in that recent and detailed oral health data on adults in Scotland is not available, steps are being taken to ensure that these data are collected and will be available in the future.
- There is some evidence of a positive association between oral health and utilisation of dental services[7]. However, there are a number of plausible explanations for this association: an increase in oral health might cause an increase in utilisation; an increase in utilisation might cause an increase in oral health; or changes in other factors, such as income or preferences for oral health, might cause both utilisation and oral health to increase. Identifying the correct explanation remains a key area for future research. Furthermore, it is important to build a more detailed picture of oral health and its association between need, demand and utilisation of dental services.
- The workforce implications of this general improvement in the oral health of both children and adults are not clear and it is difficult to obtain robust evidence on the overall effects of this trend. The indicators seem to point to increasing demand, with significant unmet need, particularly in our most deprived communities.



7 This evidence is from Kelly et al. (2000) who report that the frequency of attendance of dentate patients is greater than edentate patients. In addition, the British Household Panel Survey shows that the proportion of the population receiving a dental examination in Scotland increased between 1998 and 2005.

# Section 3

## The Supply of Dentists in Scotland

# 3. The Supply of Dentists in Scotland

This section describes the recent trends in the stock and flow of dentists in NHSScotland in order to inform the development of the supply forecasts in Section 5.1. Section 3.1 examines the stock and flow of dentists in all sectors in NHSScotland.

However, as in previous reports, this report concentrates on NHS General Dental Practitioners (GDPs) as they are the largest component of the dental workforce. Thus, Section 3.2 examines the stock and flows of NHS GDPs. Sections 3.3 to 3.8 consider a range of factors that are likely to significantly influence the future stock of NHS dentists.

## 3.1 The Stock and Flow of Dentists in NHSScotland

Table 1 reports the stock and flow of dentists in NHSScotland. Between 1996 and 2007 the stock of dentists increased by over 25%, and the past two years have seen the largest annual increases in the number of dentists since 1997. Table 8 in Appendix 1 examines the composition of the stock of NHS dentists in more detail.

Table 1 shows that the increase in the stock of dentists in Scotland has been driven by large increases in the number of Returners (dentists who worked in NHSScotland, left and subsequently returned, e.g. people on career breaks) and Other Joiners (dentists who had not previously worked in NHSScotland, e.g. dentists from the European Economic Area and Vocational Trainees (VTs)).

Table 1: The stock and flow of NHS dentists in Scotland at 30 September (headcount)

| Year | Stock | Inflow | | Outflow | Change |
|---|---|---|---|---|---|
| | | Returners | Other Joiners | | |
| 1996 | 2,323 | | | | |
| 1997 | 2,358 | 26 | 167 | 158 | +35 |
| 1998 | 2,411 | 37 | 173 | 157 | +53 |
| 1999 | 2,462 | 44 | 160 | 153 | +51 |
| 2000 | 2,465 | 35 | 162 | 194 | +3 |
| 2001 | 2,488 | 51 | 166 | 194 | +23 |
| 2002 | 2,550 | 62 | 164 | 164 | +62 |
| 2003 | 2,583 | 57 | 168 | 192 | +33 |
| 2004 | 2,617 | 56 | 184 | 206 | +34 |
| 2005 | 2,669 | 62 | 193 | 203 | +52 |
| 2006 | 2,842 | 78 | 314 | 219 | +173 |
| 2007 | 2,919 | 76 | 260 | 259 | +77 |

## 3.2 The Stock and Flow of GDPs in NHSScotland

As in previous dental workforce reports, the NHS GDP workforce is defined as salaried NHS GDPs, non-salaried NHS GDPs and NHS assistants[8].

Figure 10 shows that the number of NHS GDPs in Scotland more than doubled between 1975 and 2007 and that the rate of increase has accelerated since 2004.

Figure 10: NHS GDPs in Scotland 1975-2007

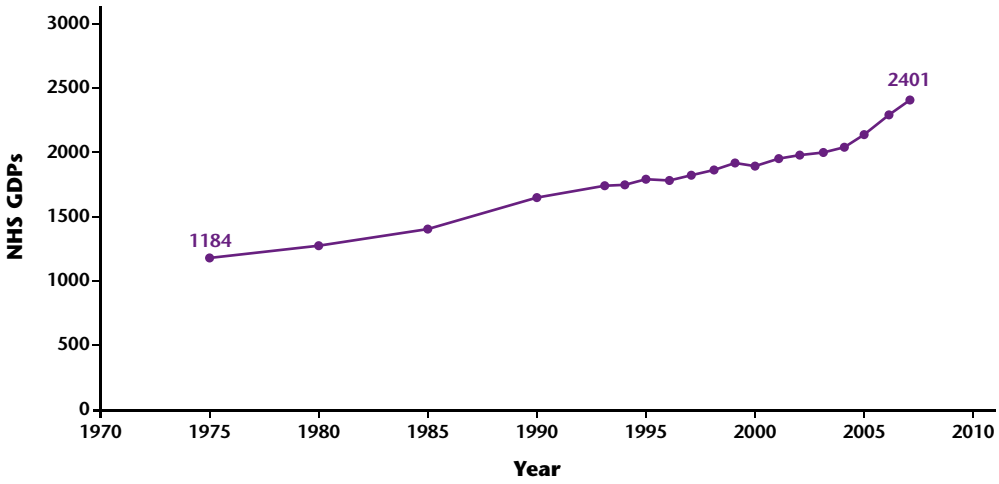



Table 2 reports that between 1996 and 2004 the stock of NHS GDPs increased by 245 dentists or about 31 a year. In contrast, between 2005 and 2007 the stock of NHS GDPs increased by 365 at an average of almost 122 a year. These relatively large increases in the stock of NHS GDPs since 2004 have been driven by historically high inflows of Returners, Other Joiners and VTs[9]. The different sources of these inflows are examined in more detail in the following sections.

Table 2: The stock and flow of NHS GDPs in Scotland at 30 September (headcount)

| Year | Stock | Inflow | | | Outflow | Change |
|---|---|---|---|---|---|---|
| | | Returners | Other Joiners | VT | | |
| 1996 | 1,791 | | | | | |
| 1997 | 1,825 | 13 | 60 | 57 | 96 | +34 |
| 1998 | 1,862 | 14 | 56 | 63 | 96 | +37 |
| 1999 | 1,907 | 25 | 58 | 61 | 99 | +45 |
| 2000 | 1,902 | 18 | 42 | 58 | 123 | -5 |
| 2001 | 1,945 | 28 | 60 | 65 | 110 | +43 |
| 2002 | 1,971 | 23 | 45 | 58 | 100 | +26 |
| 2003 | 2,004 | 24 | 46 | 65 | 102 | +33 |
| 2004 | 2,036 | 26 | 48 | 81 | 123 | +32 |
| 2005 | 2,135 | 56 | 90 | 80 | 127 | +99 |
| 2006 | 2,288 | 37 | 145 | 99 | 128 | +153 |
| 2007 | 2,401 | 35 | 115 | 92 | 129 | +113 |

8 There is a slight discrepancy between the number of NHS GDPs reported in Table 2 and the number of NHS GDPs net of Vocational Dental Practitioners (VDPs) reported in Table 8 in Appendix 1. For example, in 2007, the difference is 2. This is because dentists can work in several sectors simultaneously.

9 There is a slight discrepancy between the numbers reported in Table 2 and NES (2006). This is because of updated information on salaried dentists (see Appendix 1).

## 3.3 Expected Number of Dental Graduates

The Scottish Funding Council (SFC) sets intake targets for the number of undergraduate dentists in order to achieve an output target of qualified dentists required by the Scottish Government. As a result of the Dental Action Plan, the output target for July 2013 from Dundee and Glasgow Dental Schools is 134 which, after accounting for attrition, equates to an intake target for 2008 of 150 (SFC, 2008a). In addition, SFC has allocated funding from the Scottish Government for 15 students who will start a 4-year graduate entry training programme at Aberdeen Dental School in October 2008 and are expected to graduate in July 2012. The intake into Aberdeen Dental School is expected to increase to 20 per year from October 2009.

Figure 11 shows that there has been an steady increase in the number of graduates from Scottish Dental Schools since 1995.

Figure 11: Actual and expected graduates from Scottish Dental Schools

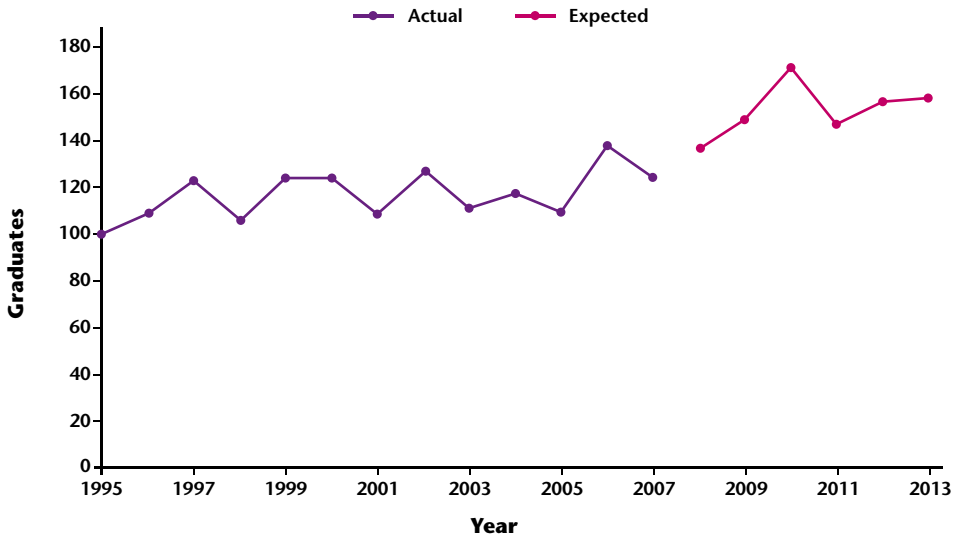



Table 3 reports the number of dental students in training, including overseas students, and the expected number of graduates during the next 6 years[10]. These data, also plotted in Figure 11, show that from 2008 there will be a large and sustained increase in the number of graduates from Scottish Dental Schools. This increase reflects the change in the output target from 120 for 2007-08 to 134 for 2008-09, the record number of students at Dundee Dental School who are expected to graduate in 2010 and the output of Aberdeen Dental School from 2012 onwards[11].

10 SFC assumes that Dundee and Glasgow Dental Schools will each have an intake of up to 3 overseas students.

11 The expected number of graduates is calculated by applying the attrition rates used by the Scottish Funding Council (SFC, 2008b) to the numbers of dental students in training. The attrition rate used for the students at Aberdeen Dental School is the mean of the attrition rates of Dundee and Glasgow Dental Schools.

Table 3: Expected graduates from Scottish Dental Schools

| Expected year of graduation | Number of students (including overseas) | | | | Expected number of graduates |
|---|---|---|---|---|---|
| | Aberdeen | Glasgow | Dundee | Total | |
| 2008 | | 79 | 57 | 136 | 136 |
| 2009 | | 80 | 69 | 149 | 149 |
| 2010 | | 84 | 90 | 174 | 170 |
| 2011 | | 86 | 70 | 156 | 147 |
| 2012 | 15 | 92 | 67 | 174 | 156 |
| 2013 | 20 | 90 | 66 | 176 | 158 |

## 3.4 The Retention of Scottish Dental Graduates in Training in Scotland

The Dental Action Plan sets out clear targets for the number of dentists in training: the Scottish Government has committed to match the number of VT places in Scotland to the output of the Scottish Dental Schools with a minimum of 135 funded posts in 2005, 145 funded posts in 2006 and 155 funded posts from 2007 onwards.

Table 4 shows that between 2005 and 2008 almost all students who expected to graduate from Dental Schools in Scotland registered for VT in Scotland. This suggests that these dentists view Scotland as an attractive place to train. This high application rate is likely to continue in light of the Dental Undergraduate Bursary Scheme (DUBS) and the other recruitment and retention incentives available to VTs in Scotland such as those reported in Appendix 5.

Table 4 also shows that an increasing percentage of graduates from Scottish Dental Schools are appointed to some form of further training in the NHS in Scotland e.g. Dental Foundation posts in the Hospital Dental Service.

Table 4: The percentage of students from Scottish Dental Schools registered for and appointed to some form of postgraduate training

| Year | Output | Registered (% of output) | Appointed (as % of output) | Appointed (as % of registered) |
|---|---|---|---|---|
| 2005-06 | 113 | 93 | 86 | 92 |
| 2006-07 | 137 | 95 | 87 | 92 |
| 2007-08 | 125 | 97 | 86 | 89 |
| 2008-09 | 134 | 97 | 91 | 94 |

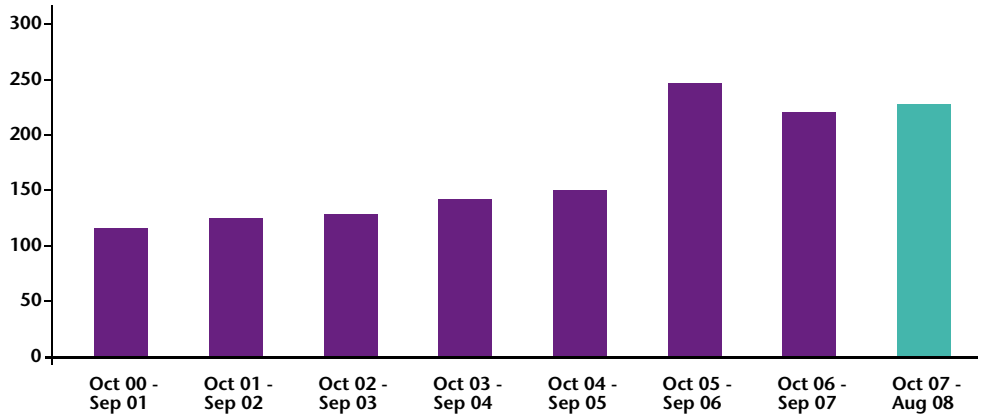
## 3.5 VT Numbers Issued

In order to practise NHS dentistry in Scotland, graduates need to obtain an NHS Board list number. To obtain a list number, dentists need to be issued with a Vocational Training number which indicates they have satisfactorily completed VT or have equivalent experience. These VT numbers are therefore a lead indicator of the inflow of dentists into NHSScotland.

Figure 12 reports the VT numbers issued since 2000-01 and shows a large increase in 2005-06. Figure 14 (in Section 3.7) illustrates that one reason for the high VT numbers issued in 2005-06 is the large increase in applications for a VT number from European Economic Area (EEA) nationals.

The number issued in 2006-07 was only slightly lower than in 2005-06. Based on the number of VT numbers issued to the end of August 2008, the number issued in 2007-08 is likely to be higher than in 2005-06.

Figure 12: VT numbers issued from October 2000 to August 2008




## 3.6 Retention Rates of Vocational Trainees

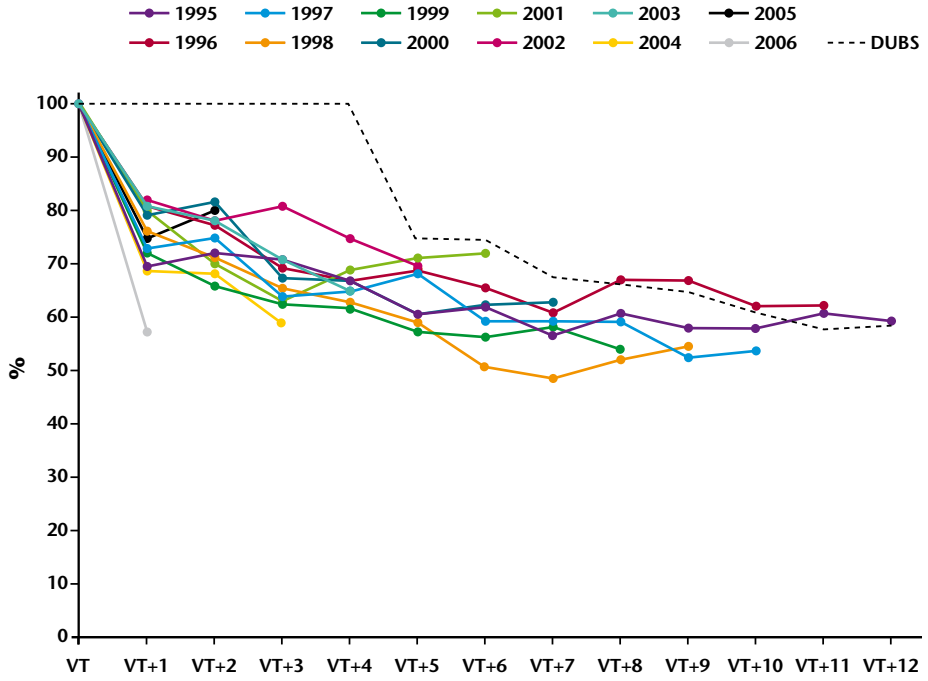
Table 2 (in Section 3.2) showed that a key driver of the inflow of dentists into NHSScotland is the number of VTs. Scottish Government's commitment to match the number of VT places to the output of Scottish Dental Schools, subject to a minimum number of funded posts between 2005 and 2007, means that the relatively large and sustained increase in the output from Scottish Dental Schools will result in a relatively large and sustained increase in the number of VTs in Scotland. This section examines the retention rate of dentists in the NHS following VT in Scotland.

Figure 13 shows the retention rates of VTs in NHSScotland by VT cohort. As expected, retention rates fall over time within each cohort but there is some variation between cohorts. Figure 13 also shows the expected retention rate of a DUBS dentist who is committed to working in NHSScotland for 4 years after VT[12].



12 The retention rate of DUBS dentists in Figure 13 is assumed to be equal to 1 between VT and VT + 4. The retention rate of a DUBS dentist in VT + 5 is assumed to be equal to the mean retention rate of dentists in VT + 1 between 1995 and 2006.

