Assessing the Provision of Prevention in the Care Pathway for Children Undergoing Dental Extractions under General Anaesthetic at the Royal Hospital for Children, Glasgow: A Qualitative Systems-Level Needs Assessment.

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Abstract

Introduction
Although Scotland has made advances in the last decade in dental prevention and in tackling oral health inequalities, many children still develop dental caries, and many subsequently require a Dental General Anaesthetic (DGA) for extractions. These DGAs are undesirable given the impact on the patient, family and NHS. National guidelines recommend that a DGA is undertaken only if there are no other options for treatment. When children require a second 'repeat' DGA, or siblings consequently require a DGA, it suggests that current prevention protocols are not working. These children are slipping through the net.

Both strategic and front-line stakeholders raised concerns that the care pathway for children undergoing general anaesthetics (GAs) for dental extractions at the Royal Hospital for Children, NHS Greater Glasgow and Clyde (RHCG) was not aligned to prevention, and was not best supporting these vulnerable families to improve and maintain oral health.

Aims and Objectives
The overarching aim of this study was to assess provision of dental prevention in the RHCG DGA care pathway, with a view to making recommendations at a local level on how to optimise prevention.

The objectives were (i) to assess the pathway of care in relation to prevention and, if required, to investigate what opportunities existed to integrate further prevention into the pathway; (ii) to explore the pathway's wider context including national policies and programmes which may support prevention, and (iii) to explore some examples of good preventive practice for DGA pathways locally and in other Scottish NHS boards.

Methods
This work was undertaken in two phases. An initial scoping exercise mapped the existing pathway of care and any child health policy or programme which could support prevention. A qualitative systems-level needs assessment subsequently explored both the views of stakeholders involved in providing care for these children, and individuals in wider child health policy and programmes, to ascertain how prevention could be better integrated into the pathway.

Results
Key findings illustrated minimal prevention currently being provided in the pathway of care and limited linkages with wider policy and programmes. Stakeholders recognised a need for change. Good preventive practice was highlighted in two external NHS Health Boards and one DGA pathway of care within NHS GGC. Suggestions for integrating prevention focused on transforming the pathway ethos towards multi-agency, tailored prevention and a whole-family approach. Clinical prevention suggestions were made within a proposed 'Prevention Pathway' model of tailored care. Potential strategies were suggested as to how to maximise patient engagement including local access clinics and liaising with support workers and the 'Named Person'. Anticipated barriers to change included challenges with collaborative working, stakeholder attitudes, service pressures and board-

level challenges such as the size of NHS GGC. Suggestions to overcome these challenges included training and education of stakeholders, consideration of an Early Years Collaborative pilot to assess changes within a local setting, improved communication and the development of a multi-agency working group to lead and affect change in the 'Prevention Pathway'.

Conclusion

This study found that prevention was not currently embedded within the pathway of care, particularly at paediatric assessment and on the day of DGA, but that many positive steps could be taken to improve the provision of prevention at all stages; from direct clinical prevention to the wider multi-agency response. Wider health inequalities must not be forgotten in efforts to engage these vulnerable families, and an ethos of prevention and early intervention must be entrenched in current practice to reduce the number of children requiring preventable general anaesthetics.

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Definitions/Abbreviations

DGA	Dental General Anaesthetic
DHSW	Dental Health Support Worker
$d_3$mft	Decayed Missing or Filled Teeth (primary)
D_3MFT	Decayed Missing or Filled Teeth (permanent)
EDDN	Extended Duties Dental Nurse
EYC	Early Years Collaborative
GA	General Anaesthetic
GDHS	Glasgow Dental Hospital and School
GDP	General Dental Practitioner
GGC	Greater Glasgow and Clyde
GIRFEC	Getting it Right for Every Child
GMP	General Medical Practitioner
IDL	Immediate Discharge Letter
ISD	Information Services Division
NDIP	National Dental Inspection Programme
NHS	National Health Service
PDS	Public Dental Service
PR	Principal Researcher
RHCG	Royal Hospital for Children, Greater Glasgow and Clyde
SDCEP	Scottish Dental Clinical Effectiveness Programme
SDNAP	Scottish Dental Needs Assessment Programme
SHO	Senior House Officer
SIGN	Scottish Intercollegiate Guidelines Network
SIMD	Scottish Index of Multiple Deprivation
UK	United Kingdom
USA	United States of America
WHO	World Health Organisation
WNB	Was Not Brought

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In addition, I am most indebted to all the participating stakeholders who voluntarily gave up their time to contribute to this research study.

This project has proved equally rewarding and intense. It was certainly my personal experiences of having to undertake 'full clearances' for children under general anaesthetic which gave me the fire to keep this project alight.

Thank you to my dear Craig for being ever patient, kind, and keeping me caffeinated.

Finally, thanks to my wonderful Dad for being my inspiration every day.

This one's for you.

Author's Declaration

I declare that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Nora E. O'Murchu

May 2017

1 Introduction

This chapter provides a background for this Master's research by describing recent trends in dental caries in children in Scotland, the persistent issue of inequality and the resultant problem of extractions under general anaesthetic (GA). Efforts to improve oral health and reduce oral health inequalities via current policy and the national oral health improvement programme in Scotland (Childsmile) are also described. This section highlights a gap in the provision of prevention within DGA pathways of care with a particular focus on Greater Glasgow and Clyde, and provides the rationale to explore this issue further.

1.1 Dental caries

Dental caries is a preventable disease which is characterized by progressive demineralisation of the tooth surface following bacterial metabolisation of dietary carbohydrates within the dental biofilm (SIGN, 2014). It is reported to be the most common disease in the world and is the most widespread chronic condition in childhood in both developed and developing countries, contributing to a significant public health problem worldwide (Petersen, 2003).

1.1.1 Risk factors for dental caries

Caries risk is grouped into 'standard' and 'increased' risk categories (SIGN, 2014). As the development of caries is a dynamic multi-factorial process involving biological, social and behavioural factors, risk can be modified by changes in these factors (SIGN, 2014, Moynihan and Kelly, 2014). Risk factors may include high frequency of dietary sugar intake, poor oral hygiene, previous decay experience, high levels of oral *Streptococcus mutans* bacteria, medical co-morbidities, social deprivation, ethnicity, low fluoride use, and reduced salivary flow (Arora et al., 2011a, Harris et al., 2004).

1.1.2 Factors leading to inequalities in dental caries

The relationship between socioeconomic position and dental caries has long been established in developed and developing countries with a well acknowledged social gradient existing wherein those most disadvantaged experience greater burdens of disease than those less disadvantaged. The factors that lead to this inequality include acquiring oral cariogenic organisms at a younger age (Angulo et al., 1994), higher frequency of dietary carbohydrates (Touger-Decker and Van Loveren, 2003) and inaccessibility to dental care (Seale and Casamassimo, 2003). However, it is now widely acknowledged that to have any impact on inequality we have to understand the 'causes of the causes' (Marmot, 2010).

Deprivation is complex and not just due to individual behaviours, but rather political and social factors at play out-with the control of the individual. Resulting poverty limits choices of housing, work, education, and of course health. Those from lower socioeconomic backgrounds generally have a greater

proportion of general disease as well as poorer oral health (Sheiham et al., 2011).

1.1.3 Impact of caries

The effect of dental caries on the patient has been well documented in the available literature. Pain, time off school, impact on socialisation and growth, lower oral health-related quality of life (Sischo and Broder, 2011), sepsis, repeat antibiotic prescriptions, nutritional problems (Arora et al., 2011b) and malocclusions as a sequelae of premature tooth loss (Lundström, 1955) have all been reported in the literature. Children who experience dental caries in the primary dentition are more likely to experience caries in the permanent dentition (Skeie et al., 2006), thus these problems may be perpetuated over the life-course.

If treatment and prevention of dental caries is delayed, and the child's condition deteriorates, the associated pain and impact on quality of life may necessitate a Dental General Anaesthetic (DGA) for treatment which may include extractions (see section 1.3).

A well-designed observational study of six randomly selected DGA centres in Northwest England evaluated 456 families of medically fit-and-well children undergoing dental extractions under GA. Negative impacts in the wait for the GA included 38% experiencing sleepless nights and 67% experiencing pain (Goodwin et al., 2015b), which could have serious wider implications for the child and family's physical and social wellbeing.

Dental caries also has a huge impact on the National Health Service (NHS). In Scotland, all dental treatment provided for children under the age of 18 is free to patients at the point of access, but remunerated by NHS Government budgets (Anopa et al., 2015). The estimated total costs of all dental treatments for 5-year-old children in Scotland in 2009/10 was £4,035,200 (Anopa et al., 2015). The treatment burden in general practice, the Public Dental Service (PDS) and on hospital services is high, all for a preventable disease.

1.1.4 Prevention of dental caries

Dental caries is a preventable disease (SIGN, 2014, SDCEP, 2010). The finding that fluoride can reduce the prevalence of caries has instigated a move away from a disease-centred approach to a preventive outlook. Fluoride functions by allowing remineralisation of affected enamel and interrupting bacterial metabolisation and strengthens the enamel against further attack by forming fluorapatite crystals (Featherstone et al., 1990).

Evidence-based national guidelines advise that every paediatric dental patient should have caries risk documented and re-assessed at predetermined intervals to account for the fact that risk factors may alter with time (SIGN, 2014), and should be on a standard risk or enhanced risk prevention programme based on their caries risk status[1]. SIGN Guideline 138 (2014) recommends interventions to prevent caries at an individual, rather than population-based level. Clinical prevention interventions include toothbrushing with fluoride toothpaste, applications of fluoride varnish, dietary advice, and fissure sealants.

A Cochrane systematic review (Marinho et al., 2003) evaluated 70 studies on toothbrushing in 42,300 children, and showed the benefits of fluoride toothpaste in preventing caries. Guidelines (SIGN, 2014) recommend that children brush twice per day with a fluoride toothpaste.

The efficacy of fluoride varnish has been illustrated in the most recent Cochrane systematic review (Marinho et al., 2013). This investigated the effects of fluoride varnish use on dental caries, and emphasised the benefits for children across all age groups. This topical method is easily applied and acceptable to most children. The SDCEP (2010) and SIGN (2014) guidelines reiterate that fluoride varnish should be applied biannually for all children over the age of 2, and if children are deemed increased caries risk they should have applications every three months.

[1] A standard prevention programme includes toothbrushing instruction, dietary advice, fissure sealants of first permanent molars and fluoride varnish twice yearly from the age of 2. For children 6 years and under, toothpaste strength of 1000ppm is advised and increased to 1450ppm for children over 6 years old. Enhanced caries risk patients should have additional protection by being transferred to 1450ppm strength toothpaste aged 3 and have fluoride varnish applied four times yearly (SDCEP, 2010).

Evidence suggests that fissure sealants should be placed on the first permanent molars as soon after eruption as possible, as it is at this early post-eruptive stage that teeth are at the greatest risk of decay. A Cochrane systematic review (Ahovuo-Saloranta et al., 2013) compared 34 trials investigating sealants for preventing caries in occlusal and aproximal surfaces. For children between five and ten years old, were 40% of first permanent molars to have become decayed over two years then sealants would have reduced this to 6%.

The recent Oral Health and Nutrition guidance for Professionals (NHS Health Scotland, 2012) document provides evidence-based nutrition advice with particular emphasis on children under five years of age, utilising the 'common risk factor approach' to integrate oral health with overall health and longevity. The guideline emphasises that frequency and amount of sugary foods, drinks and medicines should be kept to a minimum, and not exceed four episodes per day, including mealtimes.

1.2 Dental caries in Scotland

1.2.1 The general picture

There is a problem in Scotland with childhood caries, which is most evident in the most deprived sectors of the community. Data on the pattern and prevalence of dental caries in children living in Scotland, collated annually by the National Dental Inspection Programme[2] (NDIP) since 2002/2003 and more historically by the Scottish Health Boards' Dental Epidemiological Programme in the years 1987-2002 (Scottish Public Health Observatory), demonstrates that the prevalence of dental caries is reducing nationally. Figure 1 illustrates that the proportion of Primary 1 children (approximately five years of age), with 'no obvious decay' experience in their primary teeth has increased from 45% in 2003 to 69% in 2016 (ISD, 2016a).

[2] NDIP is a national epidemiological dental health survey/ screening programme of five-year-old children living in Scotland in Primary 1 (P1) and eleven-year-old Primary 7s (P7). The data provides an approximation of the dental health of primary school age children. NDIP operates on two levels: a basic annual school inspection for both age groups yearly, and a more detailed inspection alternating year on year consisting of a random sample of P1 or P7 children (for example P1 in 2016, and P7 in 2015), whereby tooth surface level caries is recorded in accordance with internationally agreed guidance.

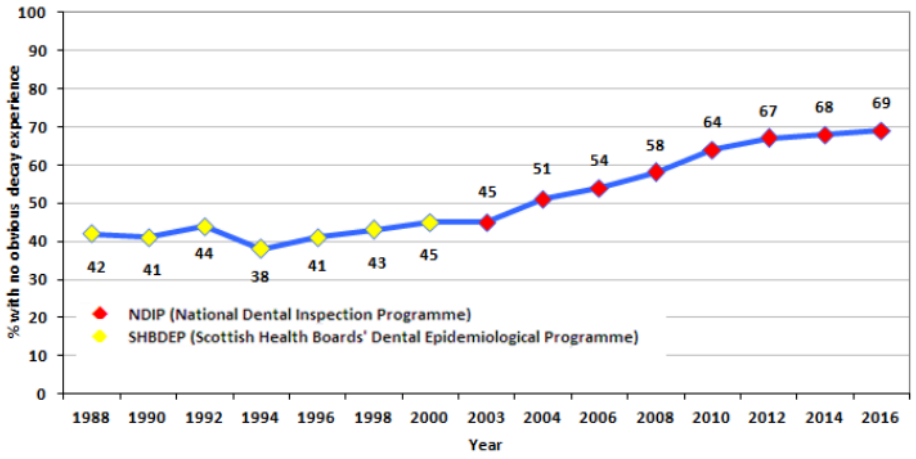


Figure 1 - Trends in the proportion of Primary 1 children in Scotland with no obvious decay experience; 1988-2016

Source: NDIP Report 2016. (ISD, 2016a). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
https://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2016-10-25/2016-10-25-NDIP-Report.pdf

A more detailed inspection (see Footnote 2, page 5) is undertaken biannually of a random sample of the Primary 1 population. Figure 2 shows the mean number of decayed, missing and filled primary teeth ($d_3$mft) among Primary 1 pupils in Scotland falling from 2.76 in the mid-2000s, to 1.21 in 2016.

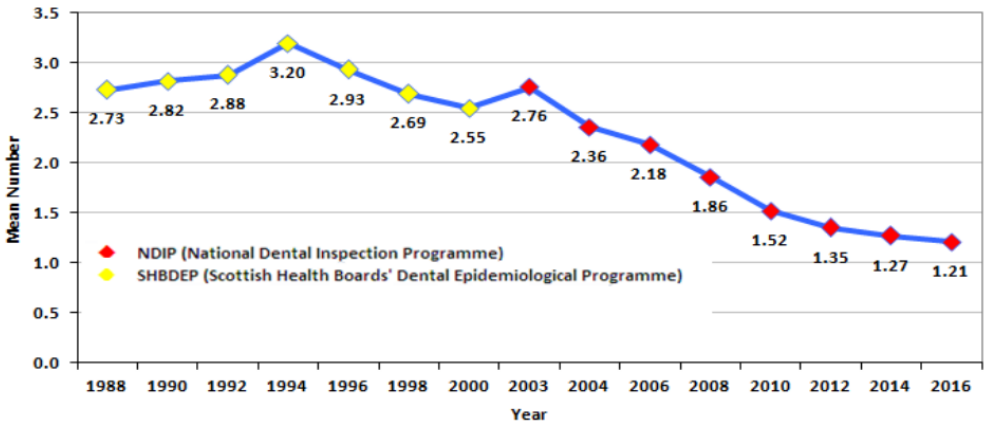


Figure 2 – Mean number of decayed, missing and filled primary teeth ($d_3$mft) in the Primary 1 population in Scotland in 2016

Source: NDIP Report 2016. (ISD, 2016a). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
https://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2016-10-25/2016-10-25-NDIP-Report.pdf

Similarly for the Primary 7 population (children approximately 11 years of age), in 2015 75% had 'no obvious decay' in the permanent dentition, which was an improvement from 53% in 2005. The D_3MFT for Primary 7 children's teeth has fallen from 1.29 in 2005 to 0.53 in 2015 (ISD, 2015).

It remains a concern that the burden of decay is greatest in a small number of children as, for example, should a Primary 1 child have 'obvious decay experience' (i.e. the 31% of Primary 1's in 2016) their average d3mft is 3.93, even though the Scottish average d3mft for Primary 1 children is 1.21 (ISD, 2016a). These patterns are mirrored in the Primary 7 data (ISD, 2015).

Mean registration rates with a dentist for children of any age in Scotland across all levels of deprivation are now at 94% (ISD, 2016b); however, registration rates in the younger age groups are notoriously low, with figures as low as 48% for children age 0-2.

'Lifetime registration' was introduced in April 2010, with the associated disadvantage that children may appear to be 'registered' but do not actually attend the dentist. It is thus perhaps more informative to explore 'participation', which is a '*measure of patient attendance at an NHS dental practice for examination or treatment in the two years prior to the time point of interest'* (ISD, 2015) and is a thus better indicator of a child's engagement with services. Registration rates nationally for children under the age of 18 in 2015 were 87.4%, and participation rates were 85.5% (SDNAP, 2016).

National HEAT[3] targets were developed by the Scottish Government as a result of the caries burden, contained within the 'Action Plan for Improving Oral Health and Modernising Dental Services in Scotland' (Scottish Executive, 2005), and aimed for 60% of all children in Scotland to be caries-free by 2010.

Childsmile, the National Oral Health Improvement Programme was also initiated as a result of the Dental Action Plan (Scottish Executive, 2005) to improve oral health and reduce oral health inequalities (see section 1.8); however, it has

[3] HEAT Target: A Government initiative, encompassing Health improvement, Efficiency and Access to Treatment to monitor services, set out that by 2010; 60% of 5-year-old primary children (Primary 1) will have no signs of dental disease and 60% of 11-12 year olds (Primary 7) will have no signs of dental disease in permanent teeth.

proved difficult to improve the oral health of the most deprived to the levels experienced by the least deprived.

1.2.1.1 Health board level variation in Scotland

At health board level, there is clearly regional variation; with some health boards performing better than others (see Figure 3). Geographically, the health boards with the greatest numbers of deprived children tend to have higher rates of decay.

In Greater Glasgow and Clyde (GGC), 68% of Primary 1 children had no obvious decay (see Figure 3 below), compared to the average of 69%. Of the 14 NHS Health Boards in Scotland, boards with poorer figures than GGC included Lanarkshire (La), at 66%, and Fife (F) at 67%. The best performing boards were Orkney (O), Western Isles (WI) and Shetland (S), where 79% of Primary 1 children had no obvious decay experience (ISD, 2016a). Figures followed similar trends for the Primary 7 children (ISD, 2015).

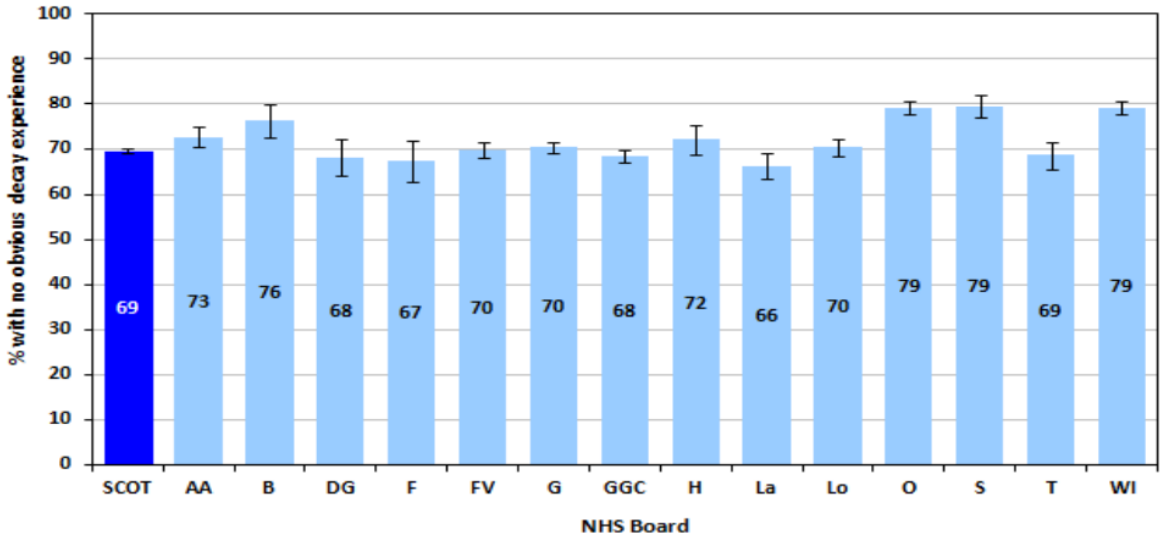


Figure 3 - Percentage of Primary 1 children in Scotland with no obvious decay experience in 2016 by NHS Health Board

Source: NDIP Report 2016. (ISD, 2016a). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
https://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2016-10-25/2016-10-25-NDIP-Report.pdf

(see Appendix 1 for full list of NHS Health Boards)

The latest $d_3$mft figures for Primary 1 children (ISD, 2016a) range between 0.65 (Western Isles) - 1.42 (Lanarkshire). Greater Glasgow and Clyde had one of the highest $d_3$mft in Scotland at 1.29 (Scottish average 1.21).

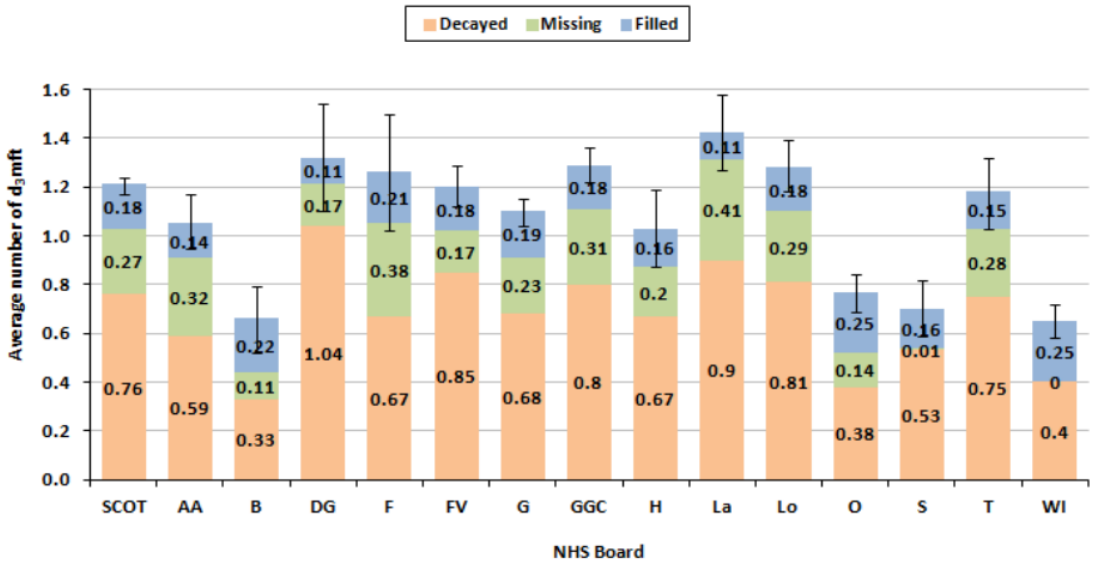


Figure 4 - Mean number of decayed, missing and filled teeth ($d_3$mft) for Primary 1 children across NHS Health Boards in Scotland in 2016

Source: NDIP Report 2016. (ISD, 2016a). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
https://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2016-10-25/2016-10-25-NDIP-Report.pdf

For children with decay ($d_3$mft >0) the Scottish average is 3.93. Again, Greater Glasgow and Clyde has one of the highest figures nationally for this group of patients with a $d_3$mft of 4.07 (ISD, 2016a).

1.2.1.2 Socioeconomic inequalities nationally

There is a long acknowledged gradient in inequality in oral health between the most deprived and least deprived in Scotland.

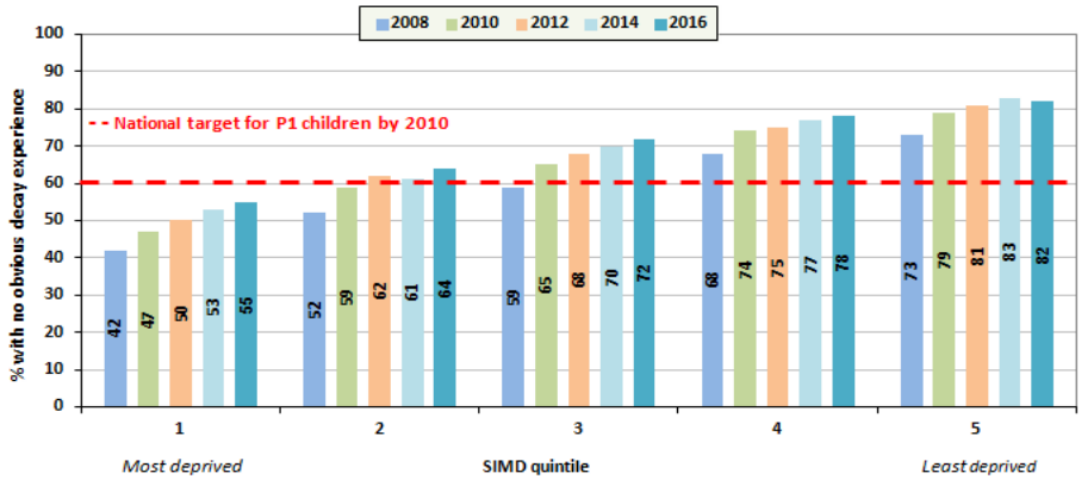


Figure 5 - Change between 2008 and 2016 in the proportion of Primary 1 children in Scotland with no obvious decay experience, by SIMD quintile

Source: NDIP Report 2016. (ISD, 2016a). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
https://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2016-10-25/2016-10-25-NDIP-Report.pdf

Figure 5 demonstrates the social gradient in oral health for Primary 1 school children in Scotland between 2008 and 2016 (ISD, 2016a). The percentage of children with no decay experience increases consistently as deprivation (using the Scottish Index of Multiple Deprivation[4] or 'SIMD') decreases. Although oral health has improved across all deprivation categories over this time period, only those in the most deprived quintiles have not yet reached the target of 60% caries free (illustrated by the dotted red line) and inequality has only reduced marginally.

[4] The Scottish Index of Multiple Deprivation (SIMD) if the official tool for measuring relative deprivation from an area-level perspective in Scotland. This Index stratifies Scotland's postcodes into quintiles between one and five (SIMD 1 being the most deprived). It acknowledges that deprivation is not simply financial in nature and utilises the concept of 'multiple deprivation' by gaining information on the seven domains of deprivation: health, housing, employment, education, crime, access to services and income. The *Scottish Index of Multiple Deprivation* [Online]. Scottish Government.

In comparison to Primary 1 children, Primary 7 children in all SIMD quintiles in Scotland reached the target of 60% free from obvious caries into dentine in 2010 (Figure 6). For Primary 7 children, patterns were similar to Primary 1 data in relation to inequalities, although to a lesser extent. Figure 6 illustrates that in 2015, 64% of children living in the most deprived quintile had 'no obvious decay experience' in comparison to 85% of children from the least deprived quintile (ISD, 2015).

