

Scottish Dental Needs Assessment Programme (SDNAP)

Oral Health and Dental Services for Children
Needs Assessment Report



Foreword

This needs assessment report was prepared before the launch of consultation on Oral Health Plan (September – December 2016) by the Scottish Government, which touches upon some of the recommendations made in this report.

It is anticipated that Oral Health Plan may address some of the issues highlighted in the report such as general dental practitioner remuneration by the Statement of Dental Remuneration (SDR), future delivery of the Childsmile programme and local commissioning of services.

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1	EXECUTIVE SUMMARY AND RECOMMENDATIONS	9
1.1	Key Findings	9
1.1.1	Oral Health Improvement, Inequalities and Demography	9
1.1.2	Information	9
1.1.3	Service Provision	10
1.1.4	Workforce and Training	11
1.2	Recommendations	12
1.2.1	Oral Health Improvement, Inequalities and Demography	12
1.2.2	Information	12
1.2.3	Service Provision	13
1.2.4	Workforce and Training	14
2	BACKGROUND AND CONTEXT	15
2.1	Health Needs Assessment	16
3	AIM, OBJECTIVES AND METHODS	18
3.1	Aim	18
3.2	Objectives	18
3.3	Methods	18
3.4	Scope and Limitations	19
3.5	Ethical Considerations	19
4	INTRODUCTION TO CHILDREN'S ORAL HEALTH	20
4.1	Child Population And Demography	20
4.1.1	Child Protection Register	21
4.1.2	Child Health Systems Programme	21
4.2	Common Oral Diseases Of Childhood	23
4.2.1	Modifying Risk Factors	23
4.3	Policy And Legislation	24
4.4	Epidemiology	25
4.4.1	National Dental Inspection Programme	25
4.4.2	Primary 1 (P1) Inspection	26
4.4.3	Primary 7 (P7) Inspection	26
4.4.4	Patterns of Decay and Inequality	27
4.5	Preventive Care	29
4.5.1	Childsmile	29
4.6	Demand	29
4.6.1	Children with extensive decay	30
4.6.2	Children with Support & Care Coordination Needs	30
4.6.3	Children with High-Risk Medical Conditions, for example, Oncology, Haematology and Cardiac	31

5	CURRENT SERVICE DELIVERY MODEL (PATIENT JOURNEY PATHWAY)	33
5.1	Paediatric Dentistry	33
5.2	Routine Care	34
5.3	Specialist Care	35
6	CURRENT SERVICE PROVISION	37
6.1	GDS Service Provision	37
6.1.1	GDP Survey	42
6.1.2	Dental Care Professionals	48
6.2	PDS Service Provision	50
6.2.1	PDS Service Provision for Children	50
6.2.2	PDS Retrospective Referral Audit	55
6.3	Hospital Paediatric Dentistry Service Provision	60
6.3.1	Hospital Activity	60
6.3.2	Hospital Retrospective Referral Audit	61
6.3.3	Current Hospital Workforce	68
6.3.4	Consultants and Specialists	68
6.3.5	Consultant Job Plan	68
6.3.6	SAS dentists	69
6.3.7	StRs and Post-CCST Development Posts	69
6.3.8	Pre-specialist Trainees	69
6.3.9	Dental Therapists	69
7	PATIENT PERCEPTIONS OF THE SPECIALIST SERVICES IN PDS AND HDS	70
7.1	Public Dental Service Paediatric Patient Interviews	70
7.2	Dental Hospital Paediatric Patient Interviews	73
8	WORKFORCE PERCEPTIONS: PDS SPECIALISTS AND HDS CONSULTANTS	78
8.1	PDS Specialists' Perceptions	78
8.2	Hospital Consultants' Perceptions	83
9	HOSPITAL SERVICE STAKEHOLDERS' AND FACILITATORS' PERCEPTIONS	96
9.1	Hospital Service Stakeholder Interviews (Oncology, Cardiology and Hematology Departments)	96
9.2	Facilitators: Anesthetist Interviews	100
10	REFERENCES	102

11 APPENDICES	105
Appendix 1: Proposed national referral criteria	105
Appendix 2: GDP survey questionnaire	109
Appendix 3: Dental hygienists and therapists' survey	112
Appendix 4: Clinical directors of PDS - Survey questionnaire	121
Appendix 5: Referral rate for GA provision and provision of alternatives to GA	124
Appendix 6: Provision of comprehensive care including restorative care under GA	125
Appendix 7: Extraction only GA provision by NHS Board	126
Appendix 8: Treatment for children who require multidisciplinary care	127
Appendix 9: 'Out-of-Board' referrals by NHS Board	128
Appendix 10: PDS Referral audit form	129
Appendix 11: Other categories	130
Appendix 12: Referrals received for anxiety or phobia	130
Appendix 13: Referrals received for treatment planning for children requiring extractions under GA or sedation	131
Appendix 14: Referrals received for severe early childhood caries	131
Appendix 15: Cross tabulation SIMD 2012 quintile and three most prevalent conditions in the PDS	132
Appendix 16: Referral triage result	132
Appendix 17: Hospital audit form	133
Appendix 18: Referrals received by GDH	134
Appendix 19: Referrals received by EDI	134
Appendix 20: Referrals received by DDH	134
Appendix 21: Patient questionnaire - PDS	135
Appendix 22: Patient questionnaire - Hospital	136
Appendix 23: Topic guide for semi-structured interview: PDS	137
Appendix 24: Topic guide for semi-structured interview: Consultants	138
Appendix 25: Hospital service stakeholders' interview questionnaire	139
Appendix 26: Facilitators: Anaesthetist interview questionnaire	139

12 ABBREVIATIONS	140
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13 GLOSSARY OF TERMS	143
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Tables

Table 1: HNA approaches (Stevens and Raftery 1994)	17
Table 2: The distribution of children across the six-fold Urban-Rural Classification	20
Table 3: Number of children active on SNS system in Scotland between 2011-2015	31
Table 4: Trends in incidence of oncology in children aged 0-17; 2005 - 2013	31
Table 5: Day case discharge rates per 100,000 population from acute hospitals by main diagnosis; children aged 18 and under	32
Table 6: Registration and participation rates of child patients in the GDS at 31 March 2014 and 2015	38
Table 7: GDS fees - total fees, cost per head of population of children 2013/14	39
Table 8: Main SDR item of service treatment claims for children from 2011/12-2013/14 by GDS	41
Table 9: Childsmile service claims and value from 2011/12 to 2013/14	42
Table 10: Responding GPs' NHS Board area	43
Table 11: Preventive treatments provided by GPs	43
Table 12: Challenges to providing the following treatments for child patients	45
Table 13: Reasons for referral to PDS	46
Table 14: Factors influencing GPs' decision to refer to a hospital rather than PDS	47
Table 15: Reasons for referrals to dental hospital	47
Table 16: Scottish DCP workforce August 2015	49
Table 17: Number of PDS clinics providing care for children by NHS Board	51
Table 18: Paediatric referrals to PDS by NHS Board	52
Table 19: Approximate referral rate for GA provision	52
Table 20: PDS workforce details by NHS Board	54
Table 21: Referrals received during four week audit and availability of a specialist	55
Table 22: Reason for the referral of children to the PDS (collated data)	56
Table 23: PDS clinic and SIMD 2012 quintile cross tabulation	57
Table 24: Total paediatric dental patient attendances	61
Table 25: New paediatric dental patient attendances	61
Table 26: Referrals received in the three centres over a month by condition	62
Table 27: Referrals received in the three centres over a month by condition for extraction only GA	63
Table 28: Cost of extraction only GA in the hospital setting as calculated by NICE (NICE 2010)	63
Table 29: Referrals received by GDH, EDI and DDH from within the NHS Board area	64
Table 30: Current hospital workforce	68

Figures

Figure 1: The Wellbeing Wheel: the eight indicators of child wellbeing (SHANARRI)	22
Figure 2: Trends in the proportion of P1 children with no obvious decay experience, in Scotland; 1988-2016	26
Figure 3: Change between 2008 and 2016 in the proportion of P1 children in Scotland with no obvious decay experience, by SIMD quintile	27
Figure 4: Change between 2009 and 2015 in the percentage of P7 children in Scotland with no obvious decay experience; by SIMD quintile	28
Figure 5: Current service delivery model (patient journey pathway)	33
Figure 6: Number of children registered with a GDP (independent contractors) and PDS* in Scotland	34
Figure 7: Most common SDR IoS treatment-percentage of all claims; Scotland 2013/14 for children	40
Figure 8: Restorative treatments provided by GDPs	44
Figure 9: The dental team	48
Figure 10: Referrals received by the PDS for caries by age	58
Figure 11: Referrals received by the PDS for anxiety or phobia by age	59
Figure 12: Referrals received within the NHS Board areas of Greater Glasgow & Clyde, Edinburgh and Dundee, grouped by SIMD	64
Figure 13: GDH referrals for top five conditions with SIMD quintile	65
Figure 14: EDI referrals for top five conditions with SIMD quintile	65
Figure 15: DDH referrals for top five conditions with SIMD quintile	66
Figure 16: Referrals received by dental hospitals for all categories by age	66
Figure 17: Referrals received by GDH, EDI and DDH for caries by age	67

This needs assessment of oral health and dental services for children was undertaken to assess the current service provision and to clarify the workforce required to sustain the service. It was undertaken against the background of improving child oral health attributed to preventive initiatives such as Childsmile. It also takes into account concerns that the age profile of paediatric-experienced dentists in Scotland indicates a significant number will be lost from the service and from the General Dental Council (GDC) specialist list over the next five to ten years. In addition, the current financial climate can mean that clinical staff, experienced and trained in providing dental care for children, are not being replaced when they either retire, or move to posts outwith Scotland.

The report highlights a number of issues relating to the current service delivery model in general dental services (GDS), hospital dental services (HDS), the Public Dental Service (PDS) and Childsmile. It also confirms that inequalities still exist in relation to social and geographical factors such as deprivation, accessibility to services and spread of population in rural Scotland, and as such, these factors should be taken into consideration when planning services. The report describes the current service delivery model and highlights the difficulties and barriers experienced by service providers, stakeholders and service users. In addition, national referral criteria have been developed which could be adapted for local areas to address the more effective use of current services in PDS and HDS. At present the HDS is reported to receive 56% of referrals for the management of severe caries, a significant proportion of which could be treated in the PDS. Key findings from the needs assessment

and the recommendations arising from it to improve services are listed in Sections 1.1 and 1.2. Lastly, this needs assessment report was prepared before the Scottish Government Oral Health Plan consultation (2016), which touches upon some of the recommendations made in this report.

1.1 Key findings

1.1.1 Oral Health Improvement, Inequalities and Demography

1. In recent years child poverty has increased in Scotland with the highest levels of poverty found in families with young children. Health inequalities between children living in poverty and their peers in more affluent areas of Scotland are significant and start early (Section 4.1). These have implications for dental health preventive initiatives and services.
2. Dental health has improved significantly, but a core of 'hard to reach' children, often with complex social challenges, remain, and inequalities still persist (Section 4.4). There is a national oral health improvement programme for children (Childsmile) but there are currently no artificial water fluoridation schemes in Scotland.

1.1.2 Information

1. While there is a wealth of evidence about the incidence of dental decay (caries) in Primary 1 (P1) and Primary 7 (P7) school children, there is no national information about the levels of decay for children of preschool and secondary

school age. Furthermore, there is no national information about the prevalence of other dental conditions seen in children, such as molar incisor hypomineralisation (Sections 4.2 and 4.6).

2. The current GP17/SDR system may not fully capture the procedures carried out by specialists in the PDS, including any work in multidisciplinary clinics for children with hypodontia, cleft lip and palate or significant medical conditions (Section 8.1).

1.1.3 Service Provision

GDS

1. General dental practitioners (GDPs) felt that the current business model is unworkable. They indicated that patient cooperation is a major barrier to treatment. GDPs believed that they are not remunerated appropriately for time spent on provision of dental services to child patients. They felt that SDR fees are inadequate where children's ability to cooperate impacts on the time taken for treatment (Section 6.1.1).
2. Dental care professionals (DCPs) are currently under-utilised in the provision of dental care for children (Section 6.1.2 and 6.2)

PDS

3. Commonly, referrals were made to the PDS for more than one reason. However, the commonest reasons for referral were for management of anxiety and phobia (61.5%), treatment planning for extraction under general anaesthetic (GA) or sedation

(52.7%) and the management of severe childhood caries (42.2%) (Section 6.2.2).

HDS

4. The commonest reason for referral of child patients to the hospital service was for the management of severe caries (56%). The second most commonly referred patient group as a whole were patients with medical conditions (26%) who were at risk, either from dental disease or from the treatment to manage their oral disease. These included children with oncological, cardiac and haematological conditions (Section 6.3.2).
5. More than half (56%) of the children referred to Glasgow Dental Hospital from within the NHS Board area were from the most deprived Scottish Index of Multiple Deprivation (SIMD) quintile (Section 6.3.2).

Patients

6. Patients preferred to be seen locally rather than travelling to a dental hospital. Some GDPs appeared to be unaware of the local PDS specialist paediatric dental service (Section 7.2).
7. Specialist care for children in the PDS was highly valued and was considered an essential service by the participants interviewed. Some patients preferred the PDS specialist service to the HDS because it is easier to access. They reported that the hospital service was good but busy and they had to wait longer to be seen (Section 7.1 and 7.2).

8. In some hospitals patients experienced delays due to communication or administration problems (Section 7.2).
 9. In some dental hospitals, some parents or carers were unable to recall the information relating to the risks of GA that had been presented to them while obtaining consent, with some parents of child patients who had undergone GA reporting that they had not been made aware of any risks. However, for many of the patients referred with pain and infection who were also dentally anxious, it was recognised that there was no realistic option other than GA. Therefore, the risk benefit ratio is very different from most other areas of dentistry (Section 7.2).
 10. Parents of some children with additional support needs felt that their children would cope better if treated at the familiar setting of school rather than being referred to hospital (Section 7.2).
 11. Dental disease and the development of anxiety can impact on a child's wellbeing (Section 6.2.2). It is also recognised that the development of anxiety may be multifactorial and there are some children who access dental care but do not present to other services. Therefore, dental teams caring for children have an integral, and increasing, role in recognising wellbeing concerns.
2. Only three NHS Boards in Scotland currently employ specialists in paediatric dentistry within their PDS (NHS Greater Glasgow & Clyde, NHS Lothian and NHS Fife, whole time equivalent (WTE) 4.12 on March 2016). In some areas, the PDS may not be making the best use of staff and their skills, for example, in two NHS Boards trained specialists are employed as non-specialists (dental officer or senior dental officer) (Section 6.2.1 and Table 20).
 3. There is evidence that the number of specialists in training is inadequate to maintain succession planning for current levels of service provision or for any future service developments (Section 8.1).
 4. The number of paediatric staff in the HDS is small, with a total WTE of 13.1 for specialists and consultants in paediatric dentistry. Elsewhere in the UK an alternative model of consultants working in the community has been developed, which may help maximise access to this highly specialised resource (Section 6.3.3).
 5. As the number of paediatric staff is small, they are stretched. Consultants are often asked to undertake extra clinics to meet the waiting time guarantee and in some areas, prospective cover for colleagues' leave has become the norm. There appears to be stress in all parts of the profession (Section 8.2).

1.1.4 Workforce and Training

1. Many working in the PDS are dentists with an interest in treating children and some have obtained relevant additional postgraduate

Specialist and Consultant-Population Ratio

6. The total number of specialists and consultants in paediatric dentistry (HDS and PDS) at present is 17.2 (WTE) as on March 2016, representing a ratio of one specialist per 52,000 head of child population, in contrast to the British Society of Paediatric Dentistry's (BSPD) recommended ratio of one specialist per 20,000 head of child population. This UK-level recommendation does not take into cognisance the large rural areas of Scotland which may require an increased ratio.

1.2 Recommendations

1.2.1 Oral Health Improvement, Inequalities and Demography

1. Despite improvements, oral health inequalities persist. Health, including dental health, is determined by myriad factors, and it is these wider determinants of health which must be addressed to ensure improvements in health, including oral health.
2. Population-based oral health improvement programmes with a primary care focus, such as Childsmile, must continue. Further targeting of resources is required to reduce inequalities, and should be considered by the Childsmile programme.
3. Population programmes should be sustainable and adaptable to demographic changes, such as increasing deprivation and the recent increase in number of refugee children.
4. A properly designed and resourced trial of water fluoridation should be conducted in Scotland to evaluate efficacy in the current socioeconomic circumstances. In the meantime, NHS Boards should continue to develop policies to improve oral health and reduce inequalities.

1.2.2 Information

1. Improving data quality and capture for all dental health services for submission to the Information Services Division (ISD) should be considered as a priority, in order to monitor delivery and ensure a more efficient service. Recent developments such as collecting tooth specific data from GP17s are welcomed.
2. In addition to the new information gained from GP17s, it is essential that the National Dental Inspection Programme (NDIP) is maintained to inform the oral health of children and service delivery/improvement. The scope of NDIP should be extended and consideration given to including information regarding decay for children at preschool and secondary school.
3. Opportunities for use of routine data for surveillance should be investigated. Consideration also should be given to include information regarding other dental conditions for children, for example molar incisor hypomineralisation (MIH), in national oral health surveillance.

1.2.3 Service Provision

1. The majority of routine paediatric care should take place in the GDS. GPs should proactively refer patients to specialist services when indicated.
2. The current system of remuneration through item of service is perceived to be unfavourable. Therefore consideration should be given to make payments taking into account the time-consuming nature of providing routine treatment for many children. The Scottish Government has recently consulted on an Oral Health Plan (2016) which includes proposals for future systems of remuneration.
3. National PDS and HDS referral criteria should be developed and agreed at NHS Board level (Appendix 1 details proposals for national referral criteria), then widely disseminated to promote greater consistency across all NHS Boards in how child patients are accepted, treated and returned to primary care providers.
4. The PDS should be developed nationally as an important part of paediatric care, forming the bridge between the GDS and HDS. The middle grade of HDS staff should also be expanded.
5. Local managed clinical networks (MCNs) should be established and should be based in primary and secondary care to encourage service integration. MCNs should include consultants, specialists and non-specialists, therapists and hygienists (working to their full scope of practice) and middle tier career grade PDS and HDS staff. In addition, a national managed clinical network should be considered to address the needs of more rural areas of Scotland, for example in the north of Scotland. These networks will also need to engage with the emerging Health and Social Care Partnerships in relation to service delivery, to ensure the needs of the local population are being met.
6. A number of pathways should be developed across Scotland, including for the following groups:
 - a. An accessible care pathway for dental trauma patients, including out-of-hours service.¹
 - b. A pathway of support to promote attendance and follow-up of children who are identified at high-risk of dental disease, utilising the Childsmile dental health support worker (DHSW) network, and emphasising primary prevention as well as considering any underlying social factors.
 - c. Dental assessment for patients with significant chronic medical conditions should be standardised, evaluated and reported nationally so as to improve surveillance and the standardisation of access to specialist-led and consultant-led care.

¹ <http://www.dentaltraumaguide.org>

- d. A standardised pathway for onward referral for patients with dental pain and infection, to allow them to be prioritised.
7. The patient journey should be improved and therefore consideration should be given to the development of national quality assurance and quality improvement indicators, as well as the use of technology, for example, for communication, e-referral and teledentistry.
5. All members of the dental team should be mindful of the impact of oral health and dental care on a child's wellbeing. They should also use the Getting it Right for Every Child (GIRFEC) approach when caring for children to consider other potential underlying reasons for any anxiety. Therefore, training in the GIRFEC approach must be considered mandatory.

1.2.4 Workforce and Training

1. A national workforce strategy for paediatric dentistry should be developed.² This should include a review of numbers of consultant and specialist posts needed to meet service demands and needs. It should also advise on the number of training posts required to meet the needs for succession planning and service development.
2. To enhance the development of networks, consultants should continue to support PDS staff training. In addition, courses should be offered to GDPs, to include the management of children with additional needs, anxiety management and the Hall technique.
3. DCPs are currently under-utilised and must be enabled to work to their full scope of practice.
4. There should be ongoing training and development of the Childsmile DSW role and their contribution

to the wider children's health and wellbeing agenda.

² This should be as part of the dental workforce review considered by the Scottish Government Oral Health Plan

2 Background and Context

Oral health is defined as the 'standard of health of the oral and related tissues which enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment and which contributes to general wellbeing' (Department of Health, 1994). Good oral health is an important component of overall general health and quality of life. Oral disease is still a major public health problem in high-income countries (Petersen, 2008). In Scotland, dental health is widely used as an 'indicative measure' of a child's general health. This is because it reflects a key 'outcome' of good parental care during the pre-school period (Scottish Government, 2014b). Dental health has an impact on child wellbeing because of the consequences of dental disease such as pain, loss of sleep, reduced quality of life and disruption to a child's education.

The Scottish Government's implementation of the Children and Young People Scotland (CYP) Act (2014) has put child wellbeing at the centre of health and social policy (Scottish Government, 2014a). The CYP Act is the first piece of legislation since the Disability Discrimination Act (2003) likely to impact on and change the behaviour of health professionals, as it makes any concerns about child wellbeing 'everyone's business'. The links between oral health and deprivation are well established and one of the aims of this report was to ensure that paediatric dental services in their widest context are sufficient to support the aims of the Act.

In Scotland, one in four children (200,000) live in families whose income is 60% below the average. The highest levels of poverty can be found in families with young children. The evidence shows that the gap in

outcomes for children living in poverty and those who do not remains wide in terms of standard of living, quality of life, opportunities and educational achievement. In addition, health inequalities between children living in poverty and their peers are significant and start early (Save the Children, 2014).

The Scottish Government investment in the nursery toothbrushing component of the national Childsmile Programme to prevent childhood dental decay has provided savings of approximately £5 million in dental treatment between 2001-2002 and 2009-2010 (Anopa *et al.*, 2015) and has started to reduce the gap between affluent and deprived communities. However, whilst there have been improvements in the oral health of children, there remains a group of children, mostly in deprived areas, who are hard to reach. Furthermore, there are still significant numbers of children who require dental extractions under GA and this remains the most common elective surgical procedure (Information Services Division, 2016). These children often have complicated social care needs, and therefore there can be a requirement for specialist paediatric dental services. In addition, more children are now living with complex medical conditions than in the past, further necessitating the need for the specialist paediatric dentist.

In the recent past, the North of Scotland (NoS) region reviewed their specialist paediatric dental services and found them to be inconsistent. The specialist or consultant input was variable across the six NHS Board areas of Grampian, Highland, Tayside, Orkney, Shetland and Western Isles. There was also little specialist paediatric input in the PDS, although this was also the case for other specialist dental

expertise (North of Scotland Planning Group, 2014). Other regions of Scotland also reported that specialist paediatric dentistry service staffing levels were not adequate to meet the need and therefore patients were waiting longer to complete a treatment course. However, they were not necessarily waiting longer to start the treatment, as this is monitored nationally through a waiting time target.

Under the auspices of the Scottish Dental Needs Assessment Programme (SDNAP), this Oral Health Needs Assessment will evaluate the provision within the current children's oral health and dental services across Scotland, in particular the services delivering specialist paediatric dental care, the scope of which is defined below. This report will take into account factors such as deprivation and the improving oral health of children arising from preventive initiatives by the Scottish Government, as well as concerns from the profession. These pertain to the age profile of paediatric-experienced dentists, a significant number of whom will be lost from the GDC specialist list over the next five to ten years, and the current financial climate, which can result in clinical staff experienced and trained in providing dental care for children not being replaced when they either retire, or move to posts outwith Scotland. Finally, the report seeks to clarify the workforce required to sustain the service and also makes recommendations for future service development.

Paediatric dentistry is defined as the practice, teaching, and research into the comprehensive and therapeutic oral health care for children from birth to adolescence, including care for children who demonstrate intellectual, medical, physical, psychological, and/or emotional problems (BSPD, 2009).

2.1 Health Needs Assessment

Health Needs Assessment (HNA) is defined as 'a systematic method of identifying the public health, health care needs of a population and making recommendations for changes to meet these needs' (Wright, 2001). Stevens and Raftery described the common approaches to assessing population needs for health care. These are characterised as the epidemiological, corporate and comparative approaches to HNA (Stevens & Raftery, 1994). The work involved in these areas is summarised in Table 1.

Table 1: HNA approaches (Stevens and Raftery 1994)

HNA approaches	Work involved
Epidemiological	Description of the problem Incidence and prevalence Availability, effectiveness and cost-effectiveness of interventions/services Possible models of care Outcome measures.
Corporate	Assessment of stakeholder perception, which includes professional and patient/public groups.
Comparative	Comparative study of the services/service models provided in one region with those available elsewhere.

The aim of a HNA is to maximise appropriate effective health care/policy, while minimising both the provision of ineffective health care/policy and the existence of unmet need. As such HNA provides a systematic framework for undertaking a complex and important

task in an evidence-based way. The current needs assessment used all of these approaches.

3 Aim, Objectives and Methods

3.1 Aim

The aim is to conduct a needs assessment of oral health and dental services provision for children in all NHS Boards across Scotland, identify probable gaps in service and make recommendations.

3.2 Objectives

The objectives of the assessment were to:

- Describe current oral health epidemiology among children in Scotland
- Describe the current oral health and dental service provision for children in Scotland
- Determine the demand for oral health and dental service for children in Scotland
- Analyse the current workforce in dental services for children
- Determine the perceptions of service providers concerning the current paediatric dentistry model, including services delivered by DCPs, and propose new pathways and models of care
- Determine the perceptions of service users and stakeholders concerning the current paediatric dentistry model
- Identify gaps in, and between, the services
- Make future recommendations for the delivery of paediatric dental services in Scotland.

3.3 Methods

A range of methods was used:

- Data collection from ISD (hospital and primary care data)
- National Records of Scotland (formerly the General Register Office for Scotland)
- Data from national reports and data sources
- GDP and DCP surveys
- Semi-structured interviews with PDS specialist and hospital consultant workforce
- Semi-structured interviews with hospital stakeholders and facilitators
- Structured interviews with patients
- Prospective audit of referrals received in PDS and HDS
- Survey of clinical directors of PDS, including activity
- Analyses of oral health inequalities using NDIP data - children from the poorest areas with greatest burden of disease
- Data from Childsmile National Headline Report.

3.4 Scope and Limitations

This report addresses the oral health service provision to children within the National Health Service (NHS) and as such includes care provided in primary, secondary and tertiary care settings within the GDS, PDS and HDS. Private practice provision is outwith the scope of this report.

Cleft Care Scotland Service provided to cleft lip and palate patients is not specifically included in the report, as it is managed nationally.

The age definition of 'child' can vary depending on the context. For the purposes of this report, a child is anyone who is under the age of 18. However, it is acknowledged that the age range might vary from service to service, and some reports or data sets may use different age ranges.

3.5 Ethical considerations

Ethical approval was sought from the West of Scotland Research Ethics Service in November 2012. The response of the committee stated that ethical approval from an NHS Research Ethics Committee was not required as the project was considered to be service evaluation and not research.

Participants were advised about the response from the Ethics Committee and informed consent was obtained from each participant prior to taking part in the needs assessment.

4 Introduction to Children's Oral Health

4.1 Child Population and Demography

Scotland has a child population of 1,096,763 (0-18 years) (National Records of Scotland, 2014) with 18.5% of the total population estimated to be under 16. The number of births registered in Scotland in 2014 was 56,725, which is 711 (1.3 per cent) more than in 2013. This was the first rise in the number of births following five consecutive annual decreases. The number of children aged under 16 is projected to rise by only five percent

from 0.91 to 0.96 million between 2012 and 2037 (National Records of Scotland, 2014).

In Scotland, more than 81% of the population live in urban areas (those with a population of more than 3,000). These areas cover less than 6% of Scotland's land area and are mainly concentrated in the central belt around Glasgow and Edinburgh (Office of National Statistics, 2012). Table 2 shows the distribution of Scottish children under 17 years across the six-fold Urban-Rural Classification (Skerratt *et al.*, 2014).

Table 2: The distribution of children across the six-fold Urban-Rural Classification

Urban-Rural	Percentage of children (0-16years) within total population
Large Urban	17.4%
Other Urban	19.1%
Accessible Small Towns	19.4%
Remote Small Towns	18.4%
Accessible Rural Areas	20.0%
Remote Rural Areas	18.4%
Total % of 0-16 years	18.5%

Source: Rural Scotland in Focus, 2014 (Skerratt *et al.*, 2014)

According to the State of the Nation 2014 report published by Social Mobility & Child Poverty:

- 180,000 children live in relative poverty in Scotland - 30,000 more than last year
- 200,000 children are in absolute poverty - also up 30,000 on the previous year

- 15,580 (1.4%) of the 0-17 population are being looked after by local authorities.

The UK can expect to see greater numbers of children in relative poverty (3.3 million by 2020/21 compared with 2.6 million in 2009/10) (The Academy of Medical Sciences, 2016), which is likely to lead to increasing health inequalities.

4.1.1 Child Protection Register

Information about children registered on the Child Protection Register is as follows (Scottish Government, 2015a):

- Between 2000 and 2014 the number of registrations has increased by 41% (2,050 to 2,882 respectively)
- Since 2008 there have been more children aged under five than over five on the Child Protection Register
- In 2014 53% of children registered were aged under five
- In 2014 there was a much larger increase in the number of those aged five and over than has been seen in recent years – a 15% increase from 2013.

It is of interest to note that the GDC now recommends child protection training as one of the 'core' topics for continuing professional development (CPD).

4.1.2 Child Health Systems Programme

In Scotland child wellbeing is supported through the provision of a universal health programme to all children and their families, known as the Child Health Systems Programme (CHSP). It consists of elements such as formal screening, routine childhood immunisations and a programme of needs assessments and reviews. In 2014/15, the 27-30 month review for Scotland showed (Information Services Division, 2015a):

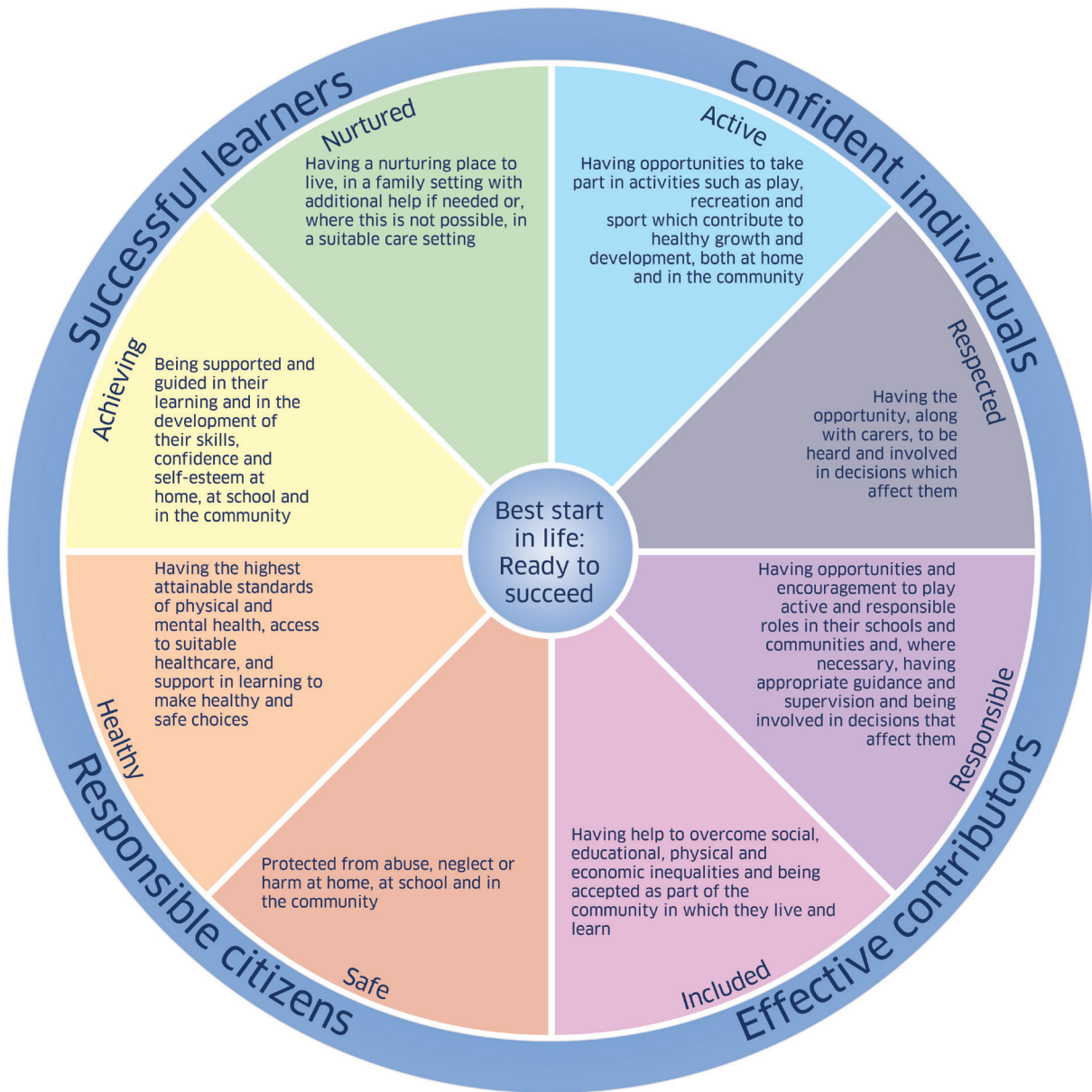
- 87% (50,956) of children had had a review by the age of three years

- 19% (9,682 children) of all 27-30 month reviews recorded at least one concern in an aspect of the child's development
- Children from the most deprived areas were more than twice as likely to have at least one developmental concern identified (27%) compared with those in the least deprived areas (12%)
- Boys were considerably more likely than girls to have at least one developmental concern identified (24% compared to 14% respectively)
- 25% of children reported as 'Asian' or 'Black, Caribbean or African' had at least one developmental concern identified compared to 19% in the 'White Scottish' ethnic group.