Figure 13: Retention rates by cohort




There were 734,174 children and 1,975,181 adults registered with 2401 GDPs in Scotland in September 2007. Thus each GDP registered an average of 306 children and 823 adults. Based on an average of 1,129 registered patients per dentist, a DUBS dentist can be expected to register more than 1,850 additional patients during a 12 year period compared with a non-DUBS dentist as a result of their higher retention rate.

A more technical analysis can be found in Chalkley, Rennie & Tilley (2008) but one of the key results is that there is persistence in these data. This means that the longer dentists have stayed in NHSScotland, the more likely they are to stay in the future. This result provides empirical support for incentives targeted at increasing the retention rate of dentists such as those reported in Appendix 5. In particular, the results of this analysis suggest that DUBS is likely to have a significant impact upon the retention rate of VTs and, other things equal, will increase the stock of NHS dentists.

A further key result is that the retention rate of dentists who qualified from a Dental School in Scotland is much higher than that of dentists who qualified elsewhere. Therefore, the greater the number of VTs who qualified from Scottish Dental Schools, the greater the future supply of dentists in NHSScotland.

## 3.7 EEA Applicants

Table 1 and Table 2 (in Sections 3.1 and 3.2 respectively) showed the impact of the recent increase in the inflow of Other Joiners (dentists without previous NHSScotland experience) on both the stock of NHS dentists and GDPs. One source of this increase is the number of applications for a VT number in Scotland from EEA nationals who hold a recognised European Diploma.

Figure 14: The number of applications for a VT number from EEA nationals

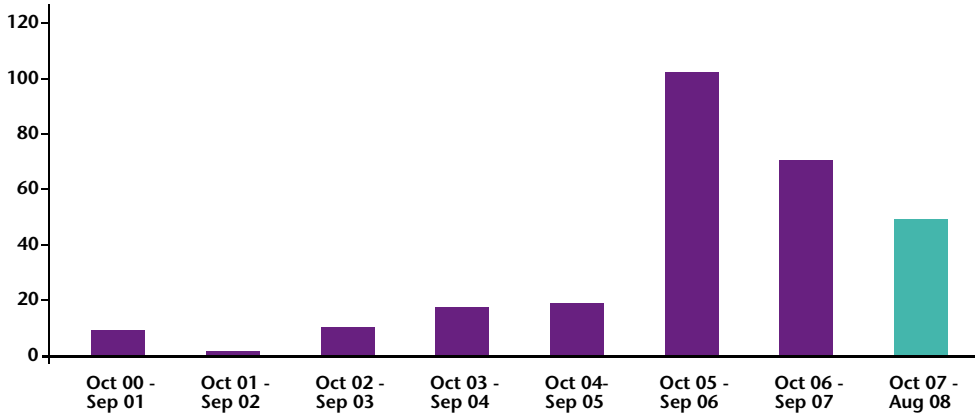



Figure 14 shows that there has been a large increase in these applications, particularly in 2005-06. The number of applications rose from just 2 in 2001-02 to 107 in the year to September 2006, which equates to 78% of the output of Glasgow and Dundee dental schools in that year. This recent rise in applications for a VT number suggests that NHSScotland is a relatively attractive place to practise dentistry. There were 59 EEA applicants for a VT number in the year to August 2008. If this recent trend in the number of VT applications from EEA nationals continues, the stock of NHS dentists in Scotland is likely to rise significantly.

## 3.8 Dental Undergraduate Bursary Scheme

Undergraduate students at Scottish Dental Schools are eligible to apply for £4,000 for each clinical year of study (from Year 2 onwards) of their course, on condition that they commit to five years (or part-time equivalent) of NHS dental work in Scotland, beginning within one year of graduation. Students in Year 3, Year 4 and Year 5 will be eligible for a bursary of £4,000 per year of study in return for a four-, three- and two-year commitment respectively.

In total, 936 bursary applications have been processed in academic years 2006-07 and 2007-08 yielding a commitment to the NHS of 1,872 dentist-years at a cost of £3,744,000.

## 3.9 Summary

- The number of NHS dentists working in NHSScotland increased by over 25% between 1996 and 2007. Since 2005, this increase has accelerated and is accounted for by the inflow of dentists from VT and, to a much larger extent, by the inflow of dentists without any previous experience in NHSScotland.
- A number of indicators, from the expected number of graduates to the retention rates of VTs in NHSScotland, suggest that there is likely to be a relatively large and sustained increase in the stock of NHS dentists in Scotland in the future.

# Section 4

## The Utilisation of Dental Services in Scotland

# 4. The Utilisation of Dental Services in Scotland[13]

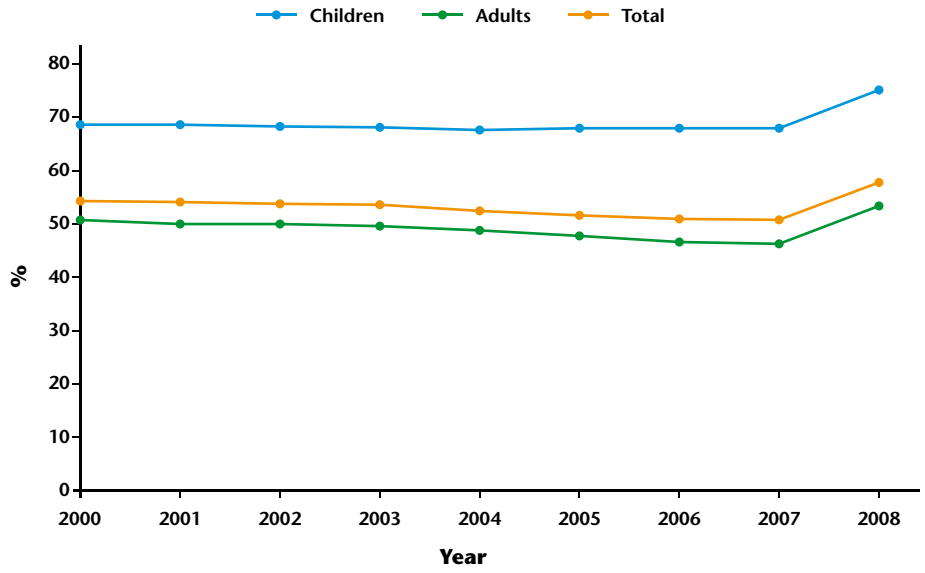
This section analyses recent trends in the utilisation of NHS and private sector dental services in Scotland.

## 4.1 NHS Registration Rates

Figure 15 uses data from ISD Scotland and the General Register Office for Scotland's (GROS) mid-year population estimates to illustrate the trend in GDS registration rates. From 2000 to 2008, the registration rate for children remained relatively constant while the registration rate for adults decreased steadily. In 2008 there has been a significant increase in the registration rate of both children and adults.

The registration period was extended from 15 to 36 months in April 2006. This change in the regulations means patients will stay registered, and will be entitled to receive the full range of dental treatment available under GDS, for a longer period unless they are de-registered. This is likely to be a factor in the recent rise in registration rates. However, the precise impact of the extended registration period on registration rates in the long run is difficult to calculate.

Figure 15: NHS registration rates at 31 March




These national NHS registration figures leave a number of questions unanswered. For example:

- What is the pattern of use of NHS dental services over time?
- What proportion of the population uses private dental care?
- What proportion of the population receives no care?
- Is the pattern of utilisation the same across Scotland?

The following sections explore these issues and attempt to provide some answers.

13 The data used in this report were made available through the ESRC Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex (now incorporated within the Institute for Social and Economic Research). Neither the original collectors of the data nor the Archive bear any responsibility for the analyses or interpretations presented here.

## 4.2 NHS Participation Rates

The registration rate is often used as an indication of the success (or otherwise) of the NHS in ensuring access to dental healthcare. A decline in the registration rate is viewed as synonymous with a decline in access to NHS dental services and, unless accompanied by an increase in privately funded dental healthcare, is considered a lead indicator of potential dental healthcare problems. However, there are other measures of access to NHS dental services such as the participation rate.

The participation rate measures the actual use of NHS dental services and is defined as the proportion of the population receiving at least one claim for treatment within a specific time interval. Table 5 reports the annual participation rate in the GDS using a 5% random sample of adult patients from MIDAS between 1998 and 2006 (953,635 observations). The annual participation rate is therefore the number of patients receiving at least one claim in each year divided by the GROS mid-year population estimate. Table 5 shows that the annual participation rate has been falling steadily[14].

However, using a unique patient identifier, it is possible to calculate that the number of different adult patients who participated in the GDS between 1998 and 2006 was about 3.7m. By contrast, the total number of adults aged 18 to 75 who could have participated in the GDS during this period was 4.7m[15]. Therefore, about 79% of the Scottish population accessed the GDS during a 9-year period. This is considerably more than is suggested by the 12-month participation rate in Table 5 or the registration rate in Figure 15.

Table 5: Participation rates in the GDS

| Year | Participation rate |
|---|---|
| 1998 | 0.4280 |
| 1999 | 0.4328 |
| 2000 | 0.4281 |
| 2001 | 0.4271 |
| 2002 | 0.4313 |
| 2003 | 0.4260 |
| 2004 | 0.4253 |
| 2005 | 0.4134 |
| 2006 | 0.4083 |

This shows that measures of access calculated over long periods of time (e.g. nine years) are greater than if calculated over short periods of time (e.g. one year) and suggests that access to GDS is greater than the measures of access currently used as performance indicators. This is because a large number of individuals access GDS but do so relatively infrequently[16].

14 The 12-month participation rate is slightly lower than the registration rate reported in Figure 15 because the registration rate is a measure of access over (at least) 15 months.

15 This is the sum of the population in 1998, the cumulative number of people who turned 18 between 1999 and 2006 and the cumulative number of in-migrants between 1999 and 2006.

16 More details of this analysis can be found in Chalkley & Tilley (2008).

## 4.3 An Analysis of Trends in Public and Private Dental Services using BHPS Data

The British Household Panel Survey (BHPS) asks two questions relating to individuals' use of dental services. First, did the respondent have at least one dental check-up in the past year? Second, if the respondent did have at least one dental check-up, was it provided by the NHS, privately or both (if the respondent had more than one dental check-up)? Figure 16 shows that the percentage of individuals who had a dental check-up in Scotland increased until 2003-04 but was relatively constant in the rest of the UK[17]. Until 2003-04, this increase was shared between the public and private sectors. The latest data show a reduction in the percentage of patients receiving an NHS check-up between 2003-04 and 2004-05. Unfortunately, the latest BHPS data were not available at the time of going to press so it is not possible to say whether these recent trends continue. This publication lag also means that the BHPS data cannot yet be used to measure the impact of the Dental Action Plan on check-up rates.

Figure 16: The percentage of patients receiving a dental exam by sector

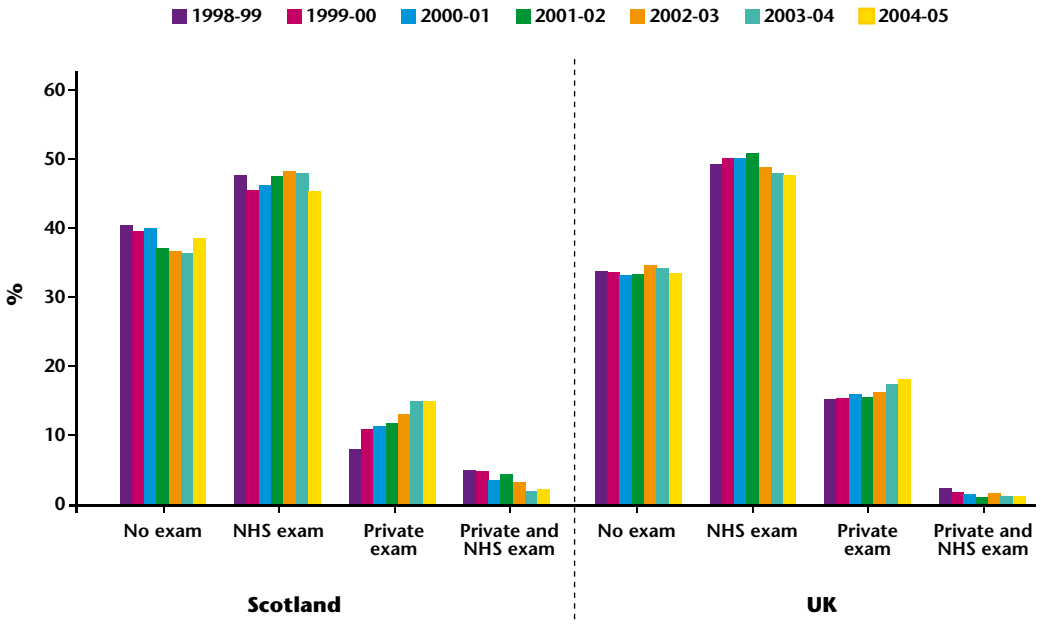
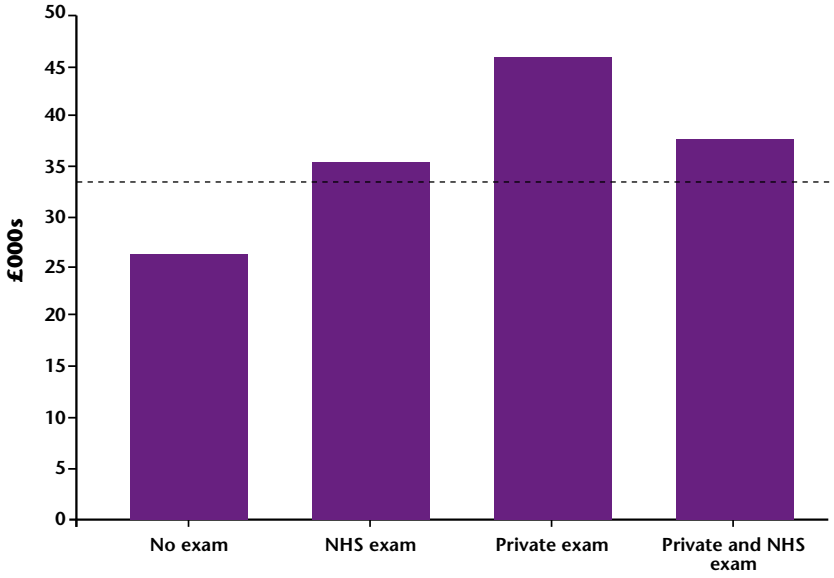



Figure 17 shows mean annual household income according to respondents' utilisation of dental services. This shows that respondents who had a dental exam in 2004-05 had higher income than respondents who didn't have a dental exam, and respondents who had a private exam had higher income than respondents who had an NHS exam. Figure 17 also shows average household income (the dashed line).



17 In light of the longitudinal nature of these data we use the longitudinal weights for the Scotland and Wales sub-samples for the latest data (nlrwtsw1) for all descriptive statistics.

Figure 17: Annual household income 2004-05



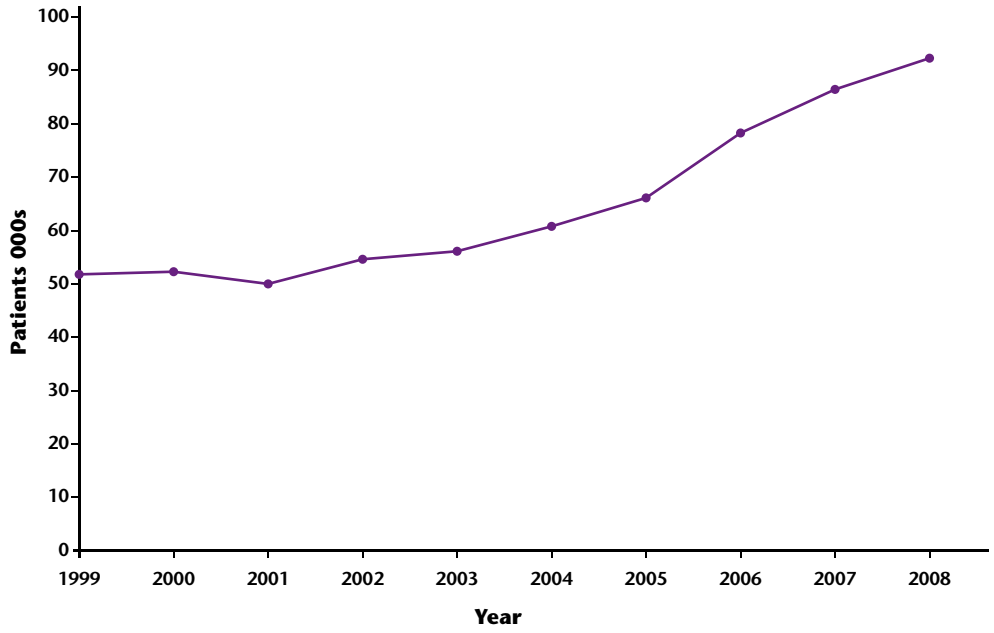

## 4.4 An Analysis of Trends in Public and Private Dental Services using Denplan Data

The data reported in the remaining sections are kindly provided by Denplan. Denplan is the largest independent provider of dental services in the UK. These data provide an important supplement to the BHPS data as they provide information on the oral health of patients.

Figure 18 shows that the number of patients registered with Denplan in Scotland is increasing but is still small relative to the number of patients registered with the NHS. For example, based on each NHS GDP registering 1,129 patients (see Section 3.6), the growth in Denplan patients from 51,191 in April 1999 to 91,673 in April 2008 is equivalent to about (40,482/1,129) 36 dentists switching from GDS to Denplan between 1999 and 2008[18].

18 This does not necessarily imply that NHS use falls by the same amount because the total number of patients using public and private sector dental care might be increasing (see Figure 16).