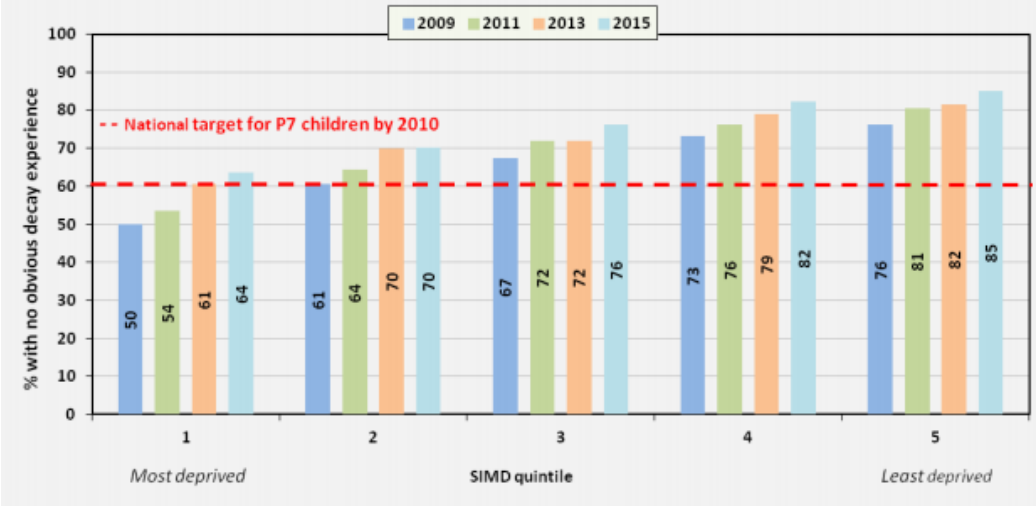


Figure 6 - Change between 2009 and 2015 in the percentage of Primary 7 children with 'no obvious decay' in the permanent dentition, by SIMD quintile

Source: NDIP Report 2015. (ISD, 2015). With permission from Information Services Division and the Scottish Dental Epidemiology Co-ordinating Committee.
http://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2015-10-27/2015-10-27-NDIP-Report.pdf

Recent ISD 'participation' figures (ISD, 2016b) illustrate that nationally, the most deprived children were less likely to participate, with 81% participation for the most deprived quintile and 90% for the least deprived quintile.

1.2.1.3 Health inequality in Greater Glasgow and Clyde

NHS Greater Glasgow and Clyde consists of six Community Health and Care Partnerships as illustrated in Figure 7: Inverclyde, West and East Dunbartonshire, Glasgow City, Renfrewshire and East Renfrewshire.

Figure 7 – NHS Greater Glasgow and Clyde Health Board area
Source: With permission from NHS GGC at http://www.nhsggc.org.uk/

The West of Scotland and NHS Greater Glasgow and Clyde in particular are consistently the most deprived areas in Scotland, with evidence of lower birth weights, higher teenage pregnancy rates, higher levels of obesity and a lower life expectancy, as illustrated in Figure 8. This map of Scotland provides a powerful visual representation of the levels of deprivation in Glasgow compared to the rest of Scotland. NHS Greater Glasgow and Clyde health board contains the largest population in Scotland, with approximately a quarter of Scotland's

annual births. Glasgow City alone contains 35.8% of Scotland's most deprived data zones (Scottish Government, 2012c).

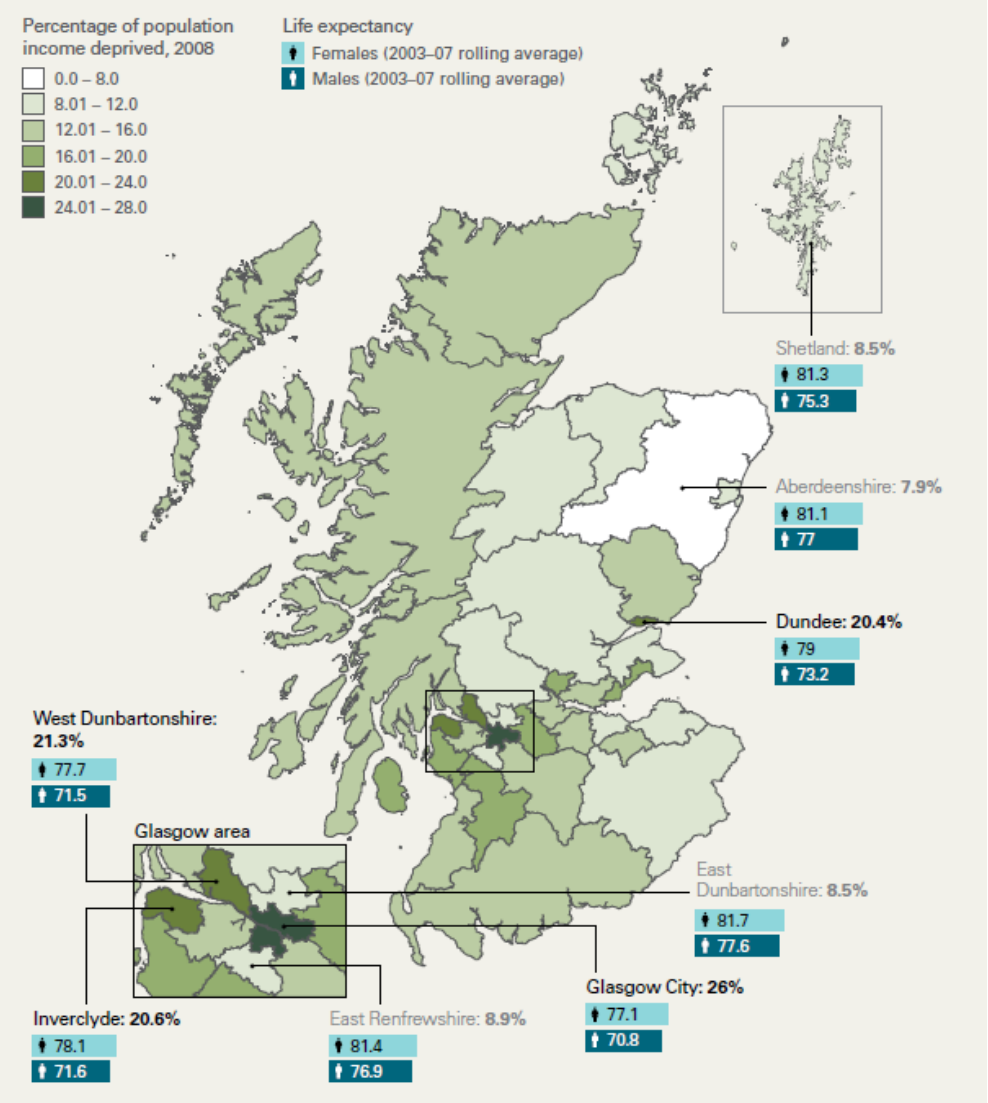


Figure 8 - Deprivation and life expectancy in Community Health Partnerships in Scotland

Source: Scottish Government, 2012c. With permission from Audit Scotland, licensed under the Open Government license. http://www.audit-scotland.gov.uk/docs/health/2012/nr_121213_health_inequalities.pdf

It would appear that, despite the fall in dental caries levels in Scotland, there is variation in the patterns of decay for children. The burden of dental decay is greatest in the most deprived sector of the population, and Glasgow City in particular has one of the highest burdens of socioeconomic deprivation and disease in Scotland. This results in an increased number of children requiring treatment, and subsequently the number of children requiring extractions.

1.3 Why do some children need a general anaesthetic?

Initially, dental caries may be reversible, and teeth restorable. The child and family should attend dental services to engage with receiving preventive and restorative care. Clinically, once the decay has progressed to proximal cavitation of the tooth surface, it may be too late to restore the tooth and extraction of teeth may be required (SDCEP, 2010).

In many cases the need for a dental extraction results in a referral for specialist assessment and care within the PDS or the Hospital Dental Services if the General Dental Practitioner (GDP) does not feel he/she is able to undertake this treatment. The PDS is a secondary care service, and the Hospital Dental Services are specialist tertiary referral centres.

Depending on the co-operation and age of the child, urgency of care, anxiety levels and the number of teeth to be extracted, this treatment may be undertaken under local anaesthetic, or require further support and pharmacological intervention through conscious sedation, or a GA. All children referred to the Public Dental or Hospital Services are assessed in relation to suitability for treatment under each of these modalities. The majority of dental procedures can be undertaken with local anaesthetic or conscious sedation; however, for some children a GA is unavoidable in order to undertake treatment. Possible reasons a child may require a DGA for dental treatment include multiple extractions, severe anxiety, allergy to local anaesthetic, the child being pre-cooperative, medical complications, behavioural issues and acute pain or swelling (Davies et al., 2008). Dental treatment under GA can be divided into ‘comprehensive care’ DGA treatments, where fillings, extractions, surgical extraction and other complex treatment can be undertaken, or ‘extraction-only’ DGAs.

The aim of treatment planning for children undergoing GA is to avoid a repeat anaesthetic by ensuring the child is dentally fit by the end of the procedure. The Department of Health states that a DGA should only be undertaken when absolutely necessary, given the morbidity and mortality associated (Pike, 2000) and distressing consequences for patient and family in the wait for and in the aftermath of a DGA (Rodd et al., 2014). Certain dental procedures do not ordinarily justify a GA as the risks of the anaesthetic would outweigh the benefits. Examples of this would include extractions for orthodontic purposes, or a child free of sepsis for whom other avenues (such as inhalation sedation) have not yet been explored (Davies et al., 2008).

1.3.1 Patterns of Dental General Anaesthetics across the UK

Over the past three decades a shift has occurred across the United Kingdom: where previously a DGA could be undertaken in primary care, all DGAs must now be undertaken in a hospital setting with critical care facilities to optimise patient safety (Pike, 2000).

In England and Wales, figures are increasing annually for DGAs. In England alone, in the year 2013-14, 46,500 children under the age of 19 experienced a GA for treatment of dental caries (Faculty of Dental Surgery, 2015), and DGAs accounted for 30.9% of all GAs for 5-9 year olds (Faculty of Dental Surgery, 2015). In contrast in Scotland, figures of DGA are gradually reducing (Figure 9).

1.3.2 DGAs in Scotland

Although Scotland is gradually reducing its rates of DGA (see Figure 9), Figure 10 illustrates that there were still 11,455 children and young people under 19 admitted to hospital for GA with a diagnosis of dental caries in Scotland in 2013-14 (ISD, 2014). This corresponds to the highest paediatric admission rate for any speciality in Scotland and was the most common reason for Scottish children to have a GA in 2013/14 (ISD, 2014), all for a preventable and generally non-communicable disease.

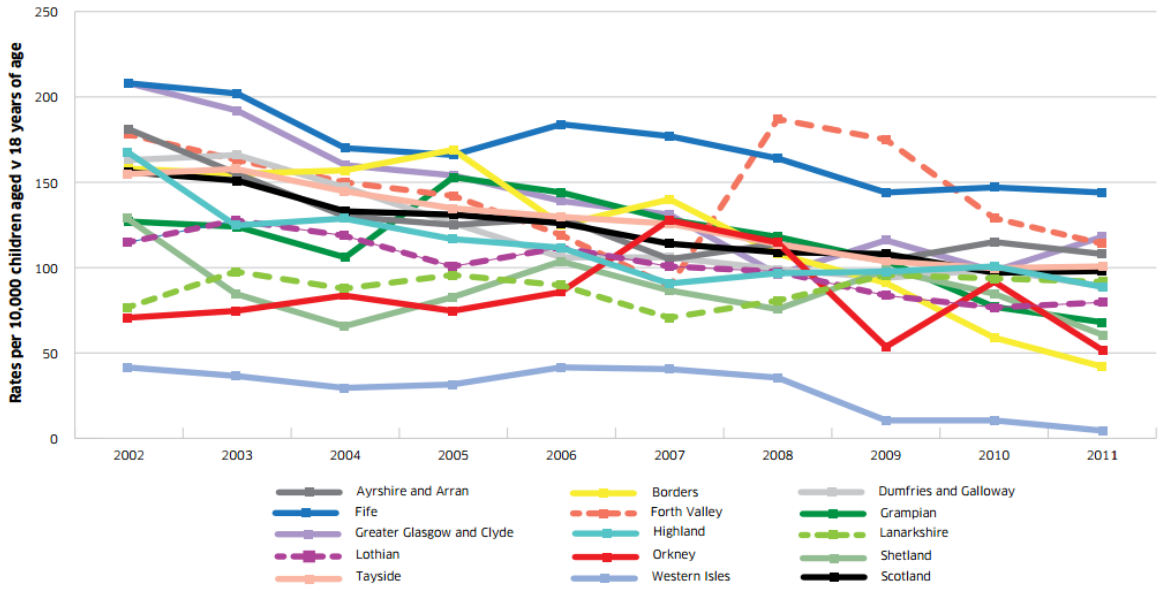


Figure 9 - Rates per 10,000 child population for general anaesthesia procedures for dental extractions in 0-17 year olds: 2002-2011

Sources: SMR01, SMR13, local data (Scottish Government, 2012b). Annual Report of Chief Dental Officer 2012 with permission from author.
http://www.gov.scot/resource/0044/00441178.pdf

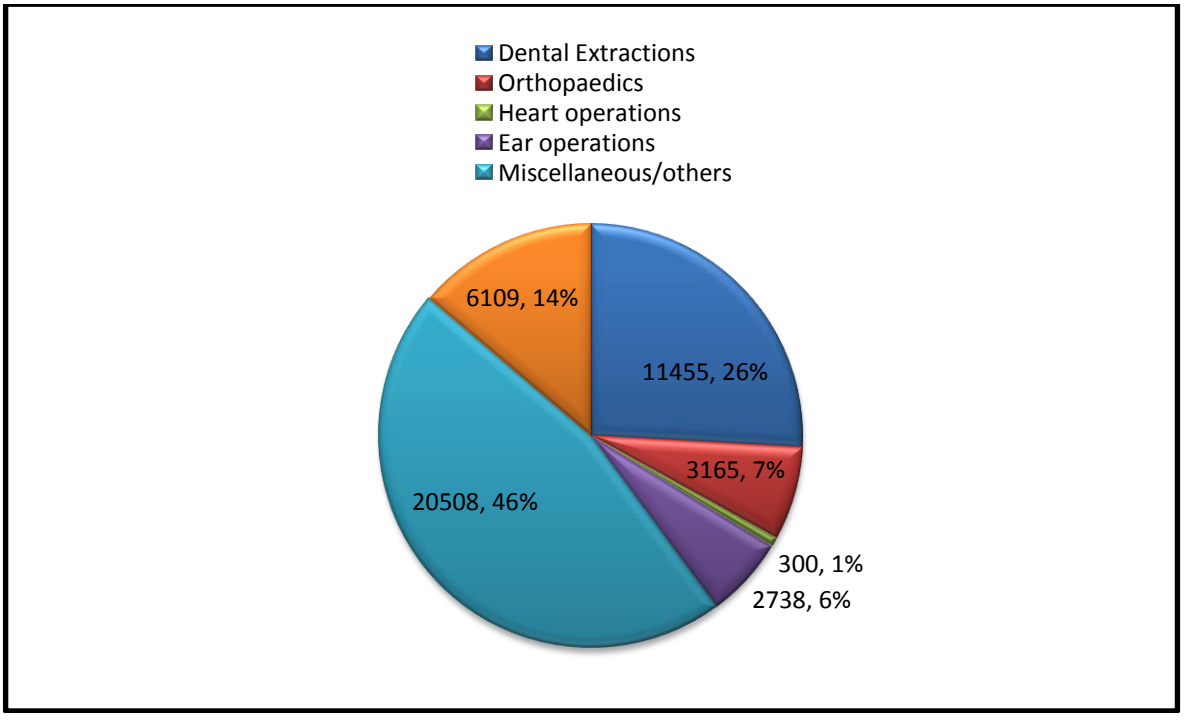


Figure 10 - Number and percentage of Hospital Elective Procedures 2013-2014 by procedure in Scottish children aged 0-18

Source: ISD, 2014. With permission from Information Services Division.

National figures for the proportion of children under age 3 undergoing a DGA in 2011-2012 showed that 'Glasgow City' had the highest rate per 100,000 of the

population (254/100,000), compared to the Scottish average (123/100,000). North Ayrshire had the second highest figures at 248/100,000, followed by West Dunbartonshire at 220/100,000. Two of these three areas (see Figure 7) are in Greater Glasgow and Clyde.

However, caution must be excercised in interpreting DGA data in Scotland. It is acknowledged that accurate coding for GA is poor, and although hospital in-patient and day-case statistics for dental extractions give a good approximation of DGA data, it is considered anecdotally that these figures are an underestimation. The most accurate DGA data in recent years is contained within the Chief Dental Officer's Report (Scottish Government, 2012b) and there were no readily available current data linking levels of deprivation and DGAs.

The recent Scottish Dental Needs Assessment Programme (SDNAP) document reports that 44.8% of referrals to Paediatric Dental departments in Scotland were for assessment for a GA (SDNAP, 2016). Glasgow Dental Hospital and School (GDHS) had the highest number of referrals for a DGA at 416 referrals in one month; compared to the second highest (125) in Grampian (SDNAP, 2016). In another retrospective audit within the aforementioned document, 39.1% of referrals to GDHS were for treatment planning for extractions under GA, compared to 17.4% in Dundee and 5.1% in Edinburgh (SDNAP, 2016). More than half of all referrals to GDHS were for children living in the 20% most deprived postcodes (SDNAP, 2016).

1.3.3 DGAs in Greater Glasgow and Clyde

A service exists for dental extractions under GA in the Royal Hospital for Children, situated in Glasgow City within NHS Greater Glasgow and Clyde Health Board, which is run by PDS Dentists.

Approximately 50 patients are assessed at paediatric assessment clinic and around 50 patients are treated on the extraction-only list under GA per week, an estimate of 2,500 children per year. Anecdotally, there is approximately a 4 – 5 month wait from initial referral to treatment. The average age of children treated on the 'extraction-only' list is 5 years and 11 months (Information and Knowledge Services, 2016).

A study based in Glasgow over a two-month period investigating the profile of children attending for DGA in 2004 quoted the average age of patients as 5.3, and the average number of teeth being extracted as seven per child; with 74% of children having between 6-16 teeth extracted. This study made a link to socioeconomic deprivation and DGAs, noting that almost nine out of 10 children attending for DGA were from the most deprived areas (Hosey et al., 2006a).

A second, smaller DGA 'extraction-only' service exists in NHS Greater Glasgow and Clyde at Inverclyde Royal Hospital, a peripheral District General Hospital, but will not be the main focus of this research project.

It is also important to note that alongside the 'extraction-only' DGA list at RHCG, a 'comprehensive care' list runs, where restorative dentistry is undertaken for children as are more complex procedures such as surgical extractions. This will not be evaluated in the course of this research project.

1.4 Impact of DGA on child and family

A DGA is undesirable for many reasons. General anaesthetics have a risk of morbidity and mortality (Bridgman et al., 1999). Patient reported outcome measures of a DGA have been evaluated (Rodd et al., 2014) with fasting described as the most difficult aspect of the DGA experience, and children feeling 'weird' and 'wobbly' after the anaesthetic. A study of 104 children (average age of 4) showed that following a DGA, although oral health-related quality of life measures improve in the short-term, dental fear scores remains unchanged (Klaassen et al., 2009). If dental fear remains unchanged these high-risk patients may be too fearful to seek continuing care and prevention post-anaesthetic. A Scottish study showed the mean Modified Child Dental Anxiety Score for DGA for those over 8 years of age prior to DGA as 24.2, placing them just shy of the 'extreme anxiety' bracket where scores are between 25-40 (Hosey et al., 2006b).

1.5 Impact of DGA on NHS and society

These preventable and expensive GAs place a burden on already stretched NHS resources. The cost of these hospital admissions to the NHS in England was reported to be £30 million in 2012–13 (Faculty of Dental Surgery, 2015). A recent Welsh report attributed a reduction in DGAs to a reduced number of available sessions rather than a reduction in caries (Morgan, 2015) . General anaesthetics in Scotland have been reported to cost on average £653.26 per patient for a day-case procedure for multiple extractions, but ranged from between £393.22 and £1,393.89 depending on whether a day-case or in-patient stay was required (Anopa et al., 2015).

In addition, Figure 11 (Audit Scotland, 2012) illustrates that patients of any age (adults included) from areas of high deprivation are twice as likely not to attend for any in-patient or day-case procedure such as a DGA, and three times as likely not to attend a new outpatient appointment as patients from the least deprived quintile (figures for all specialties combined), highlighting that engaging these families is an issue and emphasising the burden on pathways such as the DGA pathway of NHS GGC.

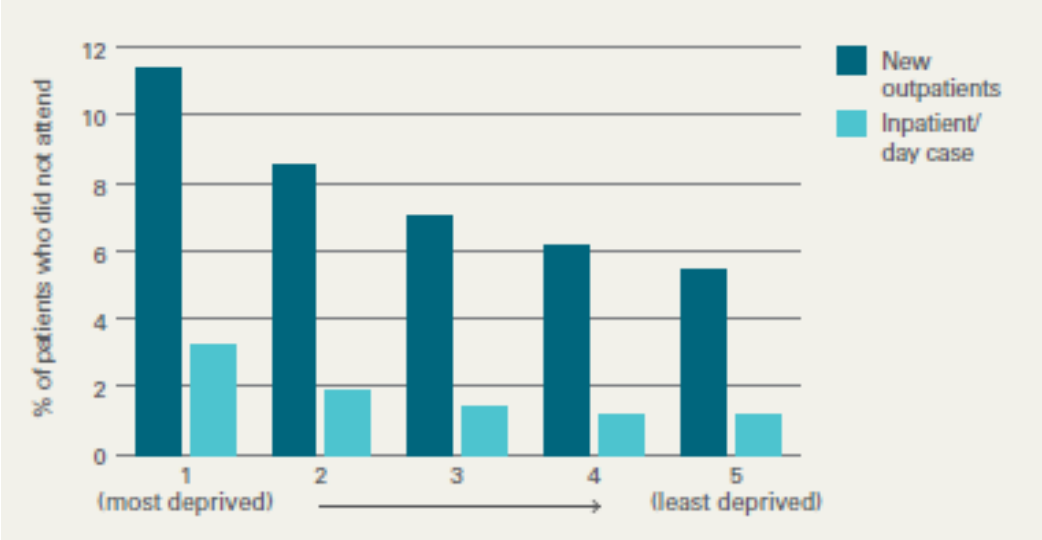


Figure 11 - Percentage of patients of any age missing hospital appointments by deprivation; 2011-12

Source: Audit Scotland, 2012. With permission from Audit Scotland, licensed under the Open Government license.

1.6 Oral health behaviours and engagement following DGA

Parents of young children undergoing a DGA in Canada were interviewed in relation to the overall DGA experience, and an immediate improvement in their child's oral-health related quality of life was reported, in particular a reduction in pain and sleepless nights (Amin et al., 2006). Although many parents described the DGA as a difficult experience for the family, they expressed increased motivation to undertake positive oral health actions. Indeed, many children allowed parents to brush their teeth more freely after surgery and were more open to reducing their sugary food intake, if only in the short term.

However, in the same study, other parents felt their children would have negative associations towards a dentist as a result of the GA experience: 'He/she doesn't want to come back to the dentist' was a repeated parental attitude (Amin et al., 2006).

Retention and provision of prevention for these high-risk children in the dental system after a GA is challenging. In a study of 448 patients (average age 41 months), treated for dental extractions under GA in 2000 in Buffalo USA, every child had a review appointment made at the hospital for the period following the anaesthetic. Only 39% returned for immediate post-DGA follow-up for prevention and, within two years, 59% of children had new carious lesions. This study recommended that children and families not engaging in the aftermath of a DGA should be actively 'pursued', by working with the family to create suitable appointments (Foster et al., 2006). If children 'were not brought' for prevention and nothing changes by way of the oral environment, then new carious lesions will present and the child may require further treatment under a 'repeat' DGA.

1.7 Repeat general anaesthetics

1.7.1 Figures for repeat DGA

A repeat DGA for dental caries is an additional anaesthetic that is required at a later date for the same patient, again for dental caries. This may be 'due to failures in treatment planning, process or failure to adopt preventive

counselling' (Kakaounaki et al., 2006). This would suggest two potential aetiologies for children requiring repeat DGA: either that caries was not adequately treated at the first DGA, or that all dental caries was dealt with initially but the child presents with new disease at follow-up due to failure to engage with prevention.

Rates of repeat DGA vary in the literature (Drummond et al., 2004). A retrospective longitudinal analysis from Leeds Paediatric Dental Department from 1997-2003 of children with an average age at first DGA of 6.35, demonstrated a repeat DGA rate of 8.9% and a mean number of teeth extracted of 4.24 at the repeat anaesthetic, with 84% of these newly carious teeth charted as un-erupted or sound at the first GA (Kakaounaki et al., 2006). One study reported a 'previous family member' DGA rate of 47%: this included the patients attending paediatric assessment clinic for a repeat DGA, or a history of other siblings in the family having had a DGA (Olley et al., 2011).

1.7.2 Characteristics of children requiring repeat DGA

Characteristics of children requiring a repeat DGA vary in the literature. The study based in Leeds in the section above suggested that characteristics include experiencing episodes of oral pain and infection and having an emergency attendance pattern, with irregular attendees being described as being at four times the risk of repeat DGA compared to regular attendees (Kakaounaki et al., 2011). A study based in Seattle USA by Sheller et al. (2003) compared reasons for healthy children undergoing repeat comprehensive care DGA in comparison to children who only required one DGA. Some of the characteristics of the repeat DGA group included a young age, using a bottle at the time of DGA, the child holding the responsibility for toothbrushing, and social deprivation (Sheller et al., 2003).

1.7.3 Avoiding DGA and repeat DGA

Available literature advises radical treatment approaches with adjunctive interagency collaboration and targeting of health education (Harrison and Nutting, 2000), and 'other preventive approaches' (Kakaounaki et al., 2006) to reduce repeat DGAs.

Furthermore, a widespread comprehensive understanding of the social determinants of disease is required in order to tackle the wider social determinants (Watt, 2007). A social gradient exists for these hospital admissions for dental caries, as DGAs are more common in more socially deprived populations (Moles and Ashley, 2009). Oral and general health are inextricably linked, with many common risk factors for both. We must consider these DGA patients in context of the wider conditions which they experience and remember the 'causes of the causes' in considering the aetiology of their deprivation (Marmot, 2010). Dental health often is an indicator for poor general health and this may be extrapolated to general neglect for some children attending DGA services.

Inequalities in general and dental health have not narrowed substantially over the past few decades, thus the social determinants of health are now more in the spotlight than ever when it comes to appropriate health promotion programmes and implementation. Watt and Sheiham (2012) postulate that the social determinants of health must be combatted in favour of addressing individual behaviours (Watt and Sheiham, 2012), and this applies to children experiencing DGAs.

The 'life-course perspective' (Kirby et al., 2009) considers life-course from conception onwards, and recognizes that influences as early as in-utero can alter life-long health outcomes for the unborn child. The early years set the scene for a child's future health, social and emotional status.

1.8 The 'Policy and Programme' Landscape in Scotland

1.8.1 Strategic drivers in Scotland

Upstream far-sightedness and a focus on national policies led to the development of the Dental Action Plan (Scottish Executive, 2005), and other wider key strategic drivers such as the NHS Quality Strategy (Scottish Government, 2010b) and the Early Years Framework (Scottish Government, 2008) in Scotland to improve oral health inequalities.

The key strategic themes for improving oral health for children in Scotland include developing services focussed on prevention, ensuring services are aligned with the needs of deprived groups, and acceptance and integration of dentistry within health in general. The NHS Quality Strategy outlines key actions to include an early years and collaborative focus, education and training of staff, service linkages, consideration of service locations in relation to deprived groups to allow equal access, and targeting prevention for vulnerable families (Scottish Government, 2010b). It has also been advised that hospital data be monitored with specific emphasis on vulnerable groups and access to care.

Service-level improvements can begin to contend with inequalities by funding services in deprived areas, such as increased General Medical Practitioners (GMPs) in these 'deep-end', or 'very deprived' areas, and increased number of GDPs with the introduction of the Deprived Areas Allowance in 2007 (see Figure 12 below); however, as illustrated previously in Figure 11, there is still a persistent issue with engagement of families.

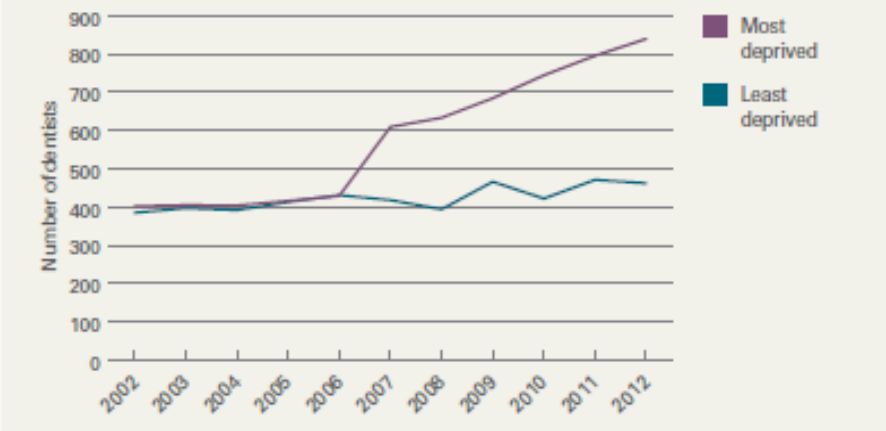


Figure 12 - Distribution of dentists in the most and least deprived areas 2002-2012

Source: Audit Scotland, 2012. With permission from Audit Scotland, licensed under the Open Government license. http://www.audit-scotland.gov.uk/docs/health/2012/nr_121213_health_inequalities.pdf

1.8.2 Prevention strategies in Scotland

Health improvement strategies that also tackle inequalities may involve a whole population approach, a targeted individual approach, or a directed scheme for a specific subdivision of the population (directed-population approach). A mixture of these three approaches can also be used (Burt, 2005). A proportionate

universalism approach was described by Marmot in 2010. In order to reduce perpetual health inequalities, the focus should be on the need to tackle differences in education, occupation, employment, income, home and community. His concept was that the entire population should receive an intervention to facilitate a population-wide improvement, but that targeted disadvantaged sections of the population should receive more intense support to narrow the gap in inequality (Marmot, 2010).