Children's dental status is regularly reviewed by health visitors as part of the CHSP. The Universal Health Visiting Pathway in Scotland (Scottish Government, 2015b) describes the role dental health plays in their overall assessment of a child's health and wellbeing needs. This programme, which is currently being implemented, consists of eleven home visits to all families, eight within the first year of life and three Child Health Reviews between 13 months and four/five years of age.

The wellbeing of children and young people is at the heart of GIRFEC. In the Scottish context wellbeing is described using the Wellbeing Wheel (Figure 1). The approach uses eight indicators to describe wellbeing at home, in school and in the community, which are: Safe, Healthy, Achieving, Nurtured, Active, Respected, Responsible, Included. The indicators are commonly referred to by their initial letters 'SHANARRI'.

Figure 1: The Wellbeing Wheel: the eight indicators of child wellbeing (SHANARRI)



In practice, the eight indicators are not discrete, but are connected and overlapping. When considered together

they give a holistic view of each child or young person.

4.2 Common Oral Diseases of Childhood

The most common dental disease is caries (decay). It is a multifactorial, dynamic disease, caused by the action of plaque bacteria and fermentable carbohydrate on susceptible tooth surfaces over time. The bacteria in the mouth metabolise dietary sugars, producing acids which dissolve the outer layers of the teeth (enamel and dentine). It is important to note that dental decay is an entirely preventable disease. It shares common risks factors with other diseases such as diabetes and obesity and therefore advice to reduce sugar intake can have wider health benefits. As with other chronic diseases, dental decay is more prevalent in areas of deprivation. However, there is evidence to demonstrate that Childsmile has made some progress in narrowing the inequalities gap (Section 4.4).

Caries prevalence data are collected annually in Scotland within NDIP (Section 4.4). Other dental conditions that occur less frequently in children are listed below, although there are no prevalence data available for Scotland:

- Dental erosion is the progressive loss of the hard component of the teeth, enamel and dentine, resulting from chemical action on the teeth, other than that which is caused by bacteria. Causes include carbonated (fizzy) acidic drinks and consumption of acidic fruit drinks
- Accidental damage to teeth is one of the commonest reasons for young children attending health services for treatment of trauma
- Developmental defects of enamel arise in the developing tooth from a variety of causes, including trauma, excessive fluoride, infections and nutritional disturbances. Usually, there is minimal effect on the long-term health of the mouth.

4.2.1 Modifying Risk Factors

In addition to the above conditions, there are a number of modifying risk factors which can also impact on disease development as follows:

- Biological risk factors such as nutrition and obesity, oral hygiene, fluoride levels in water and injury to teeth
- Social risk factors include lack of access to dental care and oral health improvement initiatives arising from geographical location and deprivation, vulnerable groups such as children from Black and Minority Ethnic (BME) communities and travelling communities, those with special needs, and looked after and accommodated children (LAAC). There has also been a recent arrival of refugee families who could also be considered vulnerable
- Medical risk factors include children diagnosed with a high-risk medical condition, for example, haematology, cardiology, metabolic, respiratory and psychiatric
- Behavioural risk factors include children with special needs, for example, dental anxiety, learning disability, autistic spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD).

The UK Government recently announced a sugar tax on soft drinks to tackle the rise in childhood obesity. This will be implemented from 2018. Furthermore, in March 2016, the Scottish Government revised the Scottish Dietary Goals to reflect the independent Scientific Advisory Committee on Nutrition (SACN) updated recommendations concerning the intake of sugar and fibre. These new goals indicate the extent of the dietary change needed to reduce the burden of obesity and diet-related disease in Scotland, and included the recommendation that sugar intake should not exceed 5% of total energy intake in adults and children over two years of age.

4.3 Policy and Legislation

There are several important policies and pieces of legislation which will impact on the health of children and services provided to them:

- **The Children and Young People (Scotland) Act 2014** aims to ensure that children's rights properly influence the design and delivery of policies and services. The Act will also provide legislative impetus to the implementation of the principles of the GIRFEC approach. There is legislation currently being discussed which proposes that local authorities and NHS Boards provide a Named Person service making a Named Person available to every child and young person. The Named Person would likely be a health visitor for pre-school children and a head teacher or senior teacher with pastoral responsibilities for school age children. This is currently under review by the Supreme Court (2016).

It is proposed the Named Person will:

- Advise, inform and support the child or young person, or a parent of the child or young person
- Help the child or young person, or their parents, to access a service or support
- Discuss or raise a matter about a child or young person with another service provider
- Have an overview of child's wellbeing
- Work in partnership with parents and children rather than 'carry out tasks to' children and parents.
- **The Early Years Collaborative** sets out to:
 - Create a structure in which Community Planning Partners can easily learn from each other and from recognised experts in areas where they want to make improvements
 - Support the application of improvement methodology to bridge the gap between what is known to work and what is done.
- **Valuing Young People (2009)** is a guide for professionals working with young people on the key policies and principles to refer to when designing services.
- **The Equality Act 2010** provides a legal framework to protect the rights of individuals and advance equality of opportunity for all. There are nine 'protected characteristics' under the Act, one of which is age.

- **The Protection of Vulnerable Groups (Scotland) Act 2007** sets out the legislation compelling governments to establish mechanisms to enhance the protection of vulnerable people, including older adults and young people, from abuse and neglect.
- **The Public Bodies (Joint Working) (Scotland) Act 2014** sets out the legislative framework for integrating health and social care, to support improvement of the quality and consistency of health and social care services in Scotland. It came into being on April 1 2016 and brings together NHS and local council care services under one partnership arrangement for each area. The Health Board and local authority delegate the responsibility for planning and resourcing service provision for health and social care services to an Integration Joint Board (IJB). In many areas, primary care services, including GDS and the PDS, are now 'hosted' by a Health and Social Care Partnership. This may have implications for service delivery in the future, as the new partnerships seek to deliver services to meet the needs of their local population.
- **The Scottish Government Oral Health Plan consultation document (2016)** sets out proposals for the future provision of dental services and preventive programmes, as well as proposals for structural changes in the way services might be delivered. Several proposals in the consultation

document are touched on in this report, namely a workforce review, the development of locally commissioned services and a review of the Childsmile programme, particularly use of national SIMD to target resources to those most in need, with the potential for additional funds being allocated to more deprived communities.

4.4 Epidemiology

4.4.1 National Dental Inspection Programme (NDIP)

The inspections are carried out annually in each NHS Board across Scotland for P1 and P7 children. Caries data are collected by calibrated clinicians within the PDS and are comparable year-on-year. While NDIP is resource intensive for the PDS to deliver, the programme provides a number of significant benefits. In addition to informing parents/carers of the oral health status of their children, by gathering aggregated, anonymised data about children's decay experience, it provides a means of monitoring oral health improvement and evidence to support planning for both policy and service development.

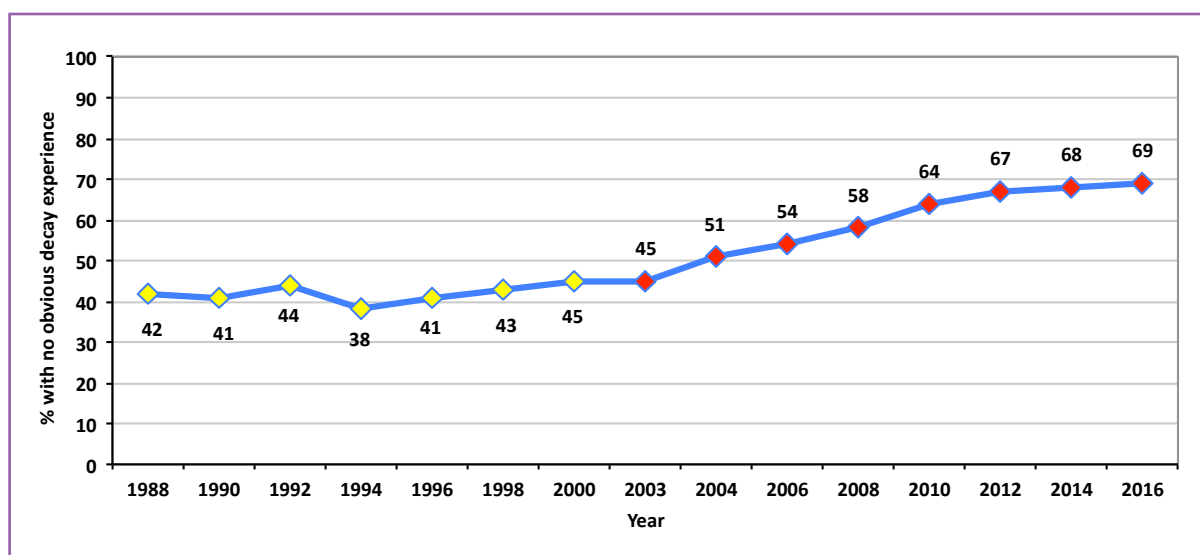
The collection of tooth-specific data from submitted GP17 forms was introduced in 2016. It is anticipated that, over time, this will provide a source of detailed information about the prevalence for oral disease in all age groups across Scotland.

4.4.2 Primary 1 (P1) Inspection

Between 1988 and 1996 the proportion of P1 children free from obvious decay was fairly static followed by a period of slight improvement between 1996 and

2003. However, Figure 2 shows that between 2003 and 2016 the percentage of P1 children with no obvious decay into dentine increased markedly from 45% to 69% (Figure 2).

Figure 2: Trends in the proportion of P1 children with no obvious decay experience, in Scotland; 1988-2016



Sources: ISD NDIP Database, SHBDEP

Correspondingly, the mean number of decayed, missing and filled (d_3mft) teeth in the P1 population has dropped over the same period from 2.76 to 1.21. However, decay is not evenly spread throughout the population. Of the children who have obvious decay into dentine, the average number of teeth affected is 3.93. The majority of this decay is untreated.

The Care Index ($ft/d_3mft \times 100$) measures the proportion of decay that has been treated by restoration (fillings or crowns). The most severe decay is normally dealt with by extractions, frequently under GA. When this is taken into account, the true extent of untreated decay in this age group is 62.8% ($d_3t/d_3mft \times 100$).

4.4.3 Primary 7 (P7) Inspection

The 2015 NDIP report showed that 75% of Scottish P7 children were free from obvious caries into dentine. All NHS Boards met the 2010 target of 60% of P7 children to be free from obvious caries and this has continued to improve over the intervening five years. The number of teeth affected by caries in the P7 population has more than halved between 2005 and 2015 (D_3MFT reduced, from 1.29 to 0.53). As seen in the P1 children, the decay is unevenly distributed, but there has been an improvement in D_3MFT for those with decay experience from 2.72 to 2.16. Not only do fewer children in P7 have experience of decay, but each child with decay in 2015 has a lighter burden of disease than in 2005.

The Care Index has improved from 36.4% in 2005 to 55% in 2015. However, it should be noted that after a significant increase between 2005 and 2007, improvements since then have been modest. In addition, the data showed that 29.4% of sound permanent molars were fissure sealed in the Scottish P7 population, with NHS Board figures ranging from 18.5% to 57.5%.

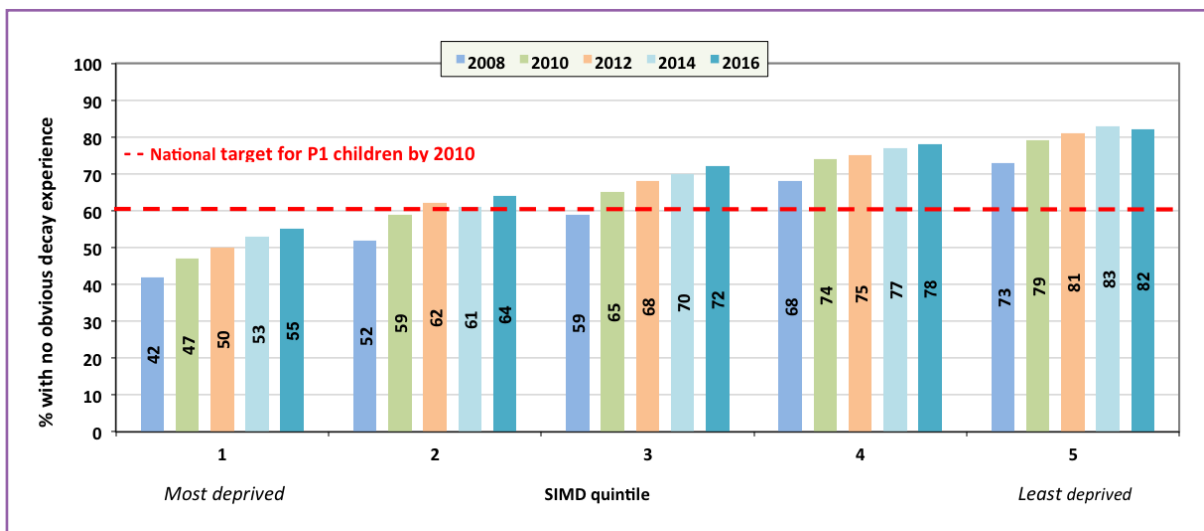
4.4.4 Patterns of Decay and Inequality

A decade ago, children in Scotland used to have the highest decay rates in the UK, but since the national introduction of the Childsmile programme in 2009/10, the oral health of children has significantly improved. Latest data show that 69% of five-year-old children had

no obvious decay experience; young children in Scotland are less likely to have a history of caries than those living in Wales or the North West of England (Monaghan *et al.*, 2014). However, despite overall improvements in oral health, major inequalities in dental health outcomes, reflecting social and economic inequalities, persist.

The NDIP reports confirm what is widely recognised, that children living in relative material deprivation have consistently higher levels of decay than their more affluent peers. These inequalities can be highlighted by mapping 'obvious caries' against deprivation (measured by SIMD). Using this approach, the 2016 P1 NDIP Report shows that 55% of children in the most deprived group are free from obvious caries compared with 82% in the least deprived (Figure 3).

Figure 3: Change between 2008 and 2016 in the proportion of P1 children in Scotland with no obvious decay experience, by SIMD quintile

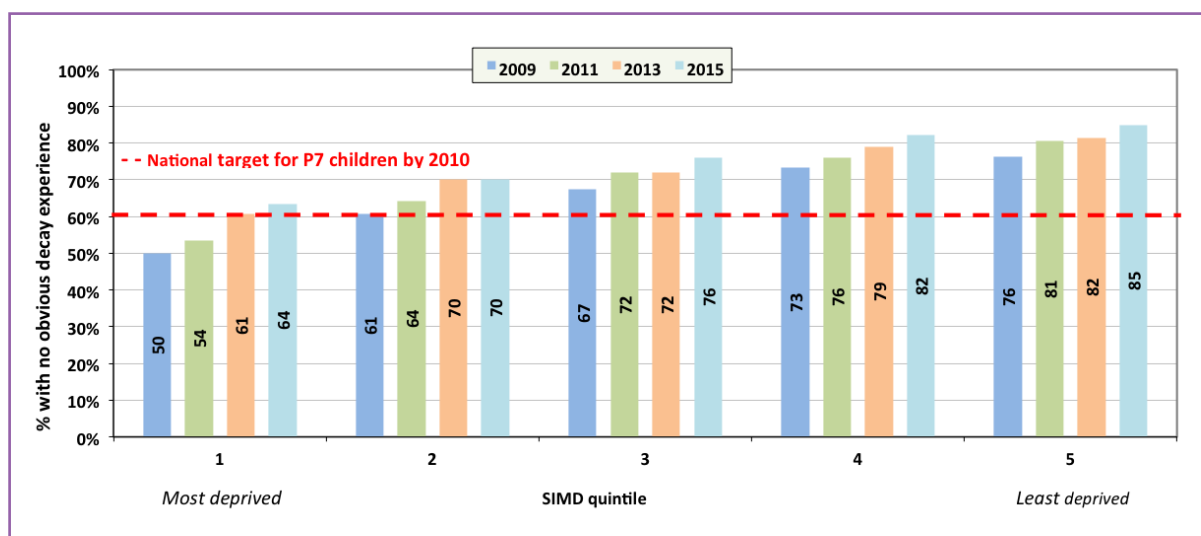


Sources: ISD NDIP Database, SHBDEP

In addition, the Scottish Caries Inequality Metric (SCIM10) shows a small and recent reduction in oral health inequality. Between 2008 and 2016, there has been an improvement in SCIM10 from 14.49 to 8.22.

The 2015 NDIP P7 report demonstrated that between 2009 and 2015 each deprivation quintile has shown an improvement in the proportion free from obvious caries (Figure 4).

Figure 4: Change between 2009 and 2015 in the percentage of P7 children in Scotland with no obvious decay experience; by SIMD quintile



Sources: ISD NDIP Database, SHBDEP

Crucially, in the P7 population the major improvement has been observed in the most deprived quintiles, and in 2013 for the first time, all quintiles reached the 2010 national target of 60% with no obvious decay experience.

The Scottish Government has recently produced an Outcomes Framework which has set new P1 and P7 targets, to be met by NHS Boards by 2022, with the aim of reducing inequalities, as well as continuing to improve the oral health of children across Scotland (Scottish Government, 2016a).

In its widest context, health (and therefore, oral health) is determined by myriad factors, so it is also important that the wider determinants of health are addressed to ensure improvements in overall health, including oral health. A broader view of the drivers of health will be required to tackle these persistent inequalities, bearing in mind that some of these drivers may be outside the traditional health sector (The Academy of Medical Sciences, 2016). The Marmot principles are also supportive of this approach (Marmot & Bell, 2012).

4.5 Preventive Care

Dental decay is an entirely preventable disease. The 2015 Cochrane Review found that water fluoridation is effective at reducing levels of tooth decay among children although the findings were based on older studies that may not be wholly applicable today. Currently there are no artificial water fluoridation schemes in Scotland. In the absence of such universal measures, clinical prevention is delivered by dental team members in various care settings. In addition to care in the dental surgery, there is also a national initiative across Scotland for improving oral health.

4.5.1 Childsmile

Childsmile is Scotland's national oral health improvement programme for children, and has three main elements.

Core Programme

Every child is provided with a dental pack containing a toothbrush, fluoride toothpaste and oral health messages, on a least six occasions by the age of five years. Children also receive a free-flow feeder cup by the age of one year. In addition, every three and four-year-old child attending nursery is offered free, daily, supervised toothbrushing. Supervised toothbrushing is also offered to Primary 1 and Primary 2 children in targeted schools.

Childsmile School and Nursery Programme

Throughout Scotland, children with the highest levels of need are offered fluoride varnish application twice a year at primary school and nursery. Fluoride varnish is applied by Childsmile dental teams. These comprise extended duties

dental nurses (EDDNs), trained in the application of fluoride varnish, aided by DHSWs. All children are encouraged to register with a dental practitioner and at each stage, children who require further assessment and possible dental care will be identified and sign-posted to a dentist.

Childsmile Practice Programme

Childsmile Practice is introduced to families by the health visitor, who reinforces key oral health messages, including the benefit of child dental registration by six months of age (Section 4.1.2). For the most vulnerable families, a DHSW provides home support, preventive advice and assistance in attending a primary care dentist. Once the family registers with a dental practice, prevention, including fluoride varnish is offered along with any treatment the child may need.

4.6 Demand

The Childsmile programme is widely recognised as helping to reach children who, in the past, may not have accessed anything other than emergency dental care. It may be, however, that the success of Childsmile is drawing children into dental care pathways who were previously unknown to services. While in the long-term this should improve the overall dental health of Scotland's children, the demand on the more specialist dental services to support these children seems to be increasing. The demand for paediatric dental services is expected to increase as the preventive initiatives, such as Childsmile, support people to access dental care.

Referral patterns to the specialist paediatric dental services are detailed in Section 6. However, in general, children referred belong to the following categories:

- Children with extensive decay (NDIP data)
- Children with support and care coordination needs (Support Needs System SNS data)
- Children with high-risk medical conditions, for example, oncological, haematological and cardiac conditions (SMR 01 data)
- Children requiring complex treatment.

It should be noted that children might have more than one condition at any given time. National prevalence data are available for children presenting within the first three of these categories (NDIP, SNS and SMR01 data respectively), and therefore they are explored in more detail in Sections 4.6.1 to 4.6.3. However, there are no routinely collected data for children who present with dental anxiety or requiring complex treatment, and therefore these groups cannot be readily quantified.

4.6.1 Children with extensive decay

According to the NDIP reports a quarter of P7 and a third of P1 children have some form of decay (Section 4.4), and the burden of decay for those who have caries can be considerable (National Dental Inspection Programme 2015, 2016). Depending on the severity of the disease, these children can either be routinely treated in primary care, or might be referred either to the local PDS or HDS. There is no information regarding decay for children of preschool and secondary school age.

Children with extensive decay often require hospital admission for extractions under GA. The cost per case for this service was calculated by the National Institute for Health and Clinical Excellence (NICE) as £719.90, with sedation costing £213.01 (National Institute for Health and Clinical Excellence, 2010). Although these figures apply to England, the Scottish costs are likely to be similar.

4.6.2 Children with Support & Care Coordination Needs

SNS is a sophisticated clinical tool that provides the facility to record accurate details of the child's problem or condition, including a detailed disabilities and impairments section. According to the SNS data 1.41% of child population have some form of disability (Table 3). These children are commonly seen by the PDS or in the HDS, if their disability affects their dental treatment.

Table 3: Number of children active on SNS system in Scotland between 2011-2015

Year	Number of children active on SNS	Mid-year child population estimate	% of child population on SNS
2011	15,682	1,116,059	1.41
2012	15,967	1,113,114	1.43
2013	16,132	1,110,845	1.45
2014	15,892	1,106,294	1.44
2015	15,563	1,103,149	1.41

Source: Support Needs System, August 2011 - August 2015

However, SNS has not been implemented in all NHS Boards across Scotland and the level of implementation and utilisation of the system varies in those Boards that do use SNS, therefore these figures are an underestimate of the true numbers.

4.6.3 Children with High-Risk Medical Conditions, for example, Oncology, Haematology and Cardiac

Children with high-risk medical conditions are commonly referred to the HDS for treatment. As dental

disease can have an even greater impact on children with medical conditions, the prevention of dental disease is of utmost importance and therefore parents and carers, as well as the wider dental team including DHSWs, should be involved.

With the exception of children diagnosed with oncological conditions, the number of children diagnosed with high-risk conditions is not usually recorded. Table 4 shows the number of children diagnosed with all cancer types excluding non-melanoma skin cancer (ICD-10 C44).

Table 4: Trends in incidence of oncology in children aged 0-17; 2005 - 2013

Year	Registrations
2005	153
2006	124
2007	145
2008	160
2009	150
2010	124
2011	145
2012	153
2013	142

Source: ISD

Additional information can be gained by looking at discharge figures (Table 5).

Table 5: Day case discharge rates per 100,000 population from acute hospitals by main diagnosis; children aged 18 and under

Diagnosis	Number of discharges per year (per 100,000 population)				
	2010/11	2011/12	2012/13	2013/14	2014/15 ^p
All Diagnosis A00-T98, Z00-Z99	3,252	3,251	3,273	3,352	3,397
Diseases of the digestive system	906	938	895	906	918
Factors influencing health status and contact with health services (includes admissions for examination, observation, immunisation, stoma care, respite care, disrupted family/home circumstances, awaiting fostering)	391	384	378	362	366
Neoplasms	291	288	317	354	393
Congenital malformations, deformations and chromosomal abnormalities	213	217	215	229	219
Diseases of the genitourinary system (includes urinary tract infection, vesico-ureteral reflux, renal failure, testicular torsion)	188	204	180	196	232
Diseases of the ear and mastoid process (includes otitis media, hearing loss)	174	154	172	160	146
Diseases of the musculoskeletal system and connective tissue (includes juvenile arthritis, osteomyelitis, Perthes disease)	148	162	185	200	223
Diseases of the respiratory system	133	104	130	132	125
Diseases of the skin and subcutaneous tissue (includes skin infections and eczema)	109	91	97	90	86
Diseases of the blood and blood forming organs and certain disorders involving the immune mechanism	103	128	124	131	130
Diseases of the eye and adnexa (includes blindness, glaucoma, strabismus)	94	95	102	106	99
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	86	84	82	93	104
Injury, poisoning and certain other consequences of external causes	79	84	84	74	75
Endocrine, nutritional and metabolic diseases	62	53	48	60	62
Diseases of the nervous system	61	61	68	64	64
Diseases of the circulatory system (includes arrhythmias, heart failure, intracerebral haemorrhage)	23	24	32	41	26
Certain conditions originating in the perinatal period	11	11	10	9	7
Certain infectious and parasitic diseases	7	10	11	18	17
Mental and behavioural disorders	4	3	3	4	4
Other	171	156	141	123	101

Source: ISD, SMR01 p=provisional data

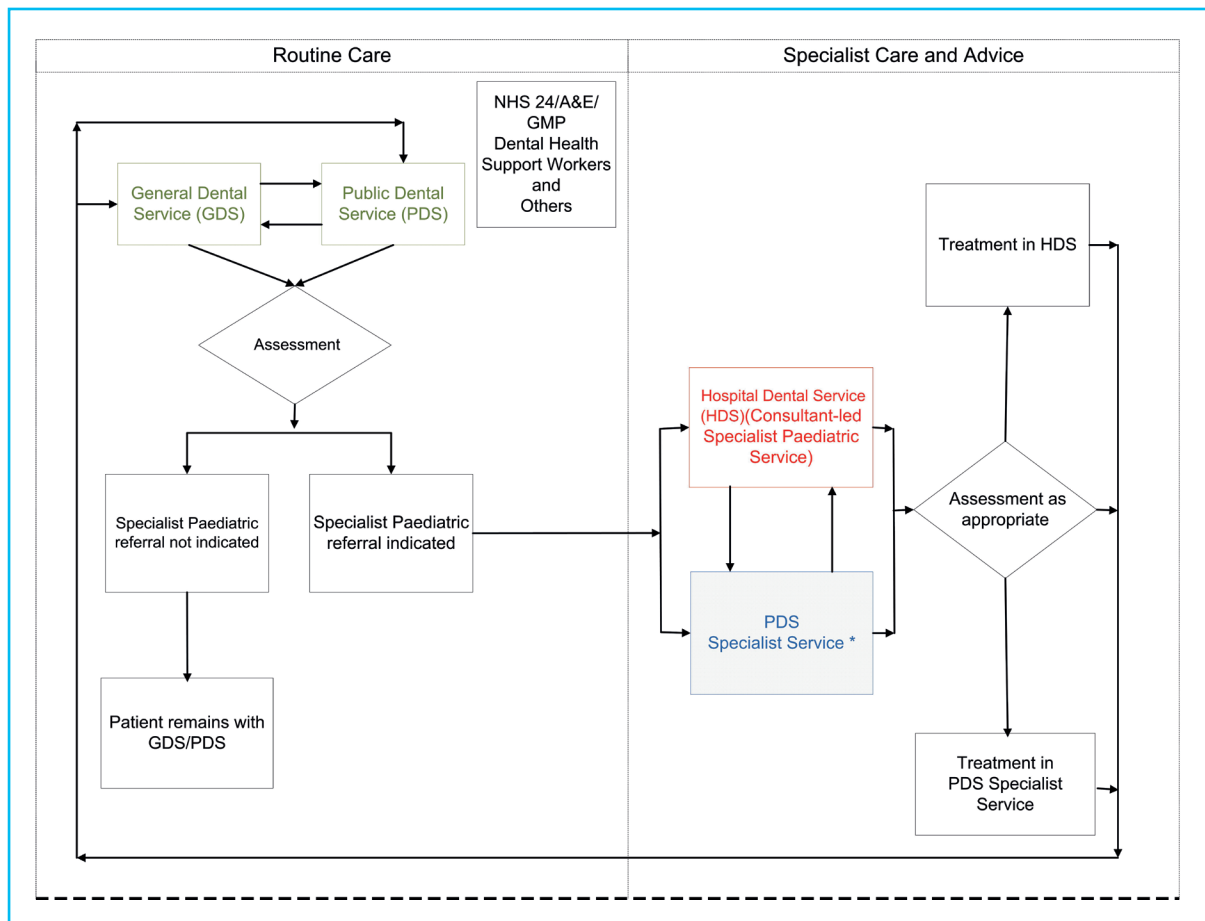
5 Current Service Delivery Model (Patient Journey Pathway)

5.1 Paediatric Dentistry

Paediatric dentistry is unlike any other dental specialty in that it covers all aspects of oral health care for children including restorative care, endodontic treatment and prosthetics, minor oral surgical procedures and interceptive orthodontics.

Children’s oral health and dental services are delivered at primary care, secondary care and tertiary care level within three settings, the GDS, PDS and HDS. Where the treatment takes place is based on the complexity of the child’s presenting condition and the presence of any modifying factors (Section 5.3). In general, the services are differentiated into routine care and specialist care (Figure 5).

Figure 5: Current service delivery model (patient journey pathway)



* PDS specialist service is only available in some NHS Boards

5.2 Routine Care

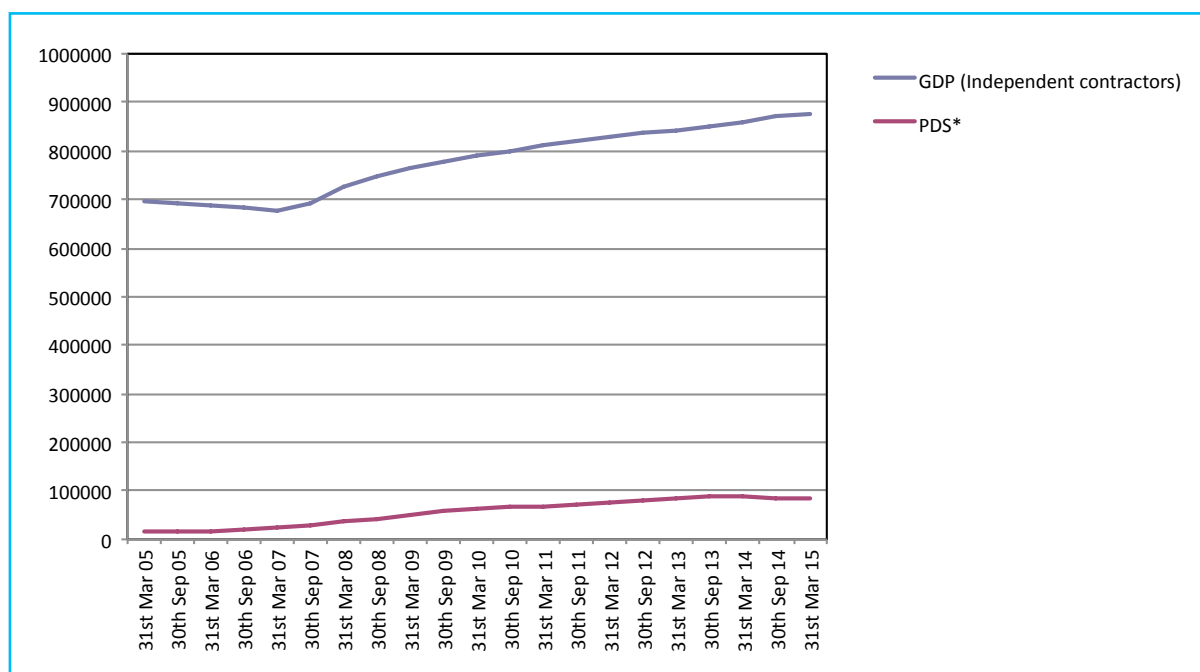
Routine care is delivered by primary care dental services in Scotland through:

- **GDS:** GDPs are independent contractors, contracted by the NHS Board to deliver services under the GDS regulations and paid through the GDS funding stream. People register with a dentist and can receive the full range of NHS treatment available under GDS. GDP-led teams are expected to provide routine treatments for children, including the preventive treatments incorporated by Childsmile
- **PDS:** The PDS was established in 2014, by amalgamation of the

Community Dental Service and the Salaried Dental Service. The PDS is made up of teams of salaried dentists and DCPs, directly employed by the NHS Board to deliver services (Scottish Government, 2014c). Currently, in some Boards, the PDS provides routine treatment to child patients where GDP services are limited or non-existent. They may also provide treatment in a hospital setting including treatment under GA.