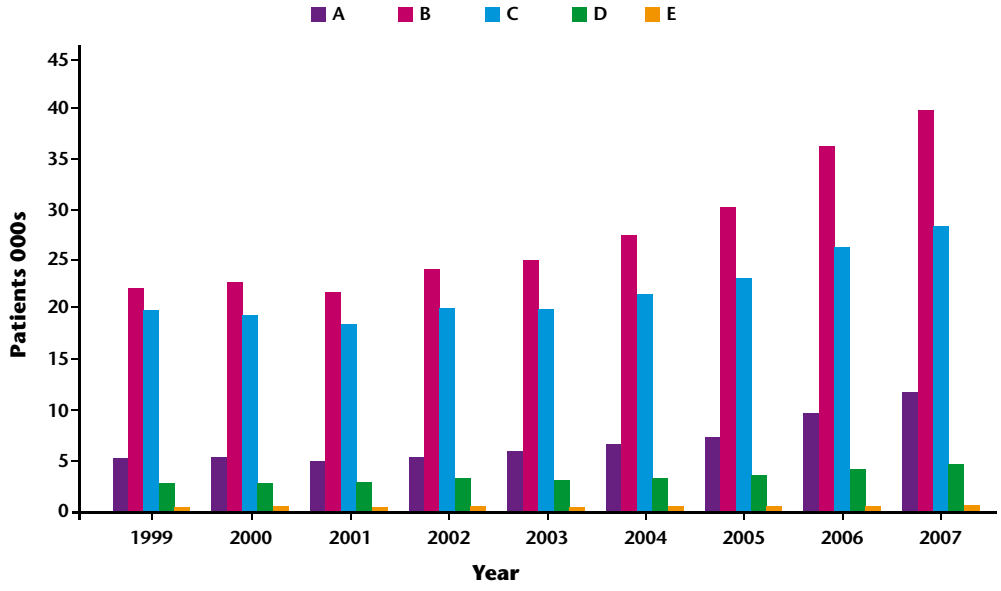
Figure 18: The number of patients registered with Denplan




Unlike many other datasets, the data provided by Denplan give an indication of the oral health of its registered patients. After a patient registers with Denplan, a dentist conducts a detailed assessment of their oral health to establish their Denplan category (A, B, C, D, or E). The Denplan category is mainly determined by the oral health and future dental care needs of the patient: category A corresponds to relatively good oral health and low future dental care needs while category E corresponds to relatively poor oral health and high future dental care needs.

Figure 19 reports the number of patients in each Denplan category between 1999 and 2007. The 2008 data for Denplan categories are not directly comparable because an increasing number of children and adults are registered in non-categorised and partly-categorised plans.

Figure 19: Denplan patients by Denplan category



In April 2007, the percentage of patients allocated to category A, B, C, D and E was 14%, 46%, 33%, 6%, and 1%, respectively and, between 1999 and 2007, the number of patients in each category increased by 123%, 79%, 42%, 60% and 51%, respectively. Therefore, while the number of patients registered with Denplan has increased in all Denplan categories, the patients most likely to register with Denplan are those with relatively good oral health and relatively low future dental care needs. This might suggest that an increasing proportion of NHS patients are relatively less well off and have relatively poor oral health and high future dental care needs. This finding accords with the BHPS results in Section 4.3.

## 4.5 An Analysis of Trends in Public and Private Dental Services using MIDAS and Denplan Data

Figure 20 compares the number of Denplan patients and the number of claims for treatment, including occasional treatment, made in the GDS in each year relative to 1999. The number of Denplan patients increased by almost 70% (from 51,191 to 85,908) between April 1999 and April 2007. The number of claims made by salaried GDS dentists increased by over 200% (from 59,837 to 183,472). The number of claims made by non-salaried GDS dentists fell by 4% (from 4,108,076 to 3,959,370)[19].

Figure 20: Number of patients (Denplan) and number of claims (GDS), 1999=100

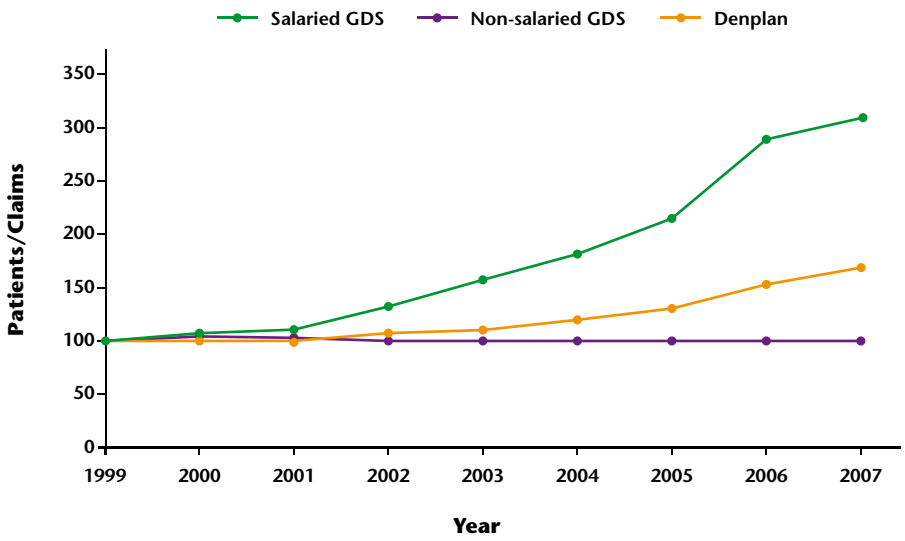



Table 6 reports that the total number of patients registered with Denplan and the GDS fell between 2000 and 2006 but increased slightly between 2006 and 2007. It should be noted that these data exclude information from other private sector providers of dental services and treatment provided by the Community Dental Service (CDS) and Hospital Dental Service (HDS).

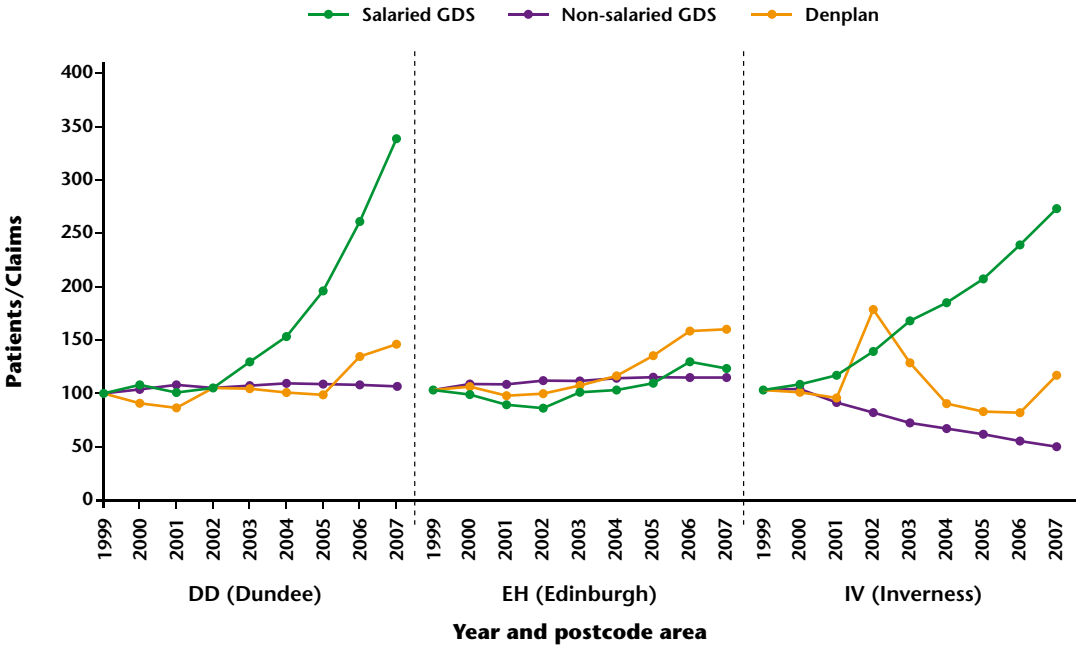
19 The GDS data from MIDAS relate to calendar years while the Denplan data relate to financial years. The number of GDS claims was calculated by summing the number of claims over salaried and non-salaried list numbers in MIDAS. The GDS data are restricted to areas in which Denplan has patients over the entire sample 1999-2007.

Table 6: The number of patients with access to dental services through Denplan or the GDS

| Year | Denplan | GDS registrations | | | Total |
|---|---|---|---|---|---|
| | | Children | Adults | GDS Total | |
| 2000 | 51,502 | 754,545 | 1,972,310 | 2,726,855 | 2,778,357 |
| 2001 | 49,445 | 743,469 | 1,969,008 | 2,712,477 | 2,761,922 |
| 2002 | 54,135 | 733,743 | 1,960,605 | 2,694,348 | 2,748,483 |
| 2003 | 55,284 | 725,494 | 1,959,293 | 2,684,787 | 2,740,071 |
| 2004 | 60,039 | 716,070 | 1,935,634 | 2,651,704 | 2,711,743 |
| 2005 | 65,570 | 711,847 | 1,915,492 | 2,627,339 | 2,692,909 |
| 2006 | 77,610 | 707,371 | 1,877,945 | 2,585,316 | 2,662,926 |
| 2007 | 85,908 | 705,286 | 1,879,626 | 2,584,912 | 2,670,820 |

Figure 21 illustrates the utilisation of dental services by selected geographical locations and shows there has been significant growth in the number of Denplan patients in postcode areas DD (Dundee) and EH (Edinburgh) over the sample period. The number of claims made by salaried GDS dentists during this period has also increased in all areas. While the number of claims made by non-salaried GDS dentists has fallen in IV (Inverness), it has increased in DD and EH.

Figure 21: Utilisation by sector and selected area



Across Scotland, there is not a consistent relationship between Denplan and GDS utilisation because there are some areas where Denplan growth has been strong and public sector provision has either fallen or remained relatively constant. This suggests that the scale of private sector provision, and its impact on public sector provision, varies across geographical region and provides some support for recruitment, retention and capital programme initiatives based on both geographical location and areas with particular access difficulties.

## 4.6 Summary

- Between 2000 and 2008 children's registration rates were constant but adults' registration rates decreased steadily. In 2008, both children's and adults' registration rates increased. At least in part, this increase is likely to be a result of the extension to the registration period.
- A much greater percentage of the adult population, about 79%, has accessed NHS dental care over nine years than is suggested by NHS registration rates. This is because a large number of individuals access the NHS GDS but do so relatively infrequently.
- At national level, there has been little change in the number of claims made by GDS dentists but there are some areas where the number of GDS claims has increased and others where it has decreased.
- Both the BHPS and Denplan data show that the private sector continues to grow. These data also show that the private sector attracts patients with higher incomes, relatively good oral health and low future dental care needs. The extent of private sector penetration varies across Scotland.
- Understanding the impact of the recent increases in the supply of dentists on the market for dental services is a key area of future research.

# Section 5

## Forecasting the Dental Workforce

# 5. Forecasting the Dental Workforce

The purpose of this section is to consider and compare several supply and demand forecasts for NHS dentists in Scotland. Section 5.1 reports three different forecasts for the supply of NHS GDPs in Scotland and compares their accuracy in 2006 and 2007. Section 5.2 reports 5 demand forecasts (3 for the NHS GDP workforce and 2 for the entire NHS workforce), each corresponding to a different measure. For example, the measure assumed in NES (2004) and NES (2006) was that there would be enough dentists to provide a given level of treatment. Another measure might be to achieve a certain dentist to population ratio. Yet another measure might be to ensure there are enough dentists to register a certain percentage of the population. As Section 5.2 shows, each measure gives rise to a different demand for dentists. Section 5.3 compares the demand and supply forecasts.

## 5.1 Supply Forecasts

Figure 22 compares three NHS GDP supply forecasts. The first forecast, NES/ISD (2008), uses the methodology used in NES (2004) and NES (2006)[20]. Simply stated, this supply forecast is the sum of the previous year's stock of NHS GDPs and the net inflow of NHS GDPs. One of the benefits of this model is that it accounts for the composition of the NHS GDP workforce in terms of dentists' age, sex and country of qualification. However, this sophistication comes at a price. The amount of information required to generate the forecast is substantial because it requires information on the age, sex and country of qualification of every dentist to have practised as an NHS GDP during the sample period (1995-2007).

Another approach is to ignore the composition of the NHS GDP workforce. This simplified NES/ISD (2008) forecast uses just two parameters, the expected outflow rate and the expected inflow of dentists, both of which are easily calculated. For example, the expected outflow rate can be calculated from Table 2. The expected inflow of NHS GDPs is the sum of the expected inflow of Other Joiners, Returners and VTs: the expected number of Returners and Other Joiners can also be calculated from Table 2 (Section 3.2); and the expected inflow of VTs is calculated by using a combination of the expected number of graduates (from Table 3 in Section 3.3) and the average retention rate of VTs in the NHS (from Figure 13 in Appendix 2).

A third approach is to use Smoothing techniques to forecast the supply of dentists. These techniques use the sample information to draw a smooth line through the data and extrapolate the line to produce a forecast. These smoothing techniques are particularly useful when, as here, the sample of data is relatively small (Diebold, 2004)[21].



20 A short description of this model can be found in Appendix 1.

21 The smoothing technique used is the Holt-Winters approach. See Diebold (2004).

Figure 22: A comparison of supply forecasts

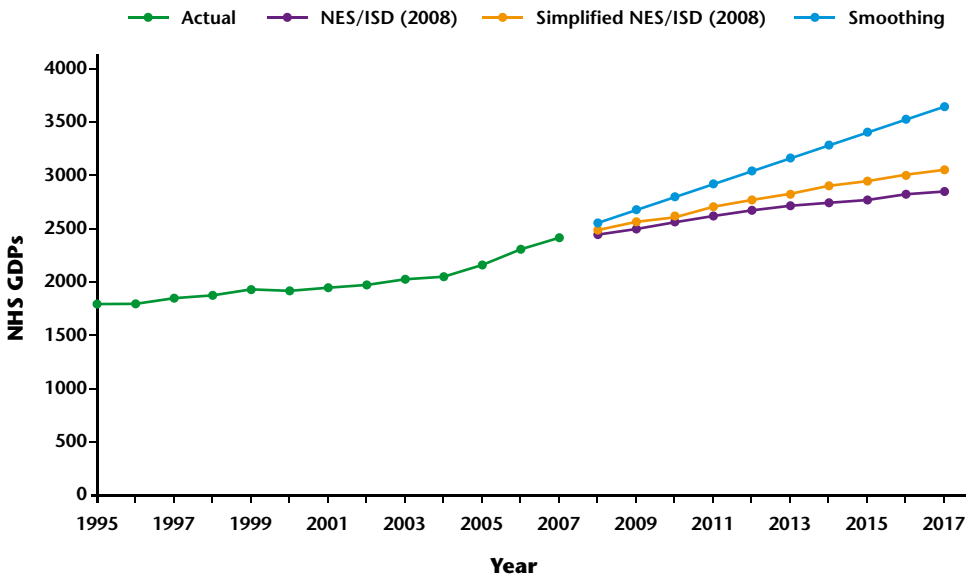



Figure 22 shows that while there is some quantitative difference between the different forecasts, each supports the conclusion of Section 3: based on the current evidence of the inflow and outflow of NHS GDPs, there is likely to be a relatively large and sustained increase in the stock of NHS GDPs in the future.

### 5.1.1 Forecast errors

One way to assess the accuracy of different forecasting models is to compare their forecast errors: the difference between the actual and forecast values. Figure 23 plots the actual supply of NHS GDPs between 1995 and 2007 and 3 different forecasts based on the information available in 2005: NES/ISD (2006) is the forecast from NES (2006); Simplified NES/ISD (2006) is the simplified version of NES/ISD (2006); and Smoothing is a smoothing forecast.

Figure 23: A comparison of forecasts based on information available in 2005

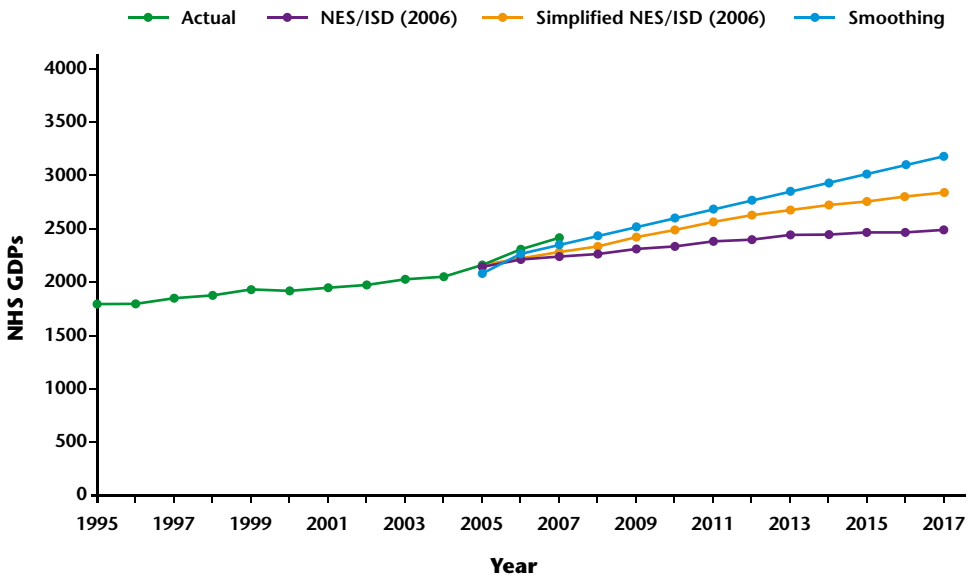


Table 7 contains the actual and forecast values for 2006 and 2007. All of the forecasts under-predict the number of GDPs in 2006 and 2007. This is because none of the models was able to account for the large increase in the supply of GDPs after 2005 (see Table 2). The model with the smallest forecast errors, Smoothing, is one of the simplest methods as it requires information on only the supply of dentists in the sample period. However, these forecast errors have been calculated over only two years. Other forecasting methods might be more accurate over a longer period. Therefore, the relative performance of these different forecasting methods will continue to be compared in future reports.