Following the 'Action Plan for Improving Oral Health and Modernizing Dental Services' (Scottish Executive, 2005), Childsmile, the National Oral Health Improvement Programme, was implemented to employ a directed population approach. This service incorporates life-course prevention and is differentially concentrated through the socioeconomic continuum (Mcmahon et al., 2011). It consists of three distinct components: Childsmile 'core', 'nursery and school', and 'practice' (see Section 4.3.2.1).

The Childsmile programme showed savings of £6 million in dental treatments between 2001-2002 and 2009-2010 (Scottish Government, 2013). In the 8th year of Childsmile operating, the estimated savings to the NHS were greater than 2.5 times the cost of the programme (Anopa et al., 2015). This is an example of 'preventive spend', as outlined in the Christie Commission (Christie, 2011).

Despite Childsmile, cohorts of children whom we deem hard-to-reach are persistently difficult to engage for prevention and treatment. There is at present no separate pathway within Childsmile for community prevention for those who have undergone, or are undergoing, DGAs. These patients requiring DGA are an 'exceedingly high-risk' group, and yet it is suspected that they are slipping through the current Childsmile net.

1.9 DGA pathways and prevention: the current picture

For a patient entering a pathway for a DGA, we cannot prevent the DGA event from occurring, but prevention within the pathway itself and in the follow-up period should ideally work to prevent a second DGA and any further DGAs for other siblings within the family. Evidence is scarce in relation to what currently

exists for integrating prevention with DGA pathways, especially at specific stages along the pathway such as at referral, pre-assessment, and at follow-up.

Olley et al. (2011) investigated parental viewpoints of prevention surrounding the GA services of a London Dental Hospital over a four-month period in 2009/10 (Olley et al., 2011). Parents completed an interview questionnaire during their child's pre-DGA assessment appointment, and of the 100 parents sampled (one quarter of their yearly cohort) almost half reported a previous DGA for that child or a sibling. One of the major barriers to oral health reported by parents was a 'lack of support from dental services'. Sixteen percent of parents found difficulty 'accessing care', and 61% did not plan to arrange any follow-up appointment for care at their dentist post-DGA. Parents thought that they had not received sufficient guideline recommended prevention to date.

This study highlights that the onus is put on the parent to engage, with little or no support from health services, and that parents would like more in the way of tailored prevention services and support. Seventy-five percent of parents indicated they would be open to receiving support for their child's oral health. When questioned about what kind of intervention would be beneficial, irregular attendees thought that 'home visits' would help, with further prevention at appointments already arranged as part of the DGA pathway, and with any intervention tailored to the child as well as the parent.

Goodwin et al. (2015) showed variability in the prevention provided in six hospitals in Northern England with no standardised prevention advice package in the pathways (Goodwin et al., 2015c).

Alijafari et al. (2014) investigated the views of 29 parents on the delivery of preventive advice for their children undergoing DGA. This study found that parents were open to more prevention and support, including advice on fruit juices and the merits of fluoride varnish, and the provision of multi-media resources (Aljafari et al., 2014).

1.9.1 Prevention at the point of referral

Goodwin et al. (2015a) reported that parents had mixed comments about the quantity and quality of prevention they had received from their GDP. Aljafari et al. (2015) found that many parents of children undergoing DGAs described not having had fluoride varnish applied previously in primary care, and any diet and oral hygiene advice given as being generic and 'common sense', rather than being tailored.

1.9.2 Prevention at pre-assessment clinic

In a study based in Northern England, only one hospital out of six had a formal pre-DGA prevention clinic that the patient was obliged to attend before any DGA appointment was given (Goodwin et al., 2015c).

Olley et al. (2011) showed that 55% of parents of children undergoing DGA supported the addition of a dental prevention intervention at the pre-DGA assessment visit.

1.9.3 Prevention post-DGA

A study by Foster et al. showed when patients attended a post-DGA clinic for preventive advice, the risk of new carious lesions decreased; however, the attendance rate was only 39% (Foster et al., 2006).

At present, there is insufficient evidence available to ascertain whether any formal or informal links have already been initiated in DGA pathways of care with wider programmes and policies in the UK to further engage these vulnerable patients with prevention.

1.9.4 Guidance

There is guidance available for these high-risk children undergoing DGA, suggesting that further preventive advice is required (SIGN, 2014). Watt described that patients who attend for DGA are not receptive to current prevention protocols and that something more active is required for them (Watt, 2007).

Interestingly, although the available UK guideline document from the British Society of Paediatric Dentistry and Royal College of Anaesthetists entitled 'The Management Of Children Referred For Dental Extractions Under General Anaesthesia' (Adewale et al., 2011) gives administrative recommendations for written information to be given to families of paediatric patients following assessment and on the day of DGA, there is no mention of including preventive information at any stage. This document recommends that there is a follow-up arranged post-DGA 'where appropriate'. It is also advised that a letter to the GDP be posted or 'given to the patient' post-treatment so that referrer is made aware that the treatment is complete and to facilitate continuing care and prevention. It is not clear to what extent this is happening locally or nationally.

It is obvious that the issues faced here in NHS GGC are a UK-wide problem. In an editorial summary of the above paper by Olley et al. (2011) 'Why are children still having preventable extractions under general anaesthetic?', emphasis is placed on 'joining the dots', embedding a preventive attitude across individuals and agencies to ensure the best standard of care for these vulnerable patients (Welbury, 2011).

1.10 Rationale for research

Poswillo emphasised that 'the use of general anaesthesia should be avoided where possible' (Poswillo, 1990). Knowing the risks surrounding DGAs and the health inequalities that lead to DGAs, it would appear then that the RHCG service may not be effective at promoting a culture of prevention and engagement for those patients with the highest need. Concern has been raised at the lack of transparency of DGA pathways in the United Kingdom in relation to care pathway settings, accessibility, and quality (Robertson et al., 2012).

Many of the families labelled as 'hard to reach' may not access dental services except in emergency situations, which result in DGAs and repeat DGAs. Modernisation of services and attitudes towards a preventive ethos and integrating with the wider policies and frameworks available could accelerate improvements in child-centred services and initiate a more proactive, preventive mind-set.

The primary aim of the RHCG DGA pathway is to treat dental caries but, arguably, another principal aim of the pathway should be prevention of a second DGA or indeed a first DGA in other siblings within the family. Olley et al. (2011) showed that siblings of children undergoing a DGA are more likely to require a DGA themselves, with up to four siblings in 6% of families cited as having required previous DGAs in the patient population they studied (Olley et al., 2011).

The rationale for this study being based in Greater Glasgow and Clyde was twofold. Firstly, as illustrated, the burden of caries and social inequalities in NHS GGC is large in comparison to many other NHS health boards in Scotland. NHS GGC has the largest service in Scotland providing extractions under GA for children from a wide catchment area. Secondly, the Principal Researcher (PR) works alongside this pathway of care as a Specialist Registrar in Paediatric Dentistry. In her role as a clinician, the PR was aware that clinical staff involved in the NHS GGC pathway of care and Dental Public Health colleagues were concerned that not enough prevention was being provided along the pathway, and there existed a general sense that change was required.

The current DGA pathway exists alongside a progressive and dynamic sea of change in relation to the wider landscape of child health and wellbeing in the UK. Scotland is at the forefront of this movement, and has initiated frameworks and policies such as Getting it Right for Every Child (Scottish Government, 2007), the Early Years Collaborative (Scottish Government, 2008) and new legislation on wellbeing within the Children and Young Person (Scotland) Act (Scottish Parliament, 2014).

Despite the successes of the Childsmile programme nationally in improving oral health (Macpherson et al., 2013), inequalities remain, with those most disadvantaged (including those requiring DGA) not always benefitting from the programme. It would appear that prevention could be more embedded in the DGA pathway in an effort to reduce repeat DGAs and indeed where possible avoid a first DGA in younger siblings by breaking life-course oral health behaviours. At the time of writing, no current models exist in the literature in relation to channelling and engaging with this wider landscape for DGA pathways of care.

A systems-level needs assessment was intended to assess the pathway in relation to current practice of prevention and elucidate if linkages are present with available preventive and protective policies and frameworks. A consideration of what changes may be required to maximise engagement and prevention for these most vulnerable children was planned within this thesis.

Chapter summary:

Chapter 1 introduced the problem of dental caries in Scotland, in particular Greater Glasgow and Clyde, the challenge of tackling health inequalities and the subsequent issues with DGA. There is awareness that a cohort of children is missing opportunities for prevention and thus present in the GA pathway of care. This background supported the aims and objectives for this Master's research, outlined in Chapter 2.

2 Aims and Approach

Chapter 2 describes the overarching aims and objectives of this Master's research, and outlines more specific research questions. The qualitative approach and design is detailed and two phases of research are introduced: a preliminary scoping exercise and a qualitative systems-level needs assessment.

2.1 Aims and Objectives

2.1.1 Aims

The overarching aim of this study was to assess provision of dental prevention in the care pathway for children undergoing GAs for dental extractions at the Royal Hospital for Children (RHCG), NHS GGC, with a view to making recommendations at a local level on how to optimise prevention in the care pathway. This aim was underpinned by three more specific objectives, outlined below.

2.1.2 Objectives

1. To undertake a systems-level needs assessment to assess the current pathway of care at RHCG for children undergoing extractions under GA in relation to prevention, and what opportunities exist to integrate prevention into the pathway.

2. To explore the pathway's wider context including national policies and programmes which may provide opportunities to improve prevention within it.

3. To explore examples of good preventive practice for DGA pathways in other NHS boards in Scotland.

Research questions were developed to address the aims and objectives and further focus the study.

2.2 Design

This Master's work comprised two distinct phases of research designed to answer seven research questions.

The first research phase was a short 'scoping study' designed to answer two research questions:

1. What is the current pathway of care for children undergoing extractions under GA in the Royal Hospital for Children NHS GGC?

2. Surrounding this pathway of care, what wider policies and programmes exist relevant to prevention?

This 'scoping study' provided preliminary information to inform the development of the second research phase, a qualitative needs assessment, which set out to answer five further research questions:

1. To what extent is prevention currently incorporated in the pathway of care and is there a need for action?

2. To what extent are there, and could there be, connections with wider policies and programmes which could support prevention?

3. What is influencing provision of prevention in the pathway of care?

4. Are there examples of good preventive practice in other DGA pathways within NHS GGC or other NHS boards which may inform improvements in NHS GGC?

5. How can the provision of prevention within the pathway be improved, are there barriers to these improvements and how can these be overcome?

2.3 Approach

2.3.1 Qualitative approach

Of the two main research approaches (qualitative and quantitative), qualitative research was chosen as the most appropriate approach for this study.

Pope and Mays described qualitative research as the 'development of concepts which help us to understand social phenomena in natural rather than experimental settings, giving due emphasis to the meanings, experiences and views of the participants and understanding context, people and interaction' (Pope and Mays, 1995).

A qualitative approach can be useful to explore a subject about which not much is known in advance, or when meanings, motives, reasons and patterns, are

important. Qualitative research can be used to obtain 'culturally specific information about the values, opinions, behaviours, and social contexts of particular populations' (Mack et al., 2005). This differs from quantitative research, which instead tests hypotheses by looking at relationships between variables and can establish cause and effect in controlled circumstances (Creswell, 2009). Where quantitative methodology takes a wide breadth of data from a large statistically representative sample, qualitative research employs an in-depth exploratory stance for a smaller sample. It emphasises the natural settings and the human as a research instrument.

Qualitative research was chosen in this study for its ability to facilitate contextual and strategic enquiry (Ritchie and Spencer, 2002). The research questions asked 'what exists' in relation to current provision of prevention in the pathway of care (contextual enquiry) and 'how can this system be improved' (strategic enquiry).

Another advantage of qualitative research for use in this particular study was its flexibility, with participants being free to respond in their vernacular with more complex information than 'yes or no' answers. It was also more malleable for the researcher, who could timeously tailor further questions depending on the answers given, asking 'why, and how', rather than just 'what'. Qualitative exploration was the obvious research style to employ in this study to gain an in-depth understanding of the pathway through rich and detailed stakeholder views and experiences.

The strengths of qualitative research have been described (Burke Johnson and Onwuegbuzie, 2004) as the ability to evaluate in-depth complex phenomena such as was required in this pathway of care, via the experiences of a selected number of participants or case studies in the local context with the ability to undertake cross-case comparison as required. In addition, given the 'generative' nature of qualitative research, it was the hope that any new insights could aid development of future initiatives, policies and strategies.

Burke Johnson and Onweugbuzie (2004) described the weaknesses of qualitative research as lacking generalisability, and the time consuming nature of data collection process and analysis. These issues were born in mind when

undertaking this study. The same authors also described qualitative research results as ‘more easily influenced by the researcher's personal biases and idiosyncrasies’ (See Sections 7.3.1.4 and 7.3.1.5). The Standards for Reporting Qualitative Research (SRQR) checklist was used to guide the qualitative process and subsequent reporting (O’Brien et al, 2014).

2.3.2 Pragmatist approach

Paradigms are a ‘loose collection of logically related assumptions, concepts or prepositions that orientate thinking and research (Bogdan and Biklen, 2007). Many paradigms in qualitative research are highly philosophical and abstract, such as phenomenology and constructivism. Phenomenology seeks to understand how people construct meaning in human phenomena, without questioning the causes (Ritchie and Lewis, 2003) and constructivism looks at learning from a social perspective, the nature of knowledge and knowledge translation (Young and Collin, 2004), neither of which was suitable for this functioning pathway of care, as it is neither a ‘phenomenon’ in which to find meaning, or an investigation of knowledge transfer in the pathway of care.

This study instead took a pragmatist approach as it was founded in ‘real-world’ problems with prevention in the pathway of care, requiring a ‘problem-solving’ investigatory stance to evaluate the pathway. A practical observation- and experienced-based approach suited this qualitative assessment of a care pathway.

Taking a pragmatist approach afforded the freedom to choose the research methods best suited to meeting the study’s overarching aims and answer the research questions.

Pragmatism is common in mixed-methods research and qualitative studies with an ‘action research’, healthcare or policy focus. This was undertaken in this study, where methods were matched to specific aims and the purpose of the research (Mackenzie and Knipe, 2006).

Pragmatism is ‘not committed to any one system of philosophy’, but ‘offers an outcome-oriented method of inquiry that is based on action and leads to further action and the elimination of doubt’ (Burke Johnson and Onwuegbuzie, 2004).

The pragmatist ideal involves considering the meaning of ‘truth’ in the research, believing that ‘truth’ is based on ‘practical consequences of belief in the world’ (Murphy, 1990), evolving over time in that what exists today will not necessarily reflect the future. This consideration of ‘truth’ was applied to the pathway of care in considering the constant flux of staff and patients within the system, and the evolution of the pathway over time between data collection and thesis write-up.

Chapter Summary

Chapter 2 set out to outline the aims, objectives, research questions, design and approach for this Master’s research. Chapter 3 outlines the method of ethical approval and further ethical considerations for this study.

3 Ethical Approval and Considerations

Chapter 3 presents the ethical approval gained for this study, and discusses further ethical considerations.

3.1 Ethical approval

This project sought to adhere to the principals of ethical research, including autonomy, beneficence and justice (Social Research Association, 2003). Guidance was initially taken from the West of Scotland Research Ethics Committee, having forwarded the research protocol, Participant Information Leaflets, draft topic guides and an example consent form for comments. The project was deemed to be a service evaluation with no further ethical approval required (see Appendix 2). University of Glasgow MVLS College Ethics Committee approval was obtained (Appendix 2, page 172). The project was also approved by the NHS GGC Oral Health Directorate Management team.

3.2 Further ethical considerations

DiCicco-Bloom and Crabtree (2006) have identified four specific ethical issues to consider when planning QR:

The first is the risk of harm to the participants as a direct result of the fieldwork, for example, precipitating emotions such as grief, and causing distress as a result. When considering risks and benefits of participation for subjects, it was not deemed that the fieldwork for this study posed any obvious threats to participants.

The second consideration involves protecting participant identity and information. Given the unique and public nature of many of the roles of the stakeholders participating in the study, it was necessary to avoid using names and generalise roles where possible to maximise anonymity. Participant information and data was stored securely in line with the Data Protection Act.

Thirdly, a paramount consideration should be how to fully inform participants of the nature of the study, by the process of 'informed consent'. How this was undertaken is covered in the methodology section (see Section 5.2.2.4.1).

Lastly, the possibility of participant exploitation should be considered (DiCicco Bloom and Crabtree, 2006). This was not deemed to be applicable to the stakeholders in this study.

Chapter Summary

Chapter 3 outlined the ethical approval methodology and wider ethical considerations for this study. Chapter 4 presents the aims, methods and findings of the first stage of this Master's research, the preliminary scoping phase.

4 Phase 1 Preliminary Scoping Exercise

Chapter 4 presents the aims, methods and findings of the first stage of this Master's research, the preliminary scoping phase. This phase was designed firstly to gain an insight into the pathway of care via informal interviews with clinical stakeholders within the pathway, and secondly to gain information on existing and applicable wider child health policy and programmes via an interview with a Childsmile strategic stakeholder, in order to inform the design of the second phase of study, the qualitative systems-level needs assessment.

4.1 Aims

An initial scoping exercise was undertaken to fully inform the methodological planning process for the main qualitative needs assessment with a view to understanding the pathway and its wider context by answering research questions one and two (below). This focussed the subsequent Phase 2 qualitative case study by identifying the most appropriate stakeholders for inclusion and topics for further consideration in the needs assessment.

Research questions:

1. What is the current pathway of care for children undergoing extractions under GA in the Royal Hospital for Children NHS GGC?
2. Surrounding this pathway of care, what wider policies and programmes exist relevant to prevention?

4.2 Methods

4.2.1 Procedure

A scoping exercise is often defined as a type of research synthesis that aims 'to rapidly map the key concepts underpinning a research area and the main sources and types of evidence available' (Mays et al., 2001). This was largely out-with the realms of literature review in this case. The scoping exercise was undertaken as concerns had been raised by front-line clinicians and Dental Public Health (Strategic) stakeholders that the current pathway of care included no elements of prevention, minimal multi-agency working and issues with communication.

The PR had some prior knowledge that the pathway consisted of five stages: referral, triage of referral letters, paediatric assessment clinic, treatment under DGA, and follow-up post-DGA.

In order to answer research question one, the PR shadowed the paediatric assessment clinic and the day of DGA. All of the PDS Dentists who assess and treat these patients under DGA also refer patients to the pathway of care and

follow them up, thus providing a positive place to begin initial information gathering about all stages in the pathway of care.

4.2.1.1 Shadowing paediatric assessment clinic at Glasgow Dental Hospital and School

The PR shadowed one PDS Dentist for a day on the paediatric assessment clinic at GDHS, to gain further knowledge of current prevention practice and to gain an insight into which stakeholders were involved in the pathway.

4.2.1.2 Shadowing the day of DGA at the Royal Hospital for Children

The PR conducted informal participant observation of front-line PDS Dentists, nurses and secretarial staff going about their day-to-day tasks in the RHCG on two randomly selected days. This aimed to build on the PR's existing knowledge of the pathway in relation to who was involved in its delivery, and to observe at an early stage what prevention existed on the day of DGA.

4.2.1.3 Discussions with external stakeholder

This scoping exercise also aimed to inform the PR of wider systems and frameworks available to support prevention through discussions with a non-clinical stakeholder. Research question two was thus answered via a meeting with a Childsmile strategic stakeholder, external to the pathway who was involved in national planning for prevention and had an excellent knowledge of the relevant wider systems, services and frameworks that exist in Scotland.

4.2.1.4 Discussions with research supervisor

Another source of information at this stage was the PR's key supervisor in her wider role as a Consultant in Paediatric Dentistry, who was able to provide insights into the pathway of care.

4.2.1.5 Documentary scoping

A further source of information was through documentary scoping, e.g. the local policy for the 'Minimum Standards For Children And Young People' who 'were not brought' to appointments in NHS Greater Glasgow and Clyde (NHS GGC Child Protection Forum, 2015).

None of the scoping exercise sessions were formally audio recorded, and there was no formal topic guide; however, field notes were taken at the time.

4.2.1.6 Attending GIRFEC Conference

The PR and Principal Supervisor attended a multi-agency 'With Scotland' GIRFEC Conference and presented a poster (Appendix 3) to gain any further information on potential multi-agency linking to be considered for the main needs assessment.

4.3 Findings

4.3.1 Overview of the Royal Hospital for Children NHS GGC 'Extraction-only' Dental General Anaesthetic Pathway of Care

From the initial scoping exercise, information was gained about the structure and setting of the current pathway of care.

The Royal Hospital for Children NHS GGC 'extraction-only' DGA pathway of care is a PDS managed list, with Oral Surgery Consultant Cover on the day of treatment.

It consists of five stages:

4.3.1.1 Stage 1: Referral

Patients may be referred to the DGA extraction-only pathway of care by:

- GDP working in primary dental care
- Public Dental Officer, working in a secondary care PDS practice
- GMP
- Other (e.g. School nurse)

Some patients may be referred to the DGA pathway of care indirectly via a GDP initially to the PDS, e.g. due to poor behavior or anxiety. If all other avenues,

such as ‘The Wand’ local anaesthetic delivery, inhalation sedation and acclimatisation have been explored, they may yet require a DGA for treatment and be referred into the pathway of care in this manner. Most referrals are sent through the electronic ‘SCI Gateway’ system, with any paper referrals being scanned onto the patient tracking system, ‘Trakcare’. It is possible that GMPs refer into the pathway also.

Stage 1 Stakeholders referring: GDPs, PDS Dentists, possibly GMPs

4.3.1.2 Stage 2: Vetting of referral letters

Computer based vetting of referral letters is undertaken at GDHS by Consultants in Paediatric Dentistry using the ‘Trakcare’ system, and appropriate cases are appointed to the Paediatric Assessment clinic for assessment and treatment planning prior to the GA. ‘Appropriate cases’ for the extraction-only services are typically aged 2-10 with no significant medical co-morbidity. Conversely, cases not appropriate for the ‘extraction-only DGA list’ include those who would manage treatment under local anaesthetic or inhalation sedation, patients with complex medical issues, and those with complex dental problems such as impacted teeth or restorative treatment needs under GA. For those more complex cases, a separate DGA list at RHCG, the ‘Comprehensive Care’ list is implemented, whereby treatment is undertaken by Consultants, Specialists and Specialty Trainees in Paediatric Dentistry under Consultant Supervision.

Stage 2 Stakeholders vetting referral letters: Consultants in Paediatric Dentistry

4.3.1.3 Stage 3: Paediatric assessment clinic

Paediatric assessment clinics occur in GDHS and are undertaken by a variety of visiting PDS Dentists. This can be an exceedingly busy clinic with a throughput of approximately 50 patients per week. As mentioned previously, these PDS clinicians also refer these patients (Section 4.3.1.1) to the pathway from a PDS site (Appendix 1).

It was noted from the observation and discussions with the clinicians on the day of assessment that children usually attend for a morning or afternoon and have a height and weight taken, a history, an examination and where required a radiograph taken, and a treatment plan formulated. Should a child be suitable for local anaesthetic or inhalation sedation, the appropriate appointments are made in the PDS or Hospital Dental Service. For complicating factors such as first permanent molars of doubtful prognosis, an on-site Consultant paediatric or orthodontic opinion is available. The patients who are suitable for treatment under GA are then referred to the Royal Hospital for Children 'Kelvin suite' list for definitive treatment. Treatment urgency is documented on the referral form as either routine (usually seen within 12 weeks), soon (within 2-3 weeks) or urgent (within 1-2 days) depending on the child's symptoms. 'Routine' requests are for children who are asymptomatic or in intermittent pain, and 'soon' equates to a child night-waking with pain, and not eating or drinking properly. An 'urgent' request equates to a child with severe pain affecting eating/drinking and an associated facial swelling or systemic spread of infection.

As mentioned previously, if the child requires restorations as well as extractions, or if the treatment itself or medical history is complex, patients are referred at this point onto a separate GA session known as 'comprehensive care' where trained paediatric specialists or consultants in Paediatric Dentistry undertake treatment. This may require a separate Consultant assessment prior to the GA.

Written and verbal information is given to the family as to what to expect on the day of DGA, including information on fasting pre-anaesthetic, and how best to care for their child post-anaesthetic. Parents then sign a consent form to confirm they understand the treatment plan proposed, including the risks and

benefits of treatment and the possible alternatives. For the majority of patients, despite the above mention of local anaesthetic and conscious sedation options, there is often no alternative to a DGA as the caries is extensive and they are either dentally anxious or pre-cooperative for treatment.

The child's parents are then posted information to inform them of the date, time and fasting instructions for the DGA to further prepare them for their visit. If a child does not attend for this appointment, the PDS Dentists must liaise with the parents and other agencies (such as Social Work, Education, Health Visitor) to ensure that the child attend. The 'was not brought' rate is anecdotally approximately 20%.

Stage 3 Stakeholders assessing: PDS Dentists, Consultant Paediatric Dentistry where required

4.3.1.4 Stage 4: DGA treatment at RHCG

As mentioned in the above sections, the 'extraction-only' DGA list is undertaken at the RHCG by PDS Dentists. There are morning and afternoon sessions Monday to Friday, with a capacity of approximately 50 'extraction-only' DGA slots per week. Patients attend earlier in the day for medical pre-assessment 'clerk-in' and have an opportunity to speak with the anaesthetist and PDS Dentist prior to treatment to further discuss what the overall hospital experience will entail. A written consent form is signed by the parent or legal guardian. The patient will be fasting as per the hospital fasting guidelines.

In the theatre where treatment is carried out, a relatively large team is present including the PDS Dentist undertaking the extractions, dental nurses, anaesthetic staff and anaesthetic assistants, and staff (medical) nurses. A senior nurse may be present. This was noted to be a very busy session with PDS Dentists filling in discharge information for each patient between DGAs and running between theatre and the clerk-in area to clerk-in newly arriving patients. Occasionally if treatment proved more complex than initially estimated the morning session continued into lunchtime. On certain days, the same clinician may be undertaking the morning and afternoon lists. A post-operative ward round at the end of the session (either 1pm or 5pm) allowed the clinician to check each

patient and give any required post-operative advice. A computerised discharge script, the 'IDL' was generated which was sent automatically to the GMP. Interestingly, the computer system did not have the capacity to store the GDP details, and for the discharge script to go to the GDP the clinician must specifically ask the dental secretary to copy the letter to this referrer. If a child was not registered with a dental primary care provider, the letter went automatically to the GMP and the clinician may advise the family verbally that they should register with a dentist to engage in preventive care. Again, if a child 'was not brought' to their GA appointment, the PDS Dentists should follow the local 'WNB' policy to ensure the child is followed-up.

Stage 4 Stakeholders treating: PDS Dentists

4.3.1.5 Stage 5: Follow-up post-DGA

As discussed in Chapter 1, all children (irrespective of the requirement for a GA) should have ongoing preventive care with a dental practitioner, with high caries risk patients, including the children in this pathway, requiring 'enhanced prevention'. The referring practitioner should thus receive a discharge letter from RHCG detailing the treatment carried out. Upon receipt of this letter, ideally the GDP or PDS dentist should review the patient within a number of weeks to begin the process of enhanced prevention and behaviour change. Concerns were raised by clinicians that this letter was not being received by referring dentists, as a number of them are the referring PDS Dentists. There was no information about prevention on the discharge letter.

Stage 5 Stakeholders following-up: GDPs, PDS Dentists, GMPs

4.3.2 Availability of wider child health policy and programmes

An informal scoping interview with a Childsmile strategic stakeholder highlighted wider child health policies and programmes which may be appropriate to support prevention in this pathway of care (Table 1), and included Childsmile, the National Oral Health Prevention Programme.

Table 1 - Wider child health policy and programmes which may be able to support prevention in the pathway of care

Name:	Type of policy or programme:
Childsmile	Programme
National Dental Inspection Programme	Service
The Children and Young Person (Scotland) Act 2014	Legislation
Getting it Right for Every Child	Framework
Early Years Collaborative	Framework

These were signposted to discuss with stakeholders in the Phase 2 in-depth qualitative study. The information gained from the external stakeholder about each of these policies and programme is detailed below, and the reasons why these might be of interest. The potential relevance of these policies and programmes will be further explored in the Phase 2 Needs assessment (see Chapter 5).