Figure 6 illustrates the increasing trend of child registrations within primary care since 2008 with the vast majority of children being registered with a GDP.

Figure 6: Number of children registered with a GDP (independent contractors) and PDS* in Scotland



Source: ISD, MIDAS, data extracted in April 2015
 Figures for September 2014 and March 2015 are provisional
 Figures for March 2014 and September 2014 have been revised
 PDS* (salaried GDS (not including CDS) prior to Jan 14 and salaried and CDS for Jan 14 onwards)

5.3 Specialist Care

Specialists in paediatric dentistry provide care for children whose dental care needs cannot be met routinely in primary care. In summary, there are three broad categories which require specialist input:

- Patients with complex needs, although the dental treatment may be routine
- Complex dental treatment
- Multidisciplinary treatment.

Specialist paediatric care is largely delivered by specialists and consultants in secondary and tertiary care settings. However in some NHS Boards specialist paediatric care is also delivered by paediatric specialists in the PDS. It is recognised however, that **the skill set of the individual delivering specialist care is the key factor, rather than the setting in which care is provided.** The volume of specialist care provided in a primary care setting is sometimes limited because of the unavailability of appropriate infrastructure and equipment, for example, GA services, sedation facilities and radiographic equipment.

Where there is no availability of specialist care through the PDS, children requiring the input of a specialist need to travel to dental hospitals. This can introduce an inequality of access to a paediatric specialist and mostly impacts on children living in remote and rural areas.

Tertiary care services are delivered in Scotland through dental hospitals and paediatric hospitals. These are often also training institutions. Tertiary referrals can be made by medical consultant

colleagues in the children's hospitals and other general hospitals, from dental consultant colleagues and from the PDS.

Secondary and tertiary care services accept referrals for paediatric patients in the following categories (British Society for Paediatric Dentistry, 2009):

1. Severe early childhood caries or unstable/extensive caries in the mixed/permanent dentition
2. Severe tooth tissue loss
3. Abnormalities of tooth morphology, number and structure
4. Complex dento-alveolar trauma
5. Periodontal or soft tissue conditions/lesions
6. Disturbances of tooth eruption
7. Advanced restorative/endodontic care including laboratory-made restorations
8. Complex endodontic therapies including management of non-vital immature teeth or teeth undergoing internal or external resorption
9. Direct/indirect composite restorations for teeth with extensive tooth tissue loss or enamel/dentine defects
10. Non-vital or vital bleaching techniques
11. Surgical interventions outwith the competence of the primary care practitioner
12. Interceptive orthodontic treatment

13. Treatment planning for children requiring extractions under GA
14. Treatment planning and provision of comprehensive dental care under GA
15. Anxiety or phobia
16. Child protection issues
17. Multidisciplinary care.

In addition, the following modifying factors to treatment may be present and sometimes require more specialised care:

- **Medical conditions, for example, haematology, cardiology, metabolic, respiratory and psychiatric**
- **Social factors, for example, looked after and accommodated children (LAAC)**
- **Behavioural factors, for example, dental anxiety, learning disability, behavioural disorders, autistic spectrum Disorder (ASD) and ADHD.**

6 Current Service Provision

Oral health care is delivered to children within three settings: GDS, PDS and HDS. The service delivery model (patient journey pathway) was reviewed in Section 5.

6.1 GDS Service Provision

The vast majority of dental care for children in Scotland is delivered by GDPs and DCPs in the GDS, who treat children under capitation and an item of service (IoS) fee as determined by the SDR. There are also a number of grants and allowances given to support practice expenses, for example, Rent Reimbursement and General Dental Practice Allowance (GDPA). It is entirely appropriate that all those children who require routine preventive and restorative care should receive their treatment in this environment, as part of the family's regular dental visits. Care within the GDS is regarded as the norm.

However, it is also recognised that there are a significant number of children whose needs are not met entirely within the GDS. The environment of general practice can be focussed on providing care for adult patients, and few practices can invest in specifically child-friendly facilities. The remuneration available to dental practitioners for undertaking preventive and restorative treatment for children continues to be an area of great contention. Simple procedures can present huge challenges to a practitioner when faced with a young or anxious child, and the time involved in reassuring and persuading young patients to cooperate to accept treatment is not felt to be recognised

within the current fee structure. A small number of GDPs utilise the services of hygienists/therapists to facilitate the treatment of their child patients. This would appear to be a much under-utilised resource, and recommendations for change in this regard are made.

In spite of the number of episodes of care undertaken by GDPs, they also make onward referrals for dental treatment. These referrals are made to the PDS or the HDS, depending on local availability, the local referral protocols and historical referral pathways.

Table 6 shows the number of children registered with GDS at year ends March 2014 and March 2015. Lifelong registration was introduced in April 2010 and it is recognised that registration with a GDP may not be an indicator that care is being accessed. To address this, the measure of 'participation' is now used to show the number of patients who have attended during the last two years. It was noted by ISD that there was no deprivation gap between registration rates for children (90% for children living in both the most and least deprived areas). However, children living in the least deprived areas were more likely to have 'participated' i.e. attended within the last two years, than those living in the most deprived areas (91% compared to 82% at 31st March 2015) (Information Services Division, 2015b). It is also noted that the registration rate of nought to two year-old children is lowest (48%) when compared with other age groups.

Table 6: Registration and participation rates of child patients in the GDS at 31 March 2014 and 2015

		All Children	0-2	3-5	6-12
2014	Registered children	948,214	84,396	161,864	402,317
	Registration rate (%)	86	47.3	92.1	105.6
	Participation numbers	824,422	82,832	145,568	346,098
	Participation rate (%)	86.9	98.1	89.9	86
2015	Registered children	961,661	84,175	163,446	414,816
	Registration rate (%)	87.4	48.4	91.3	108
	Participation numbers	822,398	82,801	145,911	351,113
	Participation rate (%)	85	98	89	84

Source: ISD, MIDAS

The average cost of dental care per head of child population in Scotland is shown in Table 7. The average cost is £66 per year. However, this varies across

Scotland ranging from £45 for Western Isles to £81 for GG&C. Please note this includes 107,000 courses of orthodontic treatment.

Table 7: GDS fees - total fees, cost per head of population of children 2013/14

NHS Board	Total fees (capitation + IoS) (£)	Child population	Number of registrations	Cost/head of population (£)	Cost/head of registered patient (£)
Scotland	68,563,684	1,035,394	950,256	66	72
Ayrshire & Arran	4,933,551	72,032	65,894	68	75
Borders	1,472,539	21,703	18,419	68	80
Dumfries & Galloway	1,580,675	27,737	25,349	57	62
Fife	4,369,677	72,853	64,958	60	67
Forth Valley	3,883,247	60,576	52,880	64	73
Grampian	6,265,492	110,733	94,063	57	67
Greater Glasgow & Clyde	17,727,426	217,972	231,556	81	77
Highland	3,419,217	61,864	55,286	55	62
Lanarkshire	7,569,633	134,980	107,797	56	70
Lothian	11,499,731	162,699	149,937	71	77
Orkney	215,564	4,063	3,817	53	56
Shetland	233,531	4,940	4,754	47	49
Tayside	5,160,577	78,106	71,093	66	73
Western Isles	232,824	5,136	4,453	45	52

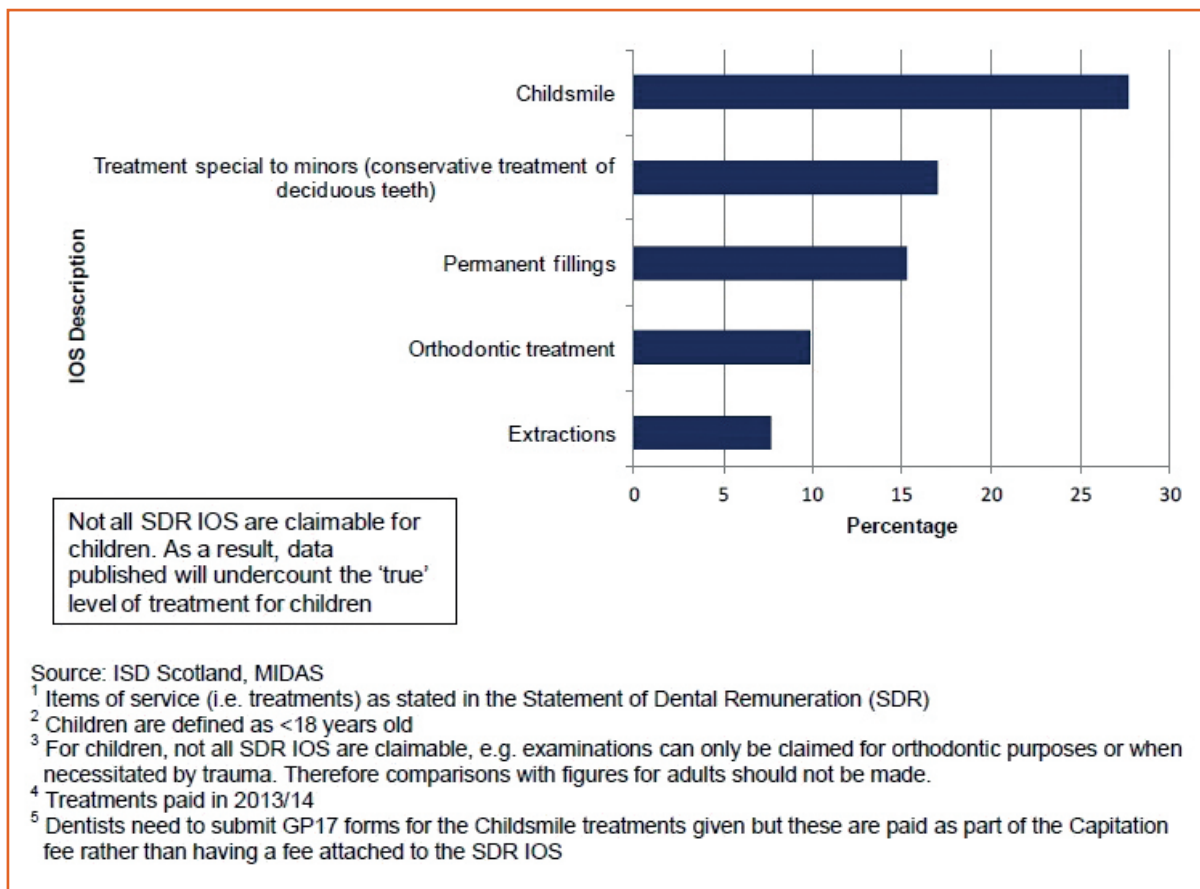
Source: ISD. Please note that some 'cross-boundary flow' exists, as people may live in one administrative area (for example, NHS Lanarkshire) but be registered with a dentist whose practice is located in another (usually adjacent) administrative area (for example, NHS Greater Glasgow & Clyde)

This can be explained in part by the fact that children who are treated in NHS Greater Glasgow & Clyde live in other NHS Boards (Information Services Division, 2014). The higher cost per head might also be a reflection of the fact that NHS Greater Glasgow & Clyde has the highest percentage of deprived areas compared to other regions of

Scotland, and in common with other chronic diseases, dental decay is more prevalent in areas of deprivation (Section 4.4.4).

The five most common types of SDR IoS treatments carried out for children in 2013/14 are shown in Figure 7.

Figure 7: Most common SDR IoS treatment - percentage of all claims; Scotland 2013/14 for children



Almost one third (28%) of the SDR IoS treatment for children were treatments given under Childsmile. The second (17%) most common SDR IoS type was for treatment of primary teeth ('deciduous'), including fillings and the application of fissure sealants.

Table 8 shows the number and value of treatments carried out by primary care dental services from 2011 to 2014. Overall, there was a slight reduction in treatments carried out in primary care; however there is a slight increase in treatment carried out under sedation was also seen over the same time period.

Table 8: Main SDR item of service treatment claims for children from 2011/12-2013/14 by GDS

Main SDR item of service treatment	2011/2012		2012/2013		2013/2014	
	Number of items	Cost (£)	Number of items	Cost (£)	Number of items	Cost (£)
Fillings - Items 14, 44(a)(e), 58(b)(c)(d)(e) & 60(a)	471,039	5,451,049	457,633	5,260,794	432,355	5,014,938
Root treatments - Items 15, 44(c)(d), 58(f), 60(c)(d) & 63(c)(d)(e)(f)	9,198	380,380	9,054	368,224	8,972	380,576
Veneers - Items 16 & 64	588	63,575	478	51,714	410	44,784
Inlays - Items 17(a)1, 17(f)5,1, 17(j)1,1, 17(k)1 & 51(c)1	43	5,394	27	3,438	19	2,513
Crowns - Items 17, 51(a), 51(b), 51(c)2 & 65	1,113	150,546	986	133,694	869	117,884
Bridges - Items 18, 51(d) & 58(g)	259	36,729	215	30,832	129	19,510
Dentures - Items 27, 28, 55(a)(b)(c)(d), 59 & 62	401	37,218	331	29,918	303	27,458
Extractions - Items 21 & 52(a)	97,037	1,094,395	90,509	1,028,601	90,207	996,468
Surgical treatments - Items 22 & 52(b)	1,762	79,624	1,617	74,493	1,318	57,052
Sedations - Items 25, 54 (b) & 54 (c)	2,681	112,793	2,580	106,499	2,960	122,882
Domiciliary visits - Items 35(a) & 57(a)	40	1,541	47	1,875	66	2,465
Recalled attendances - Items 35(b) & 57(b)	306	20,436	298	19,734	246	16,351

Source: ISD

Childsmile was introduced into the SDR in October 2011 and all GDP practices delivering NHS care to children are expected to deliver Childsmile interventions i.e. preventive dental care and caries management tailored to the individual needs of the child (NHS Health Scotland, 2011).

Interventions must incorporate:

- Dietary advice
- Toothbrushing demonstration for parents and carers
- Fluoride advice
- Clinical prevention, for example fissure sealants and fluoride varnish applications as appropriate.

As previously noted, the 352,489 claims made for Childsmile interventions in 2013/14 represented 28% of the IoS payments (Figure 9). Table 9 shows the number and value of Childsmile services carried out by

primary care dental services from 2011 to 2014. It is observed that the number of claims and the value continues to rise as more dental practices participate in delivering Childsmile interventions.

Table 9: Childsmile service claims and value from 2011/12 to 2013/14

Year	Number of claims	Value (£)
2011/12	143,383	307,751
2012/13	305,936	556,778
2013/14	352,489	674,713

Source: ISD

However, while the total number of claims has risen, with only 48% of nought to two-year-olds registered (Table 6), the latest ISD data on dietary advice and toothbrushing suggests that only 65% are receiving the support and interventions they should. For three to five-year-olds, this figure drops to around 40% of those registered. Only a third of registered two to five-year-olds received one application of fluoride varnish in 2014-15 and only 16.5% received the recommended two applications. There is also significant variation across all these measures between NHS Boards (Central Evaluation and Research Team, 2015).

There is currently a national review of the Childsmile programme (2016) looking at the way forward and options for increasing GDP participation.

6.1.1 GDP Survey

Aim

The aim of the GDP survey was to determine the nature and scope of provision of routine care to children by a GDP including the provision of Childsmile interventions, any barriers to providing routine care, and use of PDS clinics and dental hospital services.

Method

In the first instance a survey was conducted of GDPs who had an active nhs.net email. This included some salaried PDS dentists. Because of the absence of respondents from Lothian, some GDPs working in that area were contacted by alternative email addresses. Two timelines of contact were followed, with non-responders to the first survey re-contacted three weeks later. The survey questionnaire can be found in Appendix 2.

Results

Out of 1310 GDPs invited to participate in the survey, 375 (28.6%) GDPs responded to the survey. Of these, 40 (10.6%) were salaried GDPs working within the PDS. Given the response rate, it is recognised that participation

in the survey may represent an interest in the topic, therefore the results might not fully reflect all GDPs' responses. Table 10 shows GDPs who have responded to the survey and their corresponding NHS Board area.

Table 10: Responding GDPs' NHS Board area

NHS Board	Number of respondents	Percentage of total response
Ayrshire & Arran	13	3.9
Borders	2	0.6
Dumfries & Galloway	12	3.6
Fife	18	5.4
Forth Valley	13	3.9
Grampian	56	16.7
Greater Glasgow & Clyde	85	25.4
Highland	39	11.6
Lanarkshire	55	16.4
Lothian	11	3.3
Orkney	4	1.2
Shetland	4	1.2
Tayside	15	4.5
Western Isles	5	1.5
Not Reported (NR)	3	0.9
Total	335	100.0

Preventive Treatments

The majority of GDPs who participated in the survey indicated that they provided preventive care including the interventions incorporated by Childsmile (Table 11). However it

is notable that this differs from the childsmile data (Central Evaluation and Research Team, 2015), confirming that this may not be a representative sample of GDPs but instead reflects a more highly motivated group (Section 6.1).

Table 11: Preventive treatments provided by GDPs

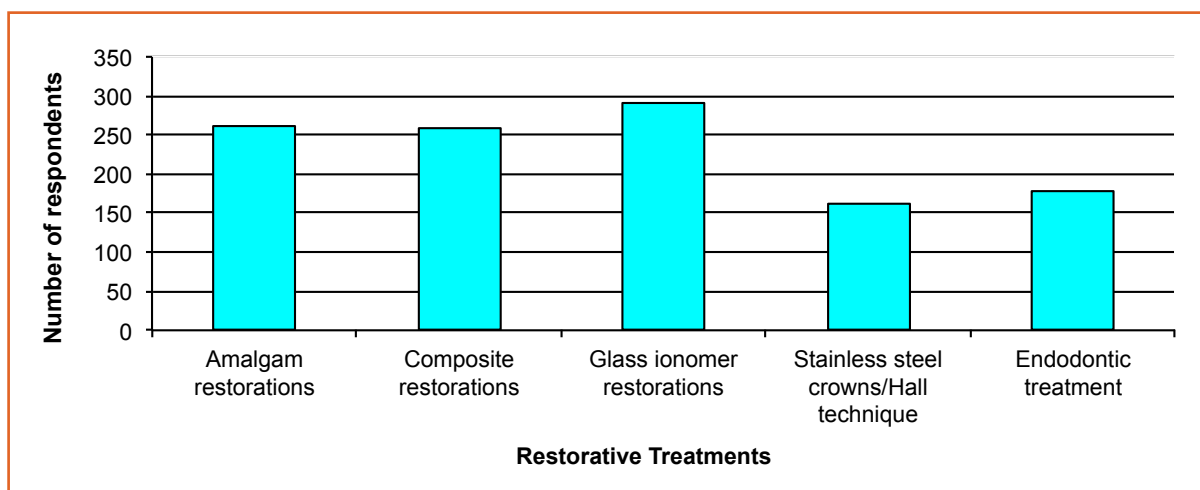
Preventive treatments	Number of respondents	Percentage of all respondents
Dietary advice	320	95.5
Toothbrushing instruction	317	94.6
Fluoride varnish application	299	89.3
Fissure sealants	293	87.5

Restorative Treatments

Figure 8 shows that the GDPs who participated in the survey provided a range of restorative treatments. Glass ionomer restorations were the most common and ‘stainless steel crowns’

(Hall technique) were the least common restorative treatments undertaken. Preformed metal crowns (PMCs) are colloquially known as ‘stainless steel crowns’. Some GDPs reported that parents did not like stainless steel crowns.

Figure 8: Restorative treatments provided by GDPs



“Parents are reluctant to accept appearance of stainless steel crowns. Caries continues to heavily affect a small number of children.”

“Parents can occasionally be a challenge for the placement of stainless steel crowns as they dislike the appearance.”

“Parents don’t like the stainless steel crowns even though often only option left.”

Challenges or barriers to providing treatments to child patients

When asked about the challenges to providing treatment GDPs indicated that patient cooperation was the main challenge they encountered with their child patients (Table 12), when providing multiple extractions (65.7%),

endodontic treatment (60.3%), restorations (54.6%) and stainless steel crowns (49.6%). In addition, SDR fee was a barrier to these treatments. Training was also cited as a challenge for two restorative procedures; the provision of stainless steel crowns (23.3%) and endodontic treatment (14.9%).

Table 12: Challenges to providing the following treatments for child patients

Treatment	SDR fee		Time		Training		Staffing cooperation		Patient cooperation	
	Count	%	Count	%	Count	%	Count	%	Count	%
Preventive advice	150	44.8	134	40.0	28	8.4	34	10.1	75	22.4
Fluoride varnish	116	34.6	71	21.2	15	4.5	25	7.5	132	39.4
Fissure sealants	111	33.1	76	22.7	7	2.1	17	5.1	161	48.1
Restorations	130	38.8	83	24.8	12	3.6	10	3.0	183	54.6
Stainless steel crowns	95	28.4	94	28.1	78	23.3	16	4.8	166	49.6
Endodontic treatment	157	46.9	116	34.6	50	14.9	17	5.1	202	60.3
Multiple extractions	143	42.7	103	30.7	17	5.1	20	6.0	220	65.7

Some GDPs believed that they were not remunerated appropriately for time spent on provision of dental services to

child patients. GDPs felt that SDR fees would be adequate if the child patients were able to cooperate.

“Dental services for children have always been under funded and always will be. They are more time consuming and more difficult to treat but dentists are paid less than the adult fees.”

“Fee provided by the SDR is adequate if child patient is cooperative but not if more time is taken.”

“Restoration fees for a child are ridiculous. A seven-12 year old child takes much more time to carry out a routine restoration. An occlusal amalgam fee for what can be easily half an hour’s work is laughable, for the practice it does not even pay the nurse, let alone materials.”

“Treating children can be extremely challenging and stressful. It is an added insult when the fee does not cover the cost of the time involved. Effectively we do not get paid for doing some of these treatments.”

Referral to Public Dental Service

Over half (59%) of GDPs who participated in the survey indicated that they were aware of the treatment offered by the PDS but 22.4% indicated that they were not. More than two

thirds (68%) of GDPs also indicated that they had referred child patients to their local PDS. Some GDPs reported that communication between PDS and GDS was poor, while others believed that they did not have a local paediatric PDS service.

“We have only a vague idea of where to refer to and what treatment is provided.”

“No service locally.”

“Not sure who to refer to.”

“Referral pathway is difficult, very little information.”

Over half (58.8%) of GDPs indicated that they found it straightforward to refer to the PDS with 39.1% indicating that they were aware of local referral protocols for the PDS.

Table 13 summarises the reasons GDPs referred children to the PDS. A number of referrals cited more than one condition, and therefore the percentages shown in Table 13 add up to more than 100%. The

most common reasons related to the child’s ability to accept treatment such as poor cooperation (56.4%), the need for treatment under GA (54%), anxiety (53.7%), sedation (51.6%) and special needs (47.8%), with fewer than 30% making a referral because of the anticipated complexity of the dental procedure itself. This mirrors the challenges GDPs found in treating children.

Table 13: Reasons for referral to PDS

Referral category	Number of responses	Percentage of total
Poor cooperation	189	56.4
General anaesthesia	181	54.0
Anxiety	180	53.7
Sedation	173	51.6
Special needs	160	47.8
Degree of medical complexity	102	30.4
High caries rate or multiple carious teeth	101	30.1
Degree of dental complexity	59	17.6
Surgical care	52	15.5
Trauma	35	10.4
Vulnerable or LAAC	35	10.4

Referral to dental hospitals

Over two thirds (67.8%) of GDPs indicated that they have referred child patients to a dental hospital

or institutes, while 14% indicated that they had not. Nearly half (47%) of GDPs indicated that severity of condition is the main reason for referral to hospital (Table 14).

“Our PDS has no specialist paediatric dentists.”

“If GA required then must refer to hospital, our PDS will not accept referral.”

“Provision of GA, I do not think our PDS offers this.”

“Unaware of other local options.”

Table 14: Factors influencing GPs’ decision to refer to a hospital rather than PDS

Factors	Number of responses	Percentage of total
Severity of condition	158	47.2
Preference	55	16.4
Hospital proforma dictates referrals accepted	61	18.2

Some GPs listed the absence of PDS service because of geography, lack of specialists in the PDS and unavailability of GA in the PDS as other reasons for referral to hospital instead of the PDS. Almost half (43.6%) of GPs indicated that they were aware of referral protocols for children being referred

to one of the dental hospitals, while 30.4% indicated that they were not. The most common reason for referral was for GA (44%), followed by dental complexity (36%) then poor cooperation (32%). Table 15 summarises the reasons for referral to dental hospitals.

Table 15: Reasons for referrals to dental hospital

Referral category	Number of responses	Percentage of total
General anaesthesia	150	44.8
Degree of dental complexity	122	36.4
Poor cooperation	106	31.6
Trauma	98	29.3
Degree of medical complexity	91	27.2
Anxiety	91	27.2
Sedation	85	25.4
Special needs	76	22.7
High caries rate or multiple carious teeth	74	22.1
Surgical care	72	21.5
Vulnerable or LAAC	14	4.2

6.1.2 Dental Care Professionals

DCPs are an expanding group of professionals who are integral to the care and treatment of both child and adult patients. In addition to the dentist, there are six groups of DCPs recognised within the dental team, each with a specific remit in relation to patient care (Figure 9). The emergence of a number of these professionals arose as a result of the findings of

the Nuffield Inquiry of 1993 entitled 'Education and Training of Personnel Auxiliary to Dentistry'. This visionary document encouraged flexibility in the delivery of dental care, suggesting that the oral health needs of the population could be met by a variety of professionals each possessing specific skills. The complete remit of all DCPs has been published by the GDC (General Dental Council, 2013b).

Figure 9: The dental team



Table 16 summarises the number of DCPs based in Scotland who were registered with the GDC in August

2015. A number of individuals are registered in more than one category.

Table 16: Scottish DCP workforce August 2015

DCP group	Number of GDC registrants
Dental nurses	5678
Dental technicians	510
Dental hygienists	412
Dental hygienist-therapists	195
Dental therapists (singly qualified)	16
Orthodontic therapists	44
Clinical dental technicians	13

Dental hygiene and therapy education

In Scotland, all dental institutions have a remit for the education and training of dental hygienist-therapists with 49 students graduating each year. Three year ordinary degrees in Oral Health Sciences are available in the University of Dundee, Glasgow Caledonian University and the University of the Highlands & Islands, while a four year Honours degree is offered by the University of Edinburgh.

The following is a summary of the clinical remit of dental hygienists, dental hygienist-therapists and dental therapists who may be involved in the treatment of children in all branches of the dental services.

Dental hygienists

Dental hygienists are trained and educated specifically in periodontal and preventive therapy. In addition to screening for oral disease, they are able to undertake all aspects of non-surgical periodontal treatment and preventive care for both the child and adult population. They are qualified to diagnose and develop a treatment plan within their scope of practice and are now able to see patients directly

without the need for a referral from a dentist.

Dental hygienist-therapists

In addition to undertaking the skills of a dental hygienist, dually qualified individuals can also provide all direct restorations in the primary and secondary dentition (adult teeth), and may extract primary teeth. They are also permitted to diagnose and treatment plan within their scope of practice without prescription and work under direct access arrangements with the public.

Survey of dental hygienists and therapists

During January and February 2016 an online survey of Scotland-based dental hygienists and therapists was carried out to explore the range of clinical treatment they provided for children within the GDS. A total of 214 out of 451 completed the questionnaire, representing a 47% response rate. Details of the survey can be found in Appendix 3.

It was apparent from the survey that the majority of dental hygienists and therapists provided treatment for children, but the range of procedures

undertaken was restricted. Some of the reasons for this limited clinical practice are indicated in the sample of comments made by respondents (Appendix 3). It is clear from the survey data that hygienists and hygienist-therapists are under-utilised in the provision of primary care dentistry for paediatric patients in the GDS. It is therefore recommended that increasing the skill mix within the dental team would free dentists' time to undertake more complex work. However, structural and high-level policy changes may need to be made to allow hygienists and hygienist-therapists to be fully utilised. In addition, further analysis will hopefully identify more fully the reasons why these highly-skilled professionals with extensive clinical and academic training are not fulfilling their full clinical potential.

6.2 PDS Service Provision

The PDS remit was defined by Scottish Government in 2014. It provides a wide range of services in a variety of settings, including community, custodial and secondary care settings, with specific reference to children with additional needs, including learning disabilities, physical disabilities, medically compromised, LAAC, migrants, severe anxiety and phobia (Scottish Government, 2014c).

6.2.1 PDS Service Provision for Children

The level of oral health/dental service provision to children within the PDS in Scotland was unclear at the outset of this needs assessment. Therefore, between October 2014 and December 2015, a survey of clinical directors of the PDS, and in some cases face-to-face interviews, were carried out to determine the level of service provision within each NHS Board. The survey questionnaire can be found in Appendix 4.

Results of PDS survey and interviews

All NHS Boards within Scotland provide paediatric dental services within the PDS and children are often referred to specific PDS clinics (Table 17). However the scope of the service provided is variable across Scotland and is dependent on the availability of skill mix and infrastructure (for example, availability of specialists, facilities to carry out GA).

Table 17: Number of PDS clinics providing care for children by NHS Board

NHS Board	Are children referred to specific clinic/s locations?	If yes, please specify	If so, how many specific clinic locations?
Ayrshire & Arran	Yes	GA & anxiety management	5
Borders	Yes	For assessment pre-sedation or GA	6
Dumfries & Galloway	Yes	Secondary dental care clinics in two main bases	2
Fife	Yes	A central hub then dependent on needs moved to closest possible clinic with skilled clinician (8 clinics)	8
Forth Valley	Yes		6
Grampian	Yes	Referrals are made centrally then assigned to individual clinics	10
Greater Glasgow & Clyde	Yes	Determined by specific user need and location	17
Highland	Yes	Depends what they are referred for	At least 14 sites have inhalation sedation services
Lanarkshire	Yes	Children with special care needs for dental treatment are referred to the nearest community clinic	10
Lothian	Yes	Edinburgh central, East, and Mid Lothian one area; West Lothian as separate area	10
Orkney	Yes	One clinician fronts the Childsmile practice	2
Shetland	Yes	To any of the PDS clinics	6
Tayside	No	No, because all clinics across Tayside accept referrals	
Western Isles	Yes		1

Patients are referred to PDS clinics by a range of professionals including GPs, general medical practitioners (GMPs), hospital consultants and Childsmile DHSWs. The referral rate is variable across Scotland (Table 18) and this is dependent on a number of factors, for example, GPs' awareness of PDS services (Section 6.1.1), accessibility

and the availability of PDS clinics, infrastructure and the available skill mix. The PDS is often the main provider of dental care in the Island Boards, i.e. Shetland, Orkney and Western Isles, because of the limited provision of GDS. In some Boards the PDS has staff specifically responsible for the treatment of children.

Table 18: Paediatric referrals to PDS by NHS Board

NHS Board	Number of referrals received per month	Percentage of paediatric referrals compared to all referrals
Ayrshire & Arran	100-150	25% - 30%
Borders	0-50	Not Reported
Dumfries & Galloway	0-50	45% - 50%
Fife	50-100	25% - 30%
Forth Valley	50-100	20% - 25%
Grampian	125	30%
Greater Glasgow & Clyde	600	60-65%
Highland	0-50	45% - 50%
Lanarkshire	50-100	20% - 25%
Lothian	150-200	55% - 60%
Orkney	0-50	1% - 5%
Shetland	Currently no GDS in Shetland, PDS provides primary care dentistry for the whole population	Not Applicable
Tayside	50-100	20% - 25%
Western Isles	0-50	5% - 10%

Provision of dental treatments under GA

Extractions under GA are offered in all the NHS Boards and referral rates are

variable across Scotland (Table 19). As an alternative to GA, inhalation sedation (IHS) is also offered in all Boards but intravenous (IV) sedation is only offered in four Boards (Appendix 5).

Table 19: Approximate referral rate for GA provision

NHS Board	Number of GA referrals received in a month	Post-GA follow-up, for example, prevention clinics
Ayrshire & Arran	70-80	Yes
Borders	15-20	Yes
Dumfries & Galloway	05-10	No
Fife	50-70	No
Forth Valley	35-40	No
Grampian	125	No
Greater Glasgow & Clyde	416	No
Highland	10-15	No
Lanarkshire	100	No
Lothian	45-50	Yes
Orkney	0-5	Yes
Shetland	0-5	Yes
Tayside	35-40	Ys
Western Isles	0-5	Yes

GA lists for dental extractions are available in all Boards. The vast majority of these lists are provided by the PDS. However child patients are not always admitted under the PDS. In some NHS Boards children may be admitted under oral and maxillofacial surgery, and therefore there might be some under-recording of PDS activity. Most NHS Boards also provide comprehensive care including restorative care under GA. Appendices 5, 6 and 7 give further details for the provision of both comprehensive care and extraction-only lists within each Health Board area.