Table 7: Actual and forecast values and forecast errors

| | Actual | NES/ISD (2006) | Simplified NES/ ISD (2006) | Smoothing |
|---|---|---|---|---|
| 2006 | 2,288 | 2,189 | 2,199 | 2,215 |
| Forecast error (actual – forecast) | | 99 | 89 | 73 |
| 2007 | 2,401 | 2,218 | 2,268 | 2,301 |
| Forecast error (actual – forecast) | | 183 | 133 | 100 |

These forecast errors illustrate the difficulty of making forecasts based on historical data, particularly when there are large changes to the system such as those introduced as a result of the Dental Action Plan. For example, while the increase in the number of VTs might have been predicted in 2005, the unprecedented increase in the number of Other Joiners could not have been predicted with any accuracy in 2005.

## 5.2 Demand Forecasts

The demand forecast reported in NES (2004) and NES (2006) represents only one of a number of possible measures of the demand for dentists. This section updates this demand forecast but also reports a number of other measures of demand, including some implied by the targets set out in the Dental Action Plan Monitoring forms used by NHS Boards.

### 5.2.1 The Demand for NHS GDPs

Figure 24 illustrates three NHS GDP demand forecasts that correspond to different measures.

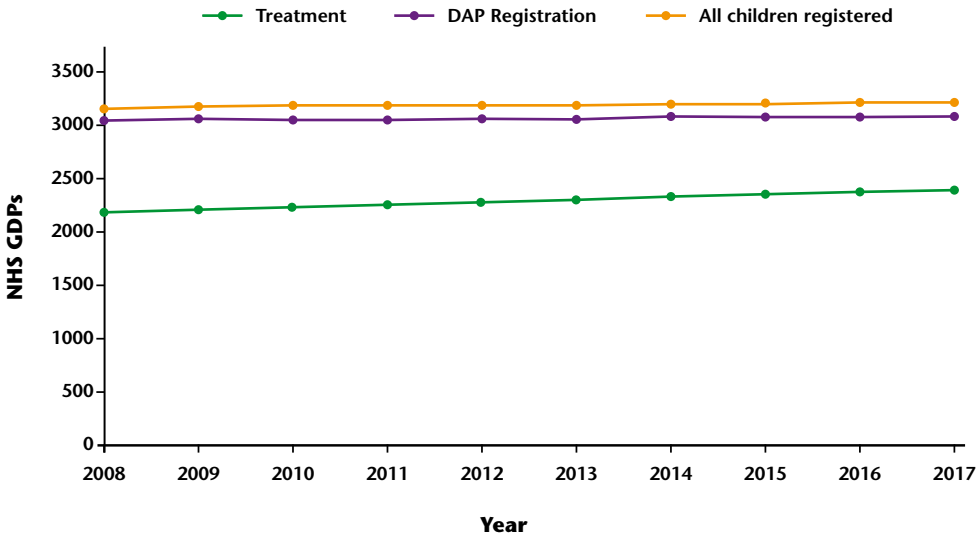
- *Treatment* illustrates the updated demand forecast based on the methodology set out in NES (2004) and NES (2006) and corresponds to the number of NHS GDPs required to provide historical levels of treatment[22]
- *DAP Registration* illustrates the demand for dentists implied by the targets from the Dental Action Plan Monitoring Forms for NHS Boards:
  - 85% of children aged 0-17 registered by 2010;
  - 65% of adults aged 18-64 registered by 2010; and
  - 50% of adults aged 65 and over registered by 2010.
- *All children registered* illustrates the demand for dentists implied by:
  - 100% of children aged 0-17 registered by 2010;
  - 65% of adults aged 18-64 registered by 2010; and
  - 50% of adults aged 65 and over registered by 2010.



22 A brief description of the methodology and an analysis of the parameters used in this forecast are provided in Appendix 2.

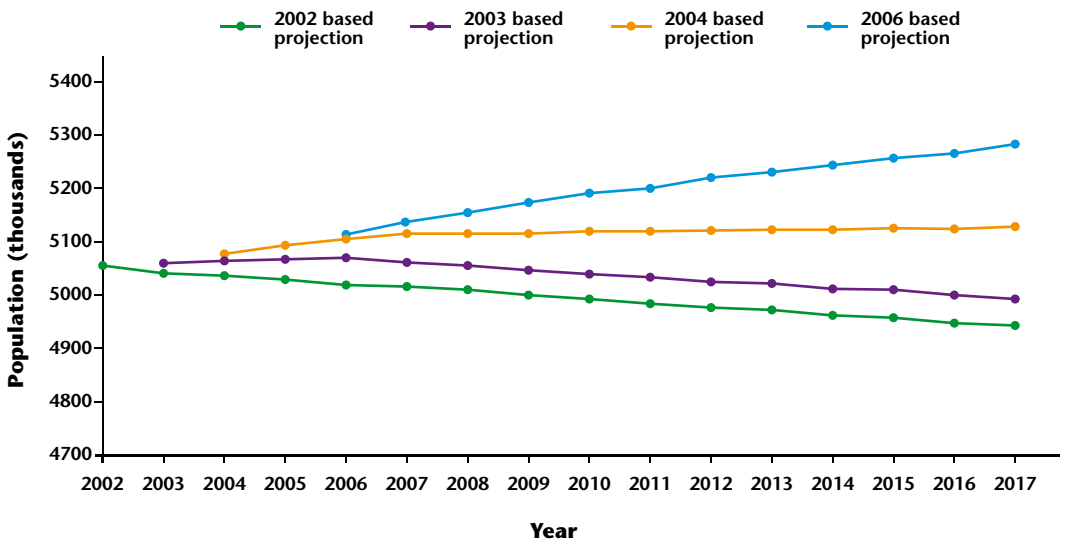
It is important to note that in order to forecast the number of dentists consistent with these registration targets, it has been assumed that each NHS GDP registers 1129 patients (see Section 3.6). If the average number of registered patients per dentist is greater than 1,129, the demand forecasts based on registration targets in Figure 24 will be lower.

Figure 24: NHS GDP demand forecasts




All the NHS GDP demand forecasts in Figure 24 increase in line with the 2006-based population projections because they are all positively related to the size of the population. If the population were to fall, the demand forecasts would also fall. Figure 25 (also discussed in Appendix 3) illustrates the last four population projections for Scotland and shows that based on the latest information the Scottish population is projected to increase significantly in the future.

Figure 25: Government Actuary Department population projections for Scotland



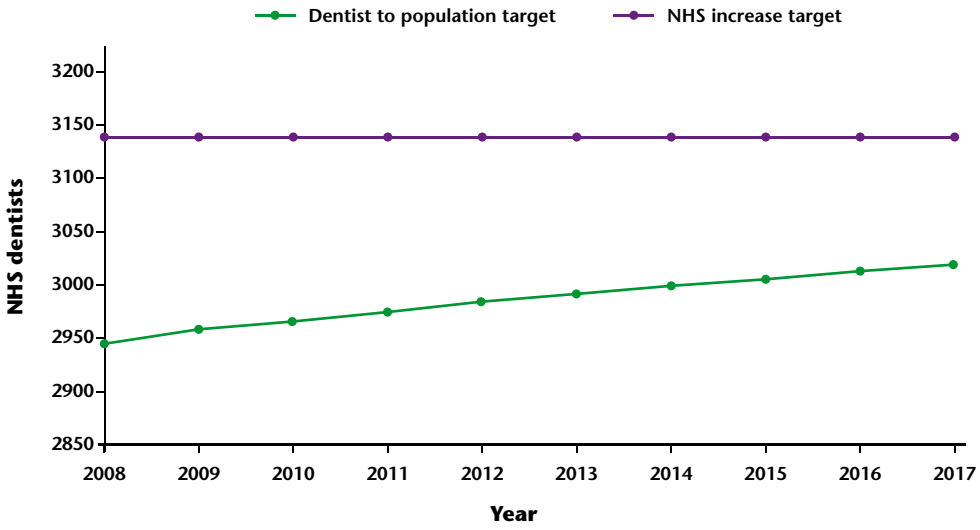
More generally, there are several factors that determine the demand for dentists. For example, the DAP Registration forecast is a function of the specific targets for registration, the forecast of the population, and the number of patients registered per NHS GDP. Changes in any of these factors (a decrease in the population forecasts or a greater number of patients registered per NHS GDP as a result of the increased contribution of Oral Health Therapists (OHTs)[23]) will result in a change in the demand for dentists.

### 5.2.2 The Demand for NHS Dentists

Figure 26 illustrates two NHS dentist demand forecasts which correspond to two dental workforce targets from the Dental Action Plan Monitoring forms for NHS Boards:

- *Dentist to Population* target reflects the Dental Action Plan target of one dentist for every 1750 people in Scotland (based on headcount including CDS, GDS, and HDS); and
- *NHS Increase* target reflects the Dental Action Plan target of a 20% increase in the number of NHS dentists (based on headcount and including CDS, GDS and HDS) between 2004 and 2010.

Figure 26: NHS demand forecasts




The Dentist to Population target forecast increases from 2,947 in 2008 to 3,019 in 2017 in line with the projected increase in Scotland's population. The NHS Increase target forecast is fixed at 3,140 because the headcount number of NHS dentists in 2004 was 2,617 (see Table 1).

## 5.3 A Comparison of the Demand and Supply Forecasts

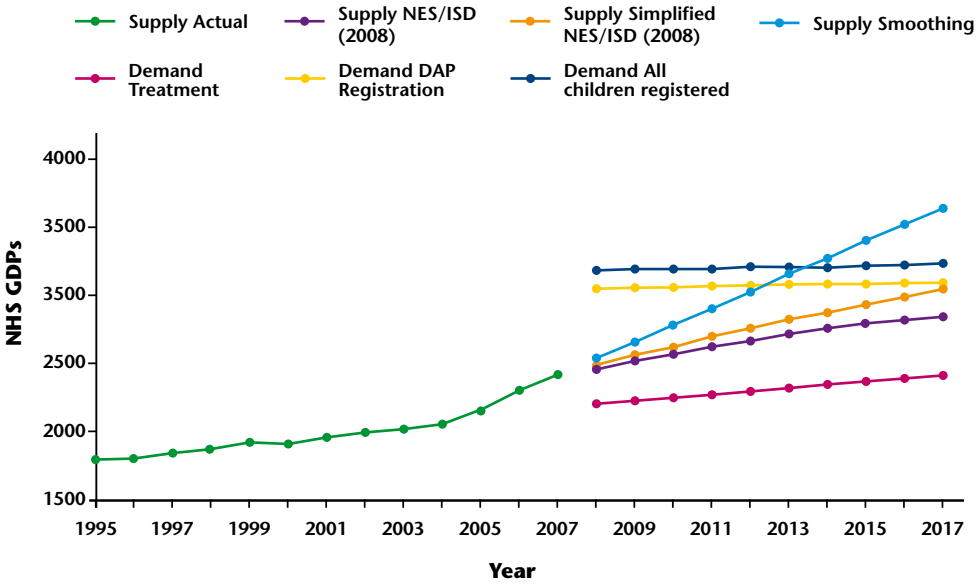
### 5.3.1 NHS GDPs

Figure 27 compares the NHS GDP demand and supply forecasts. All the NHS GDP supply forecasts already exceed the Treatment demand forecast. The DAP Registration demand forecast is expected to be met in 2013 according to the Smoothing supply forecast, will almost be met in 2017 according to the Simplified NES/ISD (2008) forecast, but is not expected to be met until after 2017 according to the NES/ISD (2008) forecast. The All children registered demand forecast will be met in 2014 according to the Smoothing forecast, but will not be met until after 2017 according to either the Simplified NES/ISD (2008) or the NES/ISD (2008) forecast.



23 Appendix 4 forecasts the number of OHTs based on the Dental Action Plan targets.

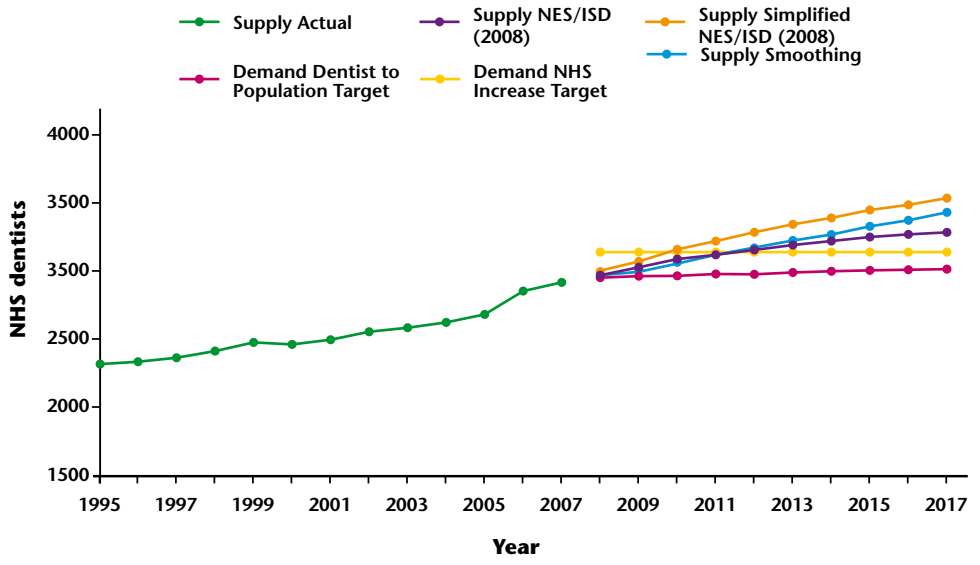
Figure 27: Demand and supply forecasts (NHS GDPs)




### 5.3.2 All NHS dentists

Figure 28 compares the three supply forecasts and the two demand forecasts for all NHS dentists in Scotland[24].

Figure 28: Demand and supply forecasts (all dentists)




All the supply forecasts already exceed the demand for dentists based on the Dentist to Population target forecast. The simplified NES/ISD (2008) forecast meets the NHS Increase target forecast by 2010, and the NES/ISD (2008) and Smoothing forecasts meet the NHS increase forecast by 2012.

24 The NES/ISD (2008) forecast is based on the methodology used in the NHS GDP forecast (details are available from the authors on request). The smoothing forecast uses the Holt-Winters approach (see Diebold (2004)).

## 5.4 Summary

- There are several different methods of forecasting the supply of dentists. All the forecasts show that, based on the current evidence of the inflow and outflow of NHS GDPs in Scotland, there is likely to be a relatively large and sustained increase in the stock of NHS dentists in Scotland in the future.
- In the past two years, relatively simple forecasting approaches have outperformed more sophisticated methods.
- There are several different ways of measuring the demand for dentists. Most of the forecasts implied by these different measures suggest there is likely to be an increase in the demand for dentists in the future mainly as a result of the expected increase in Scotland's population.
- The extent to which excess demand or supply is forecast depends crucially upon how the demand for dentists is measured and the method used to forecast supply.

# Section 6

## Avenues for Future Research

# 6. Avenues for Future Research

Several important avenues for future research have arisen as a consequence of the analyses used to inform this report.

On the supply side, research on the retention rates of graduates from Scottish Dental Schools will be important to evaluate the impact of the Dental Undergraduate Bursary Scheme. This research will build on the data and analysis already conducted on the retention of VTs reported in Section 3.6.

The information contained in Appendix 3 of this report suggests that the output of a salaried GDP is significantly lower than that of a non-salaried GDP. However, the reasons for this difference in output might be a function of several factors such as the incentives generated by the two payment systems, the type of dentist selecting into each type of payment system, the number and type of Dental Care Professionals (DCPs) working with each GDP, the contracted hours of each salaried dentist, and the type of patients treated. Better information on these and other factors might be generated through a repeat of the Toothousand project (SCPMDE, 2000).

The dental workforce team has excellent individual-level, longitudinal data on dentists in training and in practise. Unfortunately, there is a dearth of good quality information on DCPs in training or in practice. Moreover, the working patterns of DCPs and their impact on output are unknown. However, there are a number of projects in progress that are beginning to address these issues.

On the demand side, the results on the use of public and private sector dental services first reported in NES (2004) will be updated in order to examine the determinants of the utilisation of dental services and thus inform future forecasts of the demand for dental services.

This report has illustrated that the utilisation of dental services varies across Scotland. Identifying the relationship between the location of patients and the location of NHS dental services is an important measure of access that the project will begin to address. The project will also explore whether the high-quality oral health information from NDIP can be integrated with the high-quality treatment information held by ISD to examine the crucial issue of the relationship between oral health and utilisation.

Data on adult dental health are limited at present. From 2009 adult dental health data will be available at the national (Scotland) level and from 2011 at the NHS Board level. The possibility of obtaining oral health data from dental practices is also being investigated. With better information on oral health the need for, and subsequent utilisation of, dental services will begin to be better understood.

This report has shown that there has been a significant increase in the supply of dentists in Scotland. All the forecasts in Section 5 suggest that this trend is likely to continue in the future. However, it is not clear what impact this increased supply will have on outcomes (such as the utilisation of NHS dental services, the utilisation of private sector dental services, private sector premiums, and the patterns of treatment provided) in the market for dental services. An analysis of these impacts will be central to an understanding and evaluation of the effectiveness of the significant investment in training, recruitment and retention in NHS dentistry in recent years.

# References

# References


BASCD, 2008. National Surveys. Available at: http://www.bascd.org.

British Household Panel Study, University of Essex. Institute for Social and Economic Research, British Household Panel Survey: Waves 1-15, 1991-2006. 3rd Edition. Colchester, Essex: UK Data Archive, June 2007. SN: 5151.

Chalkley, M.J., Rennie, J.S. & Tilley, C.J., 2008. Participation in NHSScotland following Dental Vocational Training (unpublished).

Chalkley, M.J. & Tilley, C.J., 2008. Measuring access to dental services in Scotland (unpublished).

Diebold, F.X., 2004. *Elements of forecasting* 3rd ed., Ohio, US: South Western.

Galloway, J. et al., 2002. *The Professionals Complementary to Dentistry: Systematic Review and Synthesis*, Dental Team Studies Unit.