4.3.2.1 Childsmile

Childsmile consists of three main components: Childsmile core, Childsmile nursery and school, and Childsmile practice, which will be detailed in the following sections.

4.3.2.1.1 Childsmile core

The Childsmile core programme is a nationwide initiative in Scotland to provide every child with fluoride toothpaste and toothbrushes on at least six occasions by 5 years of age. Supervised standardised daily toothbrushing is provided free in all nurseries. The most deprived 20% of Primary 1 and Primary 2 classes in the same health board receive supervised toothbrushing instruction.

4.3.2.1.2 Childsmile nursery and school

Childsmile Nursery and School provides a targeted preventative approach via fluoride varnish application biannually to children in all nurseries and schools in the 20% most deprived population quintile (SIMD 1). This is undertaken by Extended Duties Dental Nurses (EDDNs) and supported by Dental Health Support Workers (DHSWs) who can undertake consent and initiate oral health promotion. Fluoride varnish application for the most deprived children can continue until Primary 4 (Macpherson et al., 2015).

4.3.2.1.3 Childsmile practice

All families are caries risk-assessed by a Health Visitor when a baby is 6-8 weeks old. Following this, a child thought to be at 'increased-risk' may be referred by the Health Visitor into the Childsmile Practice Programme. A DHSW, informed by the Health Visitor, will then contact the family, support them in registering and attending a GDP, provide oral health advice, and undertake home visits where required. The DHSW will assist families most in need in overcoming barriers to accessing healthcare and improving oral health behaviours. The programme integrates the dental team in providing oral health advice, dental review and treatment, and bi-annual fluoride varnish application to those over 2 years old in dental practice. The fluoride application can be undertaken by dentists or trained EDDNs within the practice. Since October 2011, practices have been paid to provide this treatment (NHS Health Scotland, 2011).

Childsmile has incorporated an ethos of early intervention to include an oral health check box as part of the standardised Health Visiting paperwork so that teams are aware of the importance of oral health in relation to general health and wellbeing for each child at a young age and interventions can be planned including referral into the Childsmile programme.

The external stakeholder suggested that Childsmile may be relevant to the DGA pathway, in that Childsmile should be reaching these children, but it appears that something is missing. The first GA for these children in the pathway cannot be prevented, but this pathway should ideally function to prevent a repeat DGA, and Childsmile could have a role to play. Aspects of the Childsmile programme of interest include the EDDNs and DHSW, the concepts of home visits to encourage engagement, and links with Health Visitors.

4.3.2.2 National Dental Inspection Programme

In addition to information already known about NDIP (within Chapter 1), the external stakeholder described that following an NDIP screening, parents are informed of the oral health outcome by a letter graded A, B or C. Category 'A' letters highlight to parents that there is an urgent need to register with and participate in primary dental care as severe dental caries is present. Category 'B' letters are sent to parents of children with decay but less urgent treatment need to advise parents to attend a dentist for assessment and treatment as required. Category 'C' letters are for children showing no obvious decay to remind parents to seek regular continuing care with their GDP. This stakeholder mentioned there was no robust follow-up of these letters in NHS GGC, but that there might be in some other external Health Boards, such as Health Board A (see section 6.4). A Dental Public Health stakeholder in Health Board A was signposted as being of interest to further discuss how NDIP might be of relevance to the DGA pathway of care.

The external stakeholder suggested that NDIP may be relevant to the DGA pathway, with regard to ensuring that agencies are made aware of these high-caries risk children before they present in the DGA pathway.

4.3.2.3 The Children and Young Person (Scotland) Act 2014

The Children and Young Person (Scotland) Act (Scottish Parliament, 2014) legislates for certain aspects of GIRFEC including the well-being indicators and a statute for all civic services to share information where appropriate. As discussed in Chapter 1, and reiterated by the external stakeholder, patients undergoing GAs for dental treatment could feasibly have wellbeing and welfare concerns as children may be in pain from untreated decay, and dental decay may be an indicator of wider neglect (Cairns et al., 2005). To support multiagency working and information sharing for children with wellbeing or welfare concerns, there is a proposed new initiative whereby every child in Scotland would be allocated a 'Named Person' from birth. The role of the 'Named Person' would include 'advising the parent or young person and helping them access a service or support'. This person will be the first point of contact for any professional involved in the child's care. From birth and the first ten

days, the midwife would be the ‘Named Person’, then until school-age the Health Visitor would act as ‘Named Person’. At the transition to primary school this role would transfer to Education (e.g. head, deputy head, guidance teacher) until the age of 18. When information about the wellbeing or welfare of a child (such as failure to attend at hospital appointments in this pathway of care) has been shared with the ‘Named Person’, the responsibility lies with them to respond appropriately; however, responsibility is maintained by every individual involved to ensure the child’s wellbeing is safeguarded. Wellbeing and welfare thresholds have not yet been determined for oral health.

The ‘Named Person’ initiative came under opposition from a number of groups as a possible breach of European Human Rights law. This was repealed in a Court of Session in Edinburgh where it was decreed that it would cause "no effect whatsoever on the legal, moral or social relationships within the family". Further challenges at the Supreme Court in London have judged that there may be some breaches of the European Convention on Human Rights and further moderation from the Courts is anticipated.

The external stakeholder suggested that this legislation was of interest to prevention in the pathway of care given the concepts of multiagency working, wellbeing and welfare, responsibilities of all involved in the care of a child, which will include everyone in this pathway of care, and the role of the ‘Named Person, who is someone who could co-ordinate ensuring that children attend for treatment and prevention.

4.3.2.4 Getting it Right for Every Child

The Scottish Government (GIRFEC) describes the national programme of Getting it Right for Every Child as ‘threading through all existing policy, practice, strategy and legislation affecting children, young people and families’ to provide ‘appropriate, timely and proportionate care in a co-ordinated manner to improve their outcomes’ (Coles et al., 2016). It exemplifies the spirit of multiagency working in the best interests of children to guarantee where possible Scotland is the best place for a child to grow up (Scottish Government, 2007).

The National Practice Model which has been developed includes the 'My World Triangle', (see Figure 13). The eight 'Wellbeing' indicators (see Figure 14) can be used to assess, observe and record current wellbeing of a child, and for future planning and review purposes. They cover a broad spectrum of issues which emphasises the dynamic nature of 'wellbeing'.

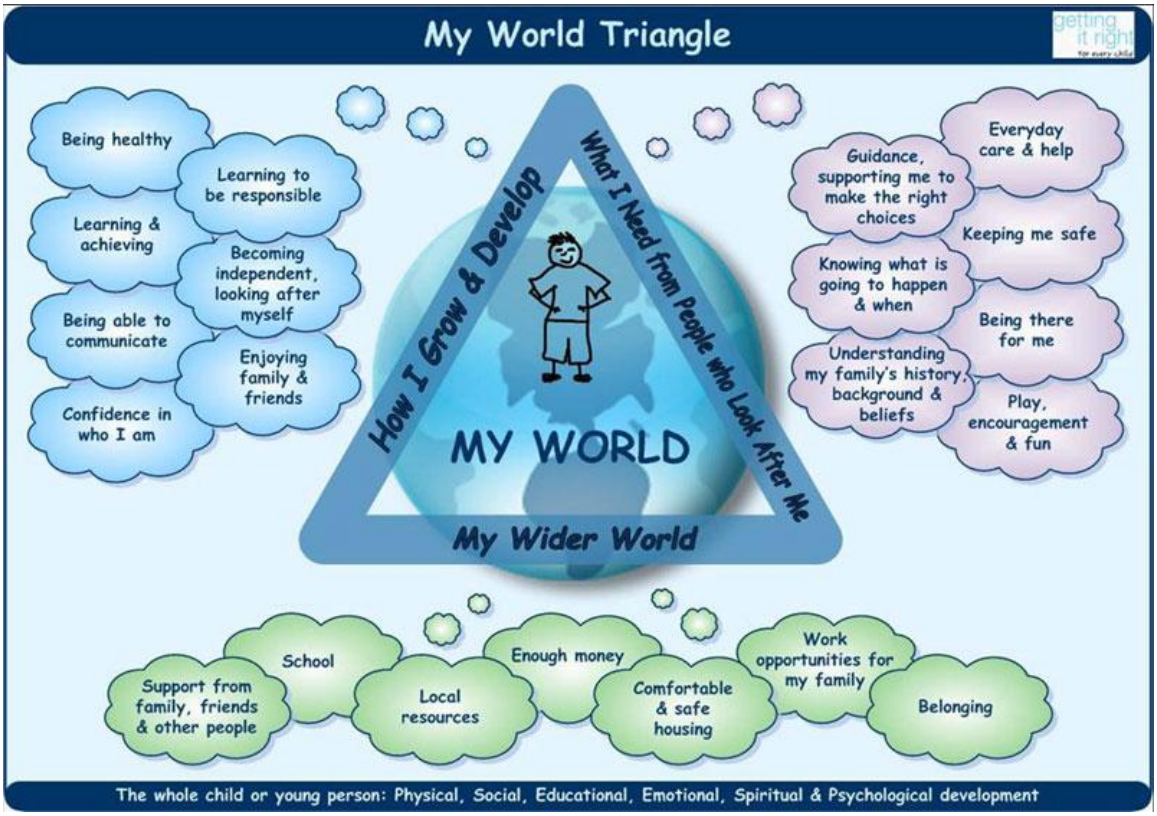


Figure 13 - My World Triangle, GIRFEC

Source: With permission of Scottish Government (GIRFEC)
https://archive.angus.gov.uk/girfec/my-world-triangle.html

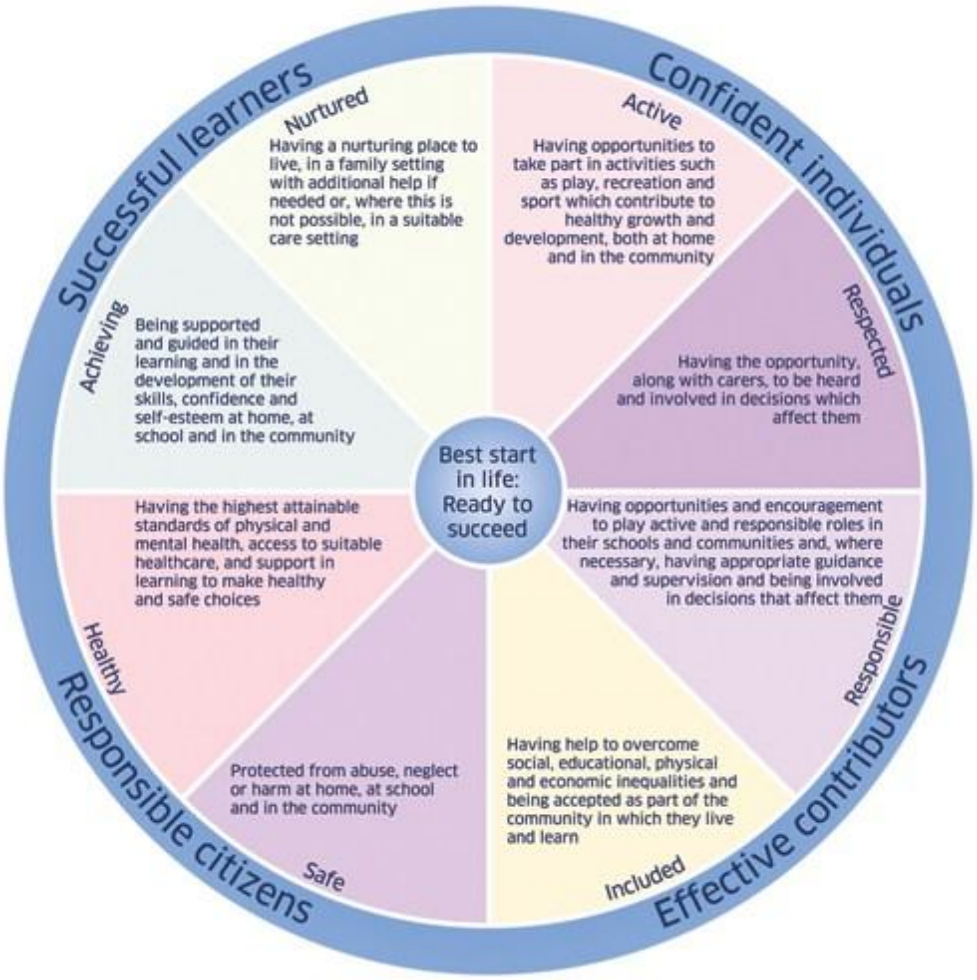


Figure 14 - The eight SHANARRI wellbeing indicators in the Wellbeing Wheel as set out by GIRFEC

Source: With permission of Scottish Government (GIRFEC)
http://www.gov.scot/Resource/0043/00438640.jpg

The external stakeholders signposted GIRFEC as being of interest to the pathway of care, particularly given the vulnerable nature of the children who present in the pathway as it encompasses an ethos to ensure all children have their wellbeing and welfare safeguarded.

4.3.2.5 Early Years Collaborative

The Early Years Framework and the resulting Early Years Collaborative (Scottish Government, 2008) brings together Community Planning Partnerships to recognise areas which require quality improvement and support change via quality improvement methodology. The mainstay is a 'bottom-up' approach with small local cycles of change known as 'Plan Do Study Act' cycles, which can then be up-scaled if appropriate.

The external stakeholder suggested that this Collaborative may be of interest as the early years are of upmost importance for children, and local small changes could be used in considering any changes in this pathway of care.

4.3.3 Construction of the 'GAP' Arrow

A simple flow diagram was created based on the information from the entire scoping exercise, combining the internal and external scoping segments, to detail the basic pathway of care at the time of fieldwork and illustrate the wider child health policy and programmes available. This was prior to any formal data collection in the form of in-depth qualitative fieldwork. This figure was entitled the 'General Anaesthetic Pathway', and it illustrated all stages of the pathway from patient referral, assessment, treatment, and follow-up. This was given the moniker of 'The GAP Arrow', given the anecdotal concerns that 'gaps' existed in the pathway in relation to prevention and linking with wider child health policy and programmes. This 'GAP Arrow' (see Figure 15 overleaf) was designed as a visual aid to assist purposive sampling as part of the in-depth qualitative study.

For the majority of children entering the pathway of care, the GAP diagram would be 'arrow' shaped. For those children requiring a repeat DGA the diagram would be more circular in nature as they are re-referred back into the pathway of care at a later date.

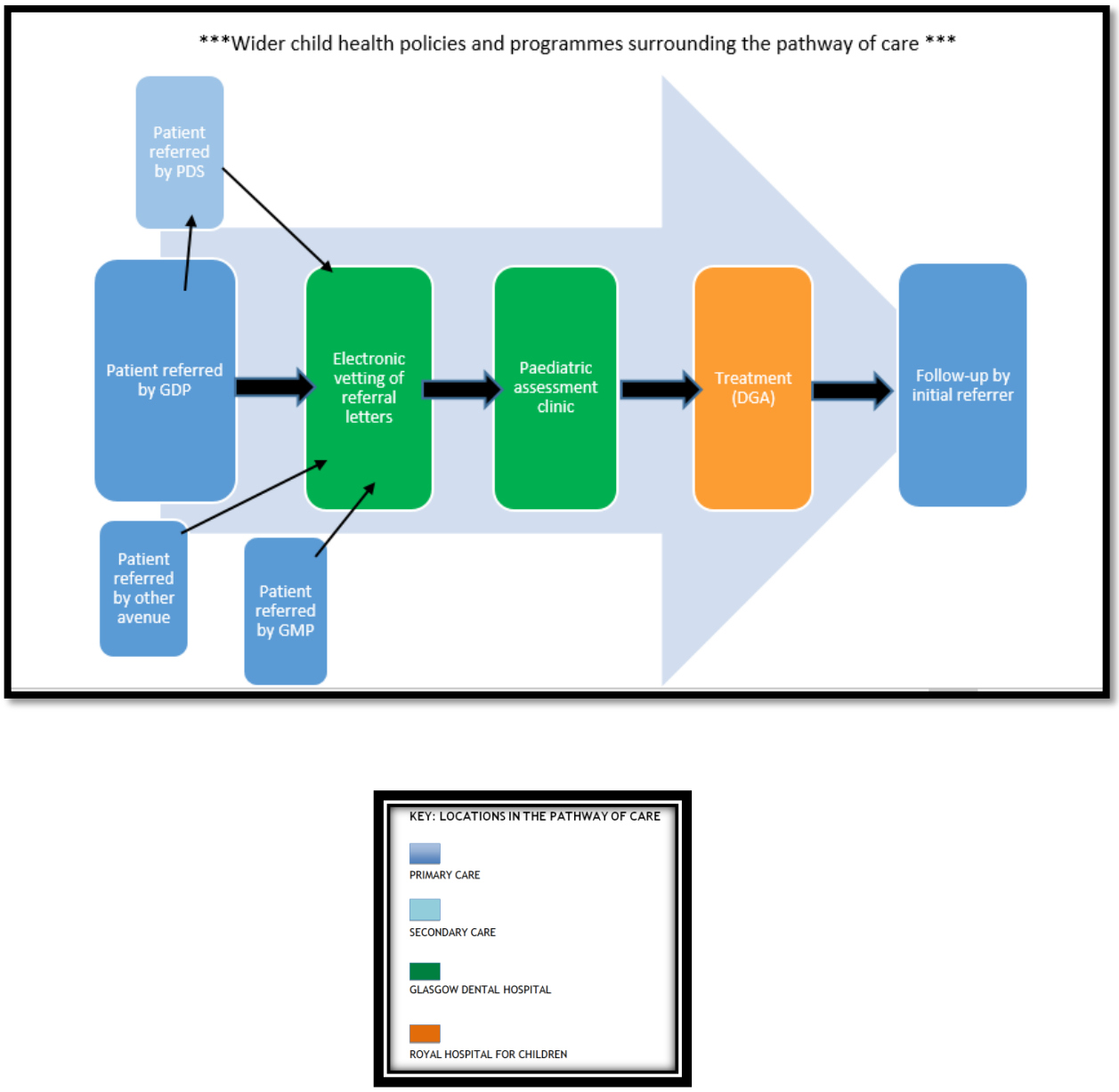


Figure 15 - The General Anaesthetic Pathway ('GAP') Arrow showing the current service delivery model for children undergoing dental extractions in the Royal Hospital for Children, Glasgow

4.3.4 Issues to consider further

Clinicians on the ground were concerned with the lack of prevention in the pathway, the high volume of children not brought to appointments, and the uncertainty surrounding the follow-up for these patients in this pathway of care. The communication from the hospital to the referring practitioner was poor. PDS Dentists were concerned that the post-DGA discharge letters were not being sent to the referrer, to facilitate engagement of the family with enhanced prevention. It was unclear from the scoping exercise what action GMPs take when they receive these DGA discharge scripts. There was little evidence of multi-agency working. The external stakeholder was able to describe the relevant wider child health arenas, but it was unclear from the scoping exercise what, if any, linkages were present.

The scoping exercise allowed the PR to gain a brief overview of 'what exists' in relation to the stages and stakeholders involved in the DGA pathway of care and the child health environment in which it exists. The limited observation and interaction was not in-depth enough to assess what prevention actually exists at each stage, what safety nets are in place in relation to participation and prevention post-DGA, and exactly what wider linkages exist with policies and frameworks in the pathway of care in Greater Glasgow and Clyde. These issues are explored in the Phase 2 qualitative needs assessment.

Front-line 'internal' stakeholders identified as 'key' stakeholders with whom to discuss issues in the pathway further were: PDS Dentists, Consultants in Paediatric Dentistry, GMPs, NHS Pathway Management, and GDPs.

The external stakeholder in this scoping exercise suggested speaking to Dental Public Health (strategic) stakeholders, those from Scottish Government involved in implementing GIRFEC principles, and further Childsmile stakeholders.

Chapter summary

This chapter outlined the preliminary scoping phase which explores the pathway itself and the wider context in which it sits. This led to the development of the 'GAP' Arrow, a visual aid depicting the 'extractions-only' DGA pathway of care

that currently exists at RHCG. This informed the development of a more detailed qualitative needs assessment, presented in Chapter 5.

5 Phase 2 Qualitative Systems-Level Needs Assessment: Aims and Methods

Chapter 5 presents the overall aims, underlying research questions and methods of the qualitative needs assessment. The needs assessment comprises an in-depth case study of prevention in the RHCG 'extraction-only' DGA pathway of care.

5.1 Aims

The overarching aim of this study was to assess provision of dental prevention in the care pathway for children undergoing General Anaesthetics for Dental Extractions only at the RHCG with a view to making recommendations at a local level on how to optimise prevention in the care pathway.

The aim of this second research phase was to determine the nature of any prevention 'gaps' present in the RHCG pathway of care for children undergoing dental extractions under GA. This phase also aimed to provide potential suggestions to improve prevention in the pathway of care. Phase 2 mapped to the below research questions 1-5:

1. To what extent is prevention currently incorporated in the pathway of care and is there a need for action?

2. To what extent are there, and could there be, connections with wider policies and frameworks which could support prevention?

3. What is influencing provision of prevention in the pathway of care?

4. Are there examples of good preventive practice in other DGA pathways within NHS GGC or other NHS boards which may inform improvements in NHS GGC?

5. How can the provision of prevention within the pathway be improved, are there barriers to these improvements and how can these be overcome?

5.2 Methods

The design of this phase was informed by the findings of the Phase 1 scoping exercise (Chapter 4). Phase 1 outlined the current pathway of care for children undergoing dental extractions in the RHCG and highlighted key questions to be asked of key stakeholders in relation to current provision of prevention within the pathway. It introduced several wider child health policies and programmes which may be of relevance to include in further discussions with stakeholders.

5.2.1 Needs assessment approach

The World Health Organisation (WHO) defines a needs assessment as 'co-ordination of services within a system of care in order to facilitate entry into the system, smooth transition across specific components and appropriate follow-up' (World Health Organisation, 2000). This tool for strategic planning can be used to assess services such as this DGA pathway of care to ensure these care pathways are prevention-orientated, or to ascertain if current services can become more co-ordinated (WHO, 2000).

Needs assessments address the gaps between 'what is' and 'what is desirable' (Pennington, 1980), thus it is imperative to ascertain what particular 'needs', or 'gaps' exist for the RHCG DGA pathway of care. These could be gaps in knowledge, attitudes, performances or situations (Pennington, 1980).

A healthcare needs assessment (Wright et al., 1998) focuses on public health issues and outcomes for particular populations. Different approaches to healthcare needs assessments have been outlined (Stevens and Gillam, 1998) and include the epidemiological approach (availability and effectiveness of services), corporate approach (stakeholder perceptions of services), and comparative approach (comparing with other available service models).

There is no agreed 'single, all-purpose' method of undertaking a needs assessment (WHO, 2000). This systems-level needs assessment mainly focussed on the 'corporate' approach, which has been described as ascertaining 'the demands, wishes and alternative perspectives of interested parties [involved in the service], including professional, political and public views' (Stevens et al., 2004). There were some elements of the 'comparative approach', in comparing prevention in the current DGA pathway of care with some other available DGA pathways, but this was not the main focus of the study.

Needs assessments can be undertaken at various 'levels' depending on what is being investigated. Kaufman et al described these different levels as existing at the 'societal' (mega), 'organisational' (macro) or 'individual/small group' (micro) level (Kaufman et al., 1993). This project evaluated the 'macro' level by identifying gaps in services and organisations and assisting the focusing of resources towards feasible solutions and outcomes, but with elements of the 'mega' level, as there may be benefits to certain patient groups in the community as a result of changes made.

It is stated by the World Health Organisation (2000) that there should be an appreciation of existing services before conducting a main needs assessment. This is in line with the initial Scoping Exercise undertaken as Phase 1 of this investigation, the 'pre-assessment' (Chapter 4).

Data is then collected from individuals and groups '*who can affect change or are affected by the problem being examined'* (Witkin and Altschuld, 1995), during the main assessment (Chapters 5 and 6) and can be qualitative or qualitative in nature. The research comprised a qualitative case study needs assessment approach in the form of a consultation with stakeholders involved in the DGA pathway of care.

5.2.1.1 Selection of in-depth data collection methods

Consideration of the research objectives (see section 2.1) supported adoption of a qualitative approach in this case as outlined previously (see section 2.3). This study was founded on pragmatist principals and aimed to obtain a 'real-life' picture of the concerns surrounding the provision of prevention within the current pathway of care. The five remaining research questions for this Phase 2, questions 1-5 (see section 5.1) were used to focus enquiry within the study in order to determine practical solutions, in preference to grounded theory or more abstract phenomenological approaches. Interviews and focus groups were considered the best methods to address the research questions.

5.2.1.1.1 Interviews and focus groups

Interviews and focus groups were used to gain an understanding of key stakeholders' attitudes, preferences and behaviour in relation to prevention in the pathway of care. The decision as to whether to interview or create a focus group was defined by participant role and logistics. A singular individual in a role of interest was approached for an interview and if multiple individuals in similar roles existed where peer discussion was of interest, a focus group was preferred.

5.2.1.1.2 Interviews

An in-depth interview is a 'personal and intimate encounter' with an individual, using questioning to obtain 'detailed' experiences (Dicicco-Bloom and Crabtree, 2006). In-depth interviews are useful to explore personal histories and perspectives of individuals (Mack et al., 2005).

Qualitative interviews can be structured, unstructured or semi-structured in nature (Dicicco-Bloom and Crabtree, 2006). For the purposes of this research, a semi-structured format was considered most appropriate in order to relax stakeholders and allow themes to be explored; however, with the PR having an awareness that focus must be maintained on the research questions (Crabtree and Miller, 1999).

5.2.1.1.3 Focus groups

Although similar to interviews in aiming to gather rich and detailed data on opinions and attitudes (Gill et al., 2008), focus groups involve a predefined group of people rather than a singular subject. Focus groups are group debates, using moderated 'group interaction' (Kitzinger, 1995) and allow exchange of common experiences. They are being increasingly used in dental health research relating to patients and services (Chestnutt and Robson, 2001). Focus groups can be constructed by characteristics such as age, sex, or professional groups (Gill et al., 2008). Ideal numbers of participants for focus groups differ in the literature, with larger numbers for market research focus groups (10-12); however, non-commercial research would suggest that ideal numbers are approximately 5-8 (Casey and Krueger, 2008), especially for those with specialised knowledge.

5.2.2 Procedure

5.2.2.1 Sampling

A purposive sampling technique was employed in this study. Purposive sampling is useful for situations where a targeted sample is required in a short time-frame, and where sampling for proportionality is not the primary concern. It is based on the concept of theoretical saturation (Mack, 2005).

The sampling frame was considered from the outset. To be able to answer the research questions, a diverse range of viewpoints was required from those involved within (internal to) and out-with (external to) the system.

'Internal' stakeholders were those involved directly in the pathway of care, with the inclusion of managerial staff. The GAP Arrow (Figure 15, page 54) was designed to assist in capturing key stakeholders in the pathway.

'External' stakeholders were those involved in wider child health policy and programmes including other NHS health boards of interest.

Involving service users (patients) was discussed but it was decided not to include the viewpoints of patients to keep this study within the confines of a Master's thesis.

5.2.2.1.1 Sampling of 'internal' stakeholders

The initial sample was identified during the scoping exercise (see Chapter 4). Given that there were specific predefined professional groups within the DGA pathway of care (as outlined in Figure 15, page 54) purposive sampling was used to obtain viewpoints from all groups involved in Stage 1 to Stage 5 of the pathway.

The sample of 'internal' stakeholders consisted of 'front-line clinical staff' directly involved in the pathway of care. Those referring and following-up were GDPs, PDS Dentists, and GMPs. Consultants in Paediatric Dentistry were included as they were vetting referral letters and providing specialist opinions on treatment planning for these children. Those dentists within the PDS actively assessing and treating these children under DGA at the Royal Hospital for Children were included. One manager of the pathway was also part of the initial internal sampling frame. It was not possible to include all stakeholders in each stakeholder group of interest, given the number of individuals practicing in these roles (see Table 2).

Snowball sampling was then employed to ensure no key stakeholders had been missed in the sample of 'internal' stakeholders. This type of purposive sampling initially identifies a participant who meets the criteria for inclusion in the study. They are then asked to recommend others with relevant opinions who may meet the criteria.

One further NHS Pathway Manager and one further PDS dentist were identified and included in the study. Also snowballed were PDS Dentists working in one other 'extraction-only' DGA pathway of care within NHS GGC (Inverclyde Royal Hospital), where there was some crossover with the Royal Hospital for Children service (see section 6.4) in that one of the PDS Dentists involved with this service also worked in the RHCG DGA pathway of care. Non-responders were not pursued.