Treatment provision for children who require multidisciplinary care

Generally, multidisciplinary care is provided to child patients through dental hospitals and other specialist paediatric hospitals, for example, the Royal Hospital for Children. However, in some NHS Boards multidisciplinary care is also provided through the PDS to a certain extent (Appendix 8).

In NHS Boards without a dental hospital or children's hospital, 'out-of-Board' referrals for children requiring multidisciplinary care are made when required (Appendix 9).

Workforce in the PDS for provision of paediatric dental services

Table 20 shows the composition of staff providing paediatric dental services in the PDS. Some Boards have staff specifically for children, while the PDS staff in other NHS Boards provide dental treatment for adults and children. The majority of the staff working in the PDS responsible for treating children are dentists with an interest and some have obtained additional postgraduate qualifications. Specialists in paediatric dentistry are employed in Lothian, Greater Glasgow & Clyde and Fife NHS Boards (WTE 4.1). The presence of specialists in the PDS allows the provision of specialist care for their child patients in community settings. However in some NHS Boards specialists in paediatric dentistry have been recruited at senior dental officer (SDO) level rather than specialist level.

Table 20: PDS workforce for provision of paediatric dental services by NHS Board

Health Board	Staff specifically responsible for the treatment of children	Clinical director (WTE)	Assistant clinical director (WTE)	Specialist in paediatric dentistry (WTE)	SDO/Senior salaried GDP (WTE)	CDO/salaried GDP (WTE)	Therapist (WTE)	Hygienist (WTE)	Specialist in paediatric dentistry (Head count)	Additional postgraduate qualification but not on specialist list (Head count)	With an interest in paediatric dentistry (Head count)
Ayshire and Arran	Yes				1.3	1	1	1			3
Borders	No										20
Dumfries and Galloway	Yes				1	1					1
Fife	Yes			1		8	2	1	2	3	5
Forth Valley	Yes				1				1*		
Grampian	Yes				0.4					1	
Greater Glasgow and Clyde	Yes			0.9	4.4	13.5	2.5	2	2*	16	26
Highland	No								2		2
Lanarkshire	No										10
Lothian	Yes			2.2		4			3	1	10
Orkney	No										
Shetland	No										1
Tayside	No								1		6
Western Isles	No									1	
Total				4.1	7.7	27.5	5.5	4	10	22	84

* Staff with specialist qualifications but not employed as a specialist
Numbers were accurate as of March 2016

6.2.2 PDS Retrospective Referral Audit

A one-month retrospective PDS referral audit (Appendix 10) was undertaken across Scotland between January and February 2015 to investigate the nature of referrals made to the PDS. The collated data included the reason (condition) given for the referral, age and SIMD of patients being referred.

The PDS in Borders, Fife, Forth Valley, Highland, Tayside and one specialist

clinic from NHS Greater Glasgow & Clyde (GG&C) participated in the four-week audit. Three of the six NHS Boards who took part in the audit did not employ a dentist at specialist level. The referral rate was very varied and ranged from 15 in the Borders to 115 in Fife. This was felt to be due to the variation in population, service provision and staff available in the Boards (Table 21). Of note, the data for GG&C were for the one specialist clinic only and not the entirety of the PDS service.

Table 21: Referrals received during four week audit and availability of a specialist

PDS clinic	Total number of referrals received during four week audit	Availability of a specialist
Borders	15	No
Fife	115	Yes
Forth Valley	66	No*
Highland	53	No
Greater Glasgow & Clyde specialist clinic based in Royal Alexandra Hospital (RAH)	33	Yes
Tayside	69	Yes
Total	351	

* SDO is on the specialist register but is not employed as a specialist

Reason for referral of children to the PDS

The most common reason for referral of children to the PDS was for the management of anxiety and phobia (61.5%) followed by treatment planning for children requiring

extraction under GA or sedation (52.7%) and severe childhood caries (42.2%), as shown in Table 22. A number of referrals cited more than one condition, and therefore the percentages shown in Table 22 add up to more than 100%.

Table 22: Reason for the referral of children to the PDS (collated data)

	Reason	Number of referrals received	Percentage
1	Anxiety or phobia	216	61.5
2	Treatment planning for children requiring extractions under GA or sedation	185	52.7
3	Severe early childhood caries or unstable/ extensive caries in the mixed/permanent dentition	148	42.2
4	Others including medical conditions	45	12.8
5	Abnormalities of tooth morphology, number and structure	32	9.1
6	Surgical interventions outwith the competence of the primary practitioner	13	3.7
7	Treatment planning and provision of comprehensive dental care under GA	8	2.3
8	Advanced restorative/endodontic care including laboratory-made restorations	7	2
9	Interceptive orthodontic treatment	6	1.7
10	Periodontal or soft tissue conditions/lesions	5	1.4
11	Disturbances of tooth eruption	4	1.1
12	Direct/indirect composite restorations for teeth with extensive tooth tissue loss or enamel/dentine defects	3	0.9
13	Complex dento-alveolar trauma	3	0.9
14	Child protection issues	2	0.6
15	Complex endodontic therapies including management of non-vital immature teeth or teeth undergoing internal or external resorption	1	0.3
16	Severe tooth tissue loss	1	0.3
17	Reason not specified	1	0.3
18	Non-vital or vital bleaching techniques	0	0
19	Multidisciplinary care	0	0

Many other reasons were given for referral. Almost half of these were related to a disability or medical condition (Appendix 11). However, there were regional differences (Appendices 12-14), for example, the PDS in Fife, Tayside and Highland

received over 60% of referrals for anxiety and phobia, whereas the specialist clinic in GG&C and the non-specialist service within Borders PDS received over 60% of their referrals for severe caries.

Relationship between most prevalent condition and SIMD

In common with other chronic diseases, this audit confirmed that referrals received for anxiety or phobia, extraction under GA or sedation and dental decay were more prevalent in areas of deprivation (Appendix 15).

Relationship between number of referrals, Health Board and SIMD

Table 23 shows the relationship between referral rate and SIMD.

Paediatric patients seen in the PDS come from all SIMD quintiles, with more referrals overall from the most deprived areas. There were regional differences, for example, the majority of child patients referred to Highland and Borders PDS came from SIMD 4 area, whereas child patients referred to Fife, Forth Valley and GG&C came from the most deprived SIMD 1 areas. In contrast, for Tayside there was no difference between the numbers of referrals received from SIMD 4 and SIMD 1 areas. However, there were a few referrals received from SIMD 5 area.

Table 23: PDS clinic and SIMD 2012 quintile cross tabulation

Health Board	SIMD 2012 quintile					Total
	1	2	3	4	5	
Borders	0	4	4	5	0	13
Fife	32	28	28	13	9	110
Forth Valley	22	16	11	9	4	62
Highland	6	13	12	17	2	50
Greater Glasgow & Clyde(GG&C) specialist clinic (RAH)	11	7	4	4	6	32
Tayside	18	12	11	18	2	61
Total	89	80	70	66	23	328
Percentage	27.2%	24.4%	21.4%	20%	7%	100%

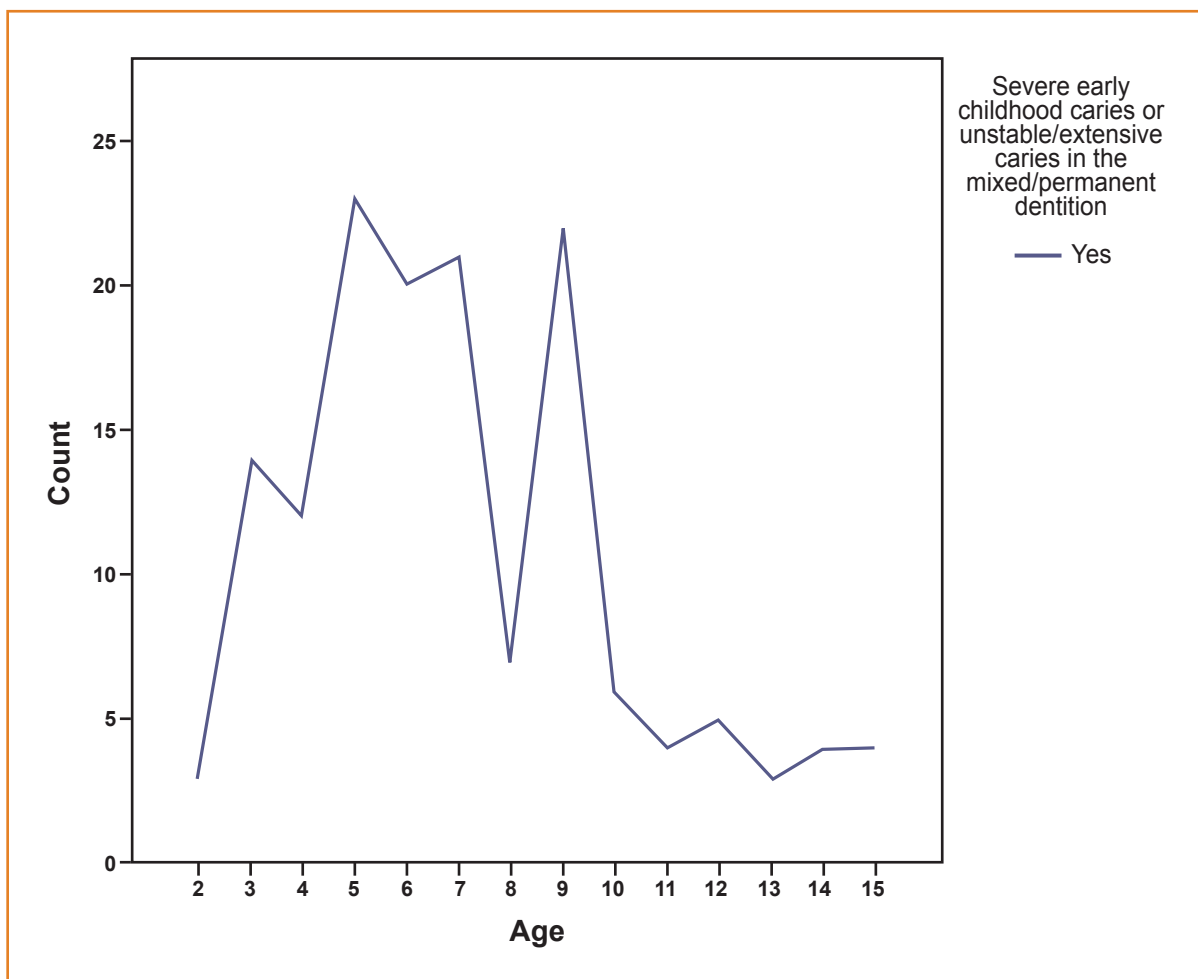
Note: Postcode could not be matched/was not reported for 23 referrals

Relationship between age and caries

The age of children referred to the PDS for management of dental caries in this audit ranged from age two to 15 years old (Figure 10). It was noted, however, that referral rates were greater for those aged between three and ten years old. This could be for a variety of reasons. Referrals prior to the age of three are less common because decay may not yet have developed or it might be more difficult to identify or

perhaps only a limited examination has been possible, making diagnosis difficult. Referrals after the age of ten appeared to diminish and this may be because most of the primary teeth will be close to exfoliation and/or be at a stage where symptoms or complications are less frequent. Additionally, those with caries in the permanent teeth are at an age where they are more likely to be able to manage treatment within the routine GDS setting.

Figure 10: Referrals received by the PDS for caries by age

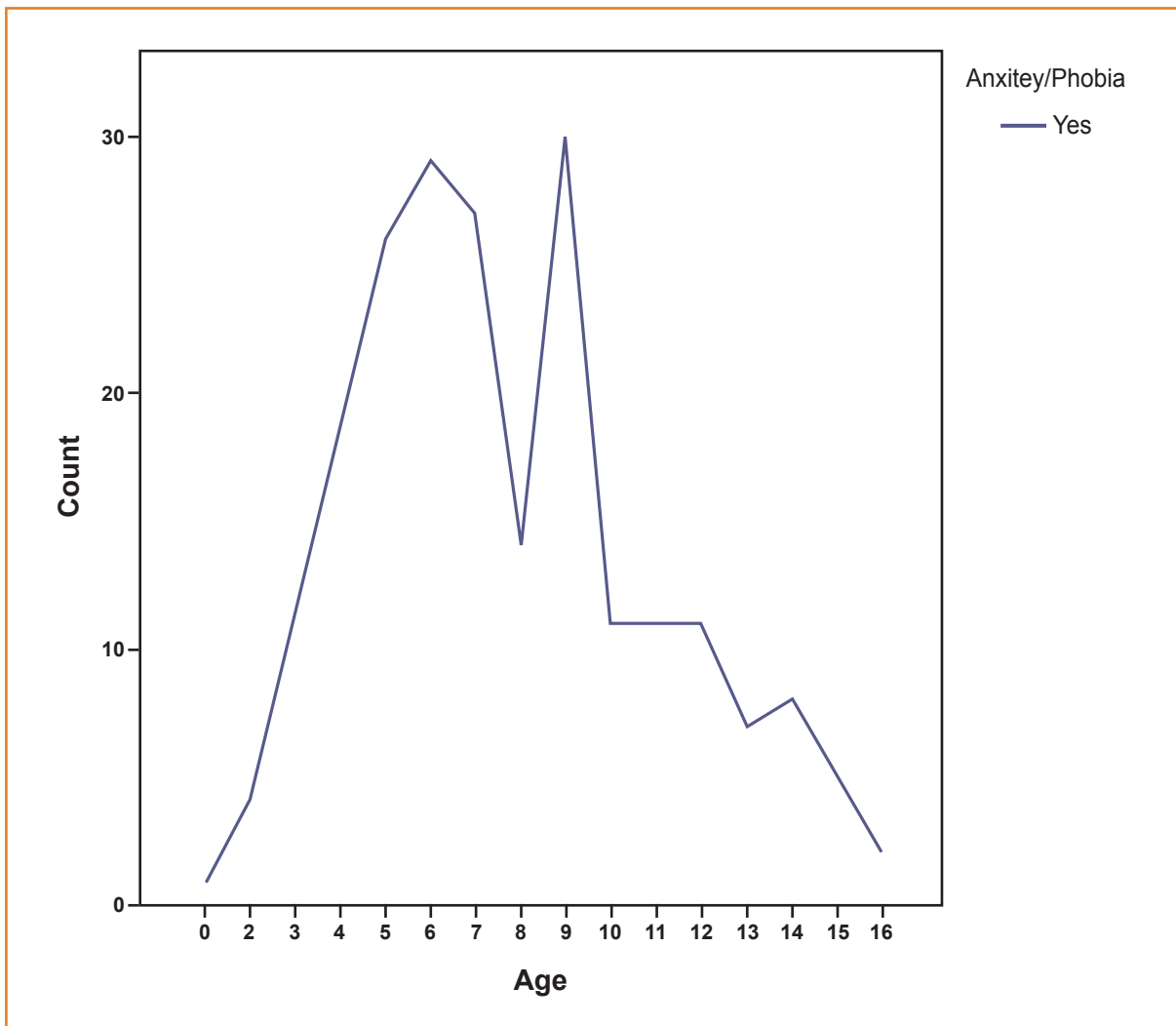


Relationship between age and anxiety or phobia

Anxiety and phobia was the most commonly cited reason for referral to the PDS. A wide age range of children were referred to the PDS for anxiety or phobia (Figure 11). The vast majority were between five and nine years of age. It is recognised that

the development of anxiety may be multifactorial and impacts on child wellbeing. There are some children who may not present to other services, but they will attend the dentist, so it is important that all dental professionals use the GIRFEC approach and are mindful of other potential underlying reasons.

Figure 11: Referrals received by the PDS for anxiety or phobia by age



Referral Triage Outcome

In general, children referred to the PDS were seen by a specialist, where

available, or a dentist for an assessment. Very few children were returned to the GDS or referred onwards to the HDS (Appendix 16).

6.3 Hospital Paediatric Dentistry Service Provision

Hospital dental services are delivered in four main locations in Scotland. Dundee Dental Hospital (DDH), Edinburgh Dental Institute (EDI) and Glasgow Dental Hospital (GDH) have consultant-led hospital dental services, and staff also provide services within the local acute children's hospitals. Aberdeen Dental Hospital (ADH) had a consultant service until 2014.

The remit of a hospital paediatric dental department includes the provision of:

- Paediatric dental advice for referring practitioners from the GDS and the PDS
- Specialist paediatric dental services for children who require specialist treatment
- A tertiary paediatric dental service for medically compromised children
- Access to specialist advice through clinical networks
- Teaching and training of dental and DCP undergraduate students, training grade hospital staff, postgraduate specialists and dental practitioners.

Currently a large percentage of referrals made to the HDS are for the management of dental caries in children who are anxious or find cooperating with dental treatment a challenge. These children require time to become acclimatised to treatment, and therefore a structured introduction to dental care

is required. Preventive measures such as fluoride varnish and fissure sealant of appropriate teeth should be undertaken in the primary care setting for all children at risk of caries, in accordance with Scottish Intercollegiate Guidelines Network (SIGN) guidelines (Scottish Intercollegiate Guidelines Network, 2014). Behaviour management techniques and IHS are useful adjuncts, and these are available within the PDS. Where caries management and anxiety are the main reasons for GDP referral, referrals to dental therapist or hygienist colleagues or the PDS should be considered in the first instance.

The main role of a hospital paediatric dental department is to ensure that children who require multidisciplinary care, particularly children with medical co-morbidities or requiring input from other dental specialities, receive the level of dental care they require through shared care pathways.

In Scotland, paediatric dental consultants work mainly in hospital settings but there is a different model in England, with some consultants working in community settings.

6.3.1 Hospital Activity

Data for total and new patient attendances over a five-year period were obtained from three out of the four Scottish dental hospitals and are detailed in Tables 24 and 25. While there were small fluctuations from year to year, there were no significant changes to the patient flow in Glasgow and Dundee. In Edinburgh, between 2010-2014 there was a 25% range in total patient attendances, which was felt to reflect a variation in capacity arising from staffing fluctuations.

Table 24: Total paediatric dental patient attendances

Dental hospital	2010	2011	2012	2013	2014
Glasgow Dental Hospital (GDH)	10,323	10,333	10,195	9,972	10,173
Edinburgh Dental Institute (EDI)	5,692	5,332	4,251	4,499	4,816
Dundee Dental Hospital (DDH)	4,497	5,078	4,989	4,826	4,626

Source: Dental hospital paediatric departments

Table 25: New paediatric dental patient attendances

Dental hospital	2010	2011	2012	2013	2014
Glasgow Dental Hospital (GDH)	3,267	3,549	3,494	3,437	3,277
Edinburgh Dental Institute (EDI)	1935	2240	1869	2054	2252
Dundee Dental Hospital (DDH)	887	933	762	755	765

Source: Dental hospital paediatric departments

6.3.2 Hospital Retrospective Referral Audit

Retrospective referral audits were undertaken in GDH, EDI and DDH for a period of four weeks or a calendar month to investigate the nature of referrals made to hospital-based

paediatric dental departments. The data included the reason (condition) given for the referral, age and SIMD of patients being referred (Appendix 17). A number of referrals cited more than one condition, and therefore the percentages shown in Table 26 add up to more than 100%.

Table 26: Referrals received in the three centres over a month by condition

Condition	Number of referrals received n (%)			
	Total	GDH	EDI	DDH
Total number of referrals	887	440	315	132
Severe early childhood caries/extensive caries in mixed/permanent dentition	499	262 (59.5)	175 (55.6)	62 (47.0)
Other (including medical conditions)	233	101 (23.0)	79 (25.1)	53 (40.2)
Treatment planning for extractions under GA	211	172 (39.1)	16 (5.1)	23 (17.4)
Anxiety or phobia	198	63 (14.3)	98 (31.1)	37 (28.0)
Abnormalities of tooth morphology, number and structure	122	42 (9.5)	55 (17.5)	25 (18.9)
Treatment planning and provision of comprehensive dental care under GA	89	65 (14.8)	24 (7.6)	0 (0.0)
Periodontal or soft tissue conditions	42	16 (3.6)	16 (5.1)	10 (7.6)
Complex dento-alveolar trauma	38	21 (4.8)	7 (2.2)	10 (7.6)
Surgical interventions outwith the competence of the primary practitioner	24	13 (3.0)	9 (2.9)	2 (1.5)
Multidisciplinary care	19	19 (4.3)	0 (0.0)	0 (0.0)
Complex endodontic therapies	17	13 (3.0)	2 (22.0)	2 (1.5)
Disturbances of tooth eruption	12	3 (0.7)	3 (1.0)	6 (4.5)
Advanced restorative/endodontic care including laboratory-made restorations	11	4 (0.9)	5 (1.6)	2 (1.5)
Interceptive orthodontic treatment	8	4 (0.9)	2 (2.2)	2 (2.3)
Child protection issues	8	3 (0.7)	3 (1.0)	2 (2.3)
Direct/indirect composite restorations	5	2 (0.5)	2 (6.0)	1 (0.8)
Severe tooth loss	4	2 (0.5)	1 (3.0)	1 (0.8)
Non-vital or vital bleaching	3	(0.5)	1 (3.0)	0 (0.0)

Referral rate

Child patients were referred to hospital departments by GDPs, GMPs, medical consultants, PDS staff, and 'others'. Almost 900 children were referred to the hospital services in the one-month period (Table 26). In all three centres, the commonest reason for referral of the child patient was for the management of severe caries (59.5%, 55.6% and 47% in Glasgow, Edinburgh and Dundee respectively). The second most commonly referred patient group

across the three centres as a whole was other. This includes patients with medical conditions who were at high-risk, either from dental disease or from the treatment to manage oral disease, for example, oncological, cardiac, haematological conditions.

Across the three centres as a whole, the third most commonly referred patient group was patients requiring treatment planning for extractions under GA. The estimated cost for providing extractions under GA across the three

centres based on the referrals received (Table 27) is £151,898.90/month, or £1,670,887.90/year (Table 28), based on the cost per case shown in Section 4.6.1. It is recognised that the cost of sedation is considerably cheaper when

compared to the cost of dental GA. However, a number of sedation sessions might be required for a course of treatment, whereas all treatment can usually be carried out under a single GA.

Table 27: Referrals received in the three centres over a month by condition for extraction only GA

Condition	Number of referrals received			n (%)
	Total	GDH	EDI	DDH
Treatment planning for extractions under GA	211	172 (39.1)	16 (5.1)	23 (17.4)

Table 28: Cost of extraction only GA in the hospital setting as calculated by NICE (NICE 2010)

Time period	Cost of dental GA	Cost of sedation
1 month/4 weeks	Number of referrals received 211 211 x £719.90 = £151,898.90	Number of referrals received 211 211 x £273.01 = £57,605.11
1 year/12 months	Number of referrals received 211 211 x 12 = 2321 2321 x £719.90 = £1,670,887.90	Number of referrals received 211 211 x 12 = 2321 2321 x £273 = £633,656.21

Of interest, when compared to the PDS data (Section 6.2) it was noted that 'patients requiring comprehensive dental treatment under GA' was a frequent reason for referral to hospital services. This difference perhaps reflects the limited capacity for provision of comprehensive care within the PDS. However, in common with the PDS data, anxiety or phobia was also a frequently cited reason for referring a child to the hospital-based departments. While it is recognised that there will also be a need for these departments to manage caries, it would be appropriate to review the pathways for anxious children to ensure that, where appropriate local services exist within the PDS, their treatment needs are met as close to home as possible.

Relation between referral rate, Health Board and SIMD

In general, the three dental hospitals serve their own population but accept a small number of patients from other NHS Board areas (Appendices 18, 19 and 20). There were a number of 'out-of-Board' referrals, particularly to GDH (28%), which indicates there may be an unmet need where there is no availability of local specialists.

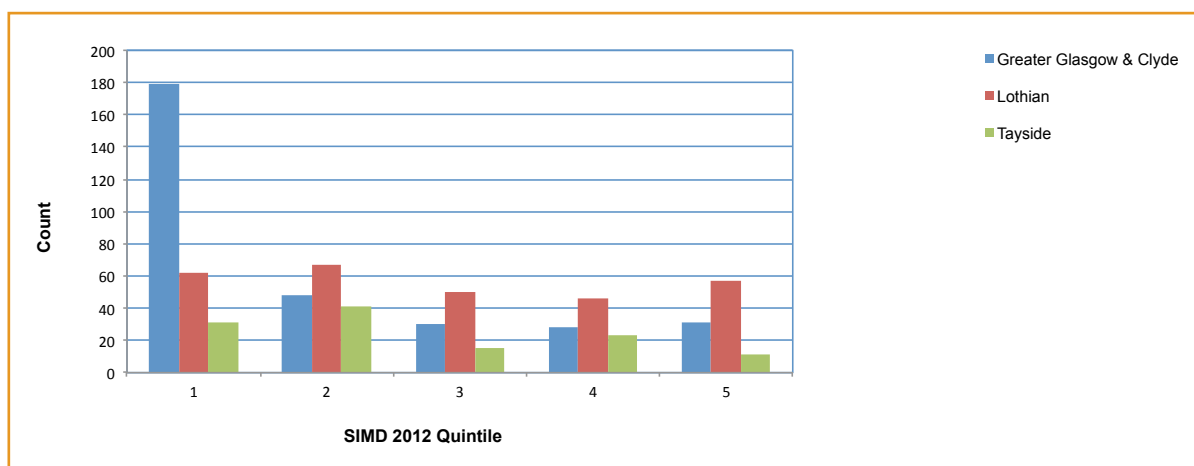
The referral rate per 10,000 population within the Board areas of dental hospitals ranged from 15 in Glasgow to 17 in Edinburgh (Table 29).

Table 29: Referrals received by GDH, EDI and DDH from within the NHS Board area

	Number of referrals received within the Board area n (%)	Rate per 10,000 population
Greater Glasgow & Clyde (GDH)	316 (72%)	15
Lothian (EDI)	282 (90%)	17
Tayside (DDH)	121 (92%)	16

Figure 12 demonstrates the relationship between referral rate, NHS Board and SIMD for Glasgow, Edinburgh and Dundee respectively.

Figure 12: Referrals received within the NHS Board areas of Greater Glasgow & Clyde, Lothian and Tayside, grouped by SIMD 2012 quintile



While the three hospitals received referrals across all five SIMD quintiles, more than half of the children referred to Glasgow Dental Hospital from within the NHS Board area were from the most deprived SIMD quintile. This was not unexpected given the profile of communities within the different NHS Board areas.

‘Out-of-Board’ referrals were made to dental hospitals mainly for the treatment of caries, treatment planning

for extractions under GA, trauma and multidisciplinary care.

Relationship between referral rate of condition with SIMD quintile

Figures 13, 14, and 15 compare the referral rate of the top five treatment conditions that were referred to dental hospitals with the patient SIMD. It is observed, as expected, that the top five treatment conditions referred to GDH all corresponded to

the SIMD profile for deprived areas. This relationship was not as strong for EDI and DDH except for caries referrals. This may relate to the fact that the majority of patients referred to

Glasgow Dental Hospital come from the most deprived quintile. It also confirms the fact that caries is most prevalent in deprived areas.

Figure 13: GDH referrals for top five conditions with SIMD quintile

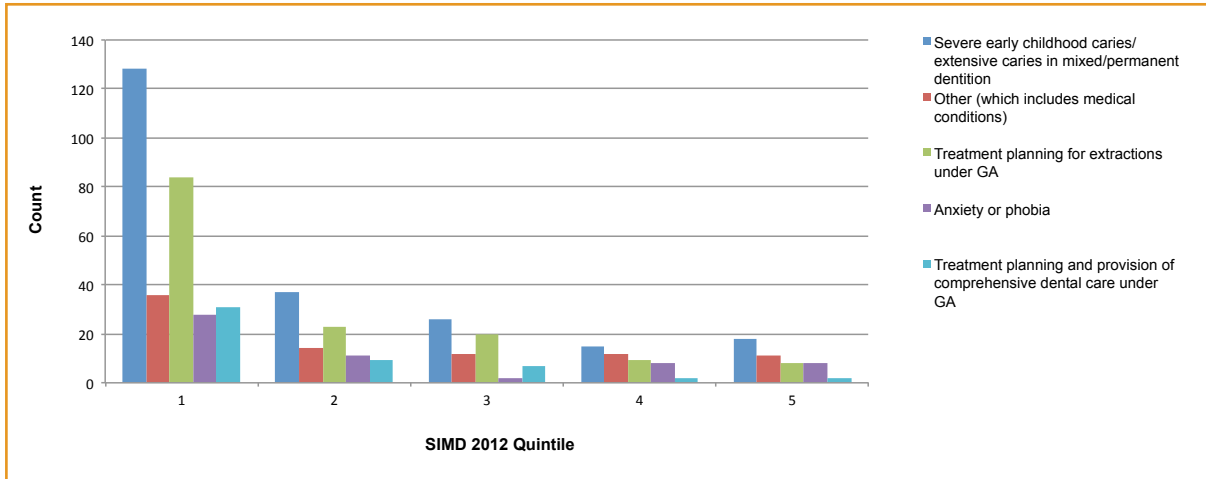


Figure 14: EDI referrals for top five conditions with SIMD quintile

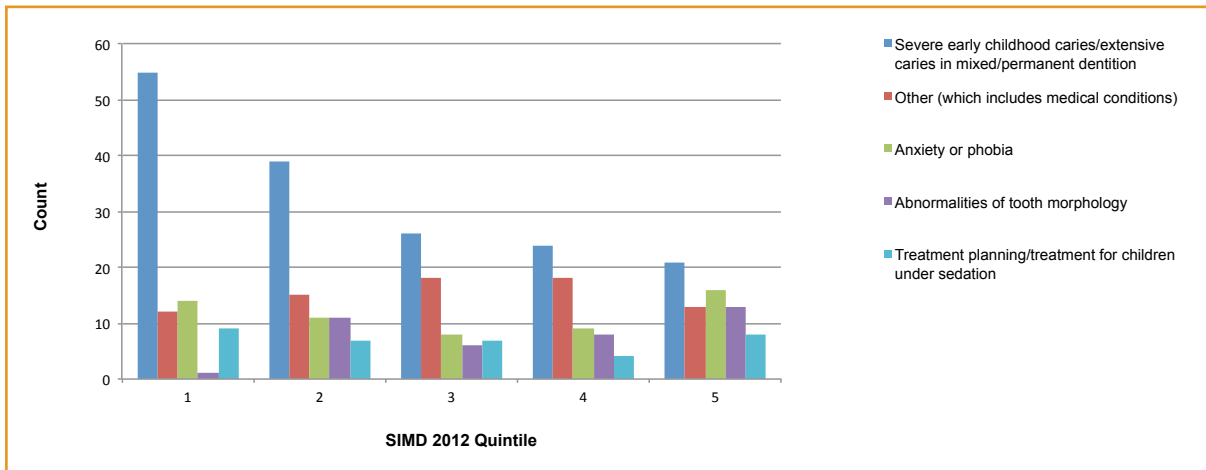
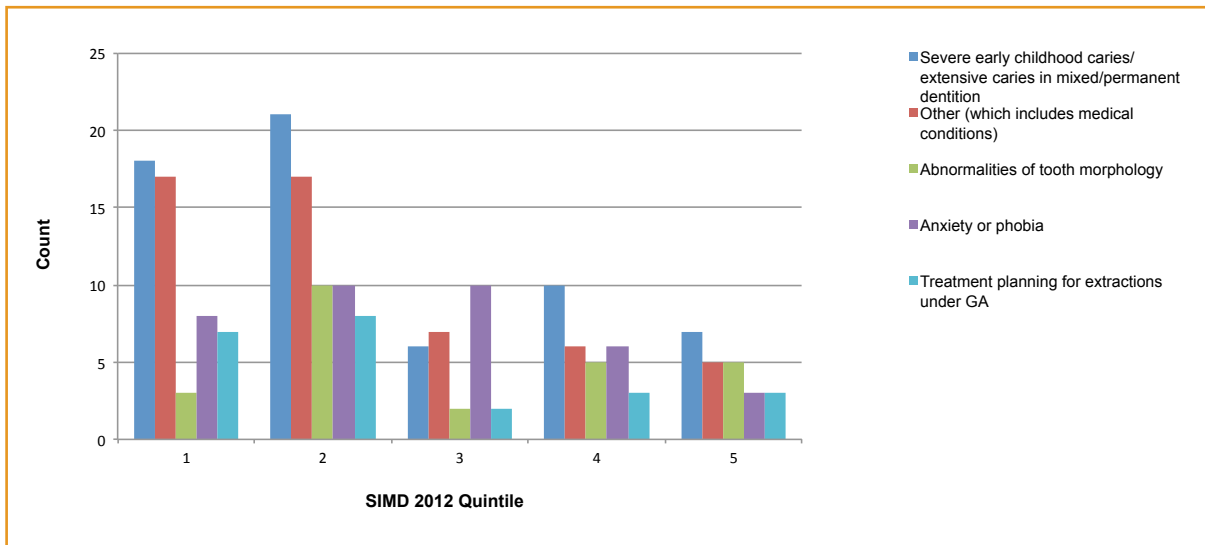


Figure 15: DDH referrals for top five conditions with SIMD quintile



Relation between referral rate and age

Figure 16 shows the number of patients referred to paediatric dental departments by age. The commonest

age of referral for EDI and DDH is five (10.8% and 11.4% respectively), compared to seven for GDH (14.3%). This may be because child patients from deprived areas of Glasgow might not be accessing dental care at an earlier age.