Kelly, M. et al., 2000. *Adult Dental Health Survey: Oral Health in the United Kingdom* 1998, London, UK: The Stationery Office.

Marthaler, T. et al., 1996. Caries prevalence in Europe. Caries Research, 30, 237-255.

NDIP, 2006. *National Dental Inspection Programme of Scotland: Report of the 2006 Survey of P1 children*, Edinburgh, UK: Scottish Dental Epidemiological Co-ordinating Committee.

NDIP, 2007. *National Dental Inspection Programme of Scotland: Report of the 2007 Survey of P7 Children*, Scottish Dental Epidemiological Co-ordinating Committee.

NES, 2006. *An Update on the Analysis and Modelling of Dental Workforce in Scotland*, Edinburgh, UK: NHS Education for Scotland and ISD Scotland.

NES, 2004. *Workforce Planning for Dental Services in Scotland*, Edinburgh, UK: NHS Education for Scotland and ISD Scotland.

NES, 2002. *Workforce Planning for Dentistry in Scotland: Characteristics and Supply Dynamics of the Dental Workforce in Scotland*, SCPMDE and ISD Scotland.

Nuttall, N.M., 2001. Oral health in Scotland 1972-1998. *Health Bulletin*, 59, 309-314.

Petersen, P.E., 2003. *The world oral health report 2003*, Geneva: WHO Oral Health Programme.

SCPMDE, 2000. *The Toothousand project*, Edinburgh, UK: Scottish Council for Postgraduate Medical and Dental Education.

SEHD, 2005. *An Action Plan for Improving Oral Health and Modernising NHS Dental Services in Scotland*, St Andrew's House, Edinburgh: Scottish Executive.

SFC, 2008a. *Intake targets for the controlled subjects in higher education institutions for academic year 2008-09*, Edinburgh, UK: Scottish Funding Council.

SFC, 2008b. *Main grants in support of teaching and research for higher education institutions for academic year 2008-09*, Edinburgh, UK: Scottish Funding Council.

SG, 2007. *Better Health, Better Care: Action Plan*, Edinburgh, UK: Scottish Government.

Sheiham, A. & Watt, R.G., 2000. The common risk factor approach: a rational basis for promoting oral health. *Community Dentistry & Oral Epidemiology*, 28, 399-406.

SNAP, 1997. *Adult Oral Health*, Scottish Needs Assessment Programme.

Sweeney, P.C., Nugent, Z. & Pitts, N.B., 1999. Deprivation and dental caries status of 5-year-old children in Scotland. *Community Dentistry & Oral Epidemiology*, 27, 152-158.

# Appendices

# Appendix 1. The Composition of the Stock of NHS Dentists in Scotland

Table 8, published by ISD, reports the stock and composition of NHS dentists in Scotland. Dentists can work in several NHS sectors simultaneously. Therefore, the categories in Table 8 are not mutually exclusive. As a consequence of categorising dentists in all sectors in which they provide care there is an element of double counting.

Table 8 NHS dentists in Scotland at 30 September (headcount)

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| All dentists[1] | 2,358 | 2,411 | 2,462 | 2,465 | 2,488 | 2,550 | 2,583 | 2,617 | 2,669 | 2,842 | 2,919 |
| Annual Change | 35 | 53 | 51 | 3 | 23 | 62 | 33 | 34 | 52 | 173 | 77 |
| Annual percentage change | 0.02 | 0.02 | 0.02 | 0.00 | 0.01 | 0.02 | 0.01 | 0.01 | 0.02 | 0.06 | 0.03 |
| General Dental Service | 1,913 | 1,955 | 1,999 | 2,002 | 2,048 | 2,078 | 2,112 | 2,156 | 2,267 | 2,434 | 2,546 |
| Non-salaried dentists | 1,877 | 1,918 | 1,952 | 1,954 | 1,992 | 2,015 | 2,040 | 2,070 | 2,100 | 2,202 | 2,261 |
| Principals | 1,747 | 1,789 | 1,827 | 1,823 | 1,856 | 1,881 | 1,903 | 1,919 | 1,933 | 2,025 | 2,085 |
| Assistants | 48 | 45 | 44 | 39 | 40 | 36 | 38 | 41 | 46 | 40 | 39 |
| Vocational Dental Practitioners | 89 | 94 | 93 | 101 | 104 | 109 | 111 | 122 | 136 | 147 | 147 |
| Salaried dentists [2,3] | 39 | 39 | 48 | 50 | 60 | 67 | 77 | 93 | 187 | 275 | 320 |
| Hospital dentists [4,5] | 311 | 325 | 338 | 327 | 321 | 311 | 313 | 294 | 302 | 308 | 260 |
| Community dentists [3,5] | 276 | 284 | 280 | 296 | 287 | 343 | 329 | 349 | 363 | 401 | 439 |

Source ISD Scotland

Notes:

1 Data for previous years have been revised. Double counting between the three different services and within the General Dental Service (GDS) has now been eliminated.

2 Due to improvements in the collection of information on GDS salaried dentists, figures from September 2005 include some GDS salaried dentists not previously recorded. There are a number of cases where a salaried post will be recorded under a generic name and not under the name of a specific dentist. Numerous dentists may work in this post at any given time. For years prior to September 2005 it was assumed that, since there was no named individual recorded, a permanent dentist was not in post. As a result, all posts recorded without a named individual were previously excluded from GDS salaried dentist counts. However, information is now available on the individuals who fill these posts. These dentists can now be included in the GDS salaried dentist count, which has resulted in a significant increase in the number of salaried dentists.

3 Salaried dentists and community dentists both work in the salaried primary care dental sector and are employed by NHS Boards. Reporting arrangements vary between Boards in the way these dentists are classified. Gradually from 2008, the salaried primary care dental practitioner classification will be introduced to cover the activities of both types of dentist.

4 Specialists in oral and maxillofacial surgery are no longer present in tables showing hospital dentists. They now appear in tables showing specialists in hospital medical surgery. Historical data, from 1996 to 2006, have also been amended.

5 Improvements continue to be made both in the historical classification of hospital and community dentists and in the monitoring of these dentists leaving and joining the service.

# Appendix 2. Details of the NES/ISD (2008) Supply Forecast

The methodology underpinning the NHS GDP supply forecast is described in detail in NES (2004) and NES (2006). Simply stated, the NHS GDP supply forecast is the sum of the previous year's stock of NHS GDPs and the net inflow of NHS GDPs. This Appendix analyses the net inflow of NHS GDPs in more detail and discusses the implications of this analysis for the NHS GDP supply forecast.

**Outflow of NHS GDPs**

Figure 29 shows the NHS GDP outflow rate during the sample period. The outflow rate is relatively constant but has been falling since 2004. The outflow of NHS GDPs (the number of leavers) used in the supply forecast is calculated by multiplying the forecast stock of dentists by the average outflow rate.

Other things equal, a reduction in the outflow rate increases the stock of NHS GDPs.

Figure 29: GDS outflow rates

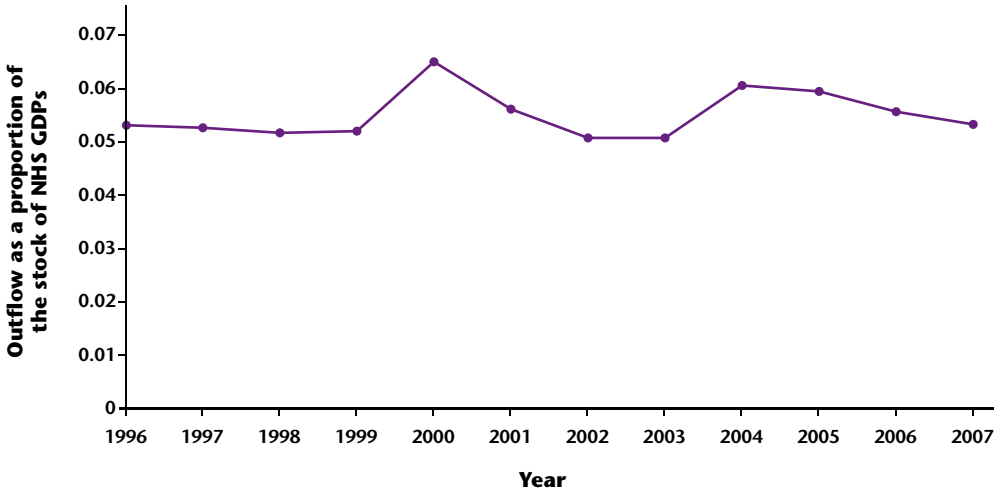
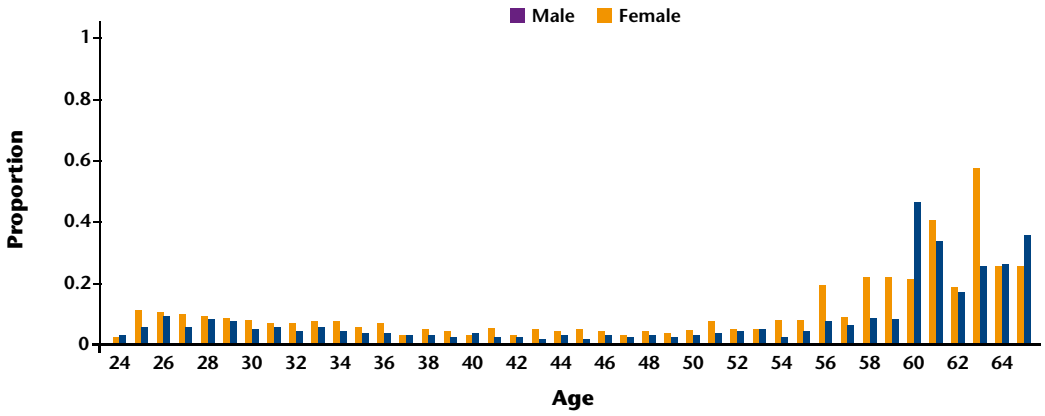



Figure 30 shows the relationship between outflow rates, age and sex. This shows, for example, that during the sample period about 21% of women aged 60 and 46% of men aged 60 left the NHS GDP workforce. This relationship is accounted for in the NES/ISD (2008) supply forecast by adjusting outflow rates by the age and sex distribution of the dental workforce.

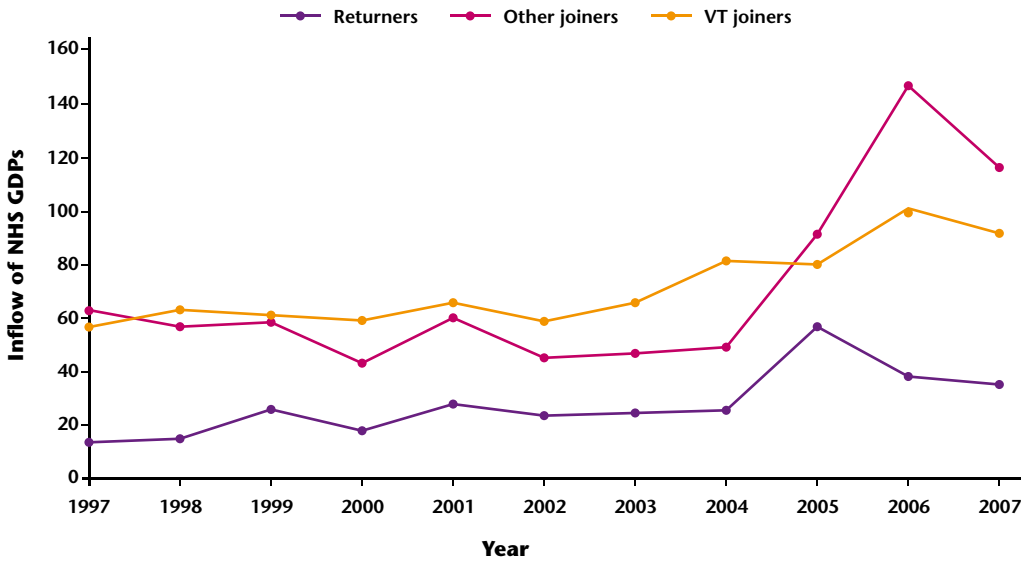
Figure 30: Outflow rates by age and sex 1995-2007




### Inflow of NHS GDPs

Figure 31 shows that the inflow of dentists into the NHS GDP workforce from all sources (Returners, Other Joiners and VT Joiners) has been increasing during the sample period.

Figure 31: GDS inflow

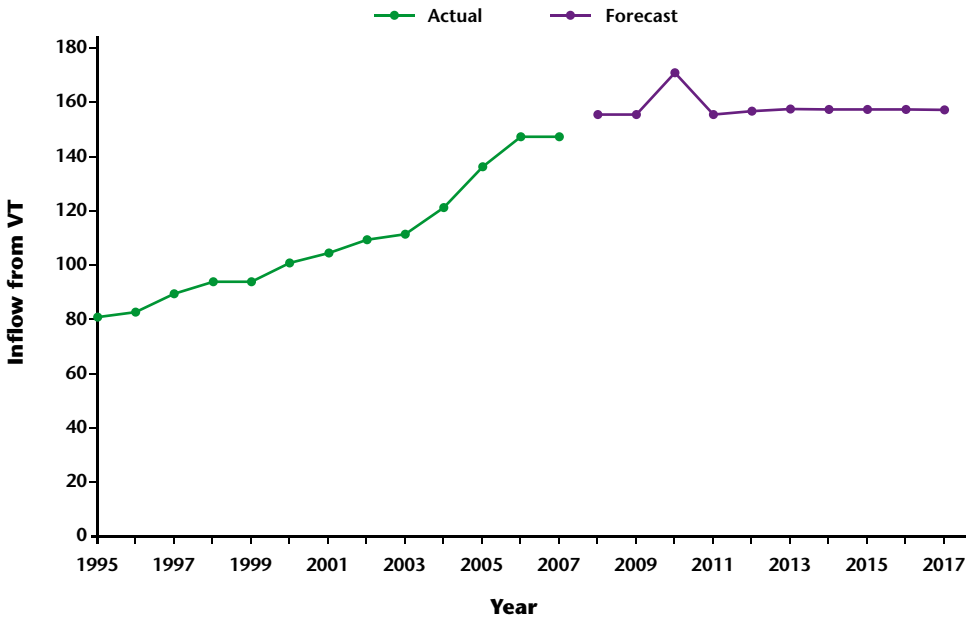



The number of Returners and Other Joiners used in the NES/ISD (2008) supply forecast is an average of these inflows during the sample period. Other things equal, an increase in the number of Returners and Other Joiners increases the stock of dentists.

The number of dentists joining the GDS from VT in the NES/ISD (2008) supply forecast is a function of the retention rate of VTs and the expected number of VTs in the future.

The actual and expected number of VTs in each cohort is illustrated in Figure 32. As a result of the Dental Action Plan VT targets, the expected number of VTs is forecast to be 155 in 2008 and 2009, 170 in 2010 (to match the higher output of the Scottish Dental Schools), 155 in 2011, 156 in 2012 (to match the output of Dundee and Glasgow Dental Schools and the first cohort of students from Aberdeen Dental School) and 158 in 2013 (to match the output of Dundee and Glasgow Dental Schools and the second cohort of students from Aberdeen Dental School). Other things equal, an increase in the inflow from VT increases the stock of NHS GDPs.

Figure 32: The actual and forecast number of VTs




## NES/ISD (2008) NHS GDP Supply Forecast

Figure 33, based on Table 9, illustrates the NES/ISD (2008) NHS GDP supply forecast based on the methodology reported in NES (2004) and NES (2006). The supply of NHS GDPs is forecast to increase from 2,401 in 2007 to 2,831 in 2017. Figure 33 quantifies the conclusion of Section 3: based on the current evidence of the inflow and outflow of NHS GDPs in Scotland, there is likely to be a relatively large and sustained increase in the stock of NHS dentists in Scotland in the future.

Figure 33: NES/ISD (2008) NHS GDP supply forecast

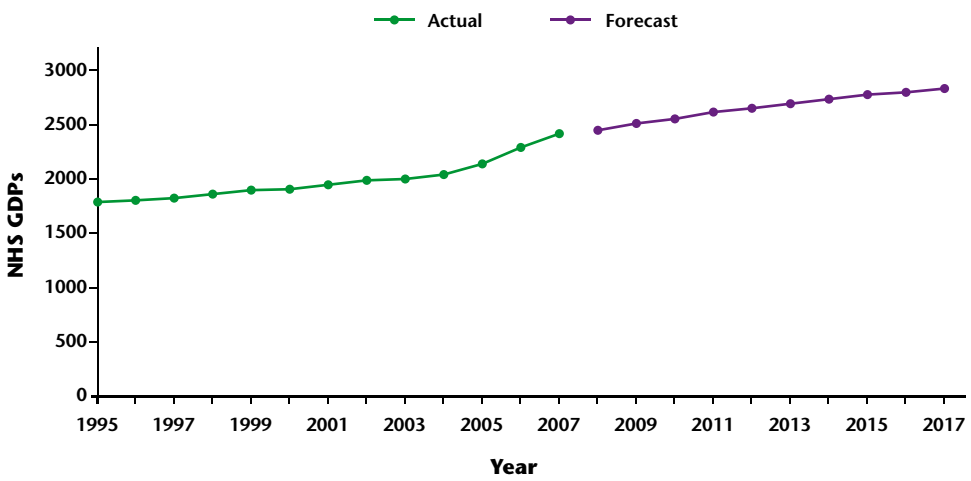


Figure 34, also based on Table 9, shows the composition of the change in the forecast stock of NHS GDPs.