Table 2 - Internal stakeholder sample

'Internal' stakeholder role	Sample in context of NHS GGC
General Dental Practitioners	3 of many

General Medical Practitioners	5 of many
Public Dental Service Dentists	5 of approx. 5-7
Consultants in Paediatric Dentistry	3 of 5
NHS Pathway Managers	2 of many

5.2.2.1.2 Sampling of 'external' stakeholders

Sampling of 'external' stakeholders was undertaken in order to gain a broader knowledge of the wider context within which the current pathway of care sits and to better evaluate any suggestions for linkages to these wider policies and programmes.

External professional groups and individuals (highlighted in the Phase 1 scoping exercise) comprised those working 'out-with' the RHCG DGA pathway of care in national child health policies and programmes and any external NHS Health Boards of interest.

External sampling was undertaken with a known purposive sample and subsequently by snowball sampling. The initial purposive sample included a Dental Public Health strategic stakeholder, a Scottish Government GIRFEC stakeholder, and a Childsmile strategic stakeholder. Snowball sampling of 'external' stakeholders highlighted another Scottish Government GIRFEC stakeholder and a Health Visiting (strategic) stakeholder based in NHS GGC. There was one individual in a Dental Public Health (strategic) role working in an external NHS Health Board who was snowballed as a source of good preventive practice in other NHS Health Boards.

5.2.2.2 Recruitment

The initial list of potential interviewees was emailed to enquire if they would be interested in participating. If the stakeholder agreed in principle, this was followed-up by a second email containing the consent form, participant information leaflet, GAP arrow diagram, and proposed topic guide for advance

perusal (see Appendix 4), with the contact number of the PR attached. The Participant Information Leaflet contained information on what would be expected of the participant, explaining any associated risks and benefits of participation. The participants were asked for permission to record the dialogue and permission to later publish the results. If they did not respond, they were not pursued.

Recruitment took place over a 6-month period between March and October 2014. Given the iterative nature of qualitative research, flexibility was required for the recruitment process. The initial strategy was modified as recruiting GMPs and GDPs proved challenging to engage without financial reimbursement. Approaching the sub-committees (local strategic groups) of GDPs or GMPs was not successful as they wished for financial reimbursement. It also proved too difficult to recruit 8-10 individuals per focus group as intended, and instead 'mini-focus groups' of 4-6 participants were conducted.

5.2.2.3 Development and delivery of topic guides

Following the Phase 1 scoping exercise, semi-structured topic guides (see Appendix 4, page 184) were developed broadly based on the research questions. This included initial easy-to-answer, understandable, open ended questions to encourage participation (Gill et al., 2008), such as: 'Describe the pathway in which you work?'. The questions proceeded to more focussed key questions as the participants relaxed, for example, 'What barriers do you perceive for the changes you have suggested in the pathway of care?'. Probes were used to explore issues in more depth and prompts used if required.

The proposed topic guide was presented to the research supervisors for comments and piloted during the first interview, where an experienced qualitative researcher sat in with the PR as a method of triangulation to ensure the level of questioning was appropriate.

5.2.2.4 Fieldwork

5.2.2.4.1 Consent

Informed consent involved explaining the 'purpose and details' of the research process so that participants could 'decide in a conscious deliberate way' if they

wished to participate (Ritchie and Lewis, 2003). This was undertaken using written and verbal information and emphasised the voluntary nature of participation. Potential subjects were assured that they could withdraw at any time, and that the principles of confidentiality would be adhered to.

The consent process was reiterated on the day of fieldwork, and the form signed by the participant and countersigned by the PR (Appendix 4). Participants were reminded that where possible they would not be made identifiable by the information contained within the results but cautioned that due to small sample sizes anonymity could not be guaranteed. Transcripts and recorded information were stored on a secured drive in line with the University of Glasgow Data Protection Policy (Appendix 5).

5.2.2.4.2 Conduct of interviews and focus groups

Interviews/focus groups were conducted over a six-month period from March-November 2014. Thought was given as to appropriate locations for the interviews/focus groups. The locations were mainly determined based on convenience for the stakeholder (see Table 3, P67). These varied from Scottish Government (GIRFEC) buildings in Edinburgh for GIRFEC stakeholders to a side room in a dental surgery for GDPs. For PDS Dentists, the PR attended their pre-arranged quarterly meeting in GDHS.

Following consent, each interview and focus group began with an introductory synopsis of the research aims and objectives. Participants were again reminded that the encounter would be audio recorded. To maximise free flow of conversation, topic guides were memorised in advance where possible to allow as much eye-contact with the subject.

The GAP Arrow (see Figure 15, page 54) was used as a visual aid of the five key stages of the pathway. Guides were tailored depending on the role and knowledge of each particular participant or staff group being interviewed.

Modification of topic guides was undertaken as required following each interview and focus group in light of any new information of interest. Although key questions were maintained, for the majority of the external stakeholders, questions on the specific provision of prevention within the DGA pathway of care

were omitted as they were irrelevant to their role. Before concluding, the PR gave the participants the opportunity to revisit any questions or add further information.

The length of interviews was generally determined by the participant and how much time they could give from their professional duties. Interviews and focus groups lasted on average 60-90 minutes. Interviews and focus groups were audio recorded to maximise flow of conversation and to ensure accuracy.

5.2.2.4.3 Post-interview field notes and transcription

Audio recording of interviews and focus groups was undertaken by the PR, and transcription was undertaken by the PR and one hired researcher both of whom used agreed transcription methods. A formal transcription service was not used. Field notes were written-up immediately after each interview and focus group as a method of reflection, diarising the observations of the PR from the data collection.

5.2.2.5 Number of interviews and focus groups

In total four focus groups (all internal stakeholders) and 10 interviews (three internal, seven external) were undertaken, with internal and external fieldwork arms running simultaneously (see Table 3 for details of the characteristics of participants and locations of fieldwork).

'Internal' stakeholders were those involved directly in the pathway of care, with the inclusion of managerial staff. The GAP Arrow (Figure 15, page 54) was designed to assist in capturing key stakeholders in the pathway.

'External' stakeholders were those involved in wider child health policy and programmes including other NHS health boards of interest.

Table 3 - Characteristics of stakeholders participating in focus groups and interviews

Professional Category	Internal/External to Pathway	NHS Board	Method of Data Collection	Number of Participants	Location
General Dental Practitioners	Internal	GGC	Focus Group	3	Side room in Dental Surgery

General Medical Practitioners	Internal	GGC	Focus Group	5	Practice Common Room
Public Dental Service Dentists	Internal	GGC	Focus Group	5**	Board Room GDHS
Consultants in Paediatric Dentistry	Internal	GGC	Focus Group	3	GDHS Office
NHS Pathway Management	Internal	GGC	Individual interviews	2	Manager Office off site from GDHS
Senior Dental Officer, Public Dental Service dentist	Internal	GGC	Individual interview	1	GDHS meeting room
Childsmile Strategic	External	GGC x1 External Health Board x1	Individual interviews	2	Meeting Room GDHS
Health Visiting (Strategic)	External	GGC	Individual interview	1	Own building in NHS GGC
Dental Public Health (Strategic)	External	GGC x 1 External Health Board x 1	Individual interviews	2**	GDHS Office and GDHS meeting room
Scottish Government (GIRFEC)	External	Not applicable	Individual interviews	2	Scottish Government Buildings (Edinburgh) and GDHS meeting room

Key: **: Undertaken twice due to time constraints at first meeting

For the purposes of reporting, the Senior Dental Officer and the PDS Dentist's viewpoints were combined.

5.2.3 Analytic Approach

Qualitative data analysis transforms the data from raw form to explanations, understanding and interpretations, and can be approached using content, narrative, discourse, or framework/thematic analysis (Ritchie and Lewis, 2003).

'Thematic analysis' was chosen as the most appropriate method to evaluate the data, themes being categories emerging from grouping lower-level data points (Braun and Clarke, 2006).

In thematic analysis, themes can be identified deductively from the 'top down', or alternatively in an inductive or 'bottom up" manner (Ritchie and Lewis, 2003). Induction in qualitative research 'looks for patterns and associations derived from observations of the world'; whereas deduction 'generates propositions and hypotheses theoretically through a logically derived process' (Ritchie and Lewis, 2003).

The qualitative process in this study combined deductive elements, in utilising the research questions outlined as the main themes, but also inductive elements in allowing the subthemes to emerge from the data under these overarching themes as analysis progressed. This was undertaken using a framework analysis approach.

5.2.3.1 Framework analysis

Framework analysis (Ritchie and Spencer, 2002) was used as a methodological tool to undertake thematic analysis. Framework is a matrix-based method of analysis which organises key data into a distinct unique set themes and categories, subdivided into subthemes. This method allows for transparency and systematic conduction of the five different stages involved (see Table 4 overleaf), with the advantage that the links with raw data are maintained (Ritchie and Spencer, 2002).

Analysis occurs 'iteratively and concurrently' with data collection. This assisted in further sampling and guiding content of topic guides (Dicicco-Bloom and Crabtree, 2006).

The right-hand column in Table 4 identifies how these five steps were specifically employed in this study. As mentioned above, these were not separate discrete stages, but rather a continuous process. For further detail of analysis methods refer to Appendices 6 and 7. Appendix 6 contains further detail of the five stages of framework analysis as employed in this study, and appendix 7 contains diagrammatic representation of the final coding structures for each research question.

Table 4 - Methodology of framework analysis

STEP	DEFINITION (Ritchie and Spencer)	UTILISATION IN THIS STUDY
1. Familiarisation	Gain overview of data by immersion in the data	Reading transcripts, PR transcribing, hand coding using marginal notes of early ideas and answers to research questions (see Appendix 6 Figure 17, page 193).
2. Identifying a Thematic Framework	Filtering and early classification of data	An A4 sheet was composed identifying the main concepts and primitive 'codes' for each stakeholder to provide basic answers to each research question. (see Appendix 6 Figure 18, page 194). Involved creating preliminary headings and subthemes (deductive).
3. Indexing	Draft framework re-applied to data	The initial codes identified on the A4 sheets in Step 2 were electronically coded into a matrix. Each 'theme' had a separate matrix (see Appendix 6 Figure 19, page 196). Thus 5 matrices existed in total. In the matrix, the emerging (inductive) 'subthemes' or 'codes' were columns, and the rows were the

		stakeholders in turn (see Appendix 6 Table 7, page 195). Using Nvivo Data Management Software. An iterative process. Data which could not be coded was placed in a 'miscellaneous code.
4. Charting themes and subthemes	Summarising data, abstraction and synthesis	Data summarised into condensed sections. The Nvivo matrices were exported and printed, to aid mind-mapping. Further organisation of coding structure (Appendix 6 Figure 20, page 197).
5. Mapping and Interpretation	Reorganising and synthesising data set as a whole, ensuring appropriate context	The initial themes were then further condensed into higher-level themes, following consideration of key points for each research question. This was undertaken following some time away from the data to have a 'fresh' take on the information. Comparing patterns across and within themes. Comparing internal and external experiences. Then final coding structure set out (see Appendix 7, Figures 21-27 pages 199-205).

5.2.3.2 Reflexivity

There was a strong reflexive element in this research, in particular when one considers the 'position of the clinician within the pathway'. Reflexivity is 'an honest account of how the researcher interacted with subjects in the field, problems and how they were solved'. If the researcher is considered as a 'human instrument', then the analytic lens of the PR could be considered to be clouded, or perhaps sharpened, by her role as a clinician and Paediatric Dentist within the Hospital Dental Services. This reflexivity has been further deliberated on within the Discussion section in Chapter 7.

Chapter summary:

Chapter 5 outlined the aims, recapped the approach and detailed the methods for the Phase 2 qualitative needs assessment. The rationale for choosing interviews and focus groups was presented and the process of conducting the research described from sampling, through fieldwork, to data analysis.

6 Phase 2 Qualitative Systems-Level Needs Assessment Findings

This chapter presents the findings from the systems-level needs assessment including views of front-line stakeholders internal to the pathway, and selected individuals involved in wider child health policy and programmes in Scotland. The findings are presented in relation to the five 'themes' (the research questions); to what extent prevention is currently incorporated in the RHCG pathway of care, what connections exist or could be made with wider child health policy and programmes, what factors exist which are influencing provision of prevention in the pathway, examples of good preventive practice in other NHS Health Boards, and suggestions for integrating prevention in the future in the RHCG pathway of care with anticipated challenges and how to overcome these.

For ease of navigation and understanding of this chapter, Table 5 below depicts a summary of the themes and subthemes which emerged from the data.

Table 5 - Tabulated themes

THEME	SUBTHEME
Extent to which prevention is incorporated within the pathway of care	At referral for DGA
	At paediatric assessment clinic
	On day of treatment
	At follow-up period
Extent to which there are connections with wider policies and programmes which could support prevention	Stakeholder knowledge of wider policy programmes
	Connections with Childsmile
	Connections with NDIP
	Connections with GIRFEC
	Connections with EYC
	Connections with Children and Young Person (Scotland) Act 2014
What is influencing the provision of prevention in the pathway of care?	Knowledge of GDPs
	Stakeholder attitudes
	Service pressures
	Communication issues
	Impact of health inequalities
	Cultural norm of DGA
	Perpetuated cycle of dental anxiety
Are there examples of good preventive practice in other DGA pathways?	Inverclyde Royal Hospital within NHS GGC
	Health Board A
	Health Board B
How can the provision of prevention be improved?	Changing the ethos of the pathway (collaborative working, early intervention, the 'whole family' approach, DGA as significant event, local access)
	Improving provision of prevention at different stages along the pathway (referral, paediatric assessment , day of DGA, follow-up, satellite sites)
What are the challenges?	Challenges of changing the ethos
	Challenge of integrating prevention at each stage (including lack of practitioner engagement, time constraints, bureaucracy, resources)
How can these challenges be overcome?	Training and education of stakeholders
	Overcoming resource issues
	Facilitating information sharing and communication
	Facilitating role redefinition

6.1 To what extent is prevention currently incorporated in the pathway of care and is there a need for action?

All descriptions of prevention in the current RHCG DGA pathway of care were gained from internal stakeholders. External stakeholders were unable to comment as their roles, and thus knowledge, were out-with the immediate pathway of care. This section is separated into current prevention in the pathway of care at each stage, and is there an overall need for action in the pathway of care in relation to prevention.

6.1.1 Current prevention in the pathway of care

The RHCG DGA pathway of care comprises five stages of delivery as outlined in the 'GAP Arrow' (Figure 15, page 54); referral, vetting, paediatric assessment clinic, day of DGA treatment, and follow-up. Current provision of prevention is outlined for each.

6.1.1.1 Stage 1: Referral for DGA

Prevention at the point of referral for DGA was variable, and the perception from the PDS Dentists was that prevention was '*being done, but not by the GDPs*'. Another PDS Dentist stated that *'[prevention] is not being done as much as it should be in general practice*'.

The GDPs did not explicitly state that they were undertaking enhanced prevention at the point of referral for DGA. Internal stakeholders postulated that preventive messages were most likely not being given at the point of referral by GDPs, and indeed the PDS Dentists described first hand experiences of patients at Paediatric Assessment clinic reporting no previous preventive input from GDPs.

The PDS Dentists often did provide prevention at the point of referral. Those referring from a solitary 'satellite' paediatric assessment site in the PDS detailed the type of prevention provided at referral by the PDS:

'I would just give them as much information as I could: diet, oral hygiene and I would do Duraphat sometimes, for certain patients …if they're just going straight to a general anaesthetic'. (PDS Dentist)

6.1.1.2 Stage 2: Electronic vetting of referral letters

Stage 2 was an electronic vetting process conducted by Consultants in Paediatric Dentistry with no direct contact with patients and thus will not be included in this section.

6.1.1.3 Stage 3: Paediatric assessment clinic

On the whole, internal stakeholders described little or no direct clinical prevention activity at the paediatric assessment clinic appointment at Glasgow Dental Hospital and School. There was no explicit mention by internal stakeholders of fluoride varnish application, oral hygiene advice, or dietary advice being given as standard practice. One PDS Dentist stated '*there's not time for us to do prevention with them*'.

Consultants in Paediatric Dentistry mentioned that a 'Triplicate pad' had been constructed (Appendix 8) to aid the prevention information and guidance being sent from GDHS to primary care. One copy of this form was posted to the GDP to highlight the patient as high caries risk and advise the appropriate enhanced prevention regime. Parents signed a second copy to show that they understood the need for prevention and ongoing care at the GDP. Another copy was kept in the patient case notes at GDHS. Some PDS Dentists mentioned that the triplicate pad was no longer being used in the clinic.

The PDS Dentists described one pre-existing 'satellite paediatric assessment site' in NHS GGC. The PDS Dentist stationed here can refer directly from this clinic onto the 'extraction-only' DGA list and there are necessary orthopantomogram radiography facilities to aid treatment planning that not all PDS sites have. The clinician based at this site thought this 'satellite site' approach to the paediatric assessment clinic allowed time to provide preventive information on the day (longer slots for patients) and reduced the overall amount of onward referral for DGA as inhalation sedation at that site is offered if required. This practitioner

provided diet advice, oral hygiene and placed fluoride varnish at the assessment appointment.

6.1.1.4 Stage 4: Day of treatment

Internal stakeholders thought that there was a lack of standardised prevention information given to patients and families on the day of DGA treatment. The PDS Dentists mentioned that they may individually endeavour to give some 'ad hoc' preventive advice on the day but that time constraints usually precluded this. They thought that parents may not be amenable to preventive advice at this stage of the pathway. Fluoride varnish was not mentioned as being applied at the time of DGA.

One PDS staff member gives ad-hoc advice to patients about attending their GDP 6-8 weeks post-DGA for review and prevention, but this stakeholder is unable to ascertain if they have actually attended, leaving the onus on the patient.

It is up to the individual clinician to decide if they wish to review the patient in the PDS post-treatment, otherwise the patients are routinely discharged back to the GDP. One PDS staff member actively allocates a PDS follow-up appointment on the day of the DGA itself but again, 'failure rate is high'.

6.1.1.5 Stage 5: Follow-up period post-general anaesthetic

The two main groups reviewing patients' post-DGA were the GDPs and PDS Dentists.

Overall, there was no agreed standardised follow-up prevention protocol for the patients in this pathway of care post-DGA.

Internal stakeholders were unsure if children were actually attending a follow-up appointment post-DGA with the initial referrer to access enhanced prevention. Dental Public Health (Strategic) stakeholders described that this was a 'grey area' of the pathway.

There was a generalised concern that GDPs were not proactive in the follow-up period contributing to a lack of engagement and prevention in the post-operative period.

'The carious teeth are removed, and a 6-month appointment will be sent out. And if they don't attend then they don't attend'. (NHS Pathway Management)

The GDPs, whom the pathway clinicians are relying to undertake prevention, did not feel 'chasing-up' patients to provide prevention was a part of their role. They generally thought that they were capable of providing prevention should the patients attend:

'And if we know they've been seen, we can follow-up at the end in the fifth stage. To see them back, to counsel them and say to them, 'we've kind of got this thing sorted out'. (GDP)

The GDPs described that sending out a letter to arrange a follow-up was where they 'drew the line' and that despite sending out a letter 'some patients still don't turn up'.

'They'll suddenly turn up again with sixes all messed up... I don't really know what you can do. 'Cause we could send them letters, texts. But they just don't turn up'. (GDP)

'Where does your responsibility stop? Where does it start? Somebody's got to be blamed for everything.' (GDP)

PDS Dentists thought they were more active in capturing these children within the PDS and that many then received enhanced prevention including fluoride varnish application there (although again the 'WNB' rate was generally high).

'We do the entire gambit of following the guidelines of fluoride varnishing and fissure sealing. And we will fissure seal primary molars as well. Fluoride varnish, diet advice and oral hygiene advice as well.' (PDS Dentist)

The PDS Dentists following these children up post-DGA mentioned that receiving the triplicate pad from the paediatric assessment clinic aided with specific advice on prevention. These stakeholders described the process of chasing up of patients who require prevention and who do not attend within the pathway as running on 'goodwill'.

The PDS staff did mention that there may be an underreporting of prevention activity undertaken in the PDS as some 'extra' prevention activity, such as sealing palatal pits of lateral incisors, goes unregistered on GP17 forms.

6.1.2 Need for action to improve prevention in the pathway of care

Based on the above mentioned lack of prevention, internal stakeholders were in agreement that there was a 'need for action' in the pathway of care to improve prevention and facilitate engagement of patients. Many described incredulity at the lack of linkages to prevention in the pathway and saw a real opportunity for change:

'Childsmile hasn't managed to get them 'cause they are hard to reach children and, in fact, this could be the key turning point for these children.' (Cons Paed Dent)

'If we have a good understanding of the reasons of them getting there, we can perhaps provide better support while they're within that pathway. It's a huge opportunity within that period of a child coming in.' (Cons Dental Public Health (Strategic) GGC)

'This is the highest risk cohort of children, from both a child protection point of view and from a dental health point of view. And we do nothing.' (Cons Paed Dent)

The PDS Dentists described a desire for change, but collectively portrayed a feeling of isolation, helplessness and not being heard:

> *'You can highlight problems in that system of care. And then nothing gets changed. You're only one individual.' (PDS Dentist)*

Stakeholders involved in following these patients up after the DGA (GDPs, PDS Dentists) were in agreement that improved links with prevention are required for these children, certainly in the period following the DGA, and within the pathway where appropriate.

6.1.3 Key findings

There is little-to-no prevention incorporated in the RHCG pathway of care, simply ad-hoc preventive advice 'if and when' the clinician has time on paediatric assessment and on the day of DGA. Some PDS Dentists are providing oral hygiene, diet advice and fluoride varnish at the point of referral for DGA. Stakeholders do not think GDPs are providing prevention and engaging these families at the time of referral and follow-up. PDS Dentists describe that there is not sufficient time at paediatric assessment clinic or on the day of DGA to provide any prevention at present. Stakeholders thought there was a need for action to 'capture' these children for prevention whilst they were attending the pathway of care.

6.2 To what extent are there, and could there be, connections with wider policies and programmes which could support prevention?

The following section describes stakeholder's awareness of, and current and potential linkages with wider child health programmes and policies which could support prevention in the RHCG DGA pathway of care. These policies and programmes had been considered for discussion following signposting by the external stakeholder in the Phase 1 Scoping Exercise (see Chapter 4), as being potentially relevant to evaluating prevention in the pathway of care, and included Childsmile, National Dental Inspection Programme, Getting it Right for

Every Child, the Early Years Collaborative, and the Children and Young Person (Scotland) Act 2014.

6.2.1 Stakeholder knowledge of wider policy and programmes

Stakeholder knowledge of wider policies and programmes which could support prevention depended on their role. Most external stakeholders were very aware of wider child health policy and programmes. Conversely, there was mixed knowledge among clinicians, with those in 'strategic' roles (the Consultants in Paediatric Dentistry) being more aware than GDPs and PDS Dentists.

All internal and external stakeholders, (with the exception of Scottish Government (GIRFEC)), had knowledge of Childsmile, although GDPs were only aware of the Childsmile Practice Programme.

All internal front-line clinicians and several external stakeholders had knowledge of the NDIP service.

External stakeholders had excellent knowledge of GIRFEC, but within the internal stakeholder group, knowledge of GIRFEC considerably dropped. Pathway clinicians described their knowledge as '*pretty limited*', were unclear on the concept of 'wellbeing'.

Consultants in Paediatric Dentistry were the only internal stakeholders to have an awareness of the Early Years Collaborative, with one stakeholder in particular having excellent knowledge.

Stakeholder knowledge of the Children and Young Person (Scotland) Act 2014 was generally poor, with considerable prompting required; however, the legislation was only in its infancy at the time of data collection, thus this finding may be expected. Internal stakeholders out-with Consultants in Paediatric Dentistry and one GDP had little-to-no knowledge of the 'Named Person'.

6.2.2 Connections with wider policy and programmes

Connections with wider policy and programmes which could support prevention were minimal. The following section describes any linkages with the programmes and policies in more detail, including Childsmile, NDIP, GIRFEC, EYC and Children and Young Person (Scotland) Act 2014.

6.2.2.1 Childsmile

There were no formal links described between Childsmile and the DGA pathway of care, with the exception of the 'standard links at the primary care level', described by external stakeholders in reference to the Childsmile Practice Programme (see section 4.3.2.1.3).

GDPs described some linkages with a Childsmile nurse who was an 'oral health educator', who dealt with dietary advice and toothbrushing:

She's got her own base of patients that she sees and gets them back in' (GDP)

It was noted that GDPs are being paid to provide prevention under the Childsmile Programme; however, as mentioned above, front-line PDS Dentists experienced many patients attending the pathway who had described no previous prevention at their GDP.

NHS Pathway Management stated that the Childsmile Practice Programme was not used by every general dental practice in Scotland, describing around 9% of GDPs (who have children registered of the appropriate age) as not engaged with Childsmile. This may indirectly reflect the GDPs lack of confidence in the programme as mentioned above and may limit access for some children to Childsmile Practice prevention and support.

Childsmile 'at the primary care level' also referred to liaising with and utilising DHSWs to encourage patient engagement; however, when questioned, the GDPs stated they 'didn't use DHSWs'.

There was a mixed response from the PDS Dentists in relation to liaising with DHSW. Several were using DHSWs to successfully engage families that were

otherwise not attending. Some had 'contacts' with DHSWs, but '*not as much as you would expect, considering we are providing children's dental service in the health centre with them*' (PDS Dentist). Those who used DHSWs described they would '*liaise with them to get contact with a family re-established*'. They described the process as '*easy…they are really helpful*'. Another PDS Dentist explained that a DHSW had '*come up with them [family] to GA assessments*' and that '*the families find it useful*'. Another PDS Dentist mentioned that for a DGA patient not engaging, the DHSW '*gave us enough information to refer to Social Work*'.

Internal stakeholders thought that the Childsmile pathway and the RHCG pathway 'did not talk to each other' and described their disbelief at the lack of linkages to the Childsmile prevention programme despite sharing GDHS premises.

> *'I think it's strange when so much training and education goes on in this building in relation to dental and oral health, that we have no direct links with Childsmile' (Cons Paed Dent)*

One Childsmile stakeholder said '*none of our teams has been asked to work there [paediatric assessment clinic]*'.

When considering what potential linkages stakeholders envisaged, many internal and external stakeholders thought that the Childsmile programme may help improve the provision of prevention in the pathway by broadening the role of the DHSW to encourage engagement, and by utilising EDDNs or oral health educators to provide direct clinical prevention including fluoride varnish in the pathway of care (see section 4.3.2).

6.2.2.2 National Dental Inspection Programme

NHS Pathway Management described that children receiving Category A letters from NDIP are most likely the patients who enter into the DGA pathway of care. NHS Pathway Management mentioned that currently, if Childsmile identifies a child with gross decay and in pain, they 'ask' the school to 'ask' the parent to attend a dentist for treatment and prevention. Management thought that there should be safeguards to ensure this engagement and prevention actually occurs.

In relation to what could be done, external stakeholders agreed that more robust NDIP feedback loops are required to identify these Category A and B children before they feed into the DGA pathway of care. A Childsmile Strategic stakeholder had an awareness of 'pilots' in other boards for more robust feedback linking children who have Category A and B letters with the 'Named Person' (see Section 6.4), but that no pathway had been confirmed or constructed in NHS GGC as yet. Strategic stakeholders mentioned that NHS GGC was starting to link with Category A children by sending a letter to families to encourage them to attend the PDS instead of their GDP.

NDIP could act as a safety net to flag up these families who are not currently engaging, in the hope that if treatment was sought earlier, some children may not require a DGA, and those who do need a DGA could be assessed in a more timely fashion.

Although NDIP was mentioned as being of interest, there were no direct linkages with NDIP mentioned that would improve prevention in the DGA pathway of care. It was more of interest from a wider safeguarding perspective.

6.2.2.3 Getting it Right for Every Child (GIRFEC)

Many stakeholders perceived that the current pathway was not aligned with GIRFEC principles, given the impact on patients and families of a long and protracted wait for treatment, especially for those patients who 'were not brought' within the pathway. Internal stakeholders described emergency attendees with wellbeing issues, in particular parents coping with children who are up at night 'crying with pain'.