Figure 16: Referrals received by dental hospitals for all categories by age

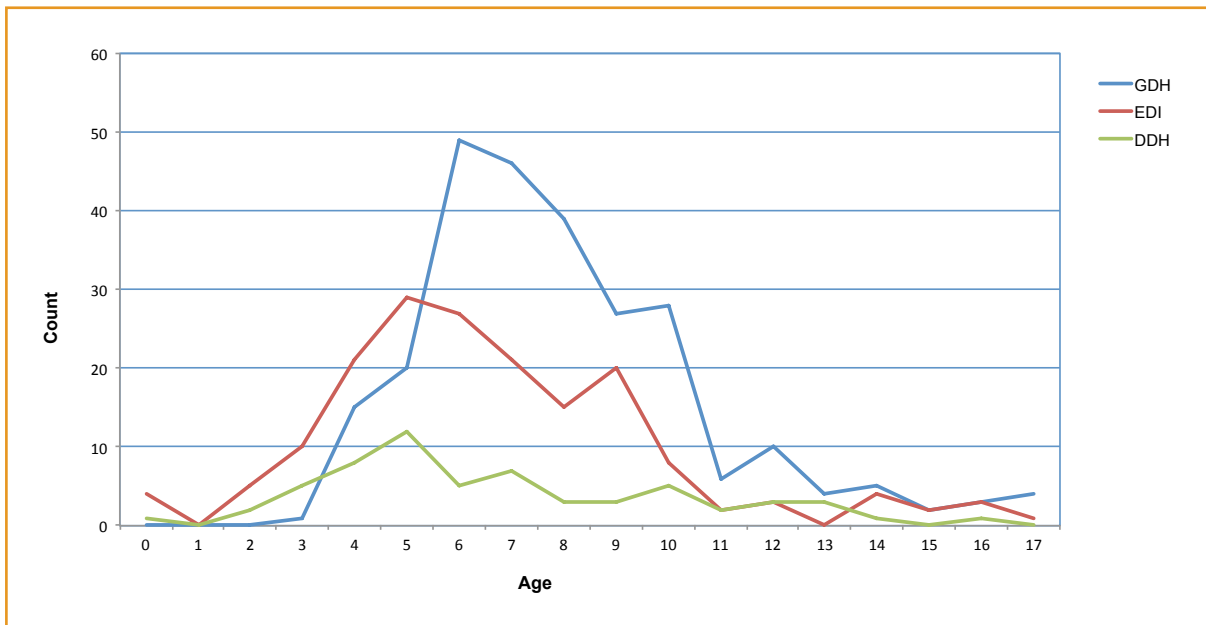


Relation between referral rate, age, and caries

As shown in Figure 17, the most frequently referred age group for severe caries to EDI and DDH was five, but was six in GDH. Again, this might be due to

delayed access to dental health services. There is also the possibility that, because of complex social factors, these children may be absent from school when NDIP inspections are undertaken, and therefore are not referred on to a dentist via that route.

Figure 17: Referrals received by GDH, EDI and DDH for caries by age



Consultation outcome

In general, children referred to paediatric dental departments are seen

by a consultant for an initial assessment. Very few children are immediately sent back to the GDS or on to the PDS without first receiving treatment.

6.3.3 Current Hospital Workforce

The current workforce in hospital paediatric dental departments includes:

- NHS consultants
- Academic/teaching consultants
- Specialists
- Specialty registrars (StRs) and post-CCST (Certificate of Completion of

Specialist Training) development posts

- Staff grades, associate specialists and speciality dentists (SAS)
- Pre-specialist core trainees, formerly senior house officers (SHOs)
- Dental hygienists and therapists.

Current figures for those with direct patient care responsibilities are listed in Table 30.

Table 30: Current hospital workforce

	NHS consultants		Academic consultants		Specialty registrars (StR)		Senior house officers (SHO)		SAS dentists		Specialists		Therapists	
	WTE	Head Count	WTE	Head Count	WTE	Head Count	WTE	Head Count	WTE	Head Count	WTE	Head Count	WTE	Head Count
Glasgow Dental Hospital	2.4	3	1.1	2	1.8	2	4	4						
Edinburgh Dental Institute	2.9	*4	1.6	2	3	3	1	1			2	2		
Dundee Dental Hospital	*2	*2	1.1	4	0.6	1	1.2	2	0.9	3				
Total	7.3	9	3.8	8	5.4	6	6.2	7	0.9	3	2	2		

*including vacancy (as of January 2016)

6.3.4 Consultants and Specialists

The total WTE for specialists and consultants in hospital paediatric dentistry is 13.1. As with the PDS, the numbers of staff within the HDS are small, and the utilisation of this resource should be carefully scrutinised and monitored. Overall, across the PDS (Table 20) and HDS (Table 30), the total WTE of consultants and specialists in

Scotland is 17.2 (PDS 4.1 and HDS 13.1 respectively).

6.3.5 Consultant Job Plan

One WTE NHS paediatric dental consultant post on the new contract consists of ten sessions per week, of which initially 2.5 sessions were allocated for supporting professional activities (SPA). This included CPD,

teaching and training, non-clinical administration etc. The remaining 7.5 sessions were allocated for direct clinical care (DCC) which included new patient clinics, theatre, sedation, treatment, joint clinics and clinical administration. Some consultants are now on a contract of 9:1 (DCC:SPA). Academic consultants do provide some DCC sessions, but these tend to be fewer than NHS consultants because academic consultants have their teaching and other academic commitments.

6.3.6 SAS Dentists

These middle grade staff work within a paediatric department to provide treatment usually following assessment and treatment planning by the consultant. They are considered valuable members of the team and can increase the capacity of the unit. They have undergone at least two years of speciality training and are able to work autonomously.

6.3.7 StRs and Post-CCST Development Posts

There are two grades of StRs: pre- and post-CCST. These trainees are GDC-registered dentists who are undergoing specialist training, either to speciality level to gain access to the GDC specialist register in paediatric dentistry, or in the case of post-CCST registrars, specialist paediatric dentists undergoing further training in complex and multidisciplinary assessments and treatments to pass their Intercollegiate Speciality Fellowship Examination with a view to becoming NHS consultants or senior clinical academics in the hospital or university services.

6.3.8 Pre-specialist Trainees

Core trainees (CTs) attend paediatric dental consultants' clinics and undertake some aspects of paediatric dental care as part of their core training. These were previously known as SHOs at the time of workforce survey.

6.3.9 Dental Therapists

A definition is given in Section 6.1.2. No therapists were found to be working in the hospital paediatric dental departments at the time of the workforce survey.

7.1 Public Dental Service Paediatric Patient Interviews

Structured face-to-face interviews were conducted between December 2014 and August 2015 to investigate the perceptions of a representative sample of patients/parents attending PDS specialist paediatric dental clinics. A patient questionnaire was used to ensure relevant areas were covered and can be found in Appendix 21.

Patients' profile

A total of 22 patients and their parents from four specialist paediatric PDS clinics participated in the interviews. The patients' ages ranged from nought to 16 years. They were accompanied by a parent or carer and had been referred to the specialist service for a number of reasons: firstly, reasons relating to medical history and/or challenges to accepting treatment, such as autistic spectrum disorder, complex learning difficulties, anxiety and phobia or, secondly, the nature of their dental diagnosis and treatment need such as the management of trauma, hypodontia, enamel hypomineralisation, root canal treatment, tongue-tie, and for restorations, fissure sealants and extractions.

Participants reported that they were referred by their own GDP, dental or medical consultant or midwife. Additionally, self-referral had been made in some cases where the child had special needs and the parent/carer was proactive in directly contacting the service within their locality. Patients interviewed preferred to be seen

locally rather than travelling to a dental hospital and some reported that some GDPs appeared to be unaware of the local PDS specialist service.

"The dentist referred us through to the dental hospital I found out about it myself through a friend whose son was attending here, and I managed to get an appointment by speaking directly to the dentist."

"And if local dentists were aware that this service was here and we didn't have to wait for an appointment in dental hospital, because that would have been a big ordeal to go through to a hospital in the city."

Waiting time and duration of treatment

It was perceived from the interviews that the patients were seen quickly in the PDS specialist service. The average waiting time for an appointment was four weeks. Some patients who were initially referred to a dental hospital reported that they had waited longer, as they had been referred on from the hospital service to the PDS.

"It was maybe about a month or so."

"I think it was about two or three weeks."

"It took quite a while because we first went to the dental hospital in Glasgow, and they referred us here because it was more convenient for us because we stay in X."

Information, communication and awareness of risks

In general, patients reported that they were well informed about the treatment options and treatment procedures. In addition, it was perceived from the interviews that patients were aware of the risks of treatment options and felt that they have made an informed decision.

“Yeah, they explained it as well. They need to give him gas and air as well so they explained all that, they explained everything to him. They’ve been really good with him.”

“If it had to go any further then obviously he would need anaesthetic and stuff, they explained the risks of that. But I think what they’ve done will hopefully do the job.”

“The risks, I think it was just with getting put to sleep. Obviously the risks that always come with that. But when I weighed up the pain that he’d been in with the teeth there was no questions asked, they have to get it done.”

“Oh yeah. I just knew that local anaesthetic and sedation wouldn’t - it just wouldn’t have been an option, and they were going to try... As in all cases, because don’t want a child to have a general anaesthetic... I mean, I’ve seen children and that experience wasn’t nice for any of us, but after xx had been in the room just a few minutes, he kind of accepted that ‘No, a local’s not going to work here, it needs to be...’ And because he needed quite a little bit of work doing and they wanted to have a look at a few more things than what they might have, they said, ‘No, general would be better’”

Quality of service and support

Specialist care for children in the PDS was highly valued and was considered an essential service by the participants interviewed. They understood that the service delivered was at specialist level and appreciated the fact that they could access the service locally. Patients valued the consistency of seeing the same specialist and reported that the staff were very approachable, friendly, considerate and helpful. Patients valued the time taken by the specialist to see them and did not feel rushed. Parents praised the skills of the specialist in calming children and felt that they were well supported.

“I think it’s an extremely important service because if it wasn’t for the likes of this service my son, and especially my daughter here, wouldn’t have anywhere to attend regularly. Because she needs that continuity, the same people that she sees on a regular basis. And dentists in practice, don’t have the time to do that with her. And this specialist centre is really good for the likes of them. And it’s well worth it.”

“I just felt from the moment we came in that day, he was only five years old when he had to get the teeth taken out, he was very nervous, I was really nervous, so was his dad. The staff in here seemed to calm me down because I was upset, they seemed to calm him down, make him feel at ease before going under. And as soon as he woke up the aftercare was also brilliant. I felt they couldn’t have done any better.”

“The staff are very, very friendly, very welcoming. They’re happy to deal with the kids, fantastic with kids. And couldn’t ask for better.”

“No, I’m happy with everything. And everyone’s approachable and friendly, knows that there are other issues and take that into account. You don’t feel rushed, you don’t feel... Because -----’s big problem is waiting, and he just doesn’t. If his appointment is at a certain time then the staff appreciate... They can’t always obviously accommodate him, but they know that that’s just the way he is, and nobody has ever complained.”

Some patients preferred the PDS specialist service to the hospital service and reported that the hospital service was good but busy and they had to wait longer to be seen.

“Hospital service is good but always busy and you have to wait. Sometimes you have to wait half an hour to an hour. While here the service you have to wait five minutes or ten minutes or something. Here it’s a better service.”

“Xx hospital is a great service but you wait always. I mean, a half an hour minimum because of the queues, and then the dental appointment, you never know what dentist is expected for your kid. It’s hospital in general. The hospital unit is overcrowded.”

Benefits anticipated

It was perceived from the interviews that some patients treated in the PDS paediatric dental clinics had long-term medical conditions and additional needs and were therefore accessing the service for continuing care. In general,

patients were anticipating functional and dental health benefits.

“It’s more preventative, I think, rather than anything. So this is the first thing that would stop anything. I feel clean. It feels clean.”

“I know her mouth was quite sore to begin with, and certainly chewing and things is obviously much easier now that she has front teeth as opposed to just broken stumps. So I think the benefit is partly cosmetic, partly practical. As I say, there was a slight element of pain, but pain wasn’t the one that was the major one for her.”

“Pain relief was my main concern because he’s had a lot of trouble.”

“Really just to save the back two teeth. Or even keep them until they do need to come out.”

“Just for the fact that it can also help him with his vocabulary later on in his life, great pronunciation.”

“Just that he’s going to be getting a close eye kept on him. So that they can deal with any problems as they arise, and if anything should need to be done, then I know it can be done here, and not in my local dentists. It can be done under GA if necessary. You know that we’ve other needs as well, but that’s taken into account.”

7.2 Dental Hospital Paediatric Patient Interviews

Structured face-to-face interviews were conducted between 5 June and 25 September 2015 to investigate the perceptions of a representative sample of patients attending the hospital paediatric dental departments. A questionnaire was used to ensure relevant areas were covered and can be found in Appendix 22.

Patients' profile

In total, 43 patients from three dental hospitals participated in the interviews. Patients' ages ranged from nought to 16 years and most patients were accompanied by a parent. In similarity with the patients interviewed within the PDS specialist clinics (Section 7.1) the reasons cited for the referral to the hospital service included those related to a medical condition and/or ability to accept treatment such as autistic spectrum disorder, complex learning difficulties, anxiety, phobia and medical conditions, or the management of a variety of dental conditions such as trauma, hypodontia and extraction under GA. Patients interviewed reported that they were referred by either a GDP or medical consultant.

Waiting time and duration of treatment

It was perceived from the interviews that across the three hospitals, patients were not waiting long to be seen by a consultant. However, it was noted that the average waiting time for a consultant appointment was between two to eight months, although trauma

and emergency patients were seen immediately.

"It wasn't a long wait."

"It was weeks, not too long. I wouldn't say more than six weeks."

"I would say about ten weeks, maybe."

Some parents reported that, although their children were in pain, they were not prioritised. In general, parents reported that they did not mind waiting if the child was not in pain.

"We waited six or seven months, it's been quite a wait. I phoned and they couldn't get her anything sooner. So she's been in constant pain for the last two weeks."

"If it wasn't urgent then I wouldn't have bothered, we can be patient. But just because there was a bit of pain involved."

In some hospitals, patients reported that they experienced delays arising from communication and or administration problems.

"We got a phone call to come up on the Monday, but then we got a letter to say to come up the following Tuesday. There was a bit of communication breakdown, really."

"It was a mix-up with the records, and the appointment came out with one of my other kids' names and date of birth on it."

“And when I phoned up, while I was on the phone I was actually given a rearranged appointment for last week. And when I phoned them to confirm the time I was told ‘no, you’ve not been given an appointment.’ And it was put off until this week. Not great up until now.”

“But it was a bit mixed up the way letters and things came through. So we haven’t actually met the consultant yet.”

“I think... well, the dentist said that she sent the referrals, and the hospital said she didn’t. So I think both of them, there’s a breakdown of communications with both of them.”

Some patients reported that they had a very difficult time as a result of staff losing their clinical records.

“It was quite difficult. We did have problems, he had one initial visit, and then they lost his records.”

“It’s just the general beginning, getting her referred. By the time you wait for an appointment, and then the loss of case notes, and then I got referred to five different departments. But eventually I got it sorted out.”

It was apparent from the interviews that the majority of patients were seen in the hospital over a long time period, however this might be because of long-term medical conditions.

“About eight years, because he’s sixteen now, yeah.”

“We have been in the hospital service since he was three months.”

“I’ve been in the dental hospital since I was quite young, maybe six. I am turning fourteen in July.”

“It must be five years.”

Awareness of risks

In some dental hospitals, parents/carers were unable to recall the information relating to the risks of GA that was presented to them while obtaining consent. Some parents of child patients who have undergone GA reported that they have not been made aware of any risks.

However, for many of the patients referred with pain and infection who are also dentally anxious, there is no realistic option other than GA. Therefore the risk benefit ratio is very different from most other areas of dentistry.

“No. Really more the paperwork, information. You know, saying like an anaesthetic. You know yourself. I honestly can’t remember somebody saying anything....”

“I: You had two GAs and nobody explained any risks?”

R: Nope.”

“I: did they give you a leaflet or something about GA?”

R: Nothing. Nothing.”

“Well, no risks. That’s me kind of coming and going. Because they don’t explain the risks to you.”

"I think they should be able to explain things a wee bit more to you regarding general anaesthetic, and even give you a leaflet on it explaining the dos and don'ts. Other than that, the service is excellent."

Information and communication

In general, patients felt they were well informed. Patients reported that the treatment options and treatment procedures were explained to them and it was perceived that patients felt involved when they were given information about their treatment.

"Yeah. They explained everything quite clear."

"Xx has to be put under general anaesthetic, so it's the day ward. So from start to finish everything's explained and again they try to accommodate him because of his needs, and the whole staff were all very understanding."

"Up to now he has explained everything well."

"Yes, because we had a couple of options so they explained it."

"They're giving us choices and we've been going through. We've been quite conservative to start with because we don't really want to go offering veneers but we didn't want to go down that route until she's a little bit older, or see how the other treatments would work better."

"Yeah, they told you both ways, whether he wanted to be awake for the procedure or not. And he made the decision himself. So they gave us all the options, yeah."

However, some patients reported that they had to wait longer for treatment on the day of appointment than originally scheduled and were not informed of any delays.

"What I'm not happy with is first time we came we waited an hour from when we arrived. Our appointment was at eleven, got in twelve. The second time we came we waited for fifty minutes. Which I understand - it's a trauma clinic, but nobody came out to tell us what was going on."

"The quality is good. My only gripe is that our appointment is ten past nine and it's now quarter to ten. And quite often they're late. Especially considering you're the first in the morning. But other than that it's been good."

"They've been really good and really helpful but sometimes we have to wait a bit longer."

"Some people have maybe not been as good at managing to communicate with you as others."

Quality of service and support

In general, the hospital paediatric dental service was highly rated by the patients interviewed. Patients praised the staff and consultants for the quality of treatment the department was providing. Patients felt that consultants and staff were very considerate and helpful. Parents appreciated that the consultants knew how to treat anxious children and children with additional needs and reported that the consultants made them and their children feel relaxed and supported.

“They absolutely do everything they possibly can to make it not traumatic. Because, the parent is sometimes more traumatised than the child.”

“They make me feel quite comfortable and supported and everything. Especially, for my mum, because she was quite worried at the time.”

“I can’t fault it. It’s been really, really good. And it’s good to know that the dentist actually has an insight into autistic children. They know how to interact with your child and know how to talk to them appropriately. A lot of professionals who know nothing about autism, particularly if your child is non-verbal, treat them like they’re retarded, and he’s not, he’s clever. He’s just starting to speak now, but it’s good to have a dentist that understands.”

“Ten. I’ll give ten, because I have a good experience here. I’ve been here, like now he’s nearly nine years old, so we’ve been here nine years to this hospital.”

However, patients in some hospitals complained about the poor service. It was reported that the patients were not seeing the same consultant and therefore there was no consistency. It was also reported that the patient appointments were changed at a short notice and a different consultant was allocated.

“Yes, they’ve rebuilt her tooth. But it fell out a few times since. It’s been rebuilt three times. So the last time we were here, the dentist we’d seen said that she’d put on the notes that if it did fall out again, that the cover needed to be changed and it needed to be lengthened. It has been quite traumatic for her, but it’s just, I think, one of those things. She’s a bit self-conscious. She was crying a few weeks ago because it wasn’t the right colour.”

“If everybody’s familiar and everybody’s in place then it’s a breeze, it’s ten out of ten. But it just takes for maybe one thing to go wrong and then it can become maybe a six or a seven. But certainly the whole familiarity thing is very, very important to children.”

“R: No, we constantly see different people.

I: Different people?

R: I would like consistency. But his treatment is going to take... he’s fourteen now, we’re talking about maybe another six years.”

“They keep on changing what consultant he’s under, without consulting me. And it just changes everything because I don’t know the person. I work full time, my husband works full time, so it’s difficult. My biggest complaint is we would like an appointment on a Friday afternoon because his school does a half day on a Friday afternoon, and I have to fight constantly to have.... And I can’t get these appointments.

And they say no because they don’t have the staff here. So it’s maybe under staffing that I don’t understand.”

Some patients reported that they would prefer to be treated at a local clinic rather than travelling long distances. Parents of special needs children felt that their children would cope better if treated at the school rather than being referred to hospital.

“The only thing is, we live in Ayrshire and it’s got its own dentist so...it’d have been more convenient for us to go to our own.”

“I would say to try and maintain the importance of the needs of the children with special needs. Years ago when he was young, the dentist used to visit the school, and in their own surroundings with special needs schools. They would visit the school and do the dental examinations there in conjunction with the child going to a dentist or coming to children’s hospital. So there will be some parents that will be happy to do that, to go to hospital and persevere with their child, but I think there’s a lot of parents that won’t be able to cope. They’ll have one bad experience and that will stop, and that is detrimental to their child’s oral health. So if they’re not seeing somebody at school, not going to a local dentist, and they’re not accessing a hospital dentist I think that’s bad.”

Benefits anticipated

It was obvious from the interviews that patients treated in the paediatric dental department were anticipating functional benefit, dental health benefit and social benefit, for example, able to see dentists regularly without phobia.

“He’s become a bit more tolerant of me brushing his teeth, because he doesn’t understand the concept of brushing teeth. So through time, and obviously the guidance.”

“To get rid of all the decay the daughter has in her teeth and to get them all treated.”

“Well, obviously she’s not going to have infected teeth there, and long-term care for her mouth.”

“To ensure that her teeth are operating properly. She’ll have a healthy life.”

“The dentist here has worked with autistic children before, and he’s got quite good techniques at getting them calm and to cooperate. So it gives us the reassurance that between the two dentists his teeth are being looked at.”

“Her benefits are both going to be her appearance, and she’s going to be able to chew properly, because with the gaps she wouldn’t have functioned properly and her jaw wouldn’t have been in line. So it’s a bit of both.”

8.1 PDS Specialists' Perceptions

Semi-structured interviews were conducted between July 2014 and February 2015 to investigate the perceptions of a representative sample of specialists in paediatric dentistry. Seven specialists based in the PDS were interviewed across Scotland. A topic guide was used to interview specialists to ensure relevant areas were covered and can be found in Appendix 23.

Referral criteria

It was apparent from the interviews that PDS specialist services across Scotland did not have specific referral criteria. They accept children from birth until eighteen years of age in full time education who are not suitable to receive care in general practice settings. Some specialists reported that they accept children who are too anxious, or who have additional needs of some description or complex medical conditions.

"I would say our criteria, we accept pretty much any child that can't receive their treatment with a GDP."

Children were referred to the PDS from a number of sources including GDPs, NDIP, Childsmile DHSWs, health visitors, social work and other professionals that come across children. It was also reported that, in some Boards where access to GDP services is limited, referrals are made for continuing care. Common treatments that were carried out by the PDS specialists were management of caries, trauma, extractions under GA, IHS, MIH, soft tissue lesions such as ulcers

and swellings, impacted teeth and hypodontia. IV sedation was also offered in some NHS Boards.

Changes in prevalence

Specialists across Scotland reported that there was a reduction in dental caries among their patients but reported that there is a big increase in MIH and GA lists. In some areas, specialists reported that they treated teenagers with significant 'gross caries'.

"I see teenagers with really bad caries. I wouldn't like to say that's going up. It might be because I run an IV sedation service and those are the children that find their way into that service."

"I've seen quite a lot of MIH since I started but not necessarily referred in for MIH, but just referred in probably for caries from GDPs but have been picked up as MIH."

Service provision/service model

The PDS provides dental care for child patients in the community who cannot typically be treated within the GDS. Most PDS clinics provide treatment under IHS and GA, and IV sedation is also provided in some NHS Boards. Children with no specific disability may be sent back to their GDP after a course of treatment but children with complex needs often remain with the PDS until they are 18 and are then transferred to adult special care services. It was observed that most NHS Boards have a management plan for children who are in the transition stage.

Some specialists felt that children did not need to be treated in a dental

hospital or children's hospital setting if the treatment does not involve multidisciplinary care or the need for treatment under GA. It was argued that specialist expertise should be available locally as much as possible to prevent patients having to travel long distances or wait longer for treatment. It was also argued that if a specialist was based locally and was able to provide sedation, there would be less chance of patients being referred for GA. This was viewed as more cost effective for the service and more beneficial to patients.

"... if you've got a specialist working in the PDS clinic, and you're set up for sedation, your conversion to general anaesthetic for treatment is lower than if you see all those patients in a hospital setting."

Specialists viewed the provision of dental care in the local community setting to be good practice and patient-centred. They reported that clinics based in the community can often liaise more directly with medical practitioners, health visitors and social work colleagues, especially if they share the same premises. It was observed that specialists were very aware of the socio-economic, demographic and working profile of the population of patients they manage.

"I think the difficulty is you do have a concentration of specialists and consultants in hospital settings, and while I think that's a good idea to have centres of excellence, I'm not sure that that's always the best place for that level."

"I had a child this morning where the child has certainly got needs but the mum has got probably more needs. And we will bend over backwards to make sure the child is seen."

"We're seeing a group of children who are very deprived."

Workforce/skill set/workforce model

Specialists' views about the workforce available in the PDS were variable. Some reported that they needed more specialists while others reported that they had an adequate number of specialists. They agreed that specialists should be based in the PDS with one or two regular sessions in a dental hospital. Specialists felt that by doing a session or more in hospital they would be able to develop further and also provide an appropriate clinical network with consultant colleagues.

"You're going to need more specialists, not based in dental hospitals, because that's only Dundee, Glasgow, Edinburgh, Aberdeen. There are huge areas in between, there's lots of population. So I think we're going to need a much more localised specialist service but it must have backup of access to general anaesthesia because there are times we can't do stuff without that."

"I think it is important for people that are PDS-based to have hospital experience and vice-versa."

It was reported that the majority of staff who work in the PDS are dentists with an interest in treating children but the presence of specialists enables the PDS

to deliver complex treatment locally because there is access to specialist care, guidance and support.

“We’re fine. We’ve got a good workforce, they all do a bit of everything and they’re all keen and committed to working with people who need a bit more than they can get on the High Street.”

Some specialists felt that the service they were providing was limited because of the absence of infrastructure and support, both clinical and administrative. It was felt that GDPs did not always have an incentive for treating children because they feel they are not remunerated appropriately for the time which is necessary to treat children, and some GDPs may not have the skill set to manage children with challenging behaviour or special needs.

“I think treating children under the GDS regulations in general practice is funded at such a level that I don’t think you could expect hugely... I’m maybe speaking out of turn here, but hand on heart I just don’t think there’s a great incentive for general practitioners to do paediatric dentistry well because I don’t think they’re remunerated appropriately for the time which is necessary.”

“You can do a lot of damage to a child if they’re not treated sympathetically, if you like, in the early years.”

The specialists reported that networking with consultants in paediatric dentistry and other specialists would significantly improve the delivery of care in the

community. It was perceived from the interviews that the specialists felt that they were on their own in the community.

“I think it’s a mind-set thing, because consultants particularly and specialists do like the hospital setting because it’s a more solid structure. If you’re in community you’re a bit more on your own.”

“I do think that the PDS would be strengthened greatly if the specialists/consultants within the hospital setup were included within the PDS, which I understand is perhaps what’s going to happen. I know we’re supposed to be joining up with them. I also know there’s a bit of resistance to that idea. But it makes an awful lot of sense, because if we’re doing the same job essentially for the same patient group in the same part of the world, we should be all part of the same team. But there is a kind of them and us...”

Some specialists who have been appointed at non-specialist grade (for example, SDO) reported that they are delivering care at specialist level. It was also perceived that some staff in PDS are not promoted despite having qualifications. This was felt to be due to limited funding.

It was reported that in some areas there are more consultants compared to specialists who can work in the community but this is because there are not enough specialists.

“I think we’re top-heavy with consultants. I think you’ll find there are more consultants than we have specialists. And that’s a top-heavy pyramid, isn’t it?”

Some specialists, close to retirement, reported that they might not be replaced appropriately as they felt the number of dentists in specialty training was inadequate. However, others felt they were training enough numbers. There was also a worry among some established specialists that, after training to a specialist level, many younger specialists seem to continue to post-CCST/consultant training which may lead to an inadequate number of specialists available to fill PDS posts in the future.

It was suggested that dentists ‘with a special interest’ might bridge the gap between dental officer/general dental practitioner and specialist. Postgraduate qualifications and/or training in paediatric dentistry, GA or sedation and managing children with special needs should be made available to PDS dentists so that they can gain additional skills and experience.

“We are struggling because it won’t just be me that is due to retire, there must be a cohort of us who got onto the specialist list without formal specialist training. It was created in 99, and a lot of people got grandfathered on. And they’re due to retire, and we haven’t got the equivalent cohort.”

“I will retire in less than three years’ time, but I hope that there’s enough people been trained who want to stay as specialists and not go on to two year, further training to be consultants. The other barrier I think in Scotland is you’re training people who aren’t necessarily Scottish and who may not settle in Scotland long-term.”

“What I would like to see is maybe what they call in England a special interest or a particular interest where you’re not a specialist but you’re able to cope with kids that maybe general dentists aren’t.”

Gaps/improvements

1. PDS referral criteria should be developed nationally and standardised as much as possible so that there is more consistency in how child patients are accepted and treated across all NHS Boards.

“I think to have a national standard rather than just a “well, in Lothian we do it this way and in Lanarkshire we do it this way, and in Greater Glasgow it gets done this way.” I think that’s not helpful.”

“There would have to be local variation to address local needs and taking into account the availability of a dental hospital.”

2. Specialists could take more responsibility for children in special needs schools and departments of additional support within 'mainstream' schools to coordinate their dental care. If clinics are available in the school setting, they should be used.

"I think one of the missed opportunities we have is the clinics that are within the special schools. I think there is a need for specialists to be working in the special schools in those clinics rather than having the children from the schools going to the hospital. The specialists should go to the school where the clinics are and that's where the treatment could be provided for them."

3. Specialty registrars should spend some time in the PDS to broaden their experience.

"I think we need more specialty registrars coming out, maybe shadowing for a week or two, so they realise some of the issues of when you're not in a dental hospital environment. Some of the good points, but some of the issues that the buck stops here, you've got to make the decisions, you've got to realise you've got to do all the follow-up. You've got to make the links. How does that feed in with other management things? It's quite different from working in a hospital."

4. Local MCNs should be established to include consultants, specialists and non-specialists, therapists and hygienists based in primary and secondary care.

"I think it would be quite nice to have it as a much more managed clinical network where maybe if you were linked to a hospital, a consultant comes out and you maybe have more overlap with them. I'm probably quite lucky because I've worked in both environments so I know the consultants that are there so I can kind of link in with them if I need to."

"I do think that the PDS would be strengthened greatly if the specialist/consultant within the hospital setup was included within the PDS."

5. The current GP17/SDR system may not fully capture the procedures carried out by the specialist in PDS, including composite restoration of malformed or hypoplastic teeth, bleaching, stainless steel crowns on first permanent molars, fissure sealants of teeth other than permanent molars within two years of eruption. It also may not reflect any work in multidisciplinary clinics for children with hypodontia, cleft lip and palate or significant medical conditions. However, there may be potential to use special codes in the SDR.

“It’d be nice not to need to use the GP17 paperwork and terms of the dental remuneration. It’s of no material gain to us. And it’s very time consuming. But to say that we’ve to work to the terms of dental remuneration is actually so out of date. We’re not using amalgams in the same way. It doesn’t cope with bleaching, it doesn’t cope with a lot of things that we do. And it won’t let you do stainless steel crowns on sixes. It doesn’t let you fissure seal an E, and that might actually be the best thing for that tooth. We do it, but there’s no way of showing our work out. And you just think it’s pointless because they’re not even collecting accurate information.”

6. In some Boards, where the PDS activity in hospital is not recorded appropriately, arrangements should be made to record activity to reflect work carried out by the PDS.

“What’s bizarre is on the general dental service recording that my activity is recorded for assessing a child, looking at the radiograph, and for treatment plan, but the work I do when the child’s asleep under GA is not counted. We’re chasing that up at the moment because it kept being labeled under oral surgery. And I kept objecting that this was wrong. Because it’s not under maxillofacial or oral surgery, it’s under, as far as I’m concerned, paediatric dentistry.”

8.2 Hospital Consultants’ Perceptions

Semi-structured interviews were conducted between August 2014 and September 2015 to investigate the perceptions of a representative sample of consultants in paediatric dentistry. Eleven consultants/honorary consultants based in three dental hospitals participated in the interviews and the topic guide used to ensure relevant areas were covered is in Appendix 24.