Figure 34: The forecast inflow and outflow of NHS GDPs

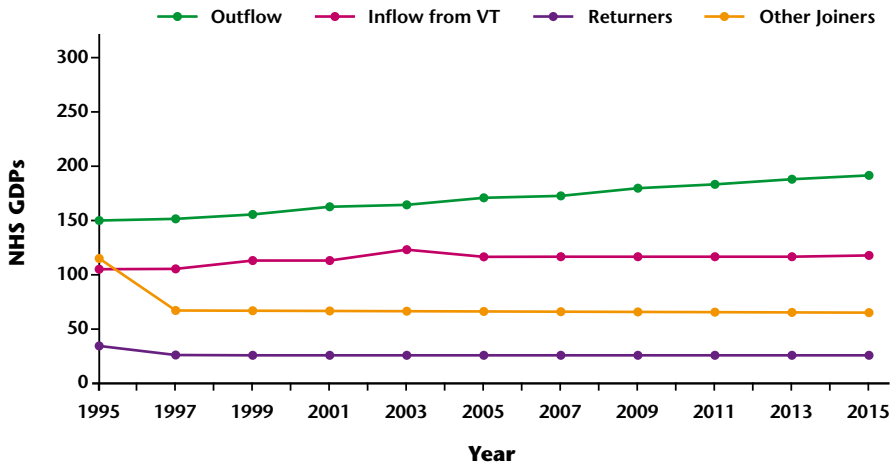



Table 9: NES/ISD (2008) NHS GDP supply forecast

| Year | Forecast | Outflow | Inflow from VT | Returners | Other Joiners |
|---|---|---|---|---|---|
| 2007 | 2,401 | 151 | 106 | 35 | 115 |
| 2008 | 2,450 | 154 | 105 | 27 | 68 |
| 2009 | 2,504 | 157 | 113 | 27 | 68 |
| 2010 | 2,557 | 164 | 115 | 27 | 68 |
| 2011 | 2,612 | 165 | 124 | 27 | 68 |
| 2012 | 2,659 | 172 | 118 | 27 | 68 |
| 2013 | 2,699 | 173 | 117 | 27 | 68 |
| 2014 | 2,740 | 180 | 119 | 27 | 68 |
| 2015 | 2,774 | 184 | 119 | 27 | 68 |
| 2016 | 2,805 | 188 | 119 | 27 | 68 |
| 2017 | 2,831 | 192 | 120 | 27 | 68 |

# Appendix 3. Details of the NES/ISD (2008) NHS GDP Demand Forecast

### Overview of the NES/ISD (2008) NHS GDP Demand Forecast

The NES/ISD (2008) NHS GDP demand forecast is based on the methodology used in NES (2004) and NES (2006) and combines six forecasts. The first four forecasts, the population, participation, attendance and treatment forecasts, calculate the amount of treatment required by the future population of Scotland. The fifth forecast, the output forecast, calculates the amount of treatment provided by dentists. The sixth forecast, the demand forecast, uses the output forecast to calculate the number of dentists required to meet the treatment forecast[25].

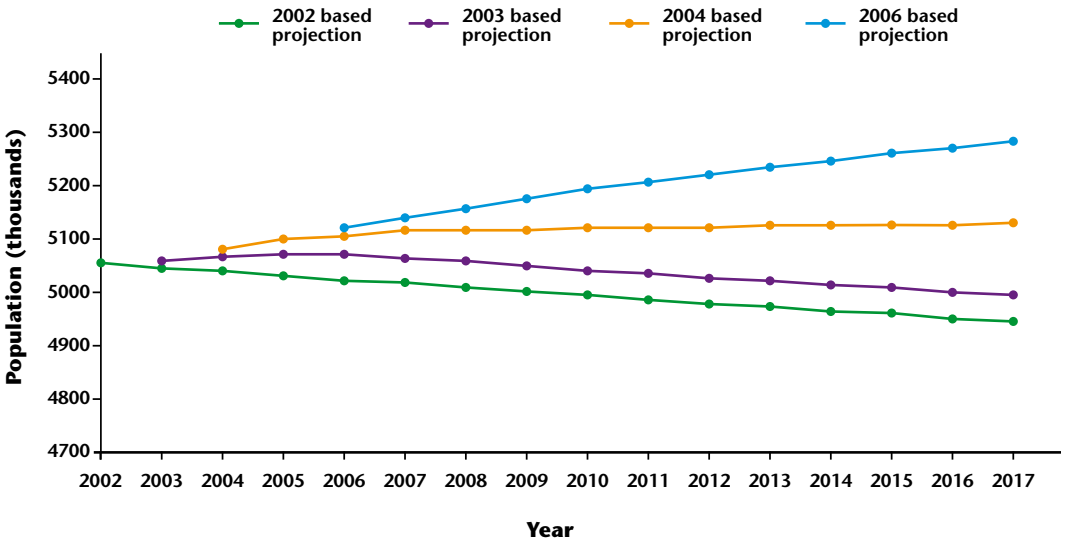
The following sections consider each of these forecasts in more detail.

### Population Forecast

Figure 35 shows four population projections produced by the Government Actuary's Department (GAD) for Scotland between 2002 and 2006. The 2002- and 2003-based projections forecast a decreasing population; the 2004-based projection forecasts a slightly increasing and then decreasing population; and the 2006-based projection forecasts a gradually increasing population. GAD report that differences between the starting population for the 2006-based projection and the 2004-based projection of the population at mid-2006 for the UK are largely explained by a combination of three factors: an underprojection of births, an overprojection of deaths and a subsequent upward revision to the mid-2004 population on which the previous projection had been based. The projected population of Scotland is higher than in the 2004-based projections because of more births, more migrants and fewer deaths. The projected number of births is higher, not only because the long-term assumption of average family size has been increased, but also because the higher assumption of net migration increases the number of women of childbearing age.

Other things equal, the 2008 NHS GDP demand forecast (which is based on the 2006-based population projection) will be higher than the 2006 NHS GDP demand forecast (which was based on the 2004-based population projection).

Figure 35: Government Actuary Department population projections for Scotland




25 In common with previous reports, the NHS GDP demand forecast does not include information on orthodontic specialists.

The difference between the 2002-based population projection and the 2006-based population projection in 2017 is about 340,000 or about 6.5% of the current population. This uncertainty around the population forecast generates uncertainty in the NHS GDP demand forecast.

### Participation Forecast

Participation is defined as at least one attendance in the GDS in a 12-month period. The participation forecast is a function of historical data on participation rates, forecast rates of edentulousness (Kelly et al., 2000), and the population forecast. Other things equal, a higher participation forecast implies a higher demand forecast. The historical participation rates are graphed in Figure 36 and Figure 37. Both figures show clear differences in participation rates by age. For example, the participation rates of the 65-and-over age group are increasing whereas the participation rates of the 25-34 age group are decreasing.

Figure 36: Female participation rates

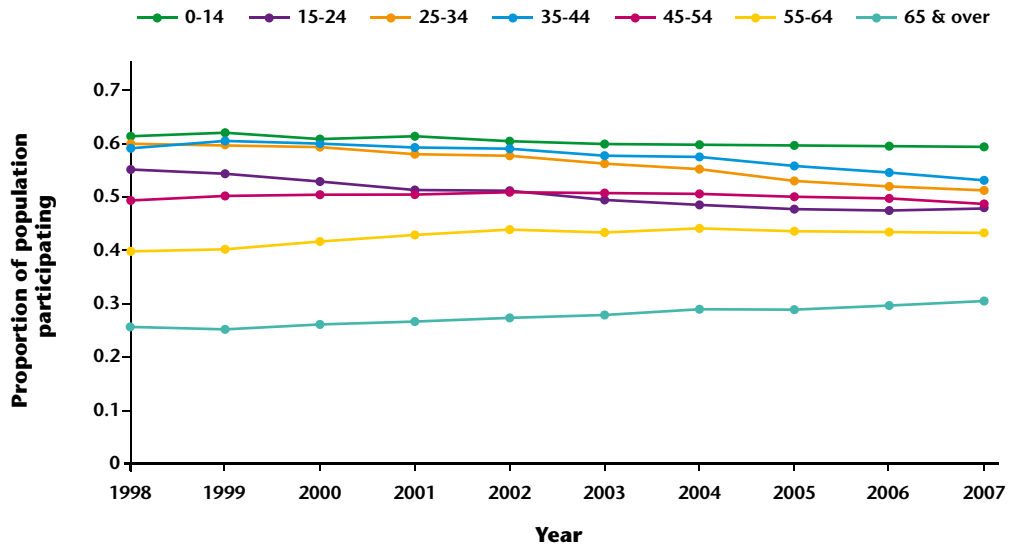
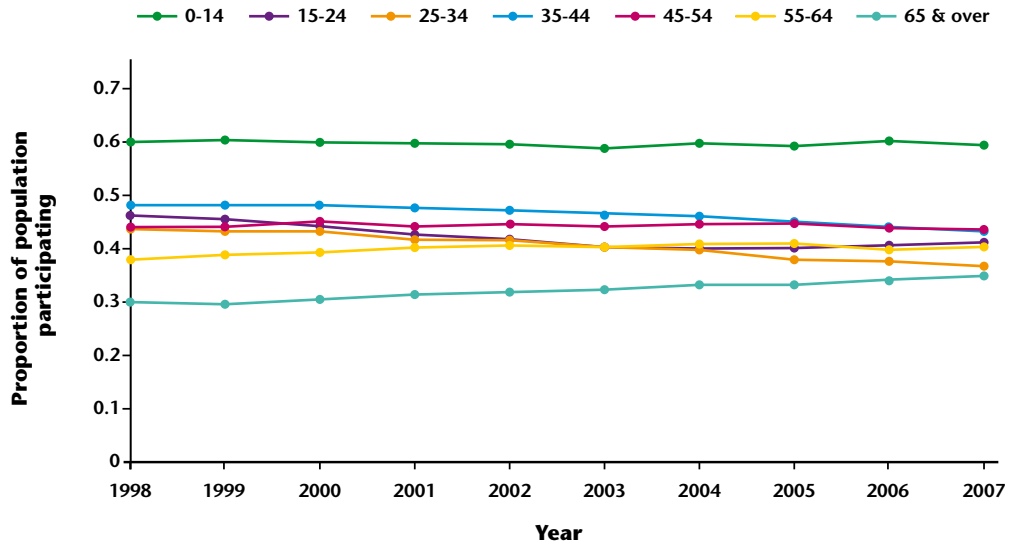



Figure 37: Male participation rates



### Attendance Forecast

The attendance forecast is a function of historical data on attendance rates and the participation forecast. Other things equal, a higher attendance forecast implies a higher demand forecast. Figure 38 and Figure 39 illustrate the attendance rates in the sample. In contrast to the participation rates, the number of claims per participation has increased in all age groups except the 0-14 age group.

Figure 38: Female claims per participation

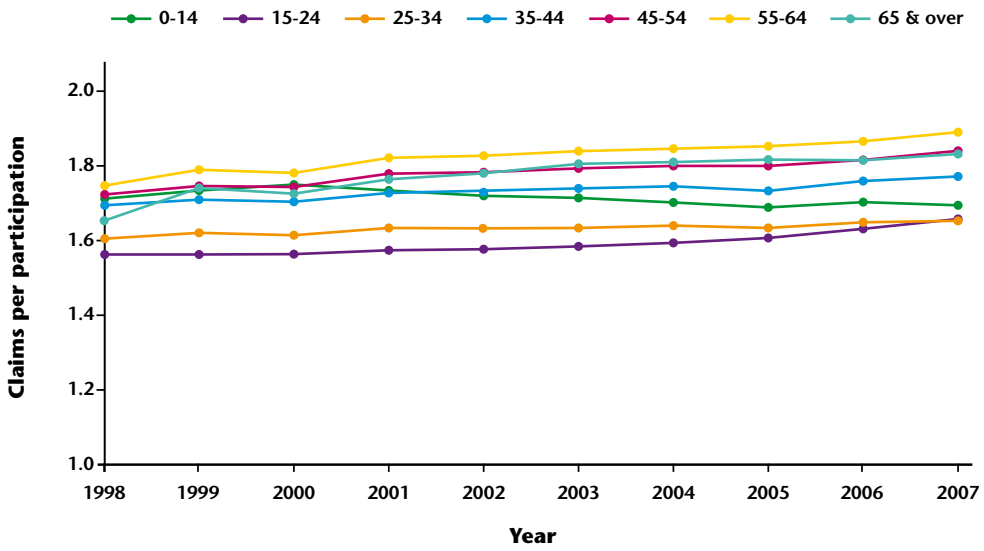
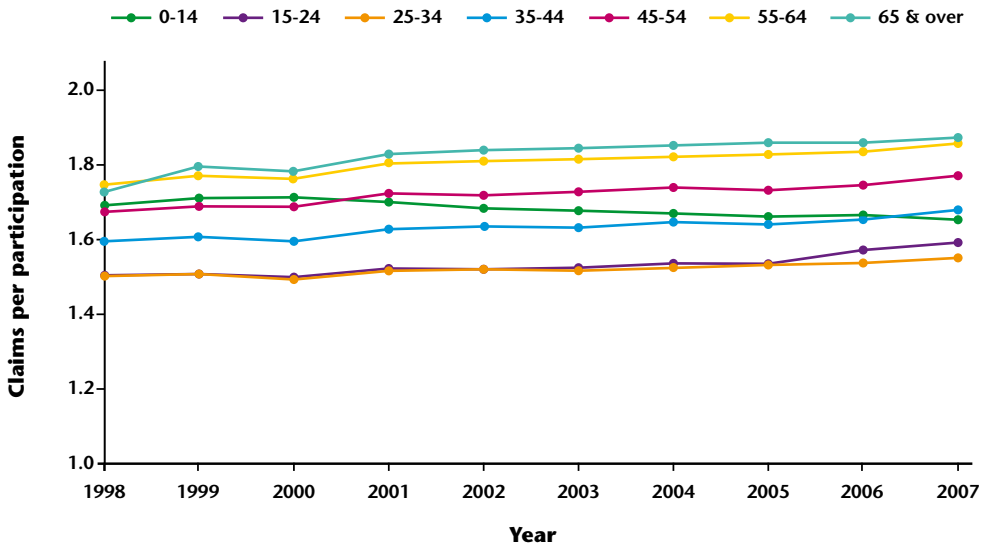



Figure 39: Male claims per participation



## Treatment Forecast

The treatment forecast is a function of historical data on the value of GDS treatments and the attendance forecast. Other things equal, a higher treatment forecast implies a higher demand forecast.

Figure 40 to Figure 47 plot treatment trends in four categories[26]. The cost per claim has decreased in all treatment categories during the sample period. This decrease in the cost per claim is particularly marked in the core and complex treatment categories for patients aged 25-34.

Figure 40: Female assessment & diagnostic treatments

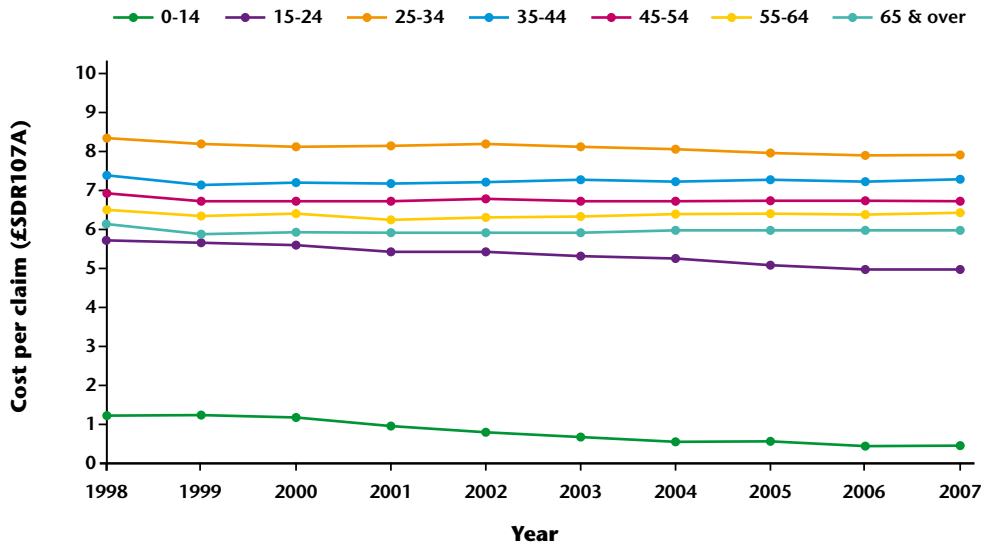
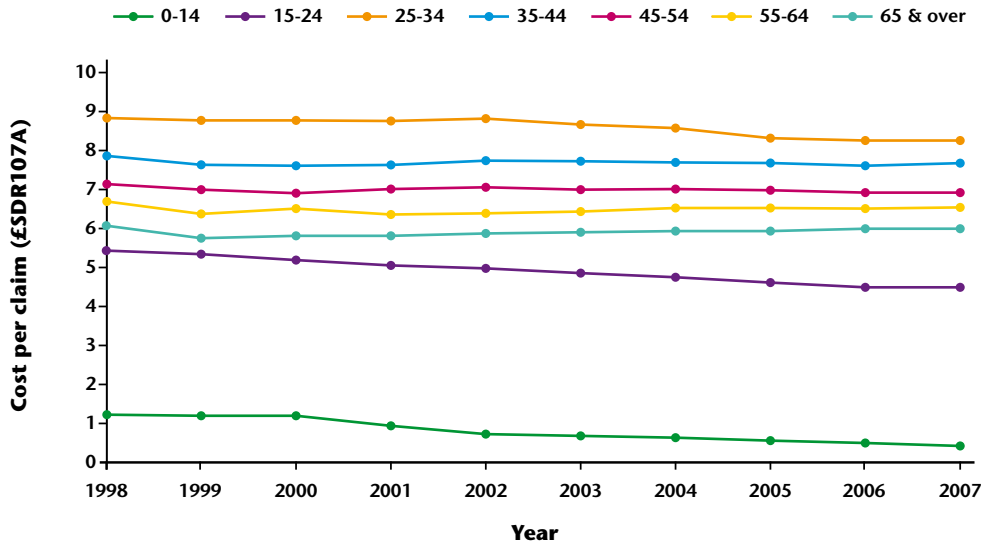