> *'The worst affected children often have taken years to come to us, and presumably, during the course of that time, have had repeated episodes of pain.' (PDS Dentist)*

The GDPs described having to resort to an increasing volume of pharmaceutical management for patients who attend in an emergency between referral and treatment:

'They are getting 3 or 4 courses of antibiotics in the space of a couple of months.' (GDP)

'I've seen him maybe 4 or 5 times since my initial referral.' (GDP)

One of the Childsmile stakeholders thought the DGA experience itself was not in line with GIRFEC principles as it may increase a child's dental anxiety, making a follow up attendance less likely:

'Invariably this has been a horrible experience to them. So they don't want to come back. Or maybe they can't persuade their child to come back.' (Childsmile)

Stakeholders thought that greater awareness of GIRFEC principles could improve provision of prevention in the pathway by ensuring we 'get prevention right' for each child by tailoring it to their needs, and strategically improving the pathway to ensure patients have the best opportunities to engage.

The overall lack of potential linkage ideas may suggest that understanding of GIRFEC was limited.

6.2.2.4 Early Years Collaborative

Consultants in Paediatric Dentistry described a marginalisation of Paediatric Dentistry within the Early Years Collaborative (EYC) movement, with no linkages presently:

'There's a huge amount of investment going on in all of this. The investment in early childhood health and wellbeing is enormous. It's one of the biggest Scottish Government policies. And it's bypassing us'. (Cons Paed Dent)

The Consultants in Paediatric Dentistry also mentioned the difficulty with implementing EYC 'Plan-Do-Study-Act' cycles for oral health:

'A lot of the targets for the early years collaborative are oral health targets, and the problem with that is, as far as I can see, the only programme that's in place to deliver these oral health targets is Childsmile.' (Cons Paed Dent)

Consultants in Paediatric Dentistry thought that an EYC pilot could help ascertain if any local changes in preventive practice are effective.

An important finding in itself was that the above section relating to the Early Years Collaborative was brief. This may have been related to the fact that knowledge about this in particular was minimal from the majority of stakeholders.

6.2.2.5 Legislation: Children and Young Person (Scotland) Act

No formal linkages or protocols for liaising with the 'Named Person' were described, be it from Health Visiting or within Education.

One Childsmile stakeholder thought that GDPs would not think about contacting the Health Visitor for children referred into the pathway of care.

Just imagine a 3-year-old with tooth decay who has failed to attend for the paediatric assessment clinic. Clinic writes back to the GDP to say 'didn't come in'. Would the GDP think to contact the Health Visitor? They probably don't even know who the Health Visitor is.' (Childsmile)

Stakeholders described that this legislation could support prevention by increasing stakeholder responsibility (regardless of agency) for engagement and wellbeing of the children in this pathway, and legislate for multi-agency working and information sharing.

In contrast, the Consultants in Paediatric Dentistry foresaw problems with legislation, in that 'all the policy in the world' could exist, but that most families would not know who their 'Named Person' is.

Again, the answers to the above section were limited, perhaps because the Act was in fact a Bill at the time of data collection and thus stakeholders may not have had the knowledge to comment further on potential linkages.

6.2.3 Key findings

Internal stakeholder's knowledge about wider child health policy and programmes was minimal. External stakeholder knowledge was superior to that of internal stakeholders, but was still not substantial. Current linkages described with wider services, policies and frameworks which could support prevention in the pathway of care were minimal, and only included the Childsmile Practice programme in the form of chair-side prevention by GDPs and PDS Dentists and some minor linkages with DHSW, Health Visitors and education. The policies and programmes described that could support prevention were Childsmile, NDIP, GIRFEC, EYC and the Children and Young Person (Scotland) Act 2014.

6.3 What is influencing provision of prevention in the pathway of care?

All influences mentioned on the provision of prevention were negative, i.e. barriers to prevention in the pathway of care. Barriers included knowledge of GDPs, stakeholder attitudes (including a low priority of prevention and a 'silo' mentality), service pressures, communication issues and the impact of health inequalities on patients' ability to receive prevention. The 'cultural norm' of DGAs and perpetuated dental anxiety post-DGA were also perceived as impacting on prevention. These are outlined in detail in the following sections.

6.3.1 Knowledge of General Dental Practitioners

There was a general lack of confidence in 'the General Dental Practitioner' in giving preventive information, influencing oral health behaviours and practically supporting these families. A Childsmile stakeholder described practices having little knowledge of guidelines during practice visits.

> *'Sometimes we get very blank looks. And other times we get 'Oh yeah, it's up on the shelf.' Well actually, you need to know [the guideline].' (Childsmile)*

Dental Public Health (Strategic) colleagues described that giving tailored holistic preventive advice for an individual family was '*beyond the current knowledge of primary care practitioners*'.

'I'm not sure that [GDPs] actually know what is the best way to give advice for an individual family…empowering them…and supporting them to change their behaviours.' (Dental Public Health (Strategic) GGC)

The GDPs demonstrated the above by describing themselves as not best placed to be the main dental caregivers for children. They desired PDS review for all children, regardless of requirement for DGA, until the age of 16.

Internal stakeholders thought that some GDPs lacked the knowledge of both the pathway structure and of treatment planning. By not informing parents about comprehensive and radical treatment plans at referral, the knock-on effect was inadequately prepared families entering the care pathway, leading to issues further along when attempting to provide prevention (see section 6.3.3). Many stakeholders believed GDPs had the wrong thresholds for referring patients into the pathway in the first instance, 'sitting on caries' rather than actively treating it.

6.3.2 Stakeholder attitudes

Stakeholder attitudes which may have been limiting the provision of prevention in the pathway included a low priority of prevention and a 'silo' mentality.

6.3.2.1 Low Priority of Prevention in Pathway

It was evident that a number of stakeholders viewed prevention as a low priority. One NHS Pathway Manager did not have an awareness of what prevention occurred at each stage in the pathway, and explained that it was not their 'role' to be aware of this.

'Prevention is what we can do after the event.' (NHS Pathway Management)

Prevention was described as being low on the agendas of GDPs. The majority of internal and external stakeholders voiced apprehension in relation to whether GDPs were best placed to be primary dental caregivers for children at increased caries risk. Internal stakeholders described a 'small business' mentality of GDPs, and an inadequacy and ambivalence in looking after the paediatric dental population, particularly in relation to clinical prevention.

'We constantly chase our GDPs. It's not them chasing us.' (Childsmile)

The Consultants in Paediatric Dentistry gave evidence to support this attitude by mentioning their communications to date with a 'vocal' local GDP sub-committee in regard to guideline based prevention being disregarded by GDPs as it was not remunerated enough.

Duraphat's expensive. General practitioners won't put fluoride on unless they get money for it.' (PDS Dentists)

The GDPs supported these general impressions. When asked 'what was making a difference in relation to prevention?' in their eyes, general practice contribution was 'fairly low'. They mentioned the national toothbrushing programme and water fluoridation as methods to improve oral health, but thought that they personally 'couldn't do much more' in primary care.

Two of the three GDPs described a 'cultural norm' of DGAs for the West of Scotland and saw a DGA as an inevitability.

6.3.2.2 'Silo mentality'

There was a general feeling among stakeholders that individuals and agencies were working only within their own agencies and failing to contact other agencies for information and support. Stakeholders likened this isolationism to being within 'silos'. Many stakeholders had concerns in particular with GDP 'silo mentality'. There was a shared concern that GDPs have a general lack of knowledge and confidence in multi-agency working and do not effectively undertake collaborative working to ensure children attended for ongoing care. External stakeholders were disappointed that it had taken legislative intervention to elicit change.

'It shouldn't have required the Children's' Act to make them do that. They should be doing it. I suspect they're not but they should be.' (Childsmile)

The Consultants in Paediatric Dentistry thought similarly that, although younger GDPs might be well educated and informed in child protection, the majority of GDPs would not be aware of the newer concept of wellbeing concerns.

'[GDPs] are firmly in the welfare rather than the wellbeing camp.' (Scottish Government (GIRFEC))

'If you ask people in primary care, 'how many times have you got in touch with the Social Work department?' most General Practitioners would say to you 'never'.' (Cons Paed Dent)

Many dental stakeholders described non-dental stakeholders (GMPs and Health Visitors) as regarding dental caries as separate from general health.

'The interaction I had with the Health Visitor was, 'The child is well cared for.' I was saying to her, this child has untreated decay and an infection.' (PDS Dentist)

The GMPs generally described that children with dental problems were not their remit and depicted very little collaboration with the PDS Dentists in their health centre building.

'It's something we only notice if they come with an upper respiratory infection and we look into their mouths. We're not terribly proactive'. (GMP)

The GMPs also portrayed issues in collaborating with education services, which they felt is still in a 'silo' from healthcare.

The PDS staff described attempts to contact Social Work as 'soul destroying'.

As a consequence of the above silo mentality, the PDS staff described the challenges of engaging children when they 'were not brought' to an appointment in the pathway to include 'lots of chasing', both of the family and of the other agencies who could provide information or help the family attend. They had lost confidence in the structure of this pathway to facilitate 'chasing' these patients, particularly as they worked on different sites daily.

'You've seen things slip through the net before; you worry about leaving things'. (PDS Dentist)

NHS Pathway Management described that current thought processes were around single treatments or an 'episode of care', rather than a journey to better oral health.

6.3.3 Service pressures

Internal stakeholders were in agreement that the pathway as a whole was pressured with a high throughput of patients, both at paediatric assessment clinic and on the day of DGA. As a result, there was little time to facilitate prevention.

'I mean Glasgow's such a powerhouse of general anaesthesia that we probably do as much as the rest of Scotland put together.' (Cons Paed Dent)

PDS Dentists explained that there was so much other information to give that prevention came at the 'bottom of the list'.

As mentioned above, there was a lack of preparation of patients by GDPs described. PDS stakeholders reported that occasionally patients turn up fasted for the paediatric assessment clinic, an appointment where no treatment will be carried out. They felt this has an impact on being able to provide any preventive advice as parents and children are distressed.

'They're actually getting 10 [teeth out], and some of them are the front ones. And they're not going to take much in; the mum's in tears. Because they've not been primed beforehand. So there's a lot of emotion going on.' (PDS Dentist)

On the day of DGA, PDS Dentists described morning lists often running over into the afternoon session as so many patients were booked onto the list.

Table 6 illustrates the impact of the service pressures in the pathway on different groups of stakeholders as self-highlighted or inferred during focus groups and interviews. Groups include hospital dental staff, GDPs, GMPs and NHS Pathway Managers.

Table 6 – Impact of pathway service pressures on stakeholders

Hospital Dental Staff (Public Dental Service and Consultants)
• *Lost confidence in the administrative system at GDHS with the result that they take on extra administrative roles to ensure children are not 'lost in the system', relying on clinician goodwill*

• *Described not enough time allocated to do WNB work, have to come in over the weekend to follow these patients up*
• *Described a feeling of isolation, helplessness and not being heard, and unease at the lack of support. Current pressures on service can lead to human error.*
• *Described multi-agency working as currently 'soul destroying'*
General Dental Practitioners
• *Feel isolated as a result of lack of communication about their patient in the care pathway*
General Medical Practitioners
• *Extra work for GMPs to re-refer patients they have never seen who do not engage in the pathway*
• *Already feel the pressures of working in a 'Deep End' practice*
Managerial Staff
• *General perception of NHS Pathway Management as the 'dark side'*
• *Under time pressures to get through lists as efficiently and effectively as possible*

6.3.4 Communication issues

Issues with the current administrative communication system were raised by front-line users and NHS Pathway Management as a factor impacting the provision of prevention for the patients in the pathway.

Internal stakeholders were concerned by the lack of administrative communication to keep relevant parties informed of assessment and treatment outcomes to ensure the families can best be supported through the pathway.

None of the front line stakeholders could definitively describe the exact administrative process in place at the time of fieldwork. A number of PDS Dentists were under the impression that IDLs were getting sent to the GDP by default; and assumed that the secretarial staff in RHCG sent these on their behalf. Yet other front-line stakeholders (Consultants in Paediatric Dentistry) were under the impression that the PDS clinicians should manually enter the GDP details alongside the GMP in order for IDLs to be sent to both parties:

> *'And one is printed and sent to the GMP and the GDP. And that tends to happen, I think. I think they do tend to get the discharge letters.' (PDS Dentist)*

A lack of clarity existed among all PDS stakeholders about what official protocol existed and whose job the administration was for children who 'were not brought' to paediatric assessment clinic or on the day of DGA. PDS Dentists discussed that the written communication for children who 'were not brought' was 'sitting on Trakcare' unsent and that it was the responsibility of reception staff and not secretarial staff to send out these letters. However, rather than relying on written communication, PDS Dentists generally chose to phone the referrer to inform them that the child 'was not brought'.

The minimum written communication that referrers should receive was outlined as the following:

- A triplicate pad sheet from paediatric assessment clinic detailing the prevention plan
- Notification of any children who 'were not brought' in the pathway
- An Immediate Discharge Letter (IDL) from the day of DGA, outlining treatment undertaken.

Overall, referrers described frustration at the infrequency of receiving any of the above information, which resulted in the referrer assuming the child was being managed when in fact they were not.

When discussing the above with the GMPs, it became apparent that they were the only practitioners receiving notification of children who 'were not brought' and IDLs, rather than the dental referrer. The GMPs were unaware that they were the only healthcare professionals receiving information that the child had had a DGA. GMPs described an increased administrative burden as a result of these 'were not brought' letters as they then had to re-refer a patient in who they have never seen. At least one IDL per month was received by the GMPs, despite not having referred the patient into the pathway.

GDPs were thus unaware of where these patients and families were within the pathway. Dental referrers would like to have more communication from the pathway to assist in providing prevention.

'I've never had a 'WNB' letter for a dental assessment at the dental hospital.' (PDS Dentists)

6.3.5 Impact of health inequalities

As a whole, stakeholders considered the impact of health inequalities, in particular the difficulties in engaging often vulnerable families, as an important factor limiting prevention in the pathway of care.

The majority of internal and external stakeholders acknowledged the common socioeconomic background of patients entering this pathway and the challenges these families faced.

'I've got one family in particular who just go continually to the wrong place. You can remind them, phone them the day before and they're just chaotic'. (PDS Dentist)

Stakeholders recognised that it was difficult to prevent caries if the patients were not attending. Some general barriers to care mentioned included lack of family resources, limited access to care and lack of health knowledge and literacy. Other factors included low priority of oral health, the DGA 'cultural norm', and the anaesthetic perpetuating the child's anxiety and limiting engagement with prevention post-DGA.

The Childsmile stakeholders alluded to the fact that health education and promotion had not reduced the number of DGAs, therefore suggesting that health inequalities had not yet been tackled adequately.

6.3.5.1 Perceived low priority of oral health

NHS Pathway Management described that dentistry was 'not the most important thing' for the families in this pathway of care, thus prevention would also be low priority.

6.3.5.2 Lack of oral health literacy and education

One GDP, the Dental Public Health (Strategic) GGC stakeholder and the Childsmile stakeholders explicitly mentioned a lack of parental education and health literacy affecting communication with patients, coupled with the lack of understanding regarding the need for ongoing care post-DGA affecting the provision of prevention and treatment.

'It's stopped being sore; that's not important to them anymore. And it's not until something gets sore again, that they'll suddenly turn up again.' (GDP)

'Expecting them then to go back to the GDP...it will not always work.' (Childsmile)

'We know that it's incredibly difficult getting hold of parents. So having an address and having a telephone number is in no way any comfort in being sure that you'll actually get hold of the parent'. (Childsmile)

Many internal stakeholders mentioned that families do not understand that by engaging with prevention, the risk of future decay will be reduced. Many internal and external stakeholders described that the families might 'not understand' the actual preventive messages given. An example given was one particular local nursery with 30+ languages spoken. One of the Childsmile stakeholders recalled personal experiences working with families in her Childsmile role and cited language barriers as posing difficulties with consent and engagement.

6.3.6 Cultural 'norm' of DGA

Childsmile, GDPs, and NHS Pathway Management described the cultural norms surrounding dental extractions under GA. Stakeholders perceived that families view a DGA as an episode of treatment only, without the prevention that could go alongside it.

'There's an element of 'you've had so many teeth extracted; you're like your mother now.' (Childsmile)

'They (parents) see it as a good thing, 'Oh aye, they got their teeth out under general anaesthetic.' A lot of people don't perceive the risk of the general anaesthetic and the fact that things have got to such a bad stage of disrepair.' (GDP)

6.3.7 Perpetuated cycle of dental anxiety

Several stakeholders mentioned the DGA experience itself may be a barrier to accessing further care and prevention, creating a downward spiral of dental anxiety likely to lead to repeat DGAs in future.

6.3.8 Key findings

Numerous factors may hinder the provision of prevention in the care pathway; including poor knowledge of GDPs; attitudes of stakeholders (including a low priority of prevention and a silo mentality); service pressures within the NHS limiting the time available to provide direct chairside prevention; communication and administrative issues; and the impact of health inequalities on patient engagement and the understanding of the preventive messages given. Stakeholders described cultural normality surrounding DGAs. Perpetuation of dental anxiety post-DGA was also considered as a factor limiting the provision of prevention in the follow-up period.

6.4 Are there examples of good preventive practice in other DGA pathways within NHS GGC or other NHS boards which may inform improvements in NHS GGC?

Not all DGA pathways and NHS Health Boards in Scotland were investigated, rather those explicitly snowballed by stakeholders as having good practice in relation to DGA pathways and prevention (see Section 7.3).

A satellite DGA site within NHS GGC was cited as a local care pathway of interest, with some areas of good preventive practice.

Two external NHS health boards were cited as having models of good practice (these will be referred to as Health Board A and Health Board B to maintain anonymity). The most developed model was within Health Board A. Health Board B was also mentioned by stakeholders, but not in great detail. The PR was made aware that the integration of prevention with DGAs may exist in other boards.

6.4.1 Inverclyde Royal Hospital DGA pathway of care NHS GGC

A DGA care pathway in Inverclyde (NHS GGC) was signposted as an efficient, streamlined, PDS-run local service which was GIRFEC aligned, with integration of prevention. PDS Dentists working within this model felt they had more 'ownership' of the system, more awareness of children who ‘were not brought’, particularly in relation to the administrative aspects, and described good relationships with their local GDPs. Clinicians and NHS Pathway Management described the advantage of reducing waiting times for children including those who may be in pain. Other benefits included the degree to which clinical prevention could be undertaken, the local nature of the service, and that all patients were offered a post-DGA PDS review.

‘Basically [Inverclyde PDS Dentists] just see the patients, do the treatment planning, do the DGA themselves, and discharge back. And those they think they need to hold onto for whatever reason, they hold onto.’ (NHS Pathway Management)

Currently, Inverclyde offer a post-DGA review for the patients, which appears to be successful in engaging families in the short-term. They have the added advantage of a hygienist to provide prevention.

'We send the appointments out after DGA. I think quite a lot of them come through because we've been auditing it recently'. (PDS Dentist)

'We do prevention…they're listening more at that point. You can do the Duraphat and they've usually seen our hygienist by that stage. Fissure sealants and everything have been done as well'. (PDS Dentist)

6.4.2 Health Board A

The three key aspects of interest within Health Board A were the concept of an 'Oral Health Pathway' aligned to Childsmile, a multidisciplinary working group, and availability of appropriate resources.

6.4.2.1 An 'Oral Health Pathway'

Health Board A was described as having a DGA service which had been 'rebranded' as the 'Oral Health Pathway'.

'We have an Oral Health Pathway. Because it immediately makes people think in a different way. Oral health is part of everybody's business'. (Dental Public Health (Strategic) External Health Board)

The aim of this integrated 'Oral Health Pathway' was to remove the traditional hierarchical silos of 'hospital care' and 'general practice' and promote a mind-set that oral health is not a silo of overall health, in line with the 'common risk factor' approach.

'If you work on a very collaborative basis, all aspects of children's health improve, including dental health'. (Dental Public Health (Strategic) External Health Board)

At the paediatric assessment clinic in the DGA pathway of care '*everyone sees themselves as part of Childsmile*' (Dental Public Health (Strategic) Health Board A). Links were described with Childsmile throughout the DGA pathway. Should a PDS Dentist have a wellbeing concern at the paediatric assessment clinic, (for example a child who is not being brought), they will 'lift the phone' to the Childsmile Coordinator to initiate the process of extra support.

> '*If there were any problems [throughout the pathway] … that would go to the Childsmile team. The prevention or home delivery and support. Going back to the referrer and arranging all their care'*. (Dental Public Health (Strategic) External Health Board)

Support was then arranged from the local DHSW to ensure the family attend the DGA and a follow up appointment. This Dental Public Health (Strategic) stakeholder was unable to describe any formal direct chairside prevention occurring presently due to their managerial strategic role.

There was evidence of an integrated surveillance system in this pathway to monitor patients' progress through the 'Oral Health Pathway'. Events such as an emergency pain attendance or a failure to attend in the pathway were sent as electronic 'alerts' to the 'Named Person', linked with the integrated child's record (see section 6.4.2.3). A DGA event was added to this 'chronology' automatically for every child. This Oral Health Pathway was most robust for the under-5s at the time of data collection, with further work being planned for school-age children.

Training was being undertaken for the 'Named Person' in oral health wellbeing, to include possible wellbeing scenarios (such as the aforementioned failure to attend in a DGA pathway) and potential action the 'Named Person' should take. An Early Year's Collaborative approach was taken, with small local changes, for example linking with one school. Third sector organisations such as social services were *'becoming aware'* that they needed to link with the pathway.

There was also an ethos of early intervention to become aware of these children before the point of DGA. This board had undertaken an 'early intervention' pilot to integrate Childsmile with NDIP. This involved the Childsmile Coordinator and the NDIP Dentist working together to garner as much information as possible about a child through ISD and integrated child health intelligence (see section 6.4.2.3) (providing information such as registration and participation data and whether the child was receiving Childsmile interventions). Each category of letter initiated a particular outcome with information fed back to the 'Named Person', to ascertain what extra support that particular family needed. A Category A letter triggered liaison with GDPs and liaison with PDS to establish if a child was more appropriate for secondary care review.

6.4.2.2 Multidisciplinary working group

External stakeholders described a multidisciplinary working group in Health Board A, created to apply GIRFEC principles to oral health for children. There was an overall Oral Health Strategy Steering Group and multiple sub-groups. Buy-in and ownership existed from the senior dental NHS Pathway Management team, General Dental Service, PDS, Childsmile and dental practice advisors. A three-year action plan was developed for the board, using a strategic planning approach. The performance management system, assessing quarterly-, yearly- and five-yearly progress against targets, was initiated in 2003, highlighting the forward thinking nature of this board. The group developed a performance management report, evaluating the individual SIMD quintiles of the caseloads of DHSWs. Their PDS management team undertake the administrative task of chasing up these patients, and have access to all the vital information for each patient on a collated form.

'It's just chasing people and phoning dentists up or phoning practitioner services to construct and gather all the information.' (Dental Public Health (Strategic) External Health Board)

There were no Specialists or Consultants in Paediatric Dentistry in Health Board A; instead, all dialogue occurred between the PDS and GDPs. If a Consultant opinion was needed, clinicians would refer into NHS GGC, which 'rarely happens' according to this Dental Public Health stakeholder.

6.4.2.3 Appropriate resources and technology

This board used up-to-date technology to allow information sharing for patients including those in their DGA pathway. The first resource described was a multi-agency 'cloud-type technology', with access for all major agencies such as education and Social Work. This electronic Scottish Government-funded 'GIRFEC early-alert system' was set up by the GIRFEC leads. At the time of data collection, the GDPs did not have access to this.

Health Board A also had an online child's record. A 'Dental Page' existed for dental professionals to collate a chronology of DGAs, pain attendances and failures to attend appointments, which assisted in information sharing. The Health Visitor and DHSW had access to this, but this was not accessible to GMPs. Social services did not have information on dental health on their own integrated template.

After a DGA, an alert of the event was placed on this electronic system, with a complementary email to the 'Named Person' to inform them of the DGA, as it was considered a 'significant event'. The Dental Public Health (Strategic) stakeholder in Health Board A described a robust pathway for Under 5s in this Health Board, and they were awaiting guidance from the Children and Young Person (Scotland) Act for over-5s as this would require liaison with Education.

Post-DGA, it was described that these children were routinely followed up by the GDP, with Childsmile and multi-disciplinary team input where required.

6.4.3 Health Board B

Another NDIP pilot project mentioned by the Dental Public Health (Strategic) GGC stakeholder involved the follow-up of Category A letter children in Health Board B and linking with ISD data to ascertain if these children were registered with a GDP. If they were registered, the team phoned the GDP to facilitate an appointment. If they were not actively participating, they were referred to the PDS. If they 'were not brought' to this appointment at the PDS, then the 'Named Person' was contacted.

6.4.4 Key findings

Points of note taken from one other DGA pathway of care in NHS GGC included adequate time on clinic to facilitate the provision of prevention at paediatric assessment clinic, a local access model for assessment, the added advantage of a hygienist, orthopantomogram facilities for appropriate treatment planning and a PDS-based post-operative review for prevention which patients seem to engage well with.

External Health Boards A and B were signposted as of relevance to NHS GGC. Health Board A in particular showed good practice of linking prevention and safeguarding to the pathway of care, and this was facilitated by the creation of a multi-disciplinary group aligned to oral health with GIRFEC mind-set in place and an ethos of early intervention. This Health Board also had appropriate technology and resources in place to support this ethos.

6.5 How can the provision of prevention be improved in the pathway of care, what are the barriers and how can they be overcome?

Stakeholders described two areas where the pathway could be modified to support prevention. One was the overall ethos of the pathway, by reconfiguring the mind-sets of stakeholders to endorse a 'journey of care' towards oral health, with collaborative working between all individuals involved in supporting families. This included the 'Named Person', GMPs, and DHSWs. The ethos was underpinned by early intervention, a 'whole family' approach, and consideration of labelling a DGA for any child as a 'significant event'. Stakeholders thought that tackling wider health inequalities may also improve the provision of prevention for these patients. This culminated in the vision for a change in terminology and structure to create a 'Prevention Pathway' rather than focus being on the surgical correction of disease.

The second area suggested was defining the actual clinical provision that stakeholders thought should be provided at each stage in the pathway of care, from referral to follow-up. Stakeholders described practical prevention packages tailored to each stage in the pathway, and suggested who should be involved in providing this care. A local model of care was suggested where possible.

The anticipated challenges in meeting these goals included stakeholder fear of change and the challenges associated with collaborative working and role redefinition. When considering the described models in other external NHS Health Boards, the large size of GGC and limited resources available were postulated as challenges, alongside information sharing given that current IT systems from different agencies and boards are not interlinked. Linking with Childsmile was considered not to be a straightforward process given the limited resources and issues with amending the contracted job descriptions of DHSWs. Stakeholders thought these challenges could be overcome by training stakeholders in the overall ethos and practicalities required to integrate prevention, engaging with EYC pilots, finding ways to information share by adopting aspects of the technology used in other boards, and the setting up of a multidisciplinary working group to drive and lead change.

6.5.1 Ethos underpinning the integration of prevention in the pathway of care

6.5.1.1 Collaborative working

All external stakeholders, the GMPs and the Consultants in Paediatric Dentistry had a vision to create a 'holistic patient-centred pathway of care' free of silos, with effective multiagency working. They described breaking down barriers between professionals to provide a streamlined service with enhanced support for families and 'feedback loops'. NHS Pathway Management mentioned the role of the specialist in the pathway and that services did not have to always be consultant led.

'It's not trying to make the child fit round the service 'cos that is what we tend to do quite often; it is actually trying to think from the other perspective.' (Childsmile)

Front-line Consultants in Paediatric Dentistry and NHS Pathway Management indicated a necessity to move away from a model of primary/secondary/tertiary care and the mind-set that supporting patients to attend 'is not my job'. The roles and responsibilities described that would need redefined to support engagement (GDP, 'Named Person', GMP and DHSW) are outlined below.

6.5.1.1.1 Role of the General Dental Practitioner

Stakeholders described that the role of the GDP should be redefined with wellbeing at the centre. There was an overall feeling that GDPs should be liaising with other agencies as standard practice and must be more accountable for patients they have referred to the DGA pathway, in line with the Children and Young Person's (Scotland) Act 2014. Several stakeholders thought that GDPs should keep a register of who they have referred in, and should be proactive in tracking what has happened to the patient.

> *They'll [GDPs] actually have that responsibility as a health professional in ensuring that they're following up by letting somebody know at an appropriate time that there is an issue.' (Dental Public Health (Strategic) External Health Board)*
>
> *'And the whole way you treatment plan needs to be along the lines of am I, as a dentist, able to prevent this disease? And if the answer to that is no, I need other support, then as soon as that little thought process happens, that's when the multi-agency support should be instigated.' (Cons Paed Dent)*

6.5.1.1.2 Role of the 'Named Person'

For under-5s, the majority of stakeholders foresaw a 'massive role' for Health Visitors in this pathway of care in terms of engagement of patients.

> *'The Health Visitor should probably be automatically informed as well'. (GMPs*)

The Health Visiting Strategic stakeholder in particular felt strongly that their teams would want to know about children who 'were not brought' in the pathway so this could be added to the child's 'chronology' and action taken where required. This stakeholder touched on the lack of clarity surrounding the role of the Health Visitor previously, but that the importance of their input is now being fully realised:

> *'I think Health Visitors have done an enormous job. I think that Health Visitors have a real role to play there [in the pathway] and in relation to dental health.' (Health Visitor (Strategic))*

Stakeholders also described the importance of the role of Education being that of the 'Named Person', but had less clarity as to how to integrate their role into the pathway of care.

6.5.1.1.3 Role of the General Medical Practitioner

The GMPs thought that any child who was referred for a DGA should be placed on their 'vulnerable families' list. They thought they could be more proactive in general with oral health messages and checking if their vulnerable families are registered and participating at the dentist.

6.5.1.1.4 Role of the Dental Health Support Worker

The Dental Public Health (Strategic) GGC stakeholder admitted that Childsmile could be doing more in this pathway as the '*national prevention programme is missing these children and we're not necessarily getting to everybody who needs [Childsmile] most.'* A Childsmile strategic stakeholder enquired, '*Is there any scope for linking [DGA patients] with any support workers?*'

The Dental Public Health (Strategic) GGC stakeholder thought there was real potential for DHSWs to assist with patient engagement within the pathway and ensure these patients are receiving preventive care in the aftermath of the DGA.

'We're now trying to refine it [Childsmile]. Ensuring all the time that we're really meeting the needs of those who need it most. And [the dentist] can put them onto a health support worker or whoever, who could follow them up thereafter depending on where they lived...' (Dental Public Health (Strategic) GGC)

When asked about involving DHSWs in the pathway, NHS Pathway Management thought that children in the DGA pathway were 'past the assistance of a DHSW', instead considering the role of the DHSW as encouraging registration rather than supporting patients to attend appointments in this pathway of care.

6.5.1.2 The 'significant event'

Many stakeholders, both internal and external, mentioned that concept of reclassifying a repeat DGA as a 'significant event', and considered the importance of having systems in place to investigate why the repeat DGA occurred.

'If we have a child have a second general anaesthetic, we should almost be looking at it as a significant event and actually trying to analyse why.' (NHS Pathway Management)

'It's got to be the case that we really make the message clear to parents that a general anaesthetic is nothing to take lightly. It's not just a little whiff of gas and we knock your child out and we take out a couple of teeth.' (Childsmile)

6.5.1.3 The 'whole family approach'

There was widespread interest in the concept of a 'whole family approach', where if one child entered the pathway with poor dental health, that the whole family be supported to engage, in order to change existing health behaviours.

'Have they got siblings? Because you know if one is like that then chances are the lot will be like that.' (Childsmile)

It was interesting to note that the only stakeholders who did not mention a vision of a holistic pathway of care, or a 'whole family approach' were front-line coal face dentists such as GDPs and PDS clinicians.

6.5.1.4 Early intervention

There was a strong push for an ethos of early intervention for prevention. Several external stakeholders alluded to the importance of oral health messages in the early years so children do not present in the DGA pathway. Again, the only stakeholders that did not mention this subtheme were GDPs and PDS Dentists:

'I think that there is something about the early prevention, how it makes a big difference around children. The school age child, in terms of their emotional health and wellbeing, in terms of their self-esteem, all of the things that make a massive difference if they happen to have good teeth.' (Health Visiting (Strategic))

Stakeholders commented on the need to act on low-level pieces of information before the child presents in a 'crisis' situation.

'I mean things like the Health Visitors, the school nurses, teachers and Social Workers; there are so many bodies, individuals that work with children….and maybe there are points that they think 'goodness I should really tell someone about this'. (Childsmile)

6.5.1.5 Tackling health inequalities

All external stakeholders thought that tackling health inequalities would be required at a wider level.

6.5.1.6 A journey of care: The Prevention Pathway

NHS Pathway Management had a vision for a 'journey of care' for these children, not simply an 'episode of care', and internal hospital-based stakeholders described their vision of a prevention 'pathway' running alongside and integrated with the DGA pathway.

'It all should be reinforced, starting at the general practitioner, then the assessment, and carried on at the general anaesthetic.' (PDS Dentist)

6.5.1.6.1 Tailoring prevention

Dental Public Health (Strategic) stakeholders, Scottish Government (GIRFEC) stakeholders, Consultants in Paediatric Dentistry and NHS Pathway Management emphasised the need to ensure tailoring of prevention occurs within this journey of care. In particular, Scottish Government (GIRFEC) stakeholders thought there was a need to understand how these patients got to the point of DGA, and how best to support them through the pathway and beyond. Childsmile stakeholders thought that a new 'innovative' prevention method was required.

'Instead of going through the bog-standard information about toothbrushing…we need to find another innovative way' (Childsmile)

Stakeholders thought how prevention is provided for these families should be reassessed.

'We've got oral health information we want to give them and just giving them the 'Remember, brush your teeth twice a day'… I don't think the normal process is going to work'. (Childsmile)

6.5.2 Practicalities of integrating prevention

This section focuses on which stages within the pathway of care that prevention should be undertaken, what prevention should be undertaken at each of these stages, and by whom.

There were five stages identified in the pathway of care where prevention could be introduced: at the point of referral for DGA; at a paediatric assessment clinic (Glasgow Dental Hospital or a local PDS site); at a stand-alone prevention appointment; on the day of DGA treatment; and at follow-up. There were differing views of stakeholders on the suitability of prevention at these particular stages. Most stakeholders thought this would be an iterative process with prevention ingrained throughout the pathway and beyond.

'Snippets of information that you build on', reinforced, reinforced, reinforced. Starting with the GDPs, and all along the pathway'. (PDS Dentist)

In relation to who should be undertaking prevention, the majority of stakeholders thought that prevention should be ‘everyone’s job’, but that specific individuals need to take lead at different stages. On the whole, stakeholders described that although previously prevention was considered a ‘primary care job’ it should now be universal within paediatric dental services.

The need to define roles and responsibilities for providing prevention was a theme raised by most stakeholders. Suggestions for who should be providing prevention included GDPs and PDS Dentists, and Oral Health Educators (non-dentists) including EDDNs, DHSWs, undergraduate dental students and dental therapists. A common belief was that whoever provides prevention should also actively pursue these patients.

Regardless of when prevention is undertaken, in relation to the content of the prevention package provided, stakeholders discussed a need to educate families in understanding why children get decay.

‘So many of these children that come in, pre-school children, are expected to be brushing their own teeth and it doesn’t occur to these parents that maybe they’re not doing a very good job.' (Cons Paed Dent)

6.5.2.1 At the point of referral

Internal stakeholders (in particular PDS Dentists) envisioned a preparatory bundle of information for patients to be given by GDPs at the point of referral to include enhanced preventive information, information on who should attend each appointment, what they will experience at each stage, and a proposed treatment plan. PDS Dentists suggested the enhanced prevention package should include fissure sealants undertaken at the point of referral if appropriate, as this 'is currently not happening in general practice'.

The GDPs thought that general practice contribution to prevention was 'fairly low' and the only way that prevention could be improved would be to 'fluoridate water'.

The PDS Dentists thought overall that this preparation package would decrease the burden on the pathway as patients may be better prepared and on board, and theoretically provide time to discuss prevention further along the pathway.

6.5.2.2 At paediatric assessment clinic in GDHS

The majority of stakeholders (including internal front-line clinicians and external agencies such as Dental Public Health, Childsmile and Scottish Government (GIRFEC)) discussed the potential for a 'prevention package' at the paediatric assessment clinic whilst these children are a 'captive audience'.

'Cause you've got them then. And the problem is, you never know if they're going to come back again later on…' (Dental Public Health (Strategic) GGC)

Adjuncts that were mentioned for inclusion in this package were dietary advice, fluoride varnish application and oral hygiene instruction. NHS Pathway Management described toothbrushing instruction on the paediatric assessment clinic as a way of improving the oral health of other siblings in line with the 'whole family approach' (see 6.5.1.3). Consultants in Paediatric Dentistry described that any child with inadequate oral hygiene and their family should be taken into a side bay and a full preventive programme begun, particularly for younger children, with tips and tricks using 'Tell-Show-Do' for the parents, and hands-on oral hygiene coaching.

'.. put on fluoride varnish…sit with the families and parents, and give the dietary advice'. (Dental Public Health (Strategic) GGC)

A Childsmile stakeholder emphasised the need to target prevention to whoever is the main caregiver for the child.

'The person that you want to talk to isn't necessarily the parent'. (Childsmile)

There was a minority of the 'external' stakeholder group, however, who felt uncertain as to whether the paediatric assessment clinic was an appropriate stage to undertake prevention. They stated that not losing sight of prevention whilst these children were in attendance was important, but that families may be focussed on the immediate need for treatment and not be receptive to preventive information.

'That would very much depend on the attitudes of the families at that point. Whether they were going to be listening to any advice or whether or not it's better to wait until afterwards'. (Dental Public Health (Strategic) GGC)

The front-line clinicians reiterated that it is often a long visit with young children becoming tired and tearful. Parents may get very upset on the day and there is already a significant amount of important information to give in relation to treatment planning and the particulars of the DGA day.

Despite this, the PDS Dentists still thought that a 'prevention package' on pre-assessment would be beneficial as parents often showed genuine interest on the day in finding out why the decay had occurred. Their ideal scenario would be a 'prevention' clinic in a quiet side room running alongside the busy Paediatric Assessment clinic, as the families find the hustle and bustle of main clinic distracting.

'I think it has to be done there and then'. (PDS Dentist)

Consultants in Paediatric Dentistry mentioned that there were nurses within the department who were keen to become an EDDN and could be used to provide prevention on the paediatric assessment clinic.

'Just might be sensible for some of the nurses in the Paeds departments to be an EDDN in a more one to one, tailored way that the clinicians may not have time for'. (Dental Public Health (Strategic) GGC)

When questioned, NHS Pathway Management were most interested in *'what change gives the biggest change in activity*' and did not advocate the utilisation of dental nurses as '*toothbrushing is done by two grades below them [EDDNs]'*. In contrast to the use of EDDN, NHS Pathway Management supported the use of a DHSW to save money.

External stakeholders described the considerable possibility of changing the role of the DHSW to be included in this pathway.

> *If it was the DHSW...in a clinic...they could again go back and discuss it with their Health Visitor as to understanding what are the issues for that family.' (Dental Public Health (Strategic) External NHS Health Board)*

Others also mentioned the possibility of a DHSW on the paediatric assessment clinic.

> *'But whether a DHSW or somebody else sat in that clinic and gave some advice.' (Dental Public Health (Strategic) GGC)*

The PDS Dentists and Consultants in Paediatric Dentistry mentioned that undergraduate students could undertake prevention at an adjunctive preventive clinic running alongside the Paediatric assessment clinic.

> *'…if you've got say a student clinic, as long as they're primed for saying the correct things.' (PDS Dentist)*

NHS Pathway Management mentioned sending an information booklet introducing preventive advice for parents with the appointment letter for the paediatric assessment clinic to raise the profile of prevention before the patients present to the hospital services.

6.5.2.3 At paediatric assessment at a local 'satellite' PDS site

An alternative suggestion was made by the majority of stakeholders (including front-line staff and NHS Management) to relocate the paediatric assessment clinic to a local PDS site so that prevention and assessment could be made accessible locally.

Stakeholders described that many patients had a preconceived negativity towards GDHS, and had previously raised concerns with having to journey there. Patients have described difficulty in parking at GDHS, whereas stakeholders thought they might be able to walk to their nearest health centre.

PDS Dentists envisaged a 'central PDS referral' for paediatric assessment, where referral (from a GDP, for example) to the PDS would instigate an appointment being sent out for the closest 'satellite' PDS assessment clinic to their home. Stakeholders thought that satellite assessment clinics could initiate a relationship with a family and facilitate future continuity of care, and that families would be better able to listen to the preventive advice at a quiet satellite site clinic, rather than at the 'noisy' main clinic of GDHS 'with all the distractions'.

There would also be the advantage of appointing with a hygienist at that site. Inverclyde Royal Hospital mentioned that utilising a hygienist improved prevention for these children (see section 6.4.1).

The PDS Dentists mentioned that there were three dental therapists working in the PDS and queried if these could be used to provide prevention for children undergoing DGAs.

6.5.2.4 Standalone pre-DGA prevention appointment

Another suggestion by one group of internal stakeholders (Consultant in Paediatric Dentistry) was to organise a formal standalone pre-DGA assessment, akin to the medical pre-assessment for every child, where prevention is undertaken.

6.5.2.5 On the day of DGA treatment

There were mixed feelings about the suggestion that prevention could be undertaken on the actual day of DGA dental extractions at the Royal Hospital for Children. A number of stakeholders discussed the challenges of time constraints and high emotions of families of fasted children being '*bombarded*' with prevention on the day of DGA; however, they thought doing nothing at this time was inappropriate.

Stakeholders did recognise the need to link children with someone who can undertake prevention but mentioned that prior to DGA, families are anxious; and directly after the DGA, families do not want to '*hang around*' post-DGA for advice and prevention may *'fall on deaf ears'*.

> *'If you try to talk to parents before we administer the anaesthetic, that's when they're almost at the peak of their anxiety and they really won't take it in. You come down on the other side and their child's in recovery, they're not going to listen again'. (Childsmile)*
>
> *'I think at the actual general anaesthetic visit, probably all that could maybe be said is 'how are you finding doing the things that we've suggested that you did?' And then a follow-up with whomever they're going back to in primary care.' (Cons Paed Dent)*

The front-line PDS clinicians acknowledged that a DGA can be a stressful time for families but believed there may be scope to have a 'support worker' in the waiting room to deliver key messages and demonstrate oral hygiene. NHS Pathway Management and Scottish Government (GIRFEC) stakeholders discussed that if the resources were there, it may be possible to integrate prevention on the day of DGA, but did not feel they were in the best place to comment on the appropriateness of this.

6.5.2.6 At follow-up

It was thought by internal stakeholders that prevention should occur very soon after the DGA, whilst the event is still fresh in the minds of families.

'I find them a lot more receptive to prevention once the treatment's done. They're just relieved that it's over'. (PDS Dentist)

Scottish Government (GIRFEC) stakeholders voiced that the patients may be 'in shock' after a DGA, and be more receptive to preventive messages.

So the biggest opportunities for change with individuals are significant events. Being admitted to hospital is a significant event. We have an opportunity to possibly change lifestyles or change attitudes'. (Scottish Government (GIRFEC))

In relation to who should be providing this post-DGA prevention, a number of stakeholders thought that many children who had been referred into the pathway could be discharged to their GDP for prevention if there were no concerns, but that feedback loops should be established with other agencies.

'Should they get them all back in to General Dental Practice? Is it a light touch first of all and then if nothing happens, that there's an immediate follow up through health support workers, Health Visitors?'. (Dental Public Health (Strategic) GGC)

Following DGA, the majority of stakeholders thought that the PDS should be the most appropriate place for follow-up for many of these children, as families may be more likely to engage with the PDS.

'The dentists go, 'Oh thank goodness. Could you look after them? I'm really struggling with this family.' [PDS] looks after them for a year or so. And once they become dentally fit and more used to coming to dental services, they go back to the GDPs.' (Dental Public Health (Strategic) GGC)

It was generally perceived that the PDS was a good arena to provide health promotion. The PDS Dentist would make a decision for each individual DGA patient based on perceived 'difficulty receiving care'. NHS Pathway Management thought that clinicians would be selective and triage the children requiring full-time PDS support post-DGA. This PDS support would continue until help was 'no longer needed'.

'There are things we could do to make accessibility better and start to build trust and an engagement with these families. I just think that if they got into a local team who wanted to nurture the relationship with the family… it would be far better.' (NHS Pathway Management)

It is interesting to note that the GDPs themselves were happier for patients to be followed up by PDS for a short period post-DGA. When questioned further, the GDPs thought that the PDS should be reviewing all children (irrespective of their requiring a DGA or not) until the age of 16.

In contrast to the above, NHS Pathway Management described that prevention did not necessarily need to be delivered by dentists, but rather 'Oral Health Educators', and emphasised that these supporting roles need to be clarified in the pathway. It was unclear as to the exact role of an 'Oral Health Educator', as to whether this equated to EDDNs and DHSWs or whether it was a standalone term.

6.5.3 Key findings

Stakeholders described a vision of a preventive and multi-agency ethos for all stakeholders in the pathway of care. In this journey of care to better oral health, a 'whole family' approach would be adopted, to reduce the likelihood of a sibling requiring a DGA. The DGA itself would be considered a significant event, so as to begin to tackle the cultural 'norm' that exists currently. Roles would be redefined in relation to supporting patients to attend (for example the 'Named Person' and DHSW); and who actually undertakes practical clinical prevention at each stage of the pathway, at the point of referral for DGA, at a paediatric assessment clinic (Glasgow Dental Hospital or locally at a PDS site), at a stand-alone prevention appointment, on the day of DGA treatment, and at follow-up. Enhanced prevention packages would be undertaken, tailored to the individual patient, but also to each particular stage of the pathway.

6.5.4 Challenges to integrating prevention in the pathway of care

Stakeholders described challenges in modifying the ethos of those involved in the pathway of care (a fear of change, issues with collaborative working and anticipated problems with redefining roles), and challenges with integrating enhanced prevention packages at different stages in the pathway of care (practitioner engagement, time constraints, the clinician/management interface, and board characteristics of NHS GGC including limited resources and outdated information technology).

6.5.4.1 Challenges to changing the ethos of the DGA pathway of care

Stakeholders hoped that modifying the pathway ethos to maximise patient engagement would facilitate prevention, but they recognised that it would require clarification in relation to all aspects including administrative work, follow-up of these patients, liaising with other agencies, and effective information sharing and communication, which would all pose challenges as outlined below.

6.5.4.1.1 Fear of change

Overall, stakeholders described that a fear of change would challenge the integration of prevention in the pathway of care.

NHS Pathway Management thought that transforming the ethos to one of collaborative working and early intervention would require buy-in from GDPs and other healthcare professionals and agencies within and out-with the pathway.

External stakeholders thought it might be difficult to implement changes as it would involve mediation between many different groups with different agendas.

> *'I think, having worked in Glasgow, it would be a huge cultural and political megalith to shift'. (Dental Public Health (Strategic) External NHS Health Board)*

One group of internal stakeholders thought that prevention was a political issue in itself.

'People always are looking for interventions as priorities rather than prevention. It doesn't have an immediate outcome, as you know. A preventative programme maybe takes 3 years to show an effect'. (Cons Paed Dent)

6.5.4.1.2 Challenges with collaborative working

External stakeholders recognised that, in particular, primary care may be the hardest place to change attitudes and achieve 'buy-in' from GDPs. Some stakeholders described that early sharing of information may not be a 'practice builder'. The Consultants in Paediatric Dentistry described a lack of engagement and unproductive liaisons with GDPs, which was of concern when considering any future changes to prevention in the pathway of care.

The GDPs appeared to have a negative attitude towards the 'Named Person', and were unsure of what the role entailed. One of the GDPs thought if parents took more responsibility then initiatives like the 'Named Person' wouldn't be required.

'I think it's an absolutely ridiculous thing [the 'Named Person']. How can that even work?' (GDP)

The PDS staff alluded to sharing the same building with Health Visitors, but had had little contact for a number of years.

'The more they get to realise that you're a reliable service provider for them, they start to engage. But you probably have to be in the same location for quite a number of years before that starts to happen'. (PDS Dentist)

Overall stakeholders thought that engaging non-health agencies would be challenging. With the new role of the 'Named Person' within Education for the over-5s, many external stakeholders were concerned as not all teachers feel confident in oral health matters, or indeed health in general. There was a feeling from stakeholders that the 'Named Person' could be overwhelmed with the volume of information depending on the deprivation area and that actively teaching staff may not have the ability to take calls in a timely manner.

6.5.4.1.3 Challenges with redefining roles

External stakeholders and Consultants in Paediatric Dentistry believed that knowledge of wider child health policies and programmes, the concepts of wellbeing, welfare and the 'Named Person', and the importance of early sharing had not yet filtered to the mainstream.

> *'But when you go beyond Education and probably Health Visiting and maybe Social Work, people's knowledge of GIRFEC drops away quite considerably'. (Cons Paed Dent)*
>
> *'I went along to talk to dental SHOs. And I think people were a bit taken aback by it all...' (Scottish Government (GIRFEC))*

The Consultants in Paediatric Dentistry thought that there was a 'comfort zone' of inaction within dentistry, particularly with regard to older dentists and multiagency working, which was illustrated by the GIRFEC stakeholder:

> *'You're a dentist for the last 20 years and had a certain practice and a certain attitude for 20 years and changing all those views reasonably… that's going to be an enormous challenge for us'. (Scottish Government (GIRFEC))*

6.5.4.2 Challenges to the practicalities of integrating prevention in the pathway of care

Stakeholders recognised that providing enhanced clinical prevention at different stages in the pathway would pose challenges both locally on clinic itself and from a wider board-level perspective. Local issues included clinician engagement with evidence-based prevention, time constraints on clinic and clinician/management conflicts of interest. Wider issues included service constraints in NHS GGC including limited resources and technology.

6.5.4.2.1 Practitioner engagement with the evidence base

The Dental Public Health (Strategic) GGC stakeholder thought that current prevention guidelines are 'dry' and difficult to interpret, with not enough practical advice on motivational interviewing and affecting behaviour change.

6.5.4.2.2 Time constraints

As mentioned previously (6.1.1.3), there was a concern that on paediatric assessment clinic there would not be the time or facilities for prevention. The PDS Dentists highlighted that the implication of longer appointment times for prevention would mean fewer patients being seen on each clinic, thus increased staffing would be required to help serve its patients in a GIRFEC fashion.

Not all stakeholders thought that GDPs could undertake multiagency working due to the time constraints in their current landscape:

> *'We know that deprived families don't use dental services as often as they might and also have other challenges related to oral health improvement, so is there [an unrealistic] expectation that the GDP can look after these patients that bring unique challenges?' (NHS Pathway Management)*

In line with the above quote, the GDPs did not feel they were the most appropriate people to facilitate in engaging these children, in particular due to the business aspects of general practice, in that 'money is time' for GDPs. They illustrated this by comparing to the PDS in that '*the Public Dental Service doesn't work at the same rate as us*'.

6.5.4.2.3 The Clinician/NHS Pathway Management interface

Front-line clinicians described poor communications between themselves and the NHS Pathway Management team, which had hindered previous efforts to improve the provision of prevention in the pathway.

These clinicians thought that prevention was generally low on the agenda for Management, being 'desirable' rather than 'essential' with *'everything else in the small print below waiting time guarantees*'. These stakeholders described that Management considered prevention as being the role of primary care, and not hospital services. The Consultants were frustrated that the triplicate pad for prevention at paediatric assessment clinic was 'delayed' by Management for months and that attempts at getting a therapist for paediatric assessment did not come to fruition.

Internal stakeholders in the PDS thought that Managers did not appreciate the time taken to follow-up patients and undertake multi-agency working. One Manager voiced that clinicians 'weren't doing enough' in relation to administrative duties, whereas clinicians felt overwhelmed with administrative duties.

Consultants in Paediatric Dentistry thought that there was a lack of transparency in relation to the Management structure, highlighting that contact is minimal between the clinical and managerial staff, with meetings only at 'crisis point'. Overall, there was a perceived lack of leadership in the pathway, with concerns as to who will take proposed changes forward.

Pathway Managers described that they are perceived as 'the dark side'. They feel the pressures of the clinician-management interface and the need to get through DGA lists as efficiently and effectively as possible. One Manager described that dentistry is not the top priority within the Women and Children's Directorate, describing that DGA lists are frequently cancelled in favour of other medical lists, e.g. neurology. In general, Management did not feel qualified to comment on which stages were appropriate to undertake prevention in the pathway.

In overcoming issues mentioned above, stakeholders described some positive meetings which they believe can be built on in the future.

'The lead clinicians have a lead meeting with NHS Pathway Management about every 3 or 4 months. I've asked for that to happen more often because I think it's probably the most useful meeting that we have as a clinical team…. maintaining a bit of a dialogue.' (Cons Paed Dent)

6.5.4.2.4 Challenges linking with Childsmile

Stakeholders described that Childsmile was integrated at primary-care level only, with mixed success. It was felt that the Childsmile programme may help improve the provision of prevention in the pathway by broadening the role of the DHSW to encourage engagement in the pathway of care, and by utilising EDDNs to provide direct clinical prevention including fluoride varnish in the pathway of care.

A number of internal stakeholders voiced a lack of confidence in the Childsmile programme. The Consultants in Paediatric Dentistry were not convinced that Childsmile could deliver on all prevention aspects and described that a wider range of the dental workforce needed to be engaged in providing prevention. GDPs also had a negative attitude towards Childsmile, and felt unconfident in utilising DHSW to help engage these patients, describing them as 'ridiculously expensive for the benefit it would give'.

'Childsmile's coming in at the last 10 minutes of the game'. (GDP)

Childsmile stakeholders described that they are '*not geared up to take this [any potential interventions] on at this moment in time'* as the 'mechanisms' and 'resources' are not in place.

There just aren't enough hours to bring them (the oral health educators) in to do the service as we stand right now. But that doesn't mean to say that if, as a result of your investigation, it's regarded as the best way forward, that someone couldn't be seconded to do that'. (Childsmile)

In relation to integrating DHSWs in the pathway to encourage engagement, NHS Pathway Management described that it would be difficult to influence their workloads and roles because DHSWs are line managed by the 'Women and Children's' Directorate', not the 'Oral Health Directorate'; thus their ability to comment on the DHSW role and flexibility to do other work was limited.

PDS Dentists had an understanding that DHSW were used only for 'under-5s'.

6.5.4.2.5 Increasing bureaucracy

Some PDS stakeholders described a barrier to providing prevention in the PDS was the increasing bureaucracy to allow for accountability of prevention in the PDS. This does not make it easy for the clinician, and these stakeholders thought it 'did not work well for the PDS'.

6.5.4.2.6 Size of NHS GGC

Many external stakeholders thought that NHS GGC was notorious in terms of difficulty in implementing changes. Many external stakeholders thought that the size of GGC would make implementing any changes a challenge. This factor is fixed and must be considered and acknowledged in the overall picture.

> *'Well we've reviewed the [other Health Board] pathways. They manage very differently because they manage smaller numbers. And the size and scope makes it quite difficult to adopt some of their ideas'. (NHS Pathway Management)*

6.5.4.2.7 Service level issues in NHS GGC

NHS Pathway Management described that RHCG is a separate entity to GDHS (Oral Health Directorate) and instead sits under the 'Women and Children's Directorate'. Dialogue would thus be required between the two Directorates to facilitate change.

External stakeholders were aware of upcoming service changes due to 'health and social care integration' which would impact on Childsmile, the PDS, and oral health promotion. Because changes would be happening at the smaller Community Health Partnership level rather than at board level, stakeholders mentioned it would be difficult to make board-wide changes.

When considering increasing numbers of children being retained by the PDS post-DGA, one of the Childsmile stakeholders considered that to retain more of these patients post-DGA would require a shift in the focus of services as the PDS was designed as a referral-only service, not for patients to be retained.

> *'NHS Pathway Management, the PDS and the GDP sub-committees, would have to look at these potential numbers and see what is actually feasible'. (NHS Pathway Management)*

6.5.4.2.8 Limited resources within NHS GGC

Stakeholders described that resources would be an issue, both at staffing level and operationally. Control of already limited resources will in future be a joint health and social care integrated venture, which stakeholders held would have massive implications as '*financial resources impacting on health will not just be managed by health'*. Funding generally comes from the Oral Health Improvement 'Dental Bundle', which since 2012 has been covering other priority group programmes. Therefore, NHS GGC is getting the *'same money but having to diversify it'* (Childsmile).

Resources required, based on stakeholder responses, would include personnel to provide prevention, orthopantomogram facilities for potential satellite clinics, extra administrative support for multiagency working, and extra funding for other agencies to allow multiagency working.

> *'What documentation do we have; what facilities do we provide them to do that? Do we have wee toothbrushing sinks for children to go to, for someone to say, 'c'mon and I'll show you how to do'…do we have that? I'm not sure that we do.' (Dental Public Health (Strategic) GGC)*

Other limitations mentioned by internal stakeholders and NHS Pathway Management include a lack of access to a Consultant opinion.

NHS Pathway Management mentioned that there were limited resources for any extra administrative staff, and indeed that new staff have to learn a whole new language and thus training takes time. These managerial stakeholders alluded to the fact that theatre time is expensive, thus having reduced patient numbers on a list would not be ideal from a managerial perspective. The GMPs reflected on there being increased pressures on the NHS already, especially in 'deep-end' practices, to be able to take on many more duties in following up these children.