Referral criteria

Consultants’ views on referral criteria were variable, with some consultants reporting that they have specific referral criteria, while others do not. Some consultants stated that they would like to tighten their referral criteria, while others stated that they would accept inappropriate cases/routine cases or cases that could be treated in local PDS for their undergraduate students. On the whole, it was perceived that consultants felt that there should be an agreement on how much routine care should be accepted within a hospital service. In some areas, new referral criteria were being developed to reflect the integration of the PDS with the hospital service.

“We do not have referral criteria, but that said, we may, depending on what transpires at the actual new patient consultation, advise they go back to their GDP for the treatment or attend a student clinic or whatever rather than necessarily get specialist-type treatment.”

“They may be inappropriate for a specialist or a consultant to see, it may not be necessary, but we will then triage them and see them on the student clinic.”

“We need an agreement between the consultant body and our management team as to what referrals we are going to continue to accept, and how we’re going to decide how many of that basic level of patient we’re going to keep taking, maybe patients who more urgently need hospital-level paediatric dentistry, multidisciplinary care, sometimes are disadvantaged because they end up waiting longer than they should.”

It was also stated that referral criteria should be developed and agreed at national level so that there is consistency across dental hospitals in Scotland in the way the paediatric dental departments accept patients. Some consultant believed that, if the patient did not need multidisciplinary care or complex treatment, they should be treated in the PDS.

“I think what we need to do is probably tighten up significantly on our referral criteria. I think we would be happy to do that as long as it’s part of an agreed and accepted plan. Not just within this Health Board but across, because the dental hospital takes referrals from a number of different Health Boards.”

“And if it isn’t of a complex nature then potentially a PDS practitioner should be able to provide it.”

Referral patterns

Consultants reported that they received referrals from GDPs, the PDS, medical consultants and specialist nurses.

The referrals received from the PDS and medical consultants tended to be complex, while the referrals received from GDPs sometimes tended to be for a very basic level of care, anxiety management, difficulty in cooperating with routine treatment and the management of dental caries. Generally, there was a perception that these cases were referred in large numbers because GDPs were not sufficiently remunerated for the volume of time they spend on child patients. It was reported that consultants accept these cases in the interest of the child. Consultants stated that they felt the PDS service was not spread out geographically and therefore not used widely by GDPs.

“A lot of the patients that were referred from GDPs are for routine care, for anxiety management, difficulty in cooperating with routine treatment, and the management of their dental caries. These get referred in large numbers because they are time-consuming patients to treat, and my feeling is that general dental practitioners send them in because they’re not sufficiently remunerated to make it economically viable for them to provide a treatment.”

“I think probably children would still not be accepted for treatment by general dental practitioners because of the lack of a proper economic model for them to provide a standard of care that isn’t going to mean they’re continuously financially out of pocket.”

“We sometimes write back to the general dental practitioner and say “this patient is not appropriate for the hospital, please send them to your local PDS.” And they’ll write back again and say I don’t know who that is, which I find astonishing.”

Consultants felt that consultant-led paediatric dental departments should accept referrals for cleft lip and palate, trauma including complex trauma, complex hypodontia, severe behavioural problems, congenital abnormalities and complex cases requiring multidisciplinary dental and/or medical care such as cases requiring an input from orthodontics, restorative dentistry, oral surgery, oral medicine, haematology, cardiology or oncology on an ongoing basis. The less complex cases should be managed within the PDS. Further details of proposed national referral criteria are given in Appendix 1.

Prevalence/demand

Consultants reported that currently they do not see demand for private specialist paediatric practices in Scotland, in contrast to England where some specialists are engaged in private services.

“There isn’t that kind of demand. I know in England there are a few people now who are working as independent contractors or private specialists. I know people from London and Leeds, but it’s not happening in Scotland.”

Consultants reported that they were seeing an increase in MIH and gingival hyperplasia cases. While the prevalence of MIH is known to be increasing, they also speculated that, in the past, the teeth damaged by the hypomineralisation process were extracted because of caries and so MIH was not diagnosed. Therefore, due to the decrease in caries levels, they are now seeing more MIH.

“There seems to be an awful lot of MIH. It wasn’t a million years ago that I was a dental student, but we didn’t even get taught about it. I’m sure it was there because you can see it in some older people, but every single one of my new patient clinics has at least three MIH patients. It just seems really prevalent.”

“I see increasing number of children with gingival hyperplasia. I think overall the demand and expectation that we should be doing more for these children.”

“We’ve seen an increase in what I would call molar incisor hypomineralisation, particularly with poor quality first permanent molars. Whether that is actually a genuine increase in the prevalence of this, or the fact that the caries rate is decreasing and therefore we’re seeing it for what it is, and not just as very advanced caries, I’m not sure. But there is an increasing prevalence across Europe, and I would say that our department is measuring that.”

Some consultants reported they have not noticed any change in prevalence of caries. In some areas consultants reported that they are noticing reductions in GA lists, while others

reported that there was an increase and they were being asked to undertake extra GA lists.

“I guess it’s pretty much the same.”

“We still get lots and lots of caries. There are pockets in and around Glasgow for whom all these changes have had a very minimal effect. And obviously we continue to hope that in time things will improve but in Glasgow particularly it does seem to be very slow. So no, I don’t personally perceive there to be much change in the types of patient that I’m seeing.”

“We appear to have a high demand for the GA service. I don’t have the figures, but in my head it’s not decreasing, because the number of paediatric assessment clinics that appear to be running just now are quite high. So there seems to be a continued high demand for that service.”

“We’ve actually reduced the number of sessions that are carried out. The type of patient referred remains the same, though, and that’s the high caries risk. So yes, there has been some change.”

“There has been a definite reduction in referral for general anaesthetic extractions.”

Service provision/service model

Consultants felt that the majority of the anxious children who were referred to hospital could be managed within the PDS by a dentist with a special interest in treating children.

“A well trained public dental salaried dentist can probably manage 90% of the anxious children who are referred...you know, like the dentist with special interest type model.”

There was agreement among consultants that patients should be treated in their local PDS unless the patient required multidisciplinary care. Consultants reported that it was often easier for patients to travel to PDS clinics and rearrange appointments.

“I think the flow of patients through PDS clinics is often a much better flow than it is through dental hospital. I think a hospital can be much more bogged down in its administration of the service. I’ve found that in all of the hospitals I worked in that it’s much harder for patients, for how patients manage to change appointments, how easy it is to get to the hospital. It just seems to flow much better in PDS.”

Some consultants felt that the establishment of a clinical network in PDS settings would be beneficial. It was acknowledged that, because of geographical issues, a consultant or specialist cannot be local to everyone, but that a network approach with consultant or specialist support should be possible. Some consultants argued that this model of network would help specialists and consultants to keep up their skills and would be more sustainable if someone left the service.

“Better networks in the middle ground so that children can receive appropriate level of care close to home and in a timely fashion.”

“Create a network. For somewhere like Tayside, Grampian, Highlands, where you’ve got huge geographic issues to deal with, you couldn’t have a consultant or specialist local to everyone, but you could have a more networked approach.....I know Grampian has got a real problem right now in terms of they’ve lost their staff.”

Others felt that the PDS and hospital service should work closely as an entity. This would require agreement in terms of clinical management and responsibility for treatment plans amongst other things. In some Boards, integration between the PDS and dental hospital has already started. Consultants in some areas felt that the model of consultants based primarily in PDS, as in areas of England and Wales, should be considered.

“The ideal model is that PDS and the hospital work very closely together as an entity. But that requires agreement on terms of clinical management and responsibility for treatment plans and various other things that I think is always potentially a point of conflict.”

“And also it’s about maintaining relationships. It’s not good never meeting... there’s a huge value of face-to-face time, working together.”

“It’s about linking the services together for children.”

“I don’t believe that a consultant has to be hospital based. I think the model south of the border has worked very well.”

Overall, consultants agreed that service provision should be patient-centred where a patient could access care close to home so as to minimise disruption to the child’s routine.

18 week waiting time referral to treatment (18 week RTT) guarantees

The consultants’ view about the 18 week waiting time was variable. Some consultants reported that they are meeting the guarantee and that there were no problems.

“We’re working to the waiting time guarantee.”

However, others reported that they were under pressure because of the 18 week RTT, which in turn was causing detriment to other areas. It was reported that the waiting time target was met for the assessment appointment (12 week target) and the patient is taken off the waiting list as soon as treatment started (18 week target). However, patients could then wait much longer for follow-up appointments and may not complete treatment in a timely fashion. In some hospitals, treatment sessions were reported to have been cancelled on a regular basis to accommodate additional new patient assessment appointments. However, management did not appear to be concerned about this.

“It’s also because there’s a lot of pressure on that waiting list, there’s very little leeway in terms of leaving any space if you have any emergencies or whatever.”

“I think overall having 18 week RTT is actually beneficial, to the population, because it has driven finance in those areas. Whether that’s to the detriment of other areas....”

“So what happens is if your new patient clinics are starting to breach and not be seen within the time, what won’t get cancelled is a new patient clinic but what will get cancelled is a treatment session. So you can see patients are waiting longer to get treatment done.”

“So what it’s doing is prioritising one type of treatment over another and it’s prioritising one type of treatment which has a waiting list guarantee over a type of treatment which doesn’t have a waiting list guarantee.”

“Well, of course, that’s of no importance to the managers. They don’t care about follow-up treatment. They’re only concerned about waiting list times for the first appointment.”

“The only pressure that we have are the first appointment and for GA.”

In some areas, consultants reported that 18 week RTT is not being met for IHS and IV sedation.

“For inhalation sedation I’m pretty sure that we’re not meeting our eighteen week target on that.”

“If they’re looking for inhalation sedation, it’s probably a number of months. If they’re looking for intravenous sedation, equally a number of months.”

PDS

Consultants reported that they felt some children could be treated in the PDS by a ‘dentist with an interest’, while some complex cases could be treated by specialists in the PDS.

“95% of children in this country don’t need a specialist. They need a good dentist, or part of a dental team (therapist), who are interested in looking after children and providing regular care. I see them in the PDS rather than the hospital service.”

“We just want good dentists who are good with children and who just want to do the regular care, maybe without the razzmatazz.”

It was reported that some of the services provided by hospital paediatric departments could be delivered in the local PDS. Some consultants reported that they were treating patients in hospital who could be treated by a specialist in the PDS.

“A lot of the services that are delivered here could be better delivered by the community service if there was staff, specialist staff, in the community service.”

“I think I potentially am treating patients that if there was a community-based specialist who could treat them in community type setting.”

However, it was acknowledged by consultants that the PDS service does not always have adequate staffing levels, skill mix and facilities to deliver services. Some consultants reported that they felt the PDS is not making the best use of the staff and their skills for, example, some specialists employed as SDOs, rather than specialists.

“I think that if you had a better staffed specialist-led service in the salary service you wouldn’t need as many of them here and you could do some of the more complex stuff here.”

“We have a very supportive PDS service. However, I think they also need additional resources.”

“I think there’s definitely overlap and there’s ways we could manage the pathways better, more efficiently, where you probably would end up seeing a lot more children in the PDS and reduce the waiting times in the hospital dental services. But it has to be managed properly and there needs to be resources put in place.”

“I think they’re over-utilising some staff for the grade that they’re being paid for at the moment. So I think the Health Board is getting a really good deal out of them, but it’s not actually fair to those individuals. But even at that, they could be doing a lot more. They’ve got the capability to do a lot more if they would be given the rein to do that.”

Consultants felt that networking with the local PDS seems to be a way forward and recently some PDS specialists have been involved in hospital GA assessment services, which has reduced the burden on the hospitals, as the specialists have taken these patients to their clinics in the PDS.

“Since the Public Dental Service staff have been much more involved in our assessment service for general anaesthesia they are taking quite a lot of these patients back with them to their health centre and providing restorative care for them locally.”

In some areas, the local PDS was delivering continuing care for patients with special needs and to patients where access to GDP services was limited or absent. It was reported that delivering routine continuing care by the PDS is not looked upon favourably by their management, even where there was limited access to GDP services.

However, it was suggested that the PDS should continue to deliver continuing care for patients in remote and rural areas where the access to a GDP was limited.

“There’s a lot of tension, I think the management team here would like general dental practitioners to actually be providing a higher level of interventional care for their patients rather than referring them to PDS. They don’t want PDS to deliver continuing care; they don’t want them to do that because they say they don’t have capacity in the public dental service to take on all these additional patients.”

Workforce

1. Middle grade staff:

Consultants agreed that service provision was very inefficient and would be much better if they had middle grade staff. In the absence of middle grade staff, they depend upon training grade staff for service provision. This has an impact on providing emergency cover and adds to the delay in patients going through treatment sessions. This might provide one explanation for patient perceptions about waiting times and the duration of treatment which was reported in Section 7.2. It was felt that the appointment of middle grade staff would greatly increase the efficiency of the department.

“So if we were to target a single area now where we felt we needed additional help to manage our patients efficiently through our service it would be to have middle career grade staff appointed.”

“There are no staff grade appointments anymore.”

“We’re struggling from the point of view that we don’t have enough dentists with extra knowledge about children.”

“If we had one or one and a half career grade staff in who were delivering services, it would make an enormous difference to our ability to get patients efficiently through the system and back out into primary care in a timely fashion rather than all the slow-turnaround gaps in treatment.”

2. Consultant workforce/workload:

Consultants across Scotland reported that staff numbers were small and they were stretched and under stress. They noted that in they were often asked to undertake extra clinical duties to meet waiting time guarantees.

“The thing I notice about my workload is the constant messages from management to ask if I can do an extra clinic here or an extra clinic there because the waiting list is breaching.”

“We’re very short staffed, I think, is the only way to put it. In the NHS side, we only have a full time member of staff as the NHS consultant. We lost our NHS specialist at the end of the summer to go abroad..... That’s it. So we are pretty stretched.”

“We’re short of a consultant just now. So the consultant we do have is doing a lot more than she should.”

It was also reported the consultants felt pressured because of inadequate staff numbers and that the treating capacity of the paediatric dentistry department had gradually reduced over the years as staff members who had retired or left were not replaced.

“The workload is high, it always has been high. It’s a high pressurised job.”

“I certainly know that we don’t have the workforce to treat that we used to have. So it may feel as though we have higher demand because we don’t have any associate specialists now on our team, we don’t have any staff grades. We have two specialty registrars and we have one higher specialty registrar, but she’s doing a PhD. And they’re also reducing the number of core trainees that we get. So our capacity to treat, I guess due to the resources having been reduced over the years, has reduced.”

Consultants also reported that they love their job but it was stressful as they are constantly trying to accommodate patients. They do not want children waiting longer than they are required to. As a result, they work extra evenings and administration time is often reduced.

“It’s always squeezing patients in, it’s always being asked to do extra, it’s always running into your admin time, it’s always working extra evenings. It’s also knowing that children are waiting longer than they should do.”

“I actually really love my job and I love treating anxious kids. I love it all. But it does make it stressful.”

Consultants reported that the actual whole time equivalent of the workforce is smaller than the head count and the number of sessions of direct patient care is again smaller. Some consultants believed that the hospital service provision in Glasgow, Edinburgh and Dundee is adequate, whereas the hospital

service provision in the remaining NHS Boards is inadequate. However, consultants in Dundee reported that they are short staffed as they have had only one full-time consultant, and a specialist recently resigned.

“I think you need to be very careful with what the workforce appears to be, because there’s a difference between numbers and the people you have. But if you look at that as actual whole time equivalent it’s actually much smaller than that. And then if you look at whole time equivalent of what they provide for the NHS... and when you look at time allied to the NHS, it’s probably about four sessions.”

“If you look at the Health Board distribution it’s relatively well weighted towards Glasgow, Edinburgh and Dundee. And that is fairly weighted for the population, but in the Borders, Ayrshire & Arran, Western Isles, Orkney Isles, Shetland, Grampian, Highland, we have no specialists at all. So the hospital provision in there is completely inadequate.”

It was reported that the academic members of staff are often asked to do extra sessions, which has an impact on teaching sessions. Academic consultants felt that the hospital management do not have an understanding of an academic consultant’s role.

“The NHS relies too heavily on its academic members to cover when NHS staff aren’t here. And so they’re asking academic staff to give up their lecturing and teaching jobs to cover an NHS duty, which is wrong.”

“So my main comment to your question would be there is a lack of understanding in NHS management over what an academic university is doing.”

3. Training

Consultants reported that they were not training enough specialists due to lack of funding and lack of interest in the specialty. Consultants believed that students were not opting for paediatric dentistry because some of the trainees were not successful in finding employment as a specialist on completion of their training programme. It was reported that some specialists have been employed at non-specialist level, for example, a SDO within the PDS (Section 6.4.1)

“We don’t have any post-CCST, NHS trainees in Scotland at the minute.”

“We’re not training enough. And we’re not giving them positions in primary care that they should have.”

“I think that’s because there’s this perception with paediatrics that there’s not this career pathway, it’s not planned out. They’re going off into orthodontics.”

Gaps/improvements

1. Dental trauma

Consultants believed that, in some NHS Boards, the management and referral of dental trauma in primary care was poor. It was suggested that courses on the management and referral of dental trauma should be made available to dentists.

“The one thing that I do think is managed really badly is trauma in primary care and the inability of dentists to know when to refer trauma.”

“I think it’s something that the consultants in Scotland need to take on board and actually make a plan to deal with dental trauma, in some way get an education to dentists or get them to know that is one thing that should be referred in promptly for a specialist or a consultant.”

In some NHS Boards, consultants also reported that the management of dental trauma during out-of-hours was not adequate. It was stated by some that dental trauma should be treated by a specialist while others felt that dentists with a special interest could assess and treat dental trauma. Generally, consultants agreed that an accessible care pathway for trauma patients should be developed across Scotland.

“I think one of the issues that I’ve found particularly is management of dental trauma, and the provision for dental trauma out-of-hours. Anything outwith Monday to Friday, nine to five.”

“I think trauma needs a specialist.”

“Dentists with special interest can handle trauma.”

“I think there ought to be a readily accessible care pathway for trauma patients.”

2. Remuneration/capitation fees for children’s dentistry

Consultants across Scotland felt that remuneration for carrying out children’s dentistry in GDS is inadequate and the SDR is outdated. It was reported that there was felt to be no incentive for general dentists to treat children because of low remuneration and the time taken to manage a child can be significantly more. It was suggested that dentists treating children should be appropriately remunerated.

“Payment to general dental practitioners for treating children has to be changed. It has to be because it doesn’t work. It only works for them if a child has a very low treatment need and is a cooperative child.”

“Biggest victories for children’s dentistry would be if we could make the argument that these items of remuneration or the capitation fee, which is what they get for children, needs to properly reflect the amount of time it takes.”

3. Childsmile DHSWs

Childsmile DHSWs can support patients at high-risk of dental disease, encouraging the whole family to attend a local practice regularly (Section 4.5.1). It was reported that while some consultants were trying to liaise with DHSWs to support children with welfare concerns, they did not have the same relationship as health visitors did with DHSWs and therefore were unable to refer at risk children to a DHSW. Some consultants felt that Childsmile DHSWs should liaise with the hospital service to target children who were at risk of decay and to deliver primary prevention.

“There’s not the same tie-in that we could approach Childsmile and say can we join in to your health support workers Every time we discharge somebody who’s had multiple teeth extracted for dental caries, theoretically they and their siblings are the ones that are at risk. These children should be given to the DHSW to make sure that they are registered with a practice and support the family. And we don’t have that.”

“I do a lot of child protection work, we call them comprehensive oral assessment, part of the comprehensive medical assessments for children with welfare concerns, and what I would really like to do with that, is to get dental health support workers linked in with these families.”

“These are families that we know have welfare concerns and we know that some of them are oral health concerns and not getting taken to appointments. We tried probably about two years ago to get links with dental health support workers... then nothing happened.”

4. Dental assessment for oncology and other high-risk patients

Consultants across Scotland expressed concern regarding the dental assessment of children with cancer and other high-risk medical conditions. It was reported the children were not always referred for dental assessment by medical colleagues unless there was a dental facilitator on site. Thus several children have not had their dental assessment before chemotherapy.

“Guideline document states that children with cancer should be assessed prior to starting chemotherapy to assess their dental condition.... But we know that it’s not done as well as it could be, particularly in centres where there’s not that on site dental paediatric presence.”

“There’s always cases. There’s a lot of children with cancer. And there’ll always be cases where somebody slips through the net. We have people going up to the wards two or three sessions a week to try and constantly see the kids on the ward and then hopefully if there’s a new referral, it will be direct contact, face-to-face. The management doesn’t log these contacts with us as important because they don’t come through an official referral pathway on a sheet of paper. And they asked us to quantify them, well, they’re different every week. It’s impossible.”

“We have a system whereby for all our medically compromised patients, when they’re diagnosed they’re actually referred to the dental department. Now, obviously that requires the medical person involved in their treatment to actually physically refer them, because we don’t know who they are unless we’re told. But that is a system that we have. We are expected to be told, well, we don’t know it if they don’t tell us about the patient.”

In some areas, patients with dental decay had been through chemotherapy sessions without a dental assessment as a result of services not communicating or liaising with each other. Consultants felt that, since there was no official referral made, they were unable to quantify the numbers of patients they assess during their visits to the wards.

“We were having a chat, looked in his mouth and there was obvious decay, and fairly significant decay, which for a child on chemotherapy is not good news at all because if he gets an abscess it’s potentially life threatening because he’s got no immune system. But because his care was such that he went to three different places and nobody took the time to do the dental assessment, we’re now either going to have to organise something really difficult or we’re going to be crossing our fingers for four months and hope that he doesn’t develop an abscess. He’s in that really high-risk group we talked about. He’s been excluded from school, he’s got a police record, his social circumstances are pretty poor and he’s already got high levels of decay. We can give all the dental advice we want to that family but I have severe doubts that they will

change. And the chance of him developing an abscess is pretty high. So that's the sort of case that's really worrying."

"I've got a child who is on the waiting list at present and should have had a general anaesthetic for their teeth, and in the waiting list entry it said 'treatment no longer required as the child has finished chemotherapy'. But the only reason the child finished chemotherapy is because they were about to have a bone marrow transplant."

It was reported that various initiatives in an attempt to improve the rate of dental assessment had been undertaken by paediatric dental departments, for example, audits, establishing referral paperwork for medical colleagues, contributing to core trainee induction and the development of patient information leaflets. However it was felt that there had been no major improvement in referral rates.

"We've done various initiatives, joint initiatives, we now have the core trainees, every single rotation in oncology having a dental presentation, so it's part of their induction. We created paperwork for the doctors to send us referrals routinely on assessment. We did various audits which showed if we put loads and loads of effort in on an ongoing basis that they had a better uptake of referrals to us. We also have worked quite hard to make sure there's core trainees screening on the ward. However, it appears that no matter how much we have been doing, dental care is not seen as a priority until it's a problem. It's very difficult."

"I created an information sheet for the parents so that they knew all about what mucositis was and what the role of the paediatric dentist is in the care of children with oncology. And it's very frustrating when you go up to the ward and the leaflets aren't there. They're not out."

"There are cases that I see where you just cannot understand why the dental treatment has not been done. I'm sure if you looked at them case by case there would be reasons for each of them, but at the same time I do find myself chasing things up a lot of the time."

Consultants suggested that the dental assessment for high-risk patients should be supported, evaluated and reported nationally.

"I would not have confidence that we see every child that has cancer, because I don't think the pathway is reliable enough yet, and it's because we have not had the resources to work on it. If you're doing a new patient clinic where you're constantly running an hour over, every new patient clinic, you do not have the time to then spend going and working on... basically, a lot of the consultants here use all their SPA time doing clinical related administration."

9.1 Hospital Service Stakeholder Interviews (Oncology, Cardiology and Haematology Departments)

Structured interviews were conducted between February 2015 and March 2016 to investigate the perceptions of medical consultants within the tertiary specialities such as oncology, haematology, cardiology about the paediatric dental department service provision. Consultants from the Edinburgh and Glasgow children's hospitals were invited to take part in the interviews. The questionnaire is in Appendix 25.

Several attempts were made to gain participation, but because of the transfer of services from Yorkhill to the Royal Hospital for Children in Glasgow, it was not possible to carry out as many interviews as had been initially hoped for. In total, five consultants took part in the interviews.

Importance of the paediatric dental department services

It was apparent from the interviews that the paediatric dental department routinely provided services to high-risk patient groups. Consultants described the service as an essential one which played an important role in reducing morbidity of child patients with high-risk conditions.

"It's important because it reduces our morbidity. If we have good dental hygiene, if we make sure that their teeth are as good as possible preoperatively, then that improves our long-term results."

"It is important service because of the risk of infection for oncology patients and risk of bleeding for the bleeding disorder patients."

"It is important mainly because a lot of them are problems with endocarditis and things like that are from the mouth, so especially children, quite a few of them have appalling dental hygiene."

It was reported that children with high-risk conditions often had poor oral hygiene and therefore the risk of dental infection was generally high. The paediatric dental departments' role was to prevent dental infection by treating and managing children prior to any surgical procedure. The service was also described as a specialised service which could not be offered in the community.

"There is a terrific tendency for a lot of our patients to have poor dental hygiene. And plus because they've got heart disease, their mothers think they've got to be nice to them so they give them lots of sweets and treats and they tend to have poor teeth. And as I say that's where a lot of our infection comes from. So we tend to be very keen that their teeth are good."

"Patients can't get their treatment in the community, it has to be specialised and that can't really change, it's not really going to change."

It was reported that the nature of their medical condition meant that child patients could not wait long for their dental treatment and had to be treated immediately. Therefore, the paediatric dental service had to be flexible and accommodate child patients at short notice when required.

“It is really important because these patients cannot get dental treatments outside so it’s important that it’s timely if they have an urgent problem. If they have a semi elective problem you don’t want them to wait longer than they would wait in the community to have something done or that causes frustrations for families.”

“Given how problematic dental care is in the west of Scotland it’s really important that we have prompt access to dental services. It’s an important part of the service.”

Some consultants reported that their departments employed dental hygienists to monitor the oral hygiene of their child patients.

“Really just because dental health is so poor in the west of Scotland, and one of the most frequent reasons to have to treat a patient with a bleeding disorder with factor products, which are quite expensive, is to facilitate dental treatment. So there’s a drive to try and improve their dental health and because all of them, even if we tell them to go to their local dentist, don’t necessarily go, so, we have a dental hygienist that helps us screen out early problems.”

Referral pathway and patient assessment

It was apparent from the interviews that some departments were actively developing referral pathways, whereas others did not have a referral procedure in place. Child patients were mainly referred verbally to the paediatric dental service and in some cases for, example, oncology, child patients were put on their clinic list by the paediatric dental consultant or dental nurse during the medical ward round and/or medical team meeting.

“At one point there was a dental referral form that we had. I think xx helped to arrange for that. But certainly, personally, and the rest of the staff grades who work in day care, we tended to pick up the phone and ask. It’s so much easier just to pick up the phone and ask.”

“I don’t think there’s a written down pathway, but what happens is that xx comes to our Thursday morning sit-down ward round, and she will note down any new patients that there are, and any patients where there might be any concerns from a dental point of view, and gets patients into the system that way. And then equally we can pick up the phone and make a referral if we need to.”

“We’re involved with it in terms of our oncology type patients who might have problems with their teeth, who could then be at risk of infection. And we know how to access it for them to be seen by the dental nurse who comes along.”

Some departments routinely offered dental assessment while others, for example, the oncology department, might occasionally delay the dental assessment because of the need for urgent medical care. In other cases, some child patients might not be offered dental assessment as this is not monitored or recorded locally or nationally. It was recognised that in some cases, this could result in morbidity.

“Every clinic we do the patients are referred for dental assessment prior to surgery. So all my clinics are preoperative and my three surgical colleagues, there’s four of us, so we do a clinic every week, effectively. And all the patients are seen by us and by the nurse practitioners and they are sent on for dental assessment at the same time. So it’s a one-stop shop, basically. They get their dental assessments at the same time.”

“When new patients are diagnosed, one of the up-front things that should get done is a dental assessment because obviously we’re giving kids chemotherapy and you want to deal with any potential sites of infection prior to any of that starting. So going to see the dentist at the time of presentation is often what happens. There are obviously occasions when children present and the dental side of things may have to take a back seat for a couple of weeks or something until we get the treatment established.”

“I’m not saying it’s never happened, but I don’t know that it is a big problem. I don’t think so. But, yeah, I think we probably do need a way of highlighting the dental review. Often, the dentists write in Portal, and they write in the note bit at the side of Portal. I don’t know why the dentists work there.”

Service provision

In general the paediatric dental service was described as a good service and it was reported that the service offered was timely and patients were accommodated without delay.

“I think things are fairly timely. There have been some staffing issues previously. I think things are a bit more settled now than they were. But, yeah, I think by and large. Certainly if someone needs urgent treatment we get it done on time.”

“They seem to get on with it appropriately, and they accept, if they’re going to have their heart surgery they need to have their dental work sorted out.”

“I think the service is good. I have no problem with the service at all. It’s settled in, it seems to work very well. We have to fill out forms, but the nurses do all that, nurse practitioners have tended to do all that and it seems to me to work very straightforwardly.”

“At the moment as far as we’re concerned we get a very good service.”

However, some patient groups, for example, those with bleeding disorders, sometimes have to wait longer for treatment.

“With bleeding disorder patients I think it’s probably a bit more difficult because they have to just be on the waiting list like anybody else. And it can be difficult to coordinate it because, maybe a day that’s picked by the dental service, we then have a very busy day in day case and we can’t really accommodate it. And often the families are a bit difficult as well. So dates that suit us might not suit the families, and then we have to start all over again. I think there are probably more delays in that side of the service.”

Gaps and improvements

1. The oncology department in Glasgow reported that access to the paediatric dental department had been difficult after moving into the new hospital. In one instance, a child patient was not accommodated as expected. It was also not clear if the dental consultants on duty were visiting the day care unit after the ward roundup. It was suggested that the appointment of a facilitator or link person would greatly benefit the service as it would address the communication problem.

“I think it’s probably fair to say that when we were in the old hospital with whatever the setup was there, you could have somebody who came to day care for review who had developed some sort of dental problem that was kind of important they were seen, and the dental department were very accommodating at seeing patients there and then. It’s a bit more difficult to get in touch with them now that we’re here. I’ve certainly found that quite difficult. Where we were before there were a variety of treatment rooms, they were just down the stairs from us, you could nip down and have a quick word with somebody. That doesn’t happen here to the same extent. It isn’t as easy.”

“I don’t know if anybody comes from the ward, you’d need to double check in the ward, because I’m generally based in the day care unit. So what’s happened since we’ve moved over here I’m not exactly sure. You used to be aware that somebody was going to the ward because they would come into day care as well. I haven’t been aware of somebody coming into day care.”

“The other week there was a kid came up who had a particularly sore mouth, and we couldn’t get hold of any of the consultants on the day that she came up. And one of the junior dentists came to see her, and arranged for her to come back on the Friday which wasn’t the best.”

- Generic treatment plans should be developed for different patient groups so that the patient is treated in a timely manner without delay.

“We sometimes waste a lot of time writing letters to each other that’s perhaps not the most efficient way. We perhaps need a more streamlined way of us producing a treatment plan that becomes part of the dental record, rather than them having to.... I get a lot of letters from the dentist from clinics asking for a treatment plan, whereas we should probably have a treatment plan or they should be able to access a suitable treatment plan for them. So I think just having something that is there for all patients that we both understand.”

- Dental guidelines relating to treating children with endocarditis should be considered for an update.

“The guidelines are designed because they feel that the risk of anaphylaxis is greater than the risk of endocarditis, whereas I don’t think that’s true in our patient population. That might be true in the general population but not in our patient population. The risk of endocarditis is fatal. I’ve never seen a patient die of anaphylaxis but I’ve seen plenty die of endocarditis. I don’t quite get where they got this guideline from.”

“I think we need an updated guideline, yes. Somebody needs to look at it and make sure that endocarditis actually isn’t increasing, because we certainly seem to see more patients with endocarditis that comes from their mouth than we used to.”

9.2 Facilitators: Anesthetist Interviews

Structured interviews were conducted between January 2015 and July 2015 to investigate the perceptions of a representative sample of anaesthetists who facilitate the hospital-based paediatric dental services in Glasgow and Edinburgh children’s hospitals. The questionnaire is in Appendix 26.

Gaps and improvements

- It was reported that the cancellation rate for GA for patients who were not under comprehensive care was very high in Glasgow and Edinburgh because the children were often unfit for anaesthetic. Therefore, in order to reduce cancellation on the day of admission it was recommended that dental assessment and pre-GA assessment should be offered on the same day as each other or before the day of admission. Currently pre-GA assessment is undertaken on the day of admission.

“On the day of admission, and that doesn’t give adequate time to sort out potential medical problems or potentially psychological or behavioural problems in advance of the day which results in a huge number, or certainly a greater number, of cancellations on the day, which makes the service inefficient.”

“I think the big problem is cancellation on the day. There are more dental patients cancelled on the day than any other group of patients.”

"There is high rate of cancellations because they're inappropriately fit for a general anaesthetic on the day of treatment."

"There is a high rate of cancellations because of patients not turning up for surgery. There's a lot of that but also patients unwell, or occasionally because you run out of time."