Figure 41: Male assessment & diagnostic treatments






26 For a definition of these categories see NES (2004).

Figure 42: Female core treatments

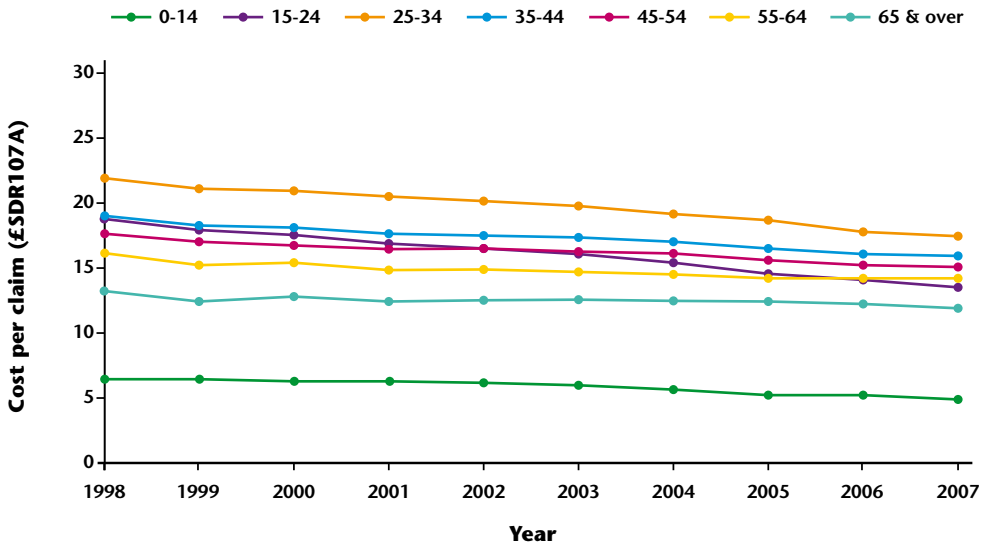



Figure 43: Male core treatments

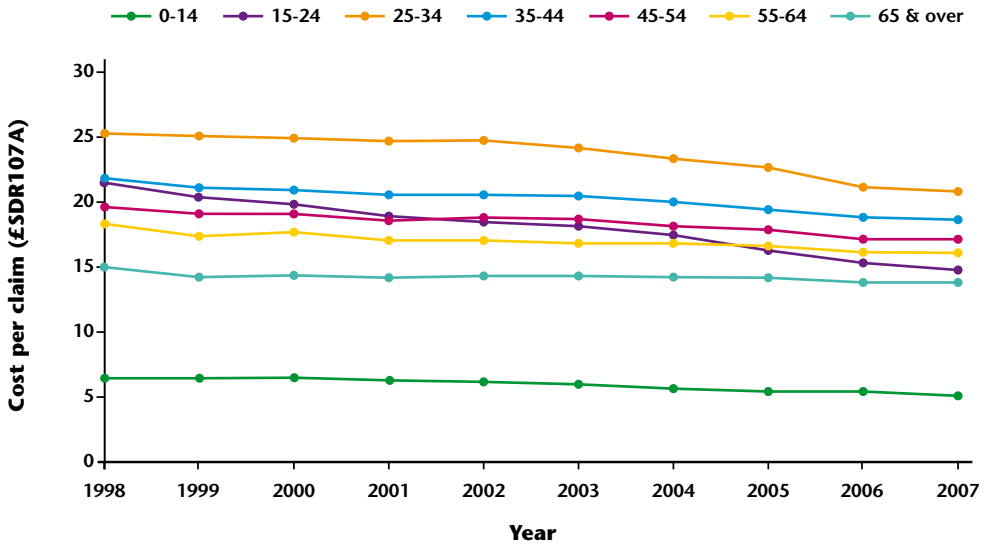


Figure 44: Female complex treatments

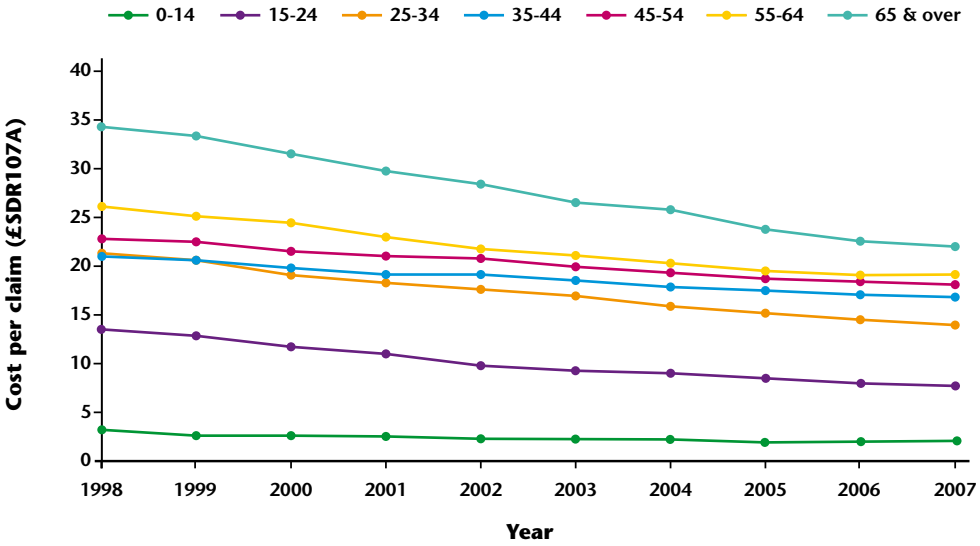



Figure 45: Male complex treatments

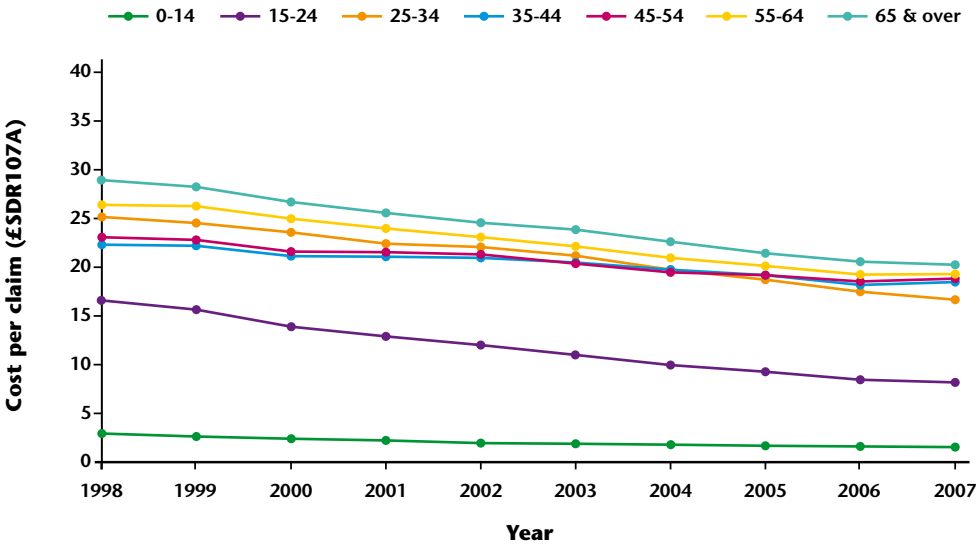


Figure 46: Female orthodontic treatments

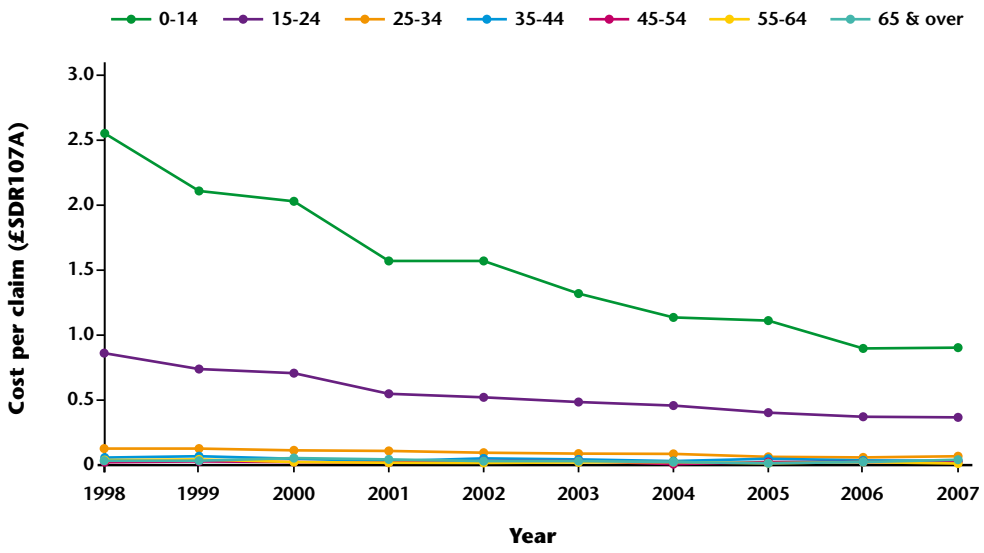
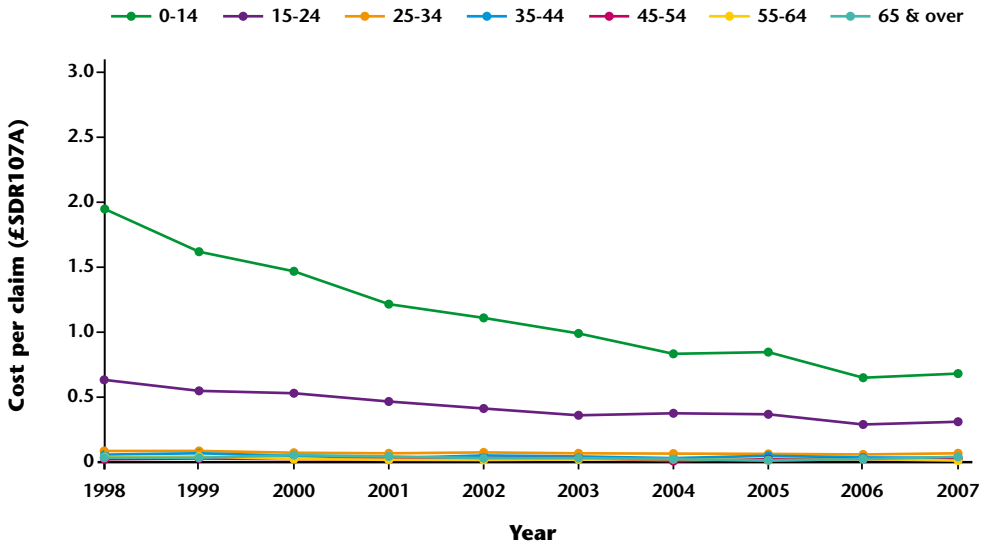



Figure 47: Male orthodontic treatments



### Output Forecast

The output forecast calculates the amount of treatment provided by dentists and is a function of historical data on the total value of GDS item of service treatments. If the output of dentists increases, fewer dentists are required to provide a given level of treatment. Therefore, other things equal, a higher output forecast implies a lower demand forecast. Figure 48 and Figure 49 show that output per non-salaried GDS dentist has decreased over the sample period in all dentist age groups.

Figure 48: Output of female non-salaried GDS dentists by dentist age group

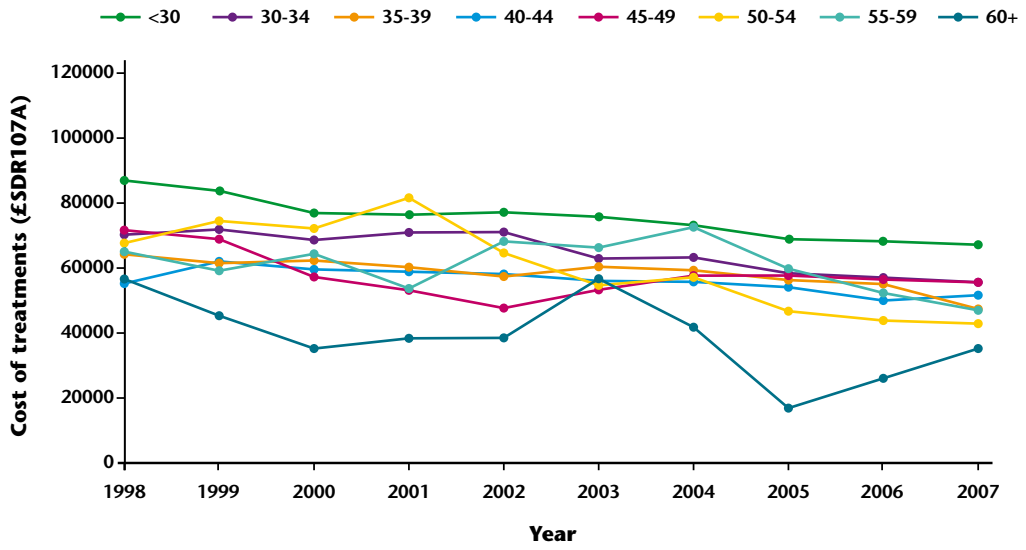



Figure 49: Output of male non-salaried GDS dentists by dentist age group

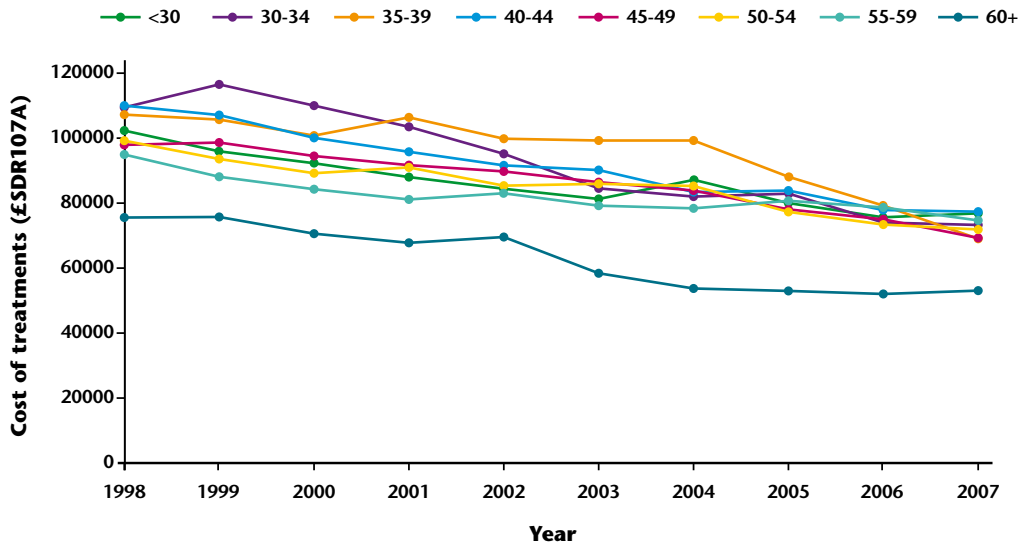
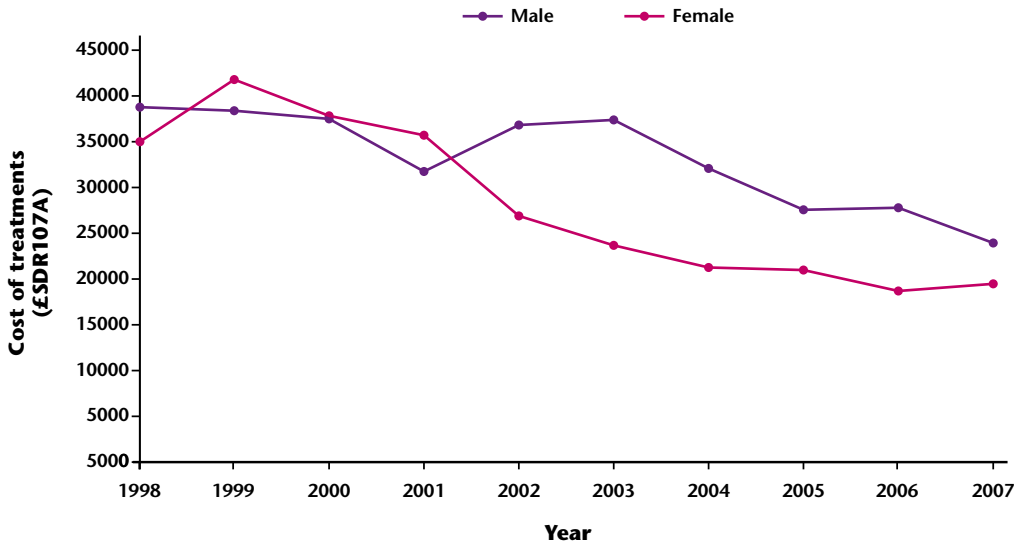


Figure 50 shows the average output of male and female salaried GDS dentists over the sample period. A comparison of the output of salaried and non-salaried GDS dentists is beyond the scope of this report but remains an important avenue for future research. Several factors need to be considered in any comparison including: the incentives generated by the different payment systems; the type of dentist selecting into each type of payments system; the number and type of DCPs working with each dentist; the contracted hours of each salaried dentist; and the type of patient being treated.

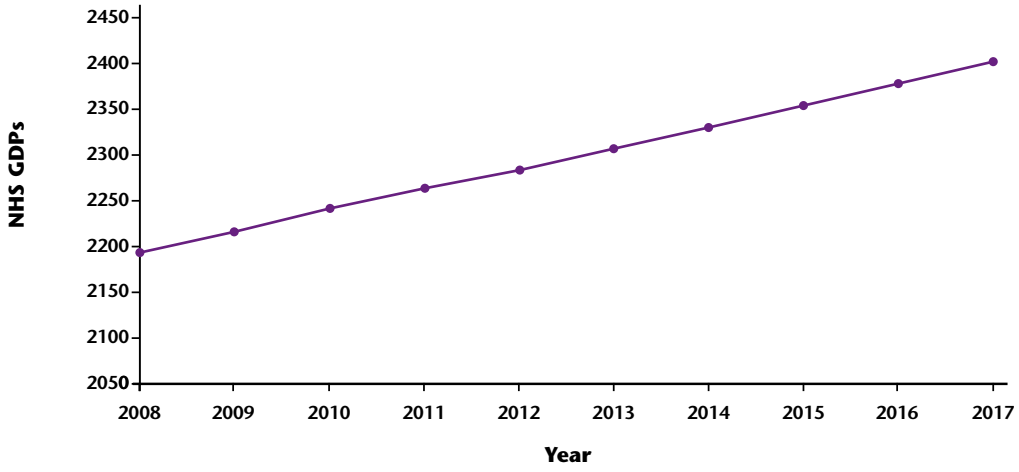
Figure 50: Output of salaried GDS dentists




### The NES/ISD (2008) NHS GDP demand forecast

The NES/ISD (2008) NHS GDP demand forecast uses the output forecast to calculate the number of NHS GDPs required to meet the treatment forecast. In order to compute the demand forecast, it was assumed that the future values of all parameters should be set at their 2007 values. Figure 51 shows that the demand for NHS GDPs increases from 2,190 in 2008 to 2,399 in 2017.

Figure 51: The NES/ISD (2008) NHS GDP demand forecast



# Appendix 4. The supply of Oral Health Therapists

The demand forecasts in Section 5.2.1 assumed that treatment is only provided by NHS GDPs. However, there are a number of other Dental Care Professionals (DCPs) that are able to provide treatment in the GDS. In particular, Oral Health Therapists (OHTs) are able to undertake a broad range of clinical procedures in the fields of periodontology, restorative dentistry and preventive dentistry.

The Dental Action Plan contains two targets specifically related to the number of OHTs in training. The first target is that the intake of OHTs should increase from 30 to 35 and then to 45 per year in 2005, 2006 and 2007, respectively. The second target is that Vocational Training (VT) for OHTs should be introduced and the number of VT places matched to the number of student places.

Figure 52 uses these Dental Action Plan targets and the assumptions and methodology described in NES (2006) to forecast the number of OHTs in the workforce.

Figure 52: The forecast stock of OHTs

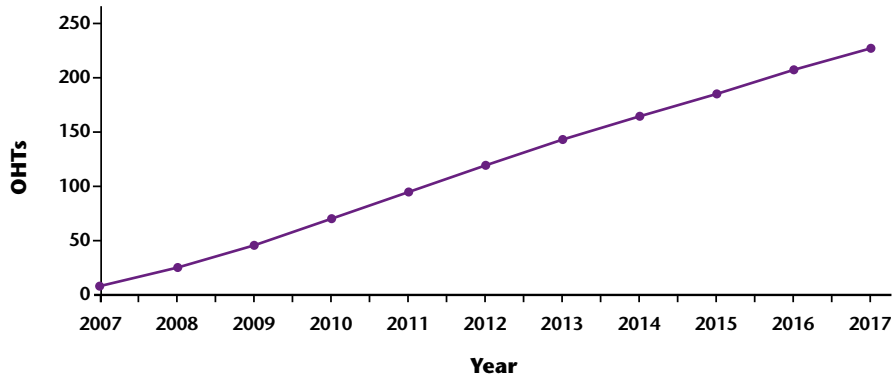
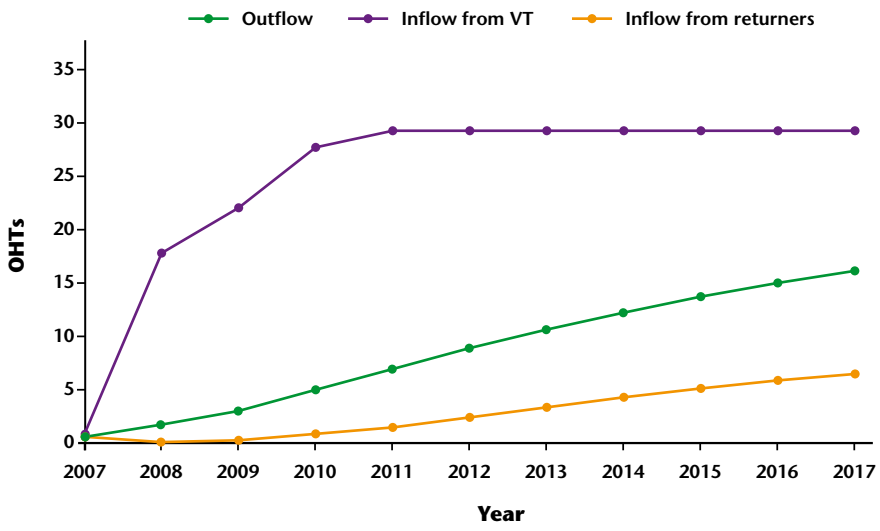


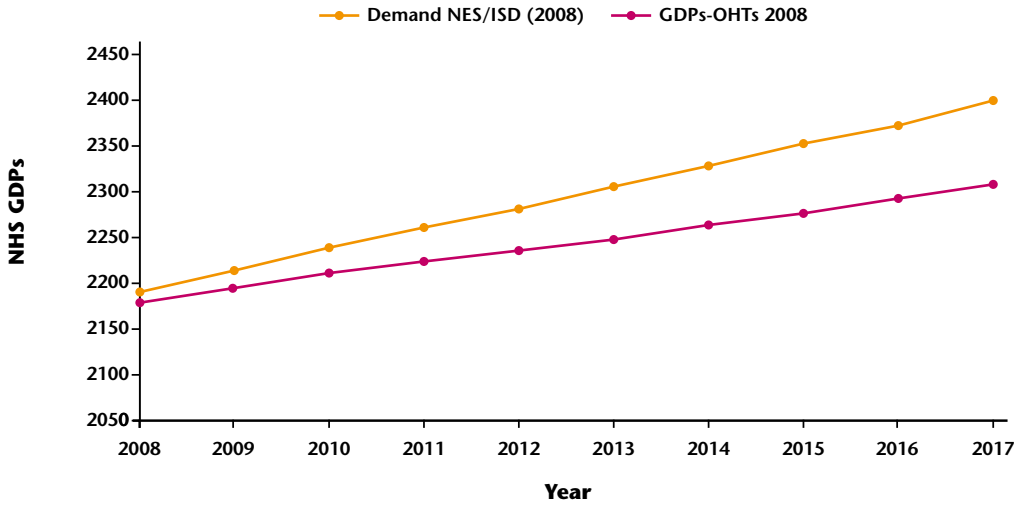

Figure 53 graphs the forecast flow of OHTs and shows that the inflow into the OHT workforce increases in line with the DAP targets until it reaches a steady state inflow of 29 per year. OHTs are assumed to leave the workforce at the same rate as NHS GDPs (see Figure 29) and, in order to simulate family-related career breaks, 50% of leavers under 40 are assumed to return to the workforce after two years.

Figure 53: The forecast inflow and outflow of OHTs




There is very little empirical evidence to assess the impact of an increase in the number of qualified OHTs on the output of NHS GDPs. However, Galloway et al. (2002) estimate that the output of a DCP is equivalent to 40% of the output of a non-salaried NHS GDP. Figure 54 uses this estimate to show that the demand for NHS GDPs is much lower after accounting for the expected impact of OHTs.

Figure 54: Demand for GDPs accounting for OHTs




However, the assumptions underpinning the forecasts in Figure 52, together with the estimate of the impact of DCPs on the output of NHS GDPs, are an area of real uncertainty and, therefore, a key area for future research.

# Appendix 5. Grants and allowances for GDPs (2008/09)

**Key:**

black text = original

*green text* = comment

✓ = the source of the reference used to validate the facts

## GRANTS AND ALLOWANCES FOR GENERAL DENTAL PRACTITIONERS

These grants and allowances have been introduced by the Scottish Government in consultation with the Scottish Dental Practice Committee.

## NEW AND RETURNING PRACTITIONERS

**"Golden Hello"** allowance of **£10,000** over two years for dentists who join the dental list of an NHS Board (NHSB) within three months of completing their training. If this is in a designated area* the allowance is doubled to **£20,000** over two years ***(Determination XIII)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (Page 133) + PCA2008(D)04.*

A **Vocational Trainee allowance** of **£3,000** for newly qualified dentists taking up vocational training. If this is in a designated area* the allowance is doubled to **£6,000** ***(Determination XIII)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 130).*

A **Joining allowance** of **£5,000** over two years for dentists joining the dental list of an NHSB in Scotland for the first time or on re-entry to a dental list in Scotland after a break of five years. If this is in a designated area* the allowance is doubled to **£10,000** over two years ***(Determination XIII)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 133).*

**Determination XII**

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 127-128).*



*As of 1 August 2002 designated areas include, Orkney, Shetland, Western Isles, Highland, Borders, Dumfries & Galloway, Grampian,Fife and, within Argyll & Clyde, Campbeltown, Dunoon, Lochgilphead, Lochgoilhead, Oban, Rothesay, Tarbert and the Isles of Mull, Iona, Colonsay, Tiree, Islay and Jura, and the Isle of Arran

The **Return to Work** scheme offers grants under the Scottish Dental Access Initiative (see below), an increase in the NHS earnings potential for the first year back in practice, reimbursement of indemnity insurance costs and free (in most cases) training courses from NHS Education for Scotland (NES). Practice owners who take on a returner also receive a payment to offset the slower work rate of a returner in their first year back.

✓ *(NHS: 2003 PCA(D)2).*

## ESTABLISHED PRACTITIONERS

**Commitment payments** have been extended to cover assistants from 1 April 2003 **(Determination IX)**. These are paid quarterly and can range from **£532** to **£5,540** per annum. *This amount has been increased in line with the percentage of the 2008 pay award.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 114).*

## CAPITAL GRANTS

**Vocational Training Practice** - grants of up to £10,000 (subject to NHS commitment) to ensure that appropriate NES standards are met by dentists wishing to establish a new Vocational Training practice or to improve an existing one. This allowance is payable per individual training surgery when a practice is delivering multiple training. ***(Determination X)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 119).*

**Scottish Dental Access Initiative** - grants of up to £100,000 to dentists proposing to establish new NHS practices or grants of up to £50,000 to dentists proposing to expand existing NHS practices in areas of unmet patient demand or high oral health need.

✓ *Scottish Executive statement on grants and allowances for General Dental Practitioners 2005.*

## QUALITY INITIATIVES

**General Dental Practice Allowance** - increased from April 2005 to **6%** of NHS earnings. This is to address increasing requirements in relation to the provision of high quality premises, health and safety, staffing support and information collation and provision. ***(Determination XIV)***.

Additionally, (as from 1st October 2005), practices which are designated as having the SEHD defined NHS commitment will be entitled to a further **6%** Practice Allowance thus doubling the level to 12% of NHS earnings.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (pages 139 & 140).*

**Sedation Practice Allowance** - calculated with reference to NHS earnings up to a maximum of £3,000 per practice for Relative Analgesia and £2,000 for Intravenous sedation. This is for practices offering such sedation services to agreed standards and conditions. ***(Determination XIV)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 145).*

**Practice Improvement Funding** - enables dentists to upgrade their practices, by the purchase, renewal or upgrade of practice equipment or modification or improvement of the practice premises, to improve patient safety, or improve environmental benefits. Improvements that provide benefits to the patients or practice efficiency are also allowable. The territorial health boards are responsible for the allocation of this grant. ***(Determination X)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 119).*

**Clinical Audit Allowance** - Since 1 April 2002 it has been mandatory that all dentists in Scotland who provide general dental services take part in at least 15 hours of clinical audit during each 3-year period. This allowance, payable for undertaking approved projects in the relevant period, is calculated at an hourly rate of **£65.07** ***(Determination XI)***. *This amount has been increased in line with the percentage of the 2008 pay award.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 125).*

**Continuing Professional Development Allowance** - The standard Continuing Professional Development Allowance is **£113.84** for education sessions of more than 1 hour and up to 2 hours and **£227.68** for education sessions of 2-3.5 hours not exceeding **£1,366.08** less any abatement. Remote island dentists can claim an additional allowance of **£227.68** or **£255.36** less any abatement and remote mainland dentists can claim an additional allowance of **£113.84** or **£227.68** less any abatement for the same sessions in recognition of the longer journey that they must make to their nearest postgraduate centre. *This amount has been increased in line with the percentage of the 2008 pay award.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 104-105).*

These additional payments are abated and shall not exceed **£2,732.16** for a remote island dentist and **£1,366.08** for a remote mainland dentist ***(Determination VII)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 105).*

**Reimbursement of Non-Domestic Rates** General Dental Practitioners can claim back their Non-Domestic rates. These are abated according to NHS commitment. Practitioners may receive up to £27,400 per annum ***(Determination VIII)***. *This amount has been increased in line with % inflation.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 108).*

**Rent Reimbursement** Practices which are designated as having the SEHD defined NHS commitment will be entitled to claim payment of leasehold rental cost for their premises.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 151-153).*

**Maternity Payments, Paternity Payments** and **Adoptive Leave Payments** Dentists are entitled to these payments, 2 weeks for Paternity and up to 26 weeks for Maternity or Adoptive Leave payments. The amount of payment payable in respect of each week is equivalent to the dentist's net earnings and may not exceed £1,378.00 per week ***(Determination V)***. *This amount has been increased in line with % inflation.*

✓ *Statement of Dental Renumeration Amendment No 112 – June 2008 (page 95).*

**Long Term Sickness Payments** These payments are made to dentists from the 4th to the 22nd week of their incapacity amounting to a weekly equivalent of their weekly net earnings, which is calculated at a weekly rate equivalent of 25% of the dentist's net NHS earnings and not exceeding £344 per week. ***(Determination VI)***. *This amount has been increased in line with % inflation.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 100-101).*

## PREVENTION

**Caries Prevention Scheme** - provides dentists with an enhanced monthly fee (according to the Deprivation Category of the practice postcode) for preventative advice. Note: there is a recent introduction of an item of service fee for fissure sealants.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 41), as described in the circular NHS 198 PCA (D) 9.*

## REMOTE PRACTITIONERS

**The Remote Areas Allowance** - increased payment from April 2005 of **£9,000** per year to encourage dentists servicing some of the remotest communities to continue practising in these areas. ***(Determination XII)***.

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 41), as described in the circular NHS 198 PCA (D) 9.*

## VOCATIONAL TRAINERS

**Trainers Allowance** - Vocational trainers receive a grant of **£1,081** per month (*£12,972* per annum). In addition, vocational trainers receive a **Vocational Training Practice Allowance of £1,500** per annum. In addition, Vocational trainers are reimbursed the salary paid to the trainee under contract. This can be up to **£30,012 per annum *(Determinations IV and XIV)***. *This amount has been increased in line with the percentage of the 2008 pay award.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (pages 89 &147).*

## SENIOR PRACTITIONERS

**Seniority Payments** – Senior dentists can earn a potential **£15,361** per annum through seniority payments ***(Determination III)***. These payments are calculated quarterly and are paid at 10% of gross fees earned. *This amount has been increased in line with the percentage of the 2008 pay award.*

✓ *Statement of Dental Remuneration Amendment No 112 –June 2008 (page 86).*

## PRACTITIONERS WORKING IN DEPRIVED AREAS

**Deprivation Areas Enhancement (Item 77)** – This is an additional 10% payment of the sum authorised to be paid in respect of a patient whose postcode is in a residence of the Scottish Index of Multiple Deprivation (SIMD) area 5 or above. In Children there is also an enhanced capitation fee which is deprivation related. *This applies after April 1st 2008. Determination XVI (Grant of up to £9,000 per annum) has been removed this year and replaced by the Deprivation Areas Enhancement.*

✓ *Statement of Dental Remuneration Amendment No 112 – June 2008 (page 66 & 38).*

***Determination I*** – Scale of fees ✗

***Determination II*** – Salaried Dentist remuneration rates ✗

***Determination III*** – Seniority payments ✓

***Determination IV*** – Vocational Training Allowances ✓

***Determination V*** – Maternity, paternity and adoptive leave payments ✓

***Determination VI*** – Long term sickness payments ✓

***Determination VII*** – CPD Allowances ✓

***Determination VIII*** – Reimbursement of non-domestic rates ✓

***Determination IX*** – Commitment payments ✓

***Determination X*** – Allowances and grants for practice improvements ✓

***Determination XI*** – Clinical audit allowances ✓

***Determination XII*** – Remote and rural allowances ✓

***Determination XIII*** – Recruitment and retention allowances ✓

***Determination XIV*** – Practice allowances ✓

***Determination XV*** – Reimbursement of practice expenses ✓

***Determination XVI*** – Deprived areas allowances ✓

# Appendix 6. Dental Workforce Steering Group

Mr D. Blaszczak, Information Analyst, Information Services Division, NHS National Services Scotland

Dr D. Conway, Consultant in Dental Public Health, NHS National Services Scotland and University of Glasgow

Mr S. Goold, Dental Information Programme Manager, Healthcare Information Group, Information Services Division, NHS National Services Scotland

Mr S. Heald, Head of the Health Information Group, Information Services Division, NHS National Services Scotland

Ms K. Jack, Research and Information Officer, NHS Education for Scotland

Mrs H. Love, Senior Project Officer, National Workforce Planning Unit, Scottish Government Health Directorate

Miss C. McGregor, Economist, Analytical Services Division, Health Finance Directorate

Dr J. Rennie, Postgraduate Dental Dean and Deputy Chief Executive, NHS Education for Scotland

Miss M. Taylor, Chief Dental Office, Scottish Government Health Directorate

Dr C. Tilley, Educational Projects Manager, NHS Education for Scotland

**NHS Education for Scotland**
5th Floor, Thistle House
91 Haymarket Terrace
Edinburgh
EH12 5HE
Tel: 0131 313 8000
Fax: 0131 313 8001

**www.nes.scot.nhs.uk**

**NHS National Services Scotland**
Gyle Square
1 South Gyle Crescent
Edinburgh
EH12 9EB
Tel: 0131 275 6000
Fax: 0131 275 7500

**www.nhsnss.org**

NHS National Services Scotland

NHS Education for Scotland