> *'If there are not enough soldiers on the ground, things won't get done. And I think, especially at the moment, everybody's struggling in the health system and Social Work. But practices like ours feel it 10 times harder'. (GMP)*

6.5.4.2.9 Information sharing and communication

Appropriate information sharing was a suggestion to help these children access care and receive prevention.

Internal and external stakeholders agreed that there was no national Information Technology system in place and therefore no one place where all information for a child is held, making information sharing and multiagency working difficult.

External stakeholders described that current NHS board Information Technology systems do not ‘talk to one another’, and to change this would be a particular challenge. The Scottish Government (GIRFEC) stakeholders mentioned that had been investigated previously and overall that was found to be too costly and 'impossible' to change.

Internal and external stakeholders described a lack of confidence in sharing sensitive information. Concerns surrounding potential implications of the Data Protection Act were cited by internal stakeholders. All GDPs felt fear of the unknown in relation to consequences of over-sharing, and were uncomfortable with the idea of having access to Clinical Portal. In contrast, most external stakeholders were happy for information sharing in patients’ best interests.

For patients under-5 years of age, the Health Visiting stakeholder thought that it was important not to assume that GMPs will automatically share DGA discharge scripts with the Health Visitor.

The GMPs thought that information sharing for the over-5s was a 'murky' area given the difficulties in obtaining information from school nurses. To mirror this, Education services also found it difficult to access any healthcare information for a vulnerable child. In addition, the Social Work database is not accessible by either Healthcare or Education staff.

6.5.4.2.10 Further input from other groups

The Dental Public Health (Strategic) GGC stakeholder thought that there was a need to discuss with health psychologists and patient representatives before making any changes to ensure they were appropriate to the patients and families at some of the more upsetting stages of the pathway, such as the day of DGA.

6.5.5 Key findings

Challenges were described in relation to modifying the ethos of the pathway, and improving direct clinical prevention at different stages in the pathway. A fear of change, and challenges with multi-agency collaboration were thought to be barriers to adopting a new ethos in the pathway. Local and board-level challenges were cited in relation to improving clinical prevention in the pathway. Locally, time constraints on clinic, lack of practitioner knowledge of and engagement with the evidence base, and clinician/management conflicts were highlighted as local barriers to change. At board level, characteristics of NHS GGC such as its large size, outdated technology for surveillance of these children and limited resources were highlighted as barriers. Challenges in linking with Childsmile were described. One stakeholder mentioned a need for further work into what prevention is actually appropriate from a patient perspective and a health psychologist perspective.

6.5.6 Overcoming challenges with integrating prevention

6.5.6.1 Training and education of stakeholders

The majority of stakeholders stressed the importance of training GDPs in facilitating behaviour change for patients. Dental Public Health (Strategic) stakeholders, in particular, mentioned utilising theories of behaviour change, and implementation science methodology to give tailored advice. They envisaged more practical guides for GDPs which would detail how to provide tailored advice and an action plan specific to that child, depending on their age. Stakeholders described that undergraduate dental students receive adequate clinical exposure to DGAs and outreach clinics; however, they still need further education on how best to tailor prevention.

> *'They don't want to be lectured. So we have to try and break that mould'. (Scottish Government (GIRFEC))*

In addition to this, the Dental Public Health (Strategic) external stakeholder thought a mind-set change to reflect social inequalities could improve oral health. This stakeholder thought that GDPs should acknowledge that '*caries under-5 indicates that other things aren't right in a child's life*'.

Dental stakeholders thought overall that dental education of other agencies is required to facilitate prevention and early intervention.

This stakeholder described a need to train the 'Named Person' in child oral health and in the local pathways that exist.

6.5.6.2 Overcoming resource issues

Internal and external stakeholders thought that stakeholder buy-in, excellent leadership and targeting of existing resources to those who do not engage could facilitate change. Internal stakeholders appreciated that any strategic changes in the pathway may have to come from Scottish Government level with further buy-in at Oral Health Directorate level.

Most external stakeholders agreed that there would probably not be any new funding available, with NHS Pathway Management describing that Cash Releasing Efficiency Savings initiatives to liberate financial resources should be considered in any bids for equipment, e.g. OPT machines. Management described that, despite the diversification of the Dental Bundle, '*Paeds is looked upon favourably*'. The Scottish Government (GIRFEC) and Childsmile stakeholders alluded to the fact that investing in Paediatric Services pays dividends across the board due to the downstream impact in later years.

There are some existing PDS sites which could be potential sites for Paediatric assessment satellite sites, such as the Royal Alexandria Hospital, and Bridgeton.

The Dental Public Health (Strategic) GGC stakeholder posited that because this will be a resource-intensive period that they may need to explore funding to be included in the payment scheme for more active follow-up of these patients by GDPs.

6.5.6.2.1 Early Years Collaborative Pilot Project

Several external stakeholders from different agencies, and the Consultants in Paediatric Dentistry, thought that if the 'size' of NHS GGC made it difficult to implement large scale changes, it would be beneficial to pilot prevention locally with linkages to Childsmile and feedback loops to ensure these patients are retained in the system. This could be undertaken through a Plan-Do-Study- Act cycle. These stakeholders were aware of resources available as part of EYC, and queried how to get access to them to facilitate an Early Years Pilot. The Health Visiting (Strategic) stakeholder suggested that a pilot could include the Health Visitor being made aware that a DGA had occurred. Another possible suggestion was a pilot for health economic purposes to assess if a support worker or EDDN providing prevention on the Paediatric Assessment Clinic is feasible.

6.5.6.3 Facilitating information sharing and communication

External stakeholders reiterated that it will be an obligation by law to share information. Childsmile stakeholders described that legislation may 'open doors to change' through individual and organisational responsibilities. It was their expectation that future statutory guidance should begin to consolidate what constitutes a wellbeing concern, and should facilitate implementing GIRFEC principals in this pathway of care.

To improve communication and transparency of the patient in the system, many internal stakeholders suggested a post-DGA follow-up appointment be booked and visible for all relevant stakeholders at the point of referral for DGA.

> *'There should be a system set up where [GDPs] should send the date that they've got the [review appointment] made for. And we should have a big Excel spreadsheet. And then if for whatever reason that child doesn't keep that prevention appointment, we get notified or they then notify the 'Named Person'. But I think the prevention and the review should be set up prior to these children even being seen in our system.' (Cons Paed Dent)*

The dental referrers would like the 'WNB' protocol to reflect that should a family not attend any appointment in the pathway of care, the primary referrer be made aware of this. They described the possibility of an email being generated to the referring GDP or PDS Dentist for each 'WNB', so that they can better chase up these families. Front-line clinicians intimated their thoughts that an administrative staff member should have this role.

External stakeholders thought that core guidance on information sharing was required.

The Dental Public Health (Strategic) external stakeholder thought information on children entering this DGA pathway of care should be shared with the 'Named Person' and also the context as to why the information was important, and an idea of where to proceed.

6.5.6.4 Facilitating role redefinition

> *'[Prevention] wasn't our job. You know, we're hospital. But that really needs to be swept away entirely. So that we're one service.' (Cons Paed Dent)*

All stakeholders thought clarity and buy-in was required in relation to roles in the pathway.

> *'We were in isolation; we just did our own bit and just expected it all to work. But a lot of these people can actually help us to actually support the families, and help us to get them back in. You know, with working with the 'Named Person', the DHSW, can help actually get them back in for further prevention'. (Dental Public Health (Strategic) External Health Board)*

'Mind-set change' to integrative working was mentioned by all stakeholders except front-line dentists as something that would facilitate prevention in the pathway of care. The Consultants in Paediatric Dentistry described that tenacity and persistence would be required to affect change. Stakeholders described a need to consider change as 'an opportunity, rather than a barrier', with passionate individuals required to facilitate this. External stakeholders also alluded to the need to learn from front-line clinicians, when considering or implementing changes, as they would bring practical knowledge to those stakeholders removed from the pathway.

Childsmile stakeholders described that Childsmile had 'opened doors' in relation to oral health in schools, which should facilitate the role of the 'Named Person' within Education. Stakeholders described that Education may already be aware of many of these children as a result, with multi-agency communication ingrained in their ethos as a consequence.

The Dental Public Health (Strategic) External stakeholder described the need to have an oral health pathway developed with '*all changes in relation to the 'Named Person', Children and Young Person (Act) Scotland, by 2016'*, with education of relevant stakeholders as part of a local framework on a board level. NHS Pathway Management thought that the wider health and social family really need to be aware of this pathway and how best to integrate, once the internal pathway has been formalised. With the introduction of the eight wellbeing indicators, one GIRFEC stakeholder described that 'we will be all on the same page'.

6.5.6.4.1 Multiagency group

Stakeholders described that relevant stakeholders should be identified and a multiagency group set up. Suggestions for inclusion in this group were representatives from Childsmile, NDIP, the GDP sub-committee, NHS Pathway Management, PDS Management, Dental Public Health, Scottish Government Social Work, Education, and Health Visiting. There was no explicit suggestion made as to who would lead this group.

6.5.7 Key findings

Suggestions to overcome anticipated challenges in integrating prevention in the pathway of care included: training and education of stakeholders; consideration of an Early Years Pilot to assess a small local section of the pathway; improving communication within and out-with the pathway among all stakeholders; and developing a multi-agency 'working group' to lead and affect change in the 'Prevention Pathway'.

6.5.8 Development of the Prevention Pathway Model

Following consideration of the findings, the 'Prevention Pathway' model (Figure 16) was developed. The blue boxes illustrate stakeholder suggestions of clinical prevention at each stage (referral, paediatric assessment clinic, on the day of dental extractions under DGA, and follow-up). The green boxes are the possible multi-agency response for a child requiring a DGA, and whose family are attending all appointments successfully and who appear to be on board with preventive advice at each stage. The red boxes highlight a family who are struggling to engage with the pathway of care, and who certainly require more

support to attend and understand the preventive advice given. This includes extra support from Childsmile in the form of DHSW input, to include home visits where required, and support from the PDS to include follow-up in this secondary care service for a time. If Social Workers are involved, they should also be consulted. Both green and red pathways involve effective communication between the hospital services, secondary care and primary care, and notification of the 'Named Person' and the GMPs.

All written communication from the pathway should include advice on what prevention has been undertaken and what is required.

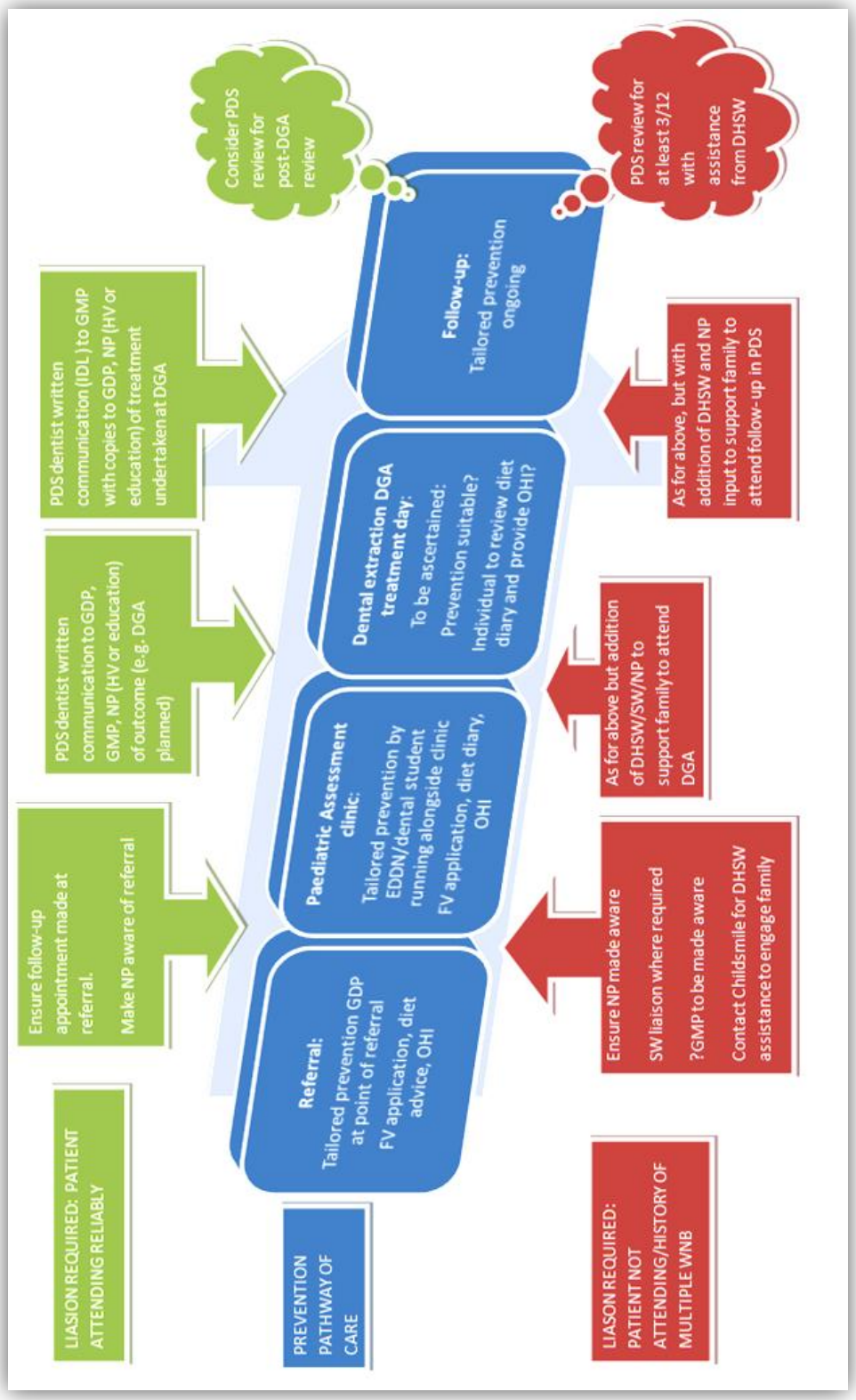


Figure 16 – The Prevention Pathway model outlining clinical prevention and multi-agency support

Chapter summary:

Chapter 6 outlined the findings from the qualitative needs assessment. This chapter answered Phase 2 research questions 1-5, and highlighted issues which are hindering prevention in the pathway of care. Suggestions for changes within and out-with the pathway were made. Anticipated challenges were discussed and possible methods to overcome these challenges. A 'Prevention Pathway' model was developed collating suggested stakeholder prevention interventions at each stage of the pathway with feedback loops to encourage engagement in the DGA pathway of care. Chapter 7 discusses the findings and makes recommendations based on this.

7 Discussion and Recommendations

Chapter summary:

This Chapter discusses the research findings in context of the relevant literature. Strengths and limitations of the thesis are considered and recommendations for practice- and strategic-level change presented alongside recommendations for future research.

7.1 Overview of aims and methods

NHS Greater Glasgow and Clyde undertake large numbers of GAs for dental extractions in children due to dental caries, a largely preventable condition. DGAs are socially patterned with those from more deprived areas experiencing higher rates. Within this landscape of a pressurised NHS where costs of health and social care are rising, there is a need to identify areas where prevention may be most effective. Moreover, the Scottish Government is placing emphasis on a shift from treatment based to anticipatory care, as shown by the Childsmile ethos (Scottish Executive, 2005) and the new Oral Health Plan document (Scottish Government, 2016) .

The overarching aim of this study was to assess provision of dental prevention in the care pathway for children undergoing GAs for dental extractions at the Royal Hospital for Children, Greater Glasgow and Clyde. This was undertaken using an initial scoping exercise and a qualitative systems-level needs assessment. The pathway's wider context was explored including national policies and programmes which may have provided opportunities to improve prevention. Examples of good preventive practice for DGA pathways in NHS GGC and in other NHS Health Boards in Scotland were considered if specifically detailed by stakeholders. This study was undertaken with a view to making recommendations at a local level on how to optimise prevention in the care pathway.

7.2 Key findings

The key finding from this study was that prevention was not currently integrated in the pathway of care, apart from ad-hoc messages by PDS dentists and some GDPs at referral and follow-up. Stakeholder suggestions culminated in a proposed model of integration of prevention into the DGA pathway (Figure 16, page 134), taking account of the importance of collaborative working and the potential impact of wider child health policy and programmes on the pathway of care.

7.2.1 The current pathway of care

The main stages of the RHCG pathway of care were referral, paediatric assessment, day of DGA treatment, and follow-up. These stages are in line with the national guideline for the management of children referred for extractions under GA by Adewale et al., (2011). Their 'optimal', 'integrated' DGA pathway of care recommends a paediatric assessment appointment prior to DGA with a clinician with experience in treating paediatric patients; this is evident in the RHCG pathway of care.

The findings of this study show that prevention was not a formal integral part of any of the stages of the DGA pathway within NHS GGC. The extent to which prevention is actually happening is patchy and variable, the impression given that PDS Dentists were more likely to provide preventive information at referral and follow-up than GDPs. However, all stakeholders thought that prevention should be happening within the pathway of care to minimise risk of repeat DGA or a first DGA for siblings. There is currently no formal guidance within the national guidelines above as to how this ibe best undertaken.

Stakeholders in the RHCG pathway felt there should be multi-agency focus to guidelines. 'Integration' in the Adewale (2011) document encompasses liaison between the PDS service, Consultants in Paediatric Dentistry, and anaesthetists. This document only outlines a treatment-based pathway, with the clear omission of any feedback loops involving wider liaison with support workers, Health Visitors, GMPs or any other agency to engage children not participating in the pathway.

7.2.2 Relevant wider child health policy and programmes

There were limited responses overall from stakeholders about what linkages with wider child health policies and programmes existed. This appeared to stem from an overall lack of knowledge and no previous consideration of this.

There is a paucity of evidence to illustrate linkages of care pathways with wider child health programmes. A non-systematic review of local and large scale pathways and organisations collated several examples, such as linkages with

support nurses for palliative care patients in England (The Health Foundation, 2012).

7.2.2.1 Childsmile

Stakeholders described limited linkages at present to Childsmile. Stakeholders (including those from Childsmile) described that Childsmile could and should link with this pathway to support patients, especially those who have difficulty in engaging with services (see section 7.2.6). Two suggestions were made: the provision of extra support from DHSWs which could undertake home visits to improve engagement of patients in the pathway and beyond; and utilising Oral Health Educators or EDDNs to provide clinical prevention at paediatric assessment and on the day of DGA. In line with this, parents of patients in a similar DGA pathway of care in England described that they would like more in the way of tailored support to include 'home visits' to overcome their perceived lack of support from dental services and difficulty in accessing care (Olley et al., 2011).

Evidence exists that lay health workers are effective in improving health outcomes for children, for example the uptake of immunisations, and reducing the impact of childhood illnesses (Lewin et al., 2010). A recent Glasgow-based doctoral study (awaiting publication) cited that lay health workers are effective within Childsmile. With the support of DHSWs, patients are more likely to attend dental practice and at a younger age (Hodgins, 2017); thus Childsmile linkages with this DGA pathway of care could indeed be advantageous for this vulnerable patient group.

7.2.2.2 GIRFEC

Stakeholders did not consider the DGA care pathway to be GIRFEC aligned. Following reflection on current practice, gaps have been identified in this pathway of care which require consideration to ensure 'GIRFEC aligned systems and processes exist' (Scottish Government, 2012a), Many patients in this pathway may experience wellbeing, or indeed welfare issues. Children with untreated decay, may not be 'Healthy', 'Achieving', 'Active' and 'Included' as a result of issues secondary to caries. These children may not be 'Safe',

'Nurtured', and 'Respected' if this untreated decay is a sign of wider overall neglect or abuse (Cairns et al., 2005).

There does not appear to be a standardised method of implementing GIRFEC in a DGA pathway of care. Very few examples exist as yet of 'GIRFEC-aligned' pathways in the literature; one example is a Health Visiting pathway for children under five years of age, linked with Childsmile, with oral health checks to ascertain if families are engaging (Scottish Government, 2015).

7.2.2.3 Children and Young Person (Scotland) Act 2014

Stakeholders highlighted that the Children and Young Person (Scotland) Act 2014 could hasten the implementation of a GIRFEC ethos in this pathway of care. Evidence exists in favour of legislation to improve health and inequalities, the most notable of which was a national smoking ban in public places in the UK, following which a reduction was evident in the number of admissions for heart attacks and numbers of low birth-weight babies born (Frazer et al., 2016).

Particular reference was made to the 'Named Person' in supporting families to engage with the RHCG pathway of care. The Act legislates that the 'Named Person' should 'help the child or young person to access a service or support', and the recent SDNAP report (2016) outlined that the oral health of children should be 'regularly reviewed by Health Visitors'. Findings showed that stakeholders were unsure as to when was an appropriate time to alert the 'Named Person' but most thought that it should be as early as possible in the pathway to facilitate early intervention.

7.2.2.4 Early Years Collaborative

The Early Years Collaborative improvement methodology could help integrate prevention in this pathway of care by providing a template for small local 'cycles of change' in terms of the package of prevention provided or the collaborative working required to encourage engagement. To date, although there have been numerous tests of change throughout NHS GGC (Scottish Government, 2014), there is as yet no available literature to illustrate small cycles of change in dentistry within the EYC.

7.2.3 What is influencing provision of prevention in the pathway of care?

Factors described as influencing prevention in the pathway of care included limited stakeholder knowledge of prevention guidelines, passive and pessimistic attitudes in relation to prevention and multi-agency working, constraints on the NHS service, and the impact of health inequalities on patient engagement. The pathway as it currently stands does not appear to support the integration of preventive care in the peri- and post-DGA period.

It was revealed that stakeholders think the sheer volume of deprived patients places an increasing emphasis on multiagency working within the pathway. There was a general feeling among stakeholders that individuals and agencies were working in silos and not engaging in multiagency collaboration.

The current pressures on the NHS to keep patients moving through the pathway has a detrimental impact on clinicians in their efforts to provide prevention and focus on the 'Preventive Spend'. Other challenges linked to the 'Preventive Spend' include the 'overwhelming' nature of often fundamental reform, and the difficulty in measuring outcomes, including positive ones (University of Stirling, 2016).

7.2.3.1 Expectation of prevention in primary care

The majority of patients in the RHCG care pathway are currently expected to receive prevention from their primary care practitioner. The findings showed that stakeholders did not feel that GDPs were best placed to provide prevention for increased caries-risk children.

Aljafari et al (2015) supported this, describing GDPs providing generic advice only rather than tailoring prevention to the patient (Aljafari et al., 2015). The latest national data on prevention suggests only 69% of registered 0-2 year olds, and only 42% of registered 3-5 year olds are receiving the preventive advice and support they require in primary care, with just 18% of registered 2-5 year olds receiving the recommended two applications of fluoride varnish in 2015-16 (Childsmile Central Evaluation and Research Team, 2016).

There was a general sense from the GDPs themselves that they were not signed up to health promotion at an individual level. Their focus on national measures, such as water fluoridation, was seen as an abdication of responsibility for these patients. A study of GDPs in Scotland found that dentists were more likely to place fluoride varnish if they believed it to be their professional role or responsibility (Gnich et al., 2015); therefore, this disconnect from prevention may be affecting its provision.

However, it is important to consider that GDPs felt isolated in their prevention attempts within the confines of the service that currently exists. Aljafari et al (2015) described barriers to GDPs in providing prevention to range from the individual- to the policy-level (Aljafari et al., 2015). These higher service-level factors the GDPs themselves cannot individually control, thus this may be reducing the motivation and ability to provide prevention.

It is also concerning that, in contrast with other stakeholders who categorised a DGA as a significant event, GDPs appeared to have a 'normalised' attitude in line with the current culture and acceptability of DGA in the United Kingdom. In light of the fact that GDPs were 3.73 times more likely to provide preventive dietary advice if they had underlying positive beliefs about prevention (Yusuf et al., 2016), it raises the issue of how change can be expected when primary oral health caregiver beliefs are not aligned to prevention.

7.2.3.2 Communication

There was a serious lack of clarity among all stakeholders surrounding the official protocol for written communication, in particular for families failing to attend appointments. The majority of stakeholders described a desire to improve communication between the hospital and primary care services. The GDPs felt that they would chase families up more proactively if they received communication that their patients were not attending within the DGA pathway, thus enabling them to perform their primary care role.

The SDNAP report (2016) detailed patient delays nationally due to communication and administration problems in DGA pathways in Scotland.

Goodwin et al (2015) and Aljafari et al (2014) both described issues with communication in a DGA pathway of care, thus this is clearly a national issue.

The only advice within the national guidance is that a letter to the GDP be posted or 'given to the patient' post-DGA so that referrer is made aware that the treatment is complete and to facilitate continuing care and prevention (Adewale et al., 2011). This does not appear to be as robust as it could be, and further guidance on standardised communication would be beneficial. The current ethos of 'everyone else assumes someone else is doing it' should not be allowed to continue, and the burden should not fall solely on pathway clinicians, who would appear to have lost faith in the administrative system (see Table 6, page 92).

Preventive and treatment information, as supported by Aljafari et al. (2015), should be included in all communication from each stage of the RHCG pathway to primary care, including the use of the triplicate pad at paediatric assessment clinic.

7.2.4 Learning points from other NHS boards which may inform improvements in NHS Greater Glasgow and Clyde

Two examples of good preventive practice in other Scottish NHS boards highlighted improvements at the strategic level which might improve clinical prevention if implemented in the RHCG DGA pathway. Good practice included linkages with Childsmile, resources, and technology. It is important to note that NHS GGC may be too large to take on some of the changes from Health Board A, particularly as stakeholders mentioned that technology may not be supported.

Should the resources be in place within local PDS clinics then there is a possibility that these satellite clinics could function as well as those described in the Inverclyde DGA pathway in NHS GGC (Section 6.4.1).

7.2.5 Improving the provision of prevention within the pathway, barriers to these improvements and how these could be overcome

Stakeholders described that prevention could be improved in the RHCG pathway by improving the ethos of those within the pathway, and by improving the direct preventive care provided at each stage. To facilitate this, stakeholders envisaged improved multiagency working and tailoring prevention to families in the pathway.

These factors culminated in the suggestion and design of a 'Prevention Pathway' to maximise engagement of patients to receive this tailored prevention.

7.2.5.1 The ethos of collaborative working

Stakeholders described that multi-agency collaborative working could improve engagement and thus prevention in the pathway of care. It is recognised that communication between individuals and sectors is vital. Multiagency working has long been a feature of welfare, or Child Protection safeguarding (Home Office, 2014). This is evident in Scotland with the introduction of a dental assessment as part of a wider comprehensive medical assessment for children with welfare concerns (Harris, 2013); however, there is as yet little information for wellbeing multi-agency models in dentistry. With the shift in the balance of care towards health and social care integration, the development of new models for dentistry will be required, to include models of collaboration for children undergoing DGAs. This research project suggests an initial template on how best to engage patients in this pathway (Figure 16, page 134).

Aljafari et al (2015) described that collaborative working is required in a wider sense to prevent DGAs. All paediatric services (such as primary care medical services and maternity wards) should be reinforcing and relaying preventive messages at every opportunity in a holistic and aligned manner.

Many stakeholders described that to affect the above, a mind-set change is required. Gagliardi (1986) defined steps of change to include motivation to change and an understanding of why change is required (Gagliardi, 1986). GIRFEC describe that future shifts in 'cultures, systems, and practice' will

involve ‘changing the values and norms of practitioners’ (Scottish Government, 2012a). The underlying motivations for change described in this study (Table 6, page 92) may help affect this. The GIRFEC stakeholders participating did not yet have a vision on how this mind-set change should or could be implemented.

7.2.5.2 The ethos of the ‘whole family approach’

The ‘whole family approach’ was signposted as important in identifying ‘at-risk’ siblings of children in the DGA pathway, and considering the whole family as a ‘vulnerable family’, with the upstream effects of investigating other siblings before the point of DGA.

This approach has already been utilised by local authorities for children who are ‘young carers’ of adults with severe chronic medical conditions. The whole family undergoes assessment to identify other siblings that might also require additional support and skills, with the principal concern of wellbeing at the core (Department of Health, 2015).

Further examples of this ‘whole family approach’ are evident in mental health, where the mental health and wellbeing of siblings of children with mental health issues are regularly monitored (Tew et al., 2013).

There is little information on this ‘whole family approach’ as yet within dentistry, except a joint Faculty of General Dental Practitioners and Royal College of Physicians and Surgeons document on reducing oral health inequalities which places an emphasis on early intervention and a ‘family focus’ (Faculty of General Dental Practitioners, 2013).

7.2.5.3 The ethos of the ‘significant event’ and behaviour change

Many stakeholders described that a DGA would constitute a ‘significant event’ for a family which could be used to elicit behaviour change. An extensive literature base exists