"The waiting list manager knows that the dental patients are the biggest group of cancellations on the day, but I've no idea what they're doing about it."

2. Parents/carers of child patients undergoing extraction under GA should be made aware of the risks of GA.

"The other thing that is a defect noted from the dental quality improvement audit is the lack of information given to patients about anaesthesia. And that's because they don't have time to get given any information because there is no pre-GA assessment in advance. So, all patients should be given information prior to general anaesthetic. And there is some, but it's not the type of information that we would give from the medical pre-assessment point of view"

3. It was recommended that children with special needs should be managed on a separate list so that professionals can concentrate on managing this group of children effectively and reduce delays. It was acknowledged that this may have resource implications.

"To have a specific list to manage the children who have particular behavioural and learning difficulties, rather than they get managed in the same way as all the other patients, so they're expected to turn up to a very busy day case ward, very noisy, which a lot of these children don't like. And in an ideal world you'd manage these children separately, you could manage them in a quiet part of the hospital, and they would have adequate workup and preparation. But there's clearly a resource implication. That would be the one thing I would like to change. The list I had at the end of last week, busy list, the ward was absolutely going like a fair with thirty patients going through that day, and then trying to manage two patients, one who had been properly worked up with challenging behaviour, and then the second one with challenging behaviour. And that was very difficult to manage that within that environment."

"Maybe having more resource to be able to dedicate more time to these children with difficulties, special needs, to try and improve their experience."

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Appendix 1: Proposed national referral criteria

This referral guidance is based on the potential complexity of procedures. However it is recognised that care should be holistic and child-centred, and that even simple procedures can be complex and demanding for children with additional needs, significant anxiety or medical complications. Ideally children should be able to move freely between care settings and care providers, according to their needs, so that as much high quality care as possible is delivered close to home, with the least disruption to the family unit. The most important factors in determining where care should be delivered are the skills and experience of the relevant local dental team. It is also acknowledged that there is a continuum of care and there may be some overlap between what is provided by each of the teams.

1. Primary care and enhanced care

A) General dental practice and non-specialists in the Public Dental Service (PDS) – dentists in teams, working with hygienist-therapists, hygienists, extended duties dental nurses (EDDNs) and the Childsmile team:

- Routine assessment of healthy cooperative children, including clinical and radiographic examination, assessment of caries risk, preventive advice in accordance with SDCEP guidelines
- Preventive care including topical fluoride, application of fissure sealants, diet analysis and advice, toothbrushing instruction, toothpaste usage instruction/ prescription, scaling and prophylaxis
- Detection, diagnosis and clinical staging of dental caries (extent of caries i.e. enamel only or enamel and dentine)
- Behaviour and pain management techniques including use of topical and local anaesthetics for children and acclimatisation for mild to moderate anxiety
- Restorative care – adhesive (composite/compomer) and amalgam restorations where required (primary teeth, single surface only), preformed metal crowns (PMCs) for multi-surface restorations in primary teeth
- Endodontic treatment of closed apex permanent teeth
- Exodontia of primary and permanent teeth, including orthodontic extractions and removal of erupted supernumeraries
- Single tooth partial dentures (transitional) and removable space maintainers
- Interceptive orthodontic treatment with a removable appliance
- Emergency treatment and pain management for simple dental trauma and dental infection
- Advice on common soft tissue conditions such as recurrent aphthae and primary herpes
- Advice on early tooth tissue loss

- Provision of any of the above under conscious sedation, where indicated, and where there are appropriate skills and training
 - Timely onward referral to the most appropriate service (PDS or hospital dental service (HDS) of children requiring diagnosis or treatment outwith the above scope, and the maintenance of regular review during any periods of shared care.
- B) Specialist-led services within the PDS:**
- Assessment and management of severe early childhood caries
 - Assessment and management of unstable progressive caries in the mixed and permanent dentition where a standard preventive programme in primary care has been unsuccessful
 - Management of patients with multiple anterior teeth requiring endodontic treatment including those with incomplete apices or undergoing resorption
 - Management and advice on moderate progressive tooth tissue loss including provision of direct/indirect restorations where required
 - Advice and management of common gingival conditions, for example, gingivitis, epulides and mucocoeles.
 - Management of children with additional needs or learning difficulties, Asperger's etc who cannot be accommodated by the general dental teams
 - Enhanced behavioural management techniques, provision of inhalation sedation and use of electronic delivery methods for local anaesthesia
 - Endodontic treatment of primary teeth
 - Vital and non-vital bleaching techniques
 - Microabrasion for enamel opacities and hypomineralisation/hypoplasia
 - Preformed metal crowns on permanent molars
 - Surgical interventions such as removal of roots/unerupted teeth and simple soft tissue procedures
 - Interceptive orthodontic treatment with appropriate appliances
 - Assessment and treatment of children with temporomandibular joint dysfunction
 - Treatment planning for patients requiring extractions under general anaesthesia (GA)
 - Treatment planning for healthy children for comprehensive care under GA
 - Timely onward referral to the HDS of children requiring diagnosis or treatment outwith the above scope, and the maintenance of regular review during any periods of shared care.

2. Consultant-led services

- Assessment and treatment of complex dental or craniofacial conditions requiring a multidisciplinary input to treatment planning and care provision such as cleft lip and palate, moderate to severe hypodontia cases and children with complex syndromes such as DiGeorge and Treacher Collins
- Assessment and management of children with significant medical co-morbidity (ASA 2 or more), who require input from other hospital-based teams such as haematology or cardiology in order to meet their dental health needs
- Assessment and management of soft tissue disease/disorders such as granulomas, cysts, intractable oral ulceration etc
- Assessment and monitoring of the dental health of hospital inpatients, including the provision of urgent dental treatment prior to significant medical interventions i.e. cardiac surgery, bone marrow ablation, chemotherapy; management of mucositis
- Treatment planning and provision of comprehensive care under GA including restorative, endodontic and surgical treatment on patients with co-morbidity, in conjunction with other medical teams
- Provision of restorative care for developmental conditions such as amelogenesis, complex dento-alveolar trauma such as complicated crown fractures, crown/root fractures, intrusion injuries etc, including laboratory-made onlays, crowns and adhesive bridges
- Endodontic treatment requiring thermoplastic obturation or use of microscopes, placement of MTA (mineral trioxide aggregate), dens in dente teeth
- Management of abnormalities of tooth eruption sequence or tooth morphology
- Assessment and provision of dental care for neonates
- Treatment of children with significant tongue-tie interfering with feeding or speech
- Provision of sedation services, especially intravenous sedation as an alternative to general anaesthetic.

All children should be returned to the primary care provider at the completion of episodes of treatment at the earliest opportunity. In cases where long-term shared care is required, a clear understanding of each individual service input is essential. In addition, links to preventive programmes such as Childsmile should also be made and maintained.

Glossary of terms

Adhesive (composite/compomer): Sticky fillings

Amalgam restorations: Metal/silver fillings

Amelogenesis: An inherited malformation of tooth enamel

Aphthae: Mouth ulcers

Asperger's: Social and communication difficulties

Bone marrow ablation: A technique used to get rid of an individual's bone marrow cells before a bone marrow transplant

Bridge: A replacement for missing tooth or teeth which is cemented onto adjacent teeth

Chemotherapy: Treatment of cancers with potent medicines which often have significant side-effects

Co-morbidity: Where more than one condition or illness happens in the same patient

Comprehensive care: Provision of all care required to restore dental health, including fillings, extractions, preventive treatment and surgery

Craniofacial conditions: Abnormal shape and/or size of the structures of the face and skull

Crown: A cap covering an entire tooth

Dento-alveolar trauma: Injury to teeth and supporting bone

DiGeorge syndrome: A complex genetic disorder which can cause facial deformities and learning difficulties

Dens in dente (tooth within a tooth): A condition found in teeth where the outer surface folds inward

Endodontic treatment: Root canal treatment

Epulides: A swelling on the gum

Exodontia: Extractions

Gingivitis: Inflamed gums

Granulomas: Soft tissue growth or swelling

Hypomineralisation/hypoplasia: Poorly formed or developed tooth enamel

Interceptive orthodontic treatment: Orthodontic treatment started early to reduce the need for treatment later on

Intractable oral ulceration: Mouth ulcers which do not heal or resolve

Intrusion injuries: Teeth pushed into bony sockets

Microabrasion: A polishing technique used to remove staining and discoloration from the teeth

MTA (mineral trioxide aggregate): A cement-like material used to seal the end of root canals

Mucocoele: A collection of saliva in the soft tissue of the mouth

Mucositis: Inflammation of mucous membranes, the soft lining of the mouth

Neonates: New born babies

Preformed metal crowns (PMCs): Stainless steel caps, usually used for baby teeth

Primary herpes: A viral infection which causes ulcers

Radiographic examination: An X-ray

Restorative care: Fillings, crowns and bridges

Root: The part of a tooth below the gum-line, attaching the tooth to the bone

Supernumeraries: Extra teeth

Temporo-mandibular joint dysfunction: Pain, restricted movement and/or clicking from the jaw joints

Thermoplastic obturation: A process of filling a root canal with a warm plasticised material

Treacher Collins syndrome: A congenital disorder causing craniofacial deformities

Unstable progressive caries: Decay which is spreading in an uncontrolled way

Appendix 2: GDP survey questionnaire

1. Please indicate the Health Board you practise in										
<input type="checkbox"/> Ayrshire & Arran	<input type="checkbox"/> Highland									
<input type="checkbox"/> Borders	<input type="checkbox"/> Lanarkshire									
<input type="checkbox"/> Dumfries & Galloway	<input type="checkbox"/> Lothian									
<input type="checkbox"/> Fife	<input type="checkbox"/> Orkney									
<input type="checkbox"/> Forth Valley	<input type="checkbox"/> Shetland									
<input type="checkbox"/> Grampian	<input type="checkbox"/> Tayside									
<input type="checkbox"/> Greater Glasgow & Clyde	<input type="checkbox"/> Western Isles									
2. What preventive treatment do you routinely provide under NHS regulations for your child patients?										
<input type="checkbox"/> Dietary advice										
<input type="checkbox"/> Toothbrushing instruction										
<input type="checkbox"/> Fluoride varnish application										
<input type="checkbox"/> Fissure sealants										
3. What restorative treatment do you routinely provide under NHS regulations for your child patients?										
<input type="checkbox"/> Amalgam restorations										
<input type="checkbox"/> Composite restorations										
<input type="checkbox"/> Glass ionomer restorations										
<input type="checkbox"/> Stainless steel crowns/Hall technique										
<input type="checkbox"/> Endodontic treatment										
4. Are there any challenges to you providing the following treatments for your child patients? Please tick all boxes that apply										
	SDR fee		Time		Training		Staffing		Patient cooperation	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Preventive advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluoride varnish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fissure sealants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restorations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stainless steel crowns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Endodontic treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multiple extractions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other										
Additional comments										

5. Do you know what treatments your local Public Dental Service offers (previously known as the community/salaried dental service)?		
<input type="checkbox"/> Yes	<input type="checkbox"/> No	
6. Have you referred paediatric patients to your local Public Dental Service?		
<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If no, why not? e.g. paediatric service does not exist (if you answered no you will be taken to question 10)		
7. If yes, how easy do you find it to refer to PDS?		
<input type="checkbox"/> Easy	<input type="checkbox"/> Neither easy nor difficult	<input type="checkbox"/> Difficult
8. Please list reasons for referral to PDS		
<input type="checkbox"/> General anaesthesia	<input type="checkbox"/> Poor cooperation	
<input type="checkbox"/> Sedation	<input type="checkbox"/> Anxiety	
<input type="checkbox"/> High caries rate/multiple carious teeth	<input type="checkbox"/> Vulnerable/looked after and accommodated children	
<input type="checkbox"/> Degree of dental complexity	<input type="checkbox"/> Other	
<input type="checkbox"/> Trauma	Please specify.....	
<input type="checkbox"/> Surgical care	
<input type="checkbox"/> Degree of medical complexity		
<input type="checkbox"/> Special needs		
9. Have you referred child patients to one of the dental hospitals or institutes?		
<input type="checkbox"/> Yes	<input type="checkbox"/> No	
If you answered no you will be taken to question 12.		
10. If yes, please list reasons for referral		
<input type="checkbox"/> General anaesthesia	<input type="checkbox"/> Poor cooperation	
<input type="checkbox"/> Sedation	<input type="checkbox"/> Anxiety	
<input type="checkbox"/> High caries rate/multiple carious teeth	<input type="checkbox"/> Vulnerable/looked after and accommodated children	
<input type="checkbox"/> Degree of dental complexity	<input type="checkbox"/> Other	
<input type="checkbox"/> Trauma	Please specify.....	
<input type="checkbox"/> Surgical care	
<input type="checkbox"/> Degree of medical complexity		
<input type="checkbox"/> Special needs		
11. What factors influence your decision to refer to a hospital rather than PDS?		
<input type="checkbox"/> Severity of condition		
<input type="checkbox"/> Preference		
<input type="checkbox"/> Hospital proforma dictates referrals accepted		
<input type="checkbox"/> Other		
Please specify.....		

12. Does your area have referral protocols for children being referred to

	Yes	No	Don't know
PDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dental hospital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Would you be willing to participate in a short interview?

Yes No

Appendix 3: Dental hygienists and therapist survey

The delivery of paediatric dental care by dental hygienists and therapists in the general dental service

This survey was instigated to explore the clinical treatment of children by dental hygienists and therapists in the general dental service (GDS) in Scotland. It was undertaken in the hope that it could contribute to the collection of baseline data which would inform the future direction of paediatric dental care.

1. Introduction

All dental institutions in Scotland have a remit for the education and training of dental hygienist-therapists with 49 students graduating each year. They undertake either a three or four year degree in Oral Health Sciences and are qualified to provide approximately 70% of routine dentistry for both the child and adult population. Consequently, their contribution to primary care dentistry should be significant although there is evidence to suggest that their skills are underused in this setting. The introduction of Direct Access in 2013 by the General Dental Council (GDC) made it possible for hygienists and therapists to work to their full scope of practice without prescription and without the patient having to see a dentist initially. This could make a further positive impact on the prevention and treatment of disease in the child population, should their potential be fully recognised.

2. Methods

During January and February 2016, an online survey was conducted amongst Scotland-based dental hygienists and therapists. An initial pre-notification email determined to establish where each individual was employed, excluding those who worked in the PDS or HDS, to confine results to the GDS only (see Section 4 of this Appendix for the survey questionnaire).

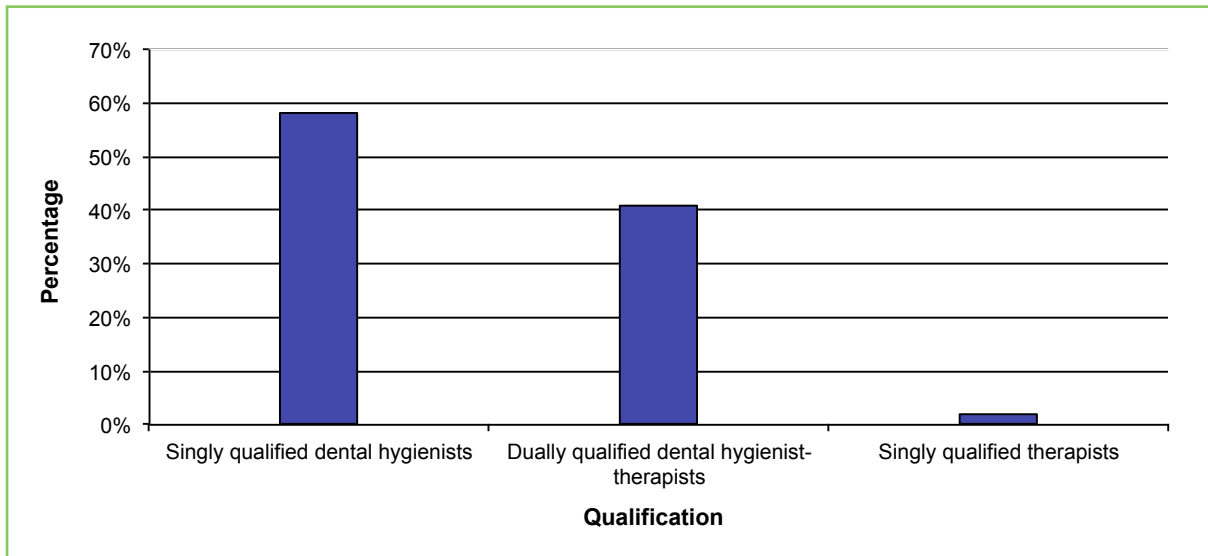
3. Results

It was estimated that 456 were eligible for the survey, although it is likely that a small number of non-respondents did not work in the GDS. A total of 219 subjects completed the questionnaire, although five of these reported that they did not work in the GDS. The response of 214 of 451 represents a 47% response rate.

Qualifications

Of the respondents (214), 58% (n=124) were singly qualified dental hygienists, 41% (n=88) were dually qualified dental hygienist-therapists, and 2% (n=4) were singly qualified therapists (see Figure 1).

Figure 1: Qualifications of the respondents

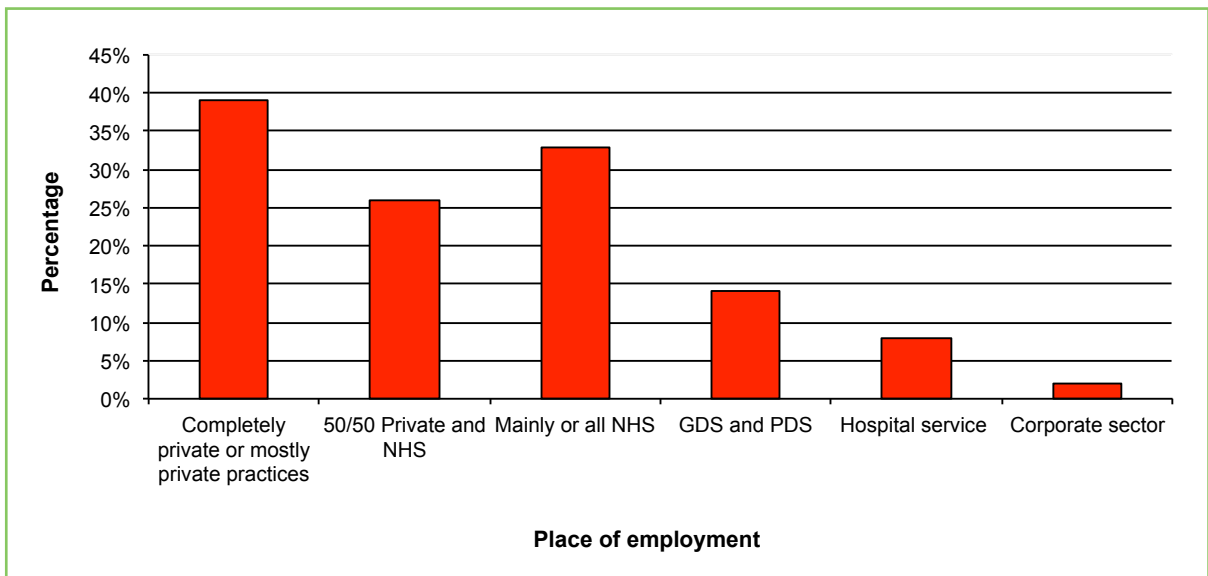


Nature of employment

Thirty nine percent of hygienists and therapists stated they worked in completely private or mostly private practices, 26% reported practices

were 50/50 private and NHS, 33% were mainly or all NHS, 14% worked in both the GDS and PDS, 8% were employed in the hospital service and 2% in the corporate sector (Figure 2).

Figure 2: Respondents' place of employment



Treatment of paediatric patients

The majority (80%) of respondents reported that they treated children in their practice although 36 individuals said they did not. The following are a selection of comments as to why hygienists and therapists did not treat children:

- Children are very rarely referred to me in practice and I never see them in hospitals
- Dentist does not pass patients to me. She “doesn’t think therapists are properly trained” and passes a lot to vocational trainee dentist, as doesn’t have to pay me
- Hygienist appointments are private so very rarely see children
- I can only treat children on a private basis, unfortunately. I see, at the very most, four per year
- I do not get referred them. One practice has a dedicated children’s dentist
- I presume it’s due to costs. Seeing children and paying a dental hygienist is not cost effective for dentist. I am so disappointed as trained on prevention of caries and perio disease but now only treat perio problems. Have not seen any children for....
- Never referred
- Not by choice. I work as a private hygienist. Children seen by NHS dentist

- Not referred any by employers
- Rarely referred them. We have a Childsmile nurse and the dentists do any work needed to be carried out
- They do not generate money for the practice.

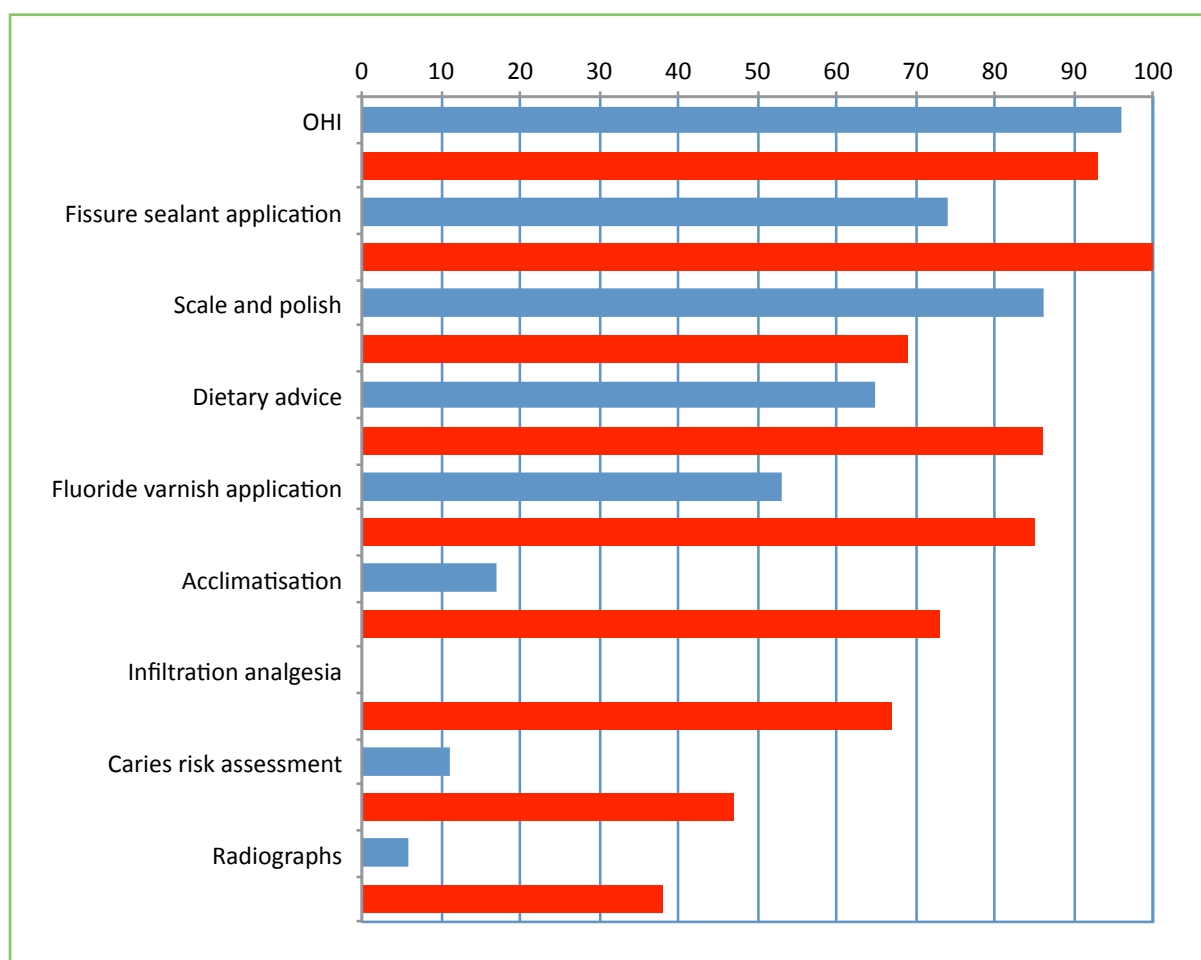
Preventive care/restorative treatment

Forty six percent of the respondents reported that a dental hygienist or therapist carried out the majority of preventive treatments, with the remaining 54% stating these treatments were undertaken by a dentist. With regard to restorative care, 36% reported that this was delivered by a therapist, while 62% stated it was carried out by dentists.

Treatment provided by hygienists or therapists

The survey revealed that therapists were carrying out low numbers of composite, amalgam and preventive restorations on primary teeth, pulpotomies, or PMCs using the Hall technique. From the open-ended comments received it was apparent that many of the respondents felt that they were under-utilised in that they were not being given the opportunity to work to their full scope of practice. Figure 3 demonstrates the types of treatment provided by singly and dually qualified hygienists or therapists.

Figure 3: Percentage of hygienists and therapists routinely providing certain treatments for child patients (blue bars=all respondents n=219; red bars=dually qualified hygienists and therapists only (n=90))



Referral for treatment

Of the respondents, 30% said there were procedures which were not referred to them even though they were within their scope of practice. The following are a selection of comments as to why some treatments were not referred to hygienists and therapists:

- Dentist’s referral is more targeted at restoring a cavity instead of alternative treatments such as PMCs. Dentists unaware of the scope of practice of a therapist

- Not required, normally charted for fillings as too extensive for preventive resin restoration
- Patient compliance and time restraints
- Probably because it takes time out my book & dentist doesn’t get fee for it
- No assistance
- Dentist prefers to do himself

- I don't have a light for curing and my surgery is not laid out in a way that I can do this. Treatment myself as I work without a nurse
- Dentist doesn't see the point of restoring primary teeth
- Most parents opt for private composites. All private conservation extraction treatment carried out by dentists
- Don't think the dentists get a fee for referring children to me so hardly see any now
- Done by dentist
- I see patients on private basis so all NHS work carried out by dentist
- I am very busy and see very few children. The dentists have quieter books so undertake preventive treatment themselves
- In general practice the dentists often state they don't refer these treatments due to financial constraints - due to how their contracts work. Sometimes they say it is to do with control and knowing what the condition of the cavity was prior to filling. Both terrible excuses
- Money/easy treatment
- The dentists would rather I was doing scalings to make the practice more money
- Dentists prefer [as initially didn't have a nurse]. Have offered
- The dentist claims acclimatisation in the dentist's surgery
- Childsmile dentist and nurse do this.

Barriers to treatment

A total of 43% declared there were barriers to providing paediatric dental care, some of which are detailed below:

- Time e.g. time in practice for acclimatisation. Too much time spent on treating problems rather than prevention
- Time....Within a 15min appt it's difficult to disclose/scale and polish and do oral health instruction (OHI) in that time
- Books are full for approximately three-four months ahead. Dentists will not refer patients for Childsmile as they would not get any payments if I carried it out
- The final barrier may be that dentists are concerned about job security since the advent of direct access....
- Commercial viability.... no fee given for this... which means OHI has to be given during treatment appointment, and not given separately. If I could have separate appointment I could focus more directly on this subject only
- Cooperation of child is largest barrier. Sometimes not having enough time/visits for acclimatisation can bring on a barrier as it's not cost effective to bring children in for visits when no treatment can be claimed
- Financial! Children have to pay a private fee to see the hygienist
- Gaining consent from a parent, some children attend alone

- GDP principals don't allow it due to loss of cost
- High failed to attend (FTA) rates in NHS practices. Compliance from parents. Dentist's knowledge of hygienist/therapist remit
- In most of my practices time is so booked up with hygiene that it is quicker for the child to be booked in with the dentist. In one of my practices it's not so much of an issue as there is another hygienist
- Little time for acclimatisation as I need to meet daily financial targets. Parents often want all treatment carried out in one-two visits which can be difficult when child is afraid/uncooperative/needs a lot of treatment. Parents do not seem to realise
- NHS fees
- NHS list number
- Not being able to prescribe treatment on the NHS e.g. needing a local anaesthetic (LA) prescription or having to go back to the dentist if they have missed something which can mean having to send the patient away if the dentist is not in
- Parents are often in a rush or frightened of dental treatment and this is relayed to the child
- Parents aren't keen on a lot of Scottish Dental Clinical Effectiveness Programme (SDCEP) recommended treatments i.e. PMCs and amalgam restorations

- Parents need to pay private fee for children to see hygienist
- Poor referral/inadequately worded, teeth not charted etc. No nurse can be a juggling act making moisture control very difficult
- Sadly in practice the financial implications of using the hygienist's time is more weighted to paying adults. It is more cost effective to treat adults rather than OHI, dietary advice for children. I think the children are missing out. Cost and time are the two main barriers. Also the claiming system in no way recognises any of our work, no codes for OHI unless three visits are undertaken, no code for scale and polish for kids. This would make a big difference if the work we do can be claimed for in kids
- Prescriptions for fluoride toothpaste and varnish as per SDCEP. Time in mixed practice/ NHS - no fee for prevention
- Preventive/OHI care is difficult to quantify so not always supported by admin managers

Requirement for NHS list numbers

Thirty and 45% of hygienists and therapists respectively felt that having a list number to undertake direct access

in the NHS would have a positive effect on the service they were able to provide for children and many others in the population.

4. Questionnaire used for dental hygienists and therapists survey

A. ABOUT YOU	
1.	Are you qualified as a: <input type="checkbox"/> Dental hygienist <input type="checkbox"/> Dually qualified dental hygienist-therapist <input type="checkbox"/> Singly qualified <input type="checkbox"/> Dental therapist <input type="checkbox"/> Other
1.a	If you selected Other, please specify.....
2.	Do you have any additional qualifications? <input type="checkbox"/> Yes <input type="checkbox"/> No
2.a	If you selected Yes, please specify.....
3.	In which year did you qualify?.....
4.	Which institution did you qualify from?.....
5.	How many sessions per week do you normally work?.....
6.	Do you currently work in general dental practice (either in private practice or the NHS)? <input type="checkbox"/> Yes <input type="checkbox"/> No
7.	Do you work in <input type="checkbox"/> All private practice <input type="checkbox"/> Mainly private practice <input type="checkbox"/> 50/50 private & NHS practice <input type="checkbox"/> Mainly NHS practice/all NHS practice/Public Dental (Community) Service <input type="checkbox"/> Dental hospital/school <input type="checkbox"/> Corporate body/company <input type="checkbox"/> Other
7.a	If you selected Other, please specify:.....
8.	IF YOU WORK IN GENERAL DENTAL PRACTICE: How many practices do you work in?.....
B. TREATMENT YOU PROVIDE FOR CHILDREN	
9.	Do you currently see child patients? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other
9.a	IF NO: Why not?.....

10.	Who undertakes the majority of preventive care for children in your practice? <input type="checkbox"/> A hygienist or therapist <input type="checkbox"/> A dentist <input type="checkbox"/> Other
10.a	If you selected Other, please specify:.....
11.	Who undertakes the majority of restorative care for children in your practice? <input type="checkbox"/> A hygienist or therapist <input type="checkbox"/> A dentist <input type="checkbox"/> Other
11.a	If you selected Other, please specify:.....
12.	Approximately how many children do you see in an average month?.....
13.	Approximately what percentage of the child patients you see are referred to you for treatment?.....
14.	Which of these treatments do you routinely provide for your child patients? (select all that apply) <input type="checkbox"/> Caries risk assessment <input type="checkbox"/> Acclimatisation <input type="checkbox"/> OHI <input type="checkbox"/> Scale and polish <input type="checkbox"/> Fluoride varnish application <input type="checkbox"/> Fissure sealant application <input type="checkbox"/> Dietary advice <input type="checkbox"/> Inferior dental blocks <input type="checkbox"/> Radiographs <input type="checkbox"/> Pulpotomies <input type="checkbox"/> Extraction of primary teeth <input type="checkbox"/> Infiltration analgesia <input type="checkbox"/> Preformed metal crowns <input type="checkbox"/> Preformed metal crowns using the Hall technique <input type="checkbox"/> Preventive resin restorations on primary teeth <input type="checkbox"/> Preventive resin restorations on secondary teeth <input type="checkbox"/> Single surface restorations on primary teeth <input type="checkbox"/> Single surface restorations on secondary teeth <input type="checkbox"/> Multi-surface restorations on primary teeth <input type="checkbox"/> Multi-surface restorations on secondary teeth <input type="checkbox"/> Amalgam restorations on primary teeth <input type="checkbox"/> Amalgam restorations on secondary teeth <input type="checkbox"/> Composite restorations on primary teeth <input type="checkbox"/> Composite restorations on secondary teeth
15.	Are you qualified in inhalation sedation? <input type="checkbox"/> Yes <input type="checkbox"/> No
15.a	IF YES: Do you undertake inhalation sedation for your child patients? <input type="checkbox"/> Yes <input type="checkbox"/> No
16.	Are there any treatments which you are qualified to undertake that you choose not to provide for children? <input type="checkbox"/> Yes <input type="checkbox"/> No
16.a	If you selected Yes, please specify:.....

16.a.i	Why do you choose not to provide these treatments?.....
17.	Are there any treatments for children that are not referred to you to undertake? (i.e. treatments you are qualified to do but are not given to do) <input type="checkbox"/> Yes <input type="checkbox"/> No
17.a	If you selected Yes, please specify:.....
17.a.i	Why are these treatments not referred to you?.....
18.	When you treat child patients do you have a dental nurse present? <input type="checkbox"/> Yes always <input type="checkbox"/> Yes usually <input type="checkbox"/> Depends on treatment <input type="checkbox"/> No <input type="checkbox"/> Other
18.a	Is a dental nurse present more often when you treat children than when you treat adults <input type="checkbox"/> Yes - more often <input type="checkbox"/> No - it's the same <input type="checkbox"/> No - less often
18.a.i	IF THE NURSE'S PRESENCE DEPENDS ON THE TREATMENT: Please state which treatments:.....
19.	On average, for how long are appointments for your child patients scheduled? <input type="checkbox"/> 15 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> Depends on treatment <input type="checkbox"/> Other
19.a	IF DEPENDS ON TREATMENT OR OTHER: Please specify.....
20.	Do you find there are any particular barriers in providing oral health care for children? <input type="checkbox"/> Yes <input type="checkbox"/> No
20.a	IF YES, please specify.....
C TREATMENT YOU PROVIDE FOR CHILDREN	
21.	Do you think that having an NHS list number would have an effect on the service you are able to provide for children? <input type="checkbox"/> Yes - a positive effect <input type="checkbox"/> No effect <input type="checkbox"/> Yes - a mixed effect <input type="checkbox"/> Other <input type="checkbox"/> Yes - a negative effect
21.a	IF YES OR OTHER: In what way?.....
21.b	Do you think that working on a direct patient access basis would have an effect on the service you are able to provide for children? <input type="checkbox"/> Yes - a positive effect <input type="checkbox"/> No effect <input type="checkbox"/> Yes - a mixed effect <input type="checkbox"/> Other <input type="checkbox"/> Yes - a negative effect
21.b.i	IF YES OR OTHER: In what way?.....
22.	Finally, do you prefer to respond to surveys like this online or by post? <input type="checkbox"/> online <input type="checkbox"/> by post <input type="checkbox"/> no preference
COMMENTS	
23.	Please add any further comments you may have on the issues covered in this survey.....

Appendix 4: Clinical directors of PDS - Survey questionnaire

Health Board Details	
1. Please indicate your Health Board	
Ayrshire & Arran	Highland
Borders	Lanarkshire
Dumfries & Galloway	Lothian
Fife	Orkney
Forth Valley	Shetland
Grampian	Tayside
Greater Glasgow & Clyde	Western Isles
Paediatric Dental Referral and Treatment Details	
2. Are children referred to specific clinic/s or locations?	
Yes	No
If yes, please specify	
3. If so, how many specific clinic locations?	
1	6
2	7
3	8
4	9
5	10
If more than 10, please specify	
4. Approximately how many paediatric referrals do you receive in a month?	
0-50	250-300
50-100	300-350
100-150	350-400
150-200	400-450
200-250	450-500
If more than 500, please specify	
5. Approximately what percent of referrals do you receive for children compared to all referrals?	
1% - 5%	25% - 30%
5% - 10%	35% - 40%
10% - 15%	40% - 45%
15% - 20%	45% - 50%
20% - 25%	55% - 60%
If more than 60%, please specify	
Workforce Details	
Does your service have staff specifically responsible for the treatment of children?	
Yes	No

7. If yes, please indicate the whole time equivalent (WTE)	
Clinical director	
Assistant clinical director	
Specialist in paediatric dentistry	
SDO/senior salaried GDP	
CDO/salaried GDP	
Therapist	
Hygienist	
8. Please specify the number of staff on the paediatric specialist list or with an interest or with additional qualifications	
Specialist in paediatric dentistry	
Additional postgraduate qualification but not on specialist list	
With an interest in paediatric dentistry	
General Anaesthesia Provision	
9. Do you offer "extractions only" under GA?	
Yes	No
10. If yes, please specify the location	
District General hospital	
Children's hospital	
Other (please specify)	
11. Do you provide comprehensive care including restorative care under GA?	
Yes	No
If yes, please specify	
12. If yes, is this a separate list?	
Yes	No
If yes, please specify	
13. Under which clinician are patients admitted?	
Public Dental Service	
Oral & maxillofacial surgery	
Paediatric dentistry	
Medical paediatrics	
Other (please specify)	
14. Approximately how many GA referrals do you receive in a month?	
0-5	30-35
5-10	35-40
10-15	40-45
15-20	45-50
20-25	If more than 50, please specify
25-30	
15. Do you have post-GA follow up e.g. prevention clinics?	
Yes	No
If yes, please detail	

16. Do you offer an alternative to GA e.g. inhalation sedation?	
Yes	No
If yes, please detail	
Treatment for children who require multidisciplinary care	
17. Do you provide dental support and treatment for child patients undergoing tertiary medical treatment in other specialities e.g. oncology, haematology etc?	
Yes	No
If yes, please detail	
18. Is this medical treatment outwith Board area e.g. tertiary service for oncology?	
Yes	No
If yes, please detail	
19. Do you provide dental support and treatment for children who have completed their medical treatment?	
Yes	No
20. If yes, do you receive support from hospital paediatric dental service?	
Yes	No
If yes, please detail	
21. Do you make out-of-Health Board area referrals for children requiring dental treatment?	
Yes	No
If yes, please detail approximate numbers/ to where and any comments	
22. Do you have a defined protocol/pathway for multidisciplinary care for children?	
Yes	No
If yes, please detail	
Help with SDNAP report	
23. Would you be willing to help us by allowing us to carry out patient interviews in one of your clinics?	
Yes	No
Other, please specify	
24. Would you be willing to help us with data collection for the SDNAP report?	
Yes	No
25. If yes, please select all that apply	
Referral audit	
GA audit	
Additional Information or comments	

Appendix 5: Referral rate for GA provision and provision of alternatives to GA

Health Board	Approximately how many GA referrals do you receive in a month?	If more than 50, please specify	Do you have post GA follow up e.g. prevention clinics?	If yes, please detail to GA e.g.	Do you offer an alternative inhalation sedation?	If yes, please detail
Lothian	45-50		Yes		Yes	All patients offered IHS if appropriate and IV sedation in Edinburgh if 12 years and over
Greater Glasgow & Clyde	416		No		Yes	IHS at multiple sites
Shetland	0-5		Yes	Our GA patients are all registered with our PDS, so routine care is routinely provided afterwards. There is not GDS in Shetland currently	Yes	IHS
Grampian	125 referrals are then pre-assessed depending on treatment need and anxiety		No		Yes	All patients pre-assessed and decision made as to which mode of anxiety management required
Forth Valley	35-40		No		Yes	
Borders	15-20	This is variable and are generally referred for GA or anxiety management	Yes	We have input from our oral health support workers and every child referred for GA for pain, sepsis, caries management generates a Childsmile referral to a OHSW	Yes	IV (anaesthetic-led) is also offered for older children
Ayrshire & Arran		70-80 per month	Yes	Oral Health Promotion at assessment & follow up	Yes	IHS if appropriate at four sites
Orkney	0-5		Yes		Yes	Inhalation sedation at one clinic
Highland	10-15		No		Yes	
Tayside	35-40		Yes	Involved in RECUR research programme	Yes	Behaviour management and sedation as required
Lanarkshire		About 100 per month	No		Yes	
Western Isles	0-5		Yes		Yes	
Fife		We receive more than 50 for assessment, no one can request GA, we receive circa 70	No		Yes	IV and IHS
Dumfries & Galloway	05-10		No	Variable care pathways - can include special care programme, therapy school, outreach	Yes	Gaseous sedation, and IV in adolescents

Appendix 6: Provision of comprehensive care including restorative care under GA

Health Board	Do you provide comprehensive care including restorative care under GA?	Other (please specify)	If yes, is this a separate list?	Other (please specify)	Under which clinician are patients admitted?					
					Public Dental Service	Oral & maxillofacial Surgery	Paediatric dentistry	Medical paediatrics	Other (please specify)	
Lothian	Yes		No			Yes			Yes	
Greater Glasgow & Clyde	No	Delivered by secondary care staff	Yes					Yes		
Shetland	Yes		No							
Grampian	Yes		Yes							
Forth Valley	Yes		No		Yes					
Borders	Yes	Basic restorative care, generally only in permanent dentition, no advanced care such as endodontics/ crown and bridge	No	Lists are protected GA day case paediatric dental	Yes					
Ayrshire & Arran	Yes		Yes	For special needs patients including children		Yes				
Orkney	Yes		No			Yes				
Highland	Yes		Yes			Yes				
Tayside	Yes	For appropriate patients - not routine	No			Yes				
Lanarkshire	Yes	Only for special care patients	Yes			Yes				
Western Isles	Yes		No			Yes				
Fife	Yes		Yes			Yes				
Dumfries & Galloway			Only for special needs patients	Yes		Yes				

Appendix 7: Extraction only GA provision by NHS Board

Health Board	Do you offer "extractions only" under GA?	If yes, please specify the location		
		District General hospital	Children's hospital	Other (please specify)
Lothian	Yes			St. John's Hospital
Greater Glasgow & Clyde	Yes	Yes	Yes	
Shetland	Yes	Yes		
Grampian	Three sessions/ week		Yes	
Forth Valley	No			
Borders	No	Yes		
Ayrshire & Arran	Yes	Yes		
Orkney	Yes	Yes		
Highland	Yes	Yes		
Tayside	Yes	Yes		Two hospitals
Lanarkshire	Yes	Yes		
Western Isles	Yes	Yes		
Fife	Yes			Special unit in grounds of DGH
Dumfries & Galloway	Yes	Yes		Two sites

Appendix 8: Treatment for children who require multidisciplinary care

Health Board	Do you provide dental support and treatment for child patients undergoing tertiary medical treatment in other specialities e.g. oncology/haematology etc?	If yes, please detail	Is this medical treatment outwith board area e.g. tertiary service for oncology?	If yes, please detail	Do you provide dental support and treatment for children who have completed their medical treatment?	If yes, do you receive support from hospital paediatric dental service?	If yes, please detail
Lothian	No	EDI	No	EDI	No	No	
Greater Glasgow & Clyde	Yes	RHC	Yes	West of Scotland	Yes	Yes	Cleft services, cardiac services
Shetland	No	Because tertiary level paed is not available in our Health Board	Yes		Yes	Yes	If needed
Grampian	Yes	Referral to PDS as and when required	No			No	
Forth Valley	Yes		No		Yes	Yes	
Borders	No	Rarely approached to do so	Yes		Yes	Yes	Our special care PDS senior works within district general hospital
Ayrshire & Arran	Yes	Ad hoc	No		No	No	
Orkney	Yes		Yes	Always off Island	Yes	Yes	Very rare we have cases but when we do the clinician coordinates treatment with the treating hospital, if that hospital has a paediatric dental service then they will guide us on the care
Highland	Yes	Poorly developed	Yes		Yes		On a temporary basis through a visiting consultant until July 2014
Tayside	Yes	Oncology clinic support	No		Yes	No	
Lanarkshire	Yes	Small numbers only	Yes	Usually in Glasgow	Yes	Yes	For small numbers of patients
Western Isles	No		Yes		Yes	Yes	
Fife	Yes	Specialist paediatric dentist sees	Yes	In Lothian or Dundee	Yes	No	
Dumfries & Galloway	Yes	Occasional, via consultant paediatricians	No		Yes	No	

Appendix 9: 'Out-of-Board' referrals by NHS Board

Health Board	Do you make out-of-Health Board area referrals for children requiring dental treatment?	If yes, please detail approximate numbers/ to where and any comments	Do you have a defined protocol/pathway for multidisciplinary care for children?	If yes, please detail
Lothian	No		No	
Greater Glasgow & Clyde	No		No	
Shetland	Yes	For multidisciplinary maxillofacial and multidisciplinary orthodontic cases/patients, they are referred to Grampian	No	
Grampian	Yes	One or two per year	no	
Forth Valley	Yes	Varies but about cases per month	Yes	
Borders	Yes	Very occasionally when a specialist opinion or treatment is appropriate	No	
Ayrshire & Arran	No		No	
Orkney	Yes	In our Grampian network of consultants and we have some visiting consultants. Any referrals further afield are usually tertiary	No	
Highland	Yes	Less than five to Dundee/ Glasgow/Edinburgh	No	
Tayside	Yes	Very occasionally, if a child needs to attend a specialist paediatric hospital. Less than once a year, to Yorkhill or Sick Children's Hospital	No	
Lanarkshire	Yes	Children under three years of age are referred to Yorkhill Hospital for dental extractions under GA	No	
Western Isles	Yes		No	
Fife	Yes	Rare only if outwith anaesthetic guidelines for a DGH	Yes	referred child who DNA
Dumfries & Galloway	Yes	Occasional, via Yorkhill	No	

Appendix 10: PDS referral audit form

Referral Letter Information

Patient details

Date of Birth Date

Patient Postcode

Referred by GDP GMP Consultant specialty (specify).....
 Other (specify).....

Does this patient have a history of?
 (Please tick all that apply)

<input type="checkbox"/>	Severe early childhood caries or unstable/extensive caries in the mixed/permanent dentition	
<input type="checkbox"/>	Abnormalities of tooth morphology, number and structure	
<input type="checkbox"/>	Advanced restorative care including laboratory-made restorations	
<input type="checkbox"/>	Complex endodontic therapies including management of non-vital immature teeth or teeth undergoing internal or external resorption	
<input type="checkbox"/>	Direct/indirect composite restorations for teeth with extensive tooth tissue loss or enamel/dentine defects	
<input type="checkbox"/>	Surgical interventions outwith the competence of the primary practitioner	
<input type="checkbox"/>	Treatment planning for children requiring extractions under GA and sedation	
<input type="checkbox"/>	Treatment planning and provision of comprehensive dental care under GA	
<input type="checkbox"/>	Severe tooth tissue loss	<input type="checkbox"/> Complex dento-alveolar trauma
<input type="checkbox"/>	Disturbances of tooth eruption	<input type="checkbox"/> Non-vital or vital bleaching techniques
<input type="checkbox"/>	Periodontal or soft tissue conditions/lesions	<input type="checkbox"/> Interceptive orthodontic treatment
<input type="checkbox"/>	Anxiety or phobia	<input type="checkbox"/> Multidisciplinary care
<input type="checkbox"/>	Child protection issues	
<input type="checkbox"/>	Other (specify).....	
<input type="checkbox"/>	Reason not specified	

Reason for Referral (Please tick one box)

<input type="checkbox"/>	Advice only	<input type="checkbox"/>	Treatment only	<input type="checkbox"/>	Advice and treatment
<input type="checkbox"/>	Second opinion	<input type="checkbox"/>	Other (specify).....		
<input type="checkbox"/>	Reason not specified				

Was a treatment area clearly specified by the referrer? Yes No

If yes, please specify.....

Referral Triage Result

<input type="checkbox"/>	Referred to the hospital service	<input type="checkbox"/>	Accepted to be assessed for GA or sedation
<input type="checkbox"/>	Accepted to see a PDS specialist	<input type="checkbox"/>	Sent back to GDP to re-refer to GA service
<input type="checkbox"/>	Accepted to see PDS dentist	<input type="checkbox"/>	Sent back to GDS to re-refer with further information

Appendix 11: Other categories

Other	Number referrals received
Registration request	9
Abscess, cyst	2
ADHD, no cooperation for treatment	2
Autism	7
GDP not confident in treating paediatric patients with early caries	1
Large number of teeth to be extracted and patients age	2
Medical conditions	4
Not under GA	1
Orthodontic extractions	5
Pain	1
Poor oral hygiene	1
Pulpotomy/Hall crown	1
RA for fissure sealants	1
Simple dental trauma, early caries	2
Special needs	6
Total	45

Appendix 12: Referrals received for anxiety or phobia

PDS clinic	Number of referrals received for anxiety or phobia	Total number of referrals received	Percentage
Borders	6	15	40%
Fife	93	115	80.9%
Forth Valley	26	66	39.4%
Highland	32	53	60.4%
RAH	14	33	42.4%
Tayside	45	69	65.2%
Total	216	351	61.5%

Appendix 13: Referrals received for treatment planning for children requiring extractions under GA or sedation

PDS clinic	Number of referrals received for treatment planning for children requiring extractions under GA or sedation	Total number of referrals received	Percentage
Borders	10	15	66.7%
Fife	76	115	66.1%
Forth Valley	32	66	48.5%
Highland	34	53	64.2%
RAH	5	33	15.2%
Tayside	28	69	40.6%
Total	185	351	52.7%

Appendix 14: Referrals received for severe early childhood caries

PDS clinic	Number of referrals received for severe early childhood caries	Total number of referrals received	Percentage
Borders	10	15	66.7%
Fife	49	115	42.6%
Forth Valley	26	66	39.4%
Highland	20	53	37.7%
RAH	22	33	66.7%
Tayside	21	69	30.4%
Total	148	351	42.2%

Appendix 15: Cross tabulation SIMD 2012 quintile and three most prevalent conditions in the PDS

SIMD 2012 quintile	Anxiety or phobia	Treatment planning for children requiring extractions under GA caries or unstable/extensive caries in the mixed/permanent dentition	Severe early childhood caries
	Count	Count	Count
1	55	43	42
2	50	43	39
3	39	41	22
4	39	34	24
5	15	13	11
Total	198	174	138

*Note: Postcode could not be matched/was not reported for 23 referrals

Appendix 16: Referral triage result

PDS clinic	*NR	Accepted to be assessed for GA or sedation	Accepted to see a PDS dentist	Accepted to see a PDS specialist	Referred to the hospital service	Sent back to GDS to re-refer to GA service	Sent back to GDS to re-refer with further information	Total
Borders	1	9	3	0	2	0	0	15
Fife	0	95	7	13	0	0	0	115
Forth Valley	0	19	33	11	0	1	2	66
Highland	0	36	17	0	0	0	0	53
RAH	4	10	15	4	0	0	0	33
Tayside	2	35	7	25	0	0	0	69
Total	7	204	82	53	2	1	2	351

*NR: Not Reported

Appendix 17: Hospital audit form

Referral Letter Information

Patient details

Date of Birth Date

Patient Postcode

Referred by GDP GMP Consultant specialty (specify).....
 Other (specify).....

Does this patient have a history of?
 (Please tick all that apply)

<input type="checkbox"/>	Severe early childhood caries or unstable/extensive caries in the mixed/permanent dentition	
<input type="checkbox"/>	Abnormalities of tooth morphology, number and structure	
<input type="checkbox"/>	Advanced restorative/endodontic care including laboratory-made restorations	
<input type="checkbox"/>	Complex endodontic therapies including management of non-vital immature teeth or teeth undergoing internal or external resorption	
<input type="checkbox"/>	Direct/indirect composite restorations for teeth with extensive tooth tissue loss or enamel/dentine defects	
<input type="checkbox"/>	Surgical interventions outwith the competence of the primary practitioner	
<input type="checkbox"/>	Treatment planning for children requiring extractions under GA	
<input type="checkbox"/>	Treatment planning and provision of comprehensive dental care under GA	
<input type="checkbox"/>	Severe tooth tissue loss	<input type="checkbox"/> Complex dento-alveolar trauma
<input type="checkbox"/>	Disturbances of tooth eruption	<input type="checkbox"/> Non-vital or vital bleaching techniques
<input type="checkbox"/>	Periodontal or soft tissue conditions/lesions	<input type="checkbox"/> Interceptive orthodontic treatment
<input type="checkbox"/>	Anxiety or phobia	<input type="checkbox"/> Multidisciplinary care
<input type="checkbox"/>	Child protection issues	
<input type="checkbox"/>	Other (specify).....	

Reason for Referral (Please tick one box)

<input type="checkbox"/> Advice only	<input type="checkbox"/> Treatment only	<input type="checkbox"/> Advice and treatment
<input type="checkbox"/> Second opinion	<input type="checkbox"/> Other (specify).....	

Was a treatment area clearly specified by the referrer? Yes No

If yes, please specify.....

Referral Triage Result

<input type="checkbox"/> Accepted to see a consultant	<input type="checkbox"/> Accepted to be treated under GA
<input type="checkbox"/> Sent to CDS	<input type="checkbox"/> Sent back to GDS

Appendix 18: Referrals received by GDH

Health Board	Number of referrals received	Percentage
Greater Glasgow & Clyde	316	71.8
Lanarkshire	39	8.9
Highland	7	1.6
Ayrshire & Arran	4	0.9
Forth Valley	4	0.9
Fife	1	0.2
*NR	69	15.7
Total	440	100.0

*NR postcode not reported

Appendix 19: Referrals received by EDI

Health Board	Number of referrals received	Percentage
Lothian	282	89.5
Borders	7	2.2
Fife	7	2.2
Forth Valley	2	0.6
Dumfries & Galloway	1	0.3
*NR	16	5.1
Total	315	100.0

*NR postcode not reported

Appendix 20: Referrals received by DDH

Health Board	Number of referrals received	Percentage
Tayside	121	91.7
Fife	11	8.3
Total	132	100.0

Appendix 21: Patient questionnaire - PDS

1. What kind of treatment is your child undergoing and for what condition?
2. What are the reasons for this treatment?
3. Who referred your child to this service?
4. Were you and your child actively involved in deciding the appropriate dental treatment (were your opinions asked and were they valued)?
5. Did you provide written consent for undergoing IV, GA or other intervention?
6. Do you feel you or your child was given adequate information about the treatment options e.g. leaflet?
7. Did you understand the options given to you?
8. Were you or your child made aware of any risks?
9. Does/do the staff make you and your child feel safe, comfortable and supported?
10. Do you know who to ask for help if you have any questions? Are the staff approachable and knowledgeable?
11. From being referred, how long did you and your child have to wait before starting treatment?
12. What do you or your child think the benefits of the treatment are/will be?
 - Pain relief
 - Improvement in health of your teeth and gums
 - Appearance: Feeling better about the way you look and feel
 - Self esteem: Feeling more confident.
13. What is your/your child's view about the staff providing the treatment?
14. Has your child ever felt discriminated due to race, distance from home, disability etc?
15. If your child received treatment was this successful (was there improvement)?
16. How would you rate the quality of the service your child received? Please expand.
17. Is there anything else you or your child would like to comment on?

Appendix 22: Patient questionnaire - Hospital

1. What kind of treatment is your child undergoing? (Type)
2. What are reasons for this treatment?
3. Who referred your child to this service?
4. Was your or your child's consent obtained?
5. Were you or your child informed about different treatment options?
6. Were you or your child made aware of any risks?
7. How long did your child wait to start treatment?
8. How long has your child been under treatment? (Duration)
9. How were your child's appointments? Did it affect your child's school attendance?
10. Was your child's treatment painful?
11. What do you or your child think the benefits of the treatment are/will be?
 - Appearance: Feeling better about the way you look and feel
 - Self esteem: Feeling more confident
 - Improvement in health of your teeth and gums.
12. What is your child's view about the staff providing the treatment?
13. Has your child ever felt discriminated due to race, distance from home, disability etc?
14. Did the consultant consider your child's opinions while planning their treatment?
15. If your child received operative treatment was this successful (was there improvement)?
16. How would you rate the quality of the service your child received?

Appendix 23: Topic guide for semi-structured interview: PDS

1. Which group of patients are accepted for treatment in PDS?
2. What are the most common treatment conditions that you are likely to treat?
3. Approximately how many referrals do you receive each month? Of these, what percentage of these are for advice and how many for treatment? (Specific service providers only)
4. Approximately how many inappropriate referrals do you receive each month?
 - Inappropriate for PDS
 - Inadequate information.
5. Do you see demand changing for specialists in paediatric service in the community/primary care setting?
6. Is there a demand for specific treatment/s in the Public Dental Service setting?
7. What is the level of complexity of these treatments and why?
8. In the last one month how many patients did you treat? How many of them required Public Dental Service?
9. Are there any conditions which seem to be increasing in the referral base?
10. What are your views about the present workforce available for Public Dental Service?
11. Is your workload increasing/changing? If so, why?
12. Are there any gaps in the service? (IV sedation)
13. What arrangements are in place for children who are moving into adulthood?
14. How do you manage children who are in transitional stage?
15. How do you think the PDS can be improved?

Appendix 24: Topic guide for semi-structured interview: Consultants

1. How long is your waiting time for a consultant opinion/patient assessment?
2. How long is the wait for treatment when a plan has been devised?
3. If the waiting time varies dependent upon treatment type or method of delivery or by grade of staff providing treatment, please provide further information.
4. Approximately how many inappropriate referrals do you receive each month?
 - Inappropriate for hospital treatment
 - Inadequate information.
5. Do you see a change in the volume of demand for specialist paediatric hospital service?
6. Is there a demand for specific treatment/s in the hospital settings
7. Are you treating patients within the hospital consultant service that could be better served in a local PDS-based specialist service where available, or if already available with a greater capacity?
8. What treatments/conditions/circumstances do you consider appropriate for hospital-based treatment, community-based treatment and GDP?
9. In the last one month how many patients did you treat? How many/percentage of them required hospital paediatric service?
10. Are there any conditions which seem to be changing in prevalence in the referral base?
11. What are your views about the present workforce available for hospital paediatric service?
12. Is your workload changing? If so, why?
13. Are there any gaps in the service?
14. Are there any developments required?
15. How do you think the hospital paediatric service can be improved?
16. Do you have autonomy to decide how and where your patients are treated and the overall service priorities?
17. Have you/your group been invited to provide input into national manpower planning
18. Are you required to meet 18 week RTT or 9 week assessment to treatment?
19. What impact has your Health Board's requirement to meet 18 week RTT had on GA services for children?
20. If you have GA service which is consultant-led, is there also a specialist-led GA service via PDS?

Appendix 25: Hospital service stakeholder interview questionnaire

1. How often do you use the paediatric dental service?
2. Why do you use the service?
3. How important is this service to you and why?
4. How do you communicate with this service?
5. Do you receive the required treatment on time or is there a waiting list?
6. If there are delays what problems does this cause?
7. What are your views about the workforce available for this service?
8. What are the gaps in the service? Are there patients of yours who cannot be accommodated?
9. How do you think this service can be improved?

Appendix 26: Facilitators: Anaesthetist interview questionnaire

1. How often do you provide service for this service?
2. Are there problems specific to supporting the paediatric dental service?
3. How do you think this service can be improved?

12 Abbreviations

ADH	Aberdeen Dental Hospital
ADHD	Attention Deficit Hyperactivity Disorder
ASA	American Society of Anesthesiologists
ASD	Autistic Spectrum Disorder
BME	Black and Minority Ethnic communities
BSPD	British Society of Paediatric Dentistry
CDS	Community Dental Service
CHSP	Child Health Systems Programme
CPD	Continuing Professional Development
CSDS	Community and Salaried Dental Services, now known as PDS
DCP	Dental Care Professional
DDH	Dundee Dental Hospital
DGH	District General Hospital
DHSW	Dental Health Support Worker
DMF/dmf	Decayed, Missing and Filled Teeth
DNA	Did Not Attend
EDDN	Extended Duties Dental Nurse
EDI	Edinburgh Dental Institute
EYC	Early Years Collaborative
FTA	Failed to Attend
$ft/d_3mft \times 100$	Proportion of obvious decay experience that has been treated restoratively; expressed as number of filled teeth divided by number of obviously decayed, missing and filled teeth, multiplied by 100
GA	General Anaesthesia
GDH	Glasgow Dental Hospital
GDC	General Dental Council
GDP	General Dental Practitioner
GDS	General Dental Services
GG&C	Greater Glasgow & Clyde
GIRFEC	Getting it Right for Every Child

GP17	Form used for recording primary care dentistry
GMP	General Medical Practitioner
HDS	Hospital Dental Service
HNA	Health Needs Assessment
ICD	International Classification of Diseases
IHS	Inhalation Sedation
IJB	Integral Joint Board
IoS	Item of Service
ISD	Information Services Division
IV sedation	Intravenous Sedation
LA	Local Anaesthetic
LAAC	Looked After and Accommodated Children
MCN	Managed Clinical Network
MIDAS	Management Information & Dental Accounting System
MIH	Molar Incisor Hypomineralisation
NDIP	National Dental Inspection Programme
NHS	National Health Service
NoS	North of Scotland
NR	Not Reported
NRS	National Records Scotland
OHI	Oral Health Instruction
ONS	Office for National Statistics
PDS	Public Dental Service
PMC	Preformed Metal Crown
CCST	Certificate of Completion of Specialist Training
RAH	Royal Alexandra Hospital
RTT	Referral to Treatment
SAS	Staff Grades, Associate Specialists and Speciality Dentists
SCIM10	Scottish Caries Inequality Metric
SDCEP	Scottish Dental Clinical Effectiveness Programme
SDNAP	Scottish Dental Needs Assessment Programme

SDO	Senior Dental Officer
SDR	Statement of Dental Remuneration
SHBDEP	Scottish Health Boards' Dental Epidemiological Programme
SHO	Senior House Officer
SIMD	Scottish Index of Multiple Deprivation
SMR01 data	Scottish Morbidity Record-General Acute Inpatient and Day Case data
SNS	Support Needs System
StR	Specialty Registrar
WHO	World Health Organisation
WTE	Whole Time Equivalent

13 Glossary of terms

Care Index [(ft/d₃mft)x100]: Proportion of obvious decay experience that has been treated restoratively; expressed as number of filled teeth divided by number of obviously decayed, missing and filled teeth, multiplied by 100.

Childsmile: National oral health improvement programme for children in Scotland.

Deciduous teeth: Another term for primary teeth or 'baby' teeth.

Dental caries: A multifactorial, dynamic disease, caused by the action of plaque bacteria and fermentable carbohydrate on susceptible tooth surfaces over time.

Dental care professionals (DCP): This term refers to the wider dental team and is made up of dental hygienists, therapists, nurses, orthodontic therapists, technicians and clinical dental technicians.

Dental sealants/fissure sealants: Placing sealants involves the application of a clear resin over the biting surfaces of teeth to prevent decay and to protect the teeth, especially in children.

Dental trauma: Tooth loss or damage caused by physical injury.

Dentine: The main constituent of the teeth, composed of 60% calcium hydroxyapatite, which is covered by enamel.

DMFT/dmft: An indication of the experience of decay measured by counting the decayed, missing or filled teeth (dmft). DMFT refers to the decay in the secondary dentition (adult teeth), dmft refers to the levels of decay in the primary dentition. The subscript 3 indicates more advanced decay into dentine (D₃mft, d₃mft).

Enamel: The hard, white shiny surface of the crown, composed of 95% calcium hydroxyapatite.

Erosion: Loss of surface of tooth due to chemical dissolution of teeth.

Exfoliation: Falling out of the baby teeth.

Fluoride: A chemical compound that helps to prevent dental caries.

Fluoride varnish: Topical application of a fluoride gel or liquid that prevents decay.

General anaesthesia (GA): A state of controlled unconsciousness. During a general anaesthetic, medications are used to send a patient to sleep, so they are unaware of surgery and do not move or feel pain while it is carried out.

Hall technique: Is a novel method of managing carious primary molars by cementing preformed metal crowns, also known as stainless steel crowns, over them without local anaesthesia, caries removal or tooth preparation of any kind.

Hypodontia: The condition in which the patient has missing teeth as a result of the failure of those teeth to develop. There can be different levels of severity.

Incisor teeth: The eight teeth in the front and centre of the mouth (four on top and four on bottom).

Inhalation sedation (IHS): A light form of sedation where there is no loss of consciousness. It is a mixture of nitrous oxide and oxygen breathed through a nosepiece. This helps the child to feel relaxed and accept treatment. Inhalation sedation is also known as 'happy air'.

IV sedation: A sedative is injected directly into a vein. For people who are nervous about having dental treatment or having a procedure which may cause discomfort, intravenous (IV) sedation is an effective and safe treatment.

Molar tooth: A tooth having a broad biting surface adapted for grinding, being one of twelve in humans, with three on each side of the upper and lower jaws.

Molar incisor hypomineralisation (MIH): A common developmental condition resulting in enamel defects in first permanent molars and permanent incisors.

Maxillofacial surgery: Surgical specialty concerned with the diagnosis and treatment of diseases affecting the mouth, jaws, face and neck

Occlusion: The relationship of the teeth in a closed position in both the maxillary (upper) and mandibular (lower) arch

Oral cancer: Malignant tumour of the mouth

SHANARRI Wheel: The acronym SHANARRI is formed from the eight indicators of wellbeing: Safe, Healthy, Achieving, Nurtured, Active, Respected, Responsible, and Included. All of these wellbeing indicators are necessary for a child or young person to reach their potential. They are used to record observations, events and concerns and as an aid to creating an individual plan for a child.

Water fluoridation: Addition of fluoride to a population's drinking water to reduce tooth decay, at the optimal concentration of one part per million (1 ppm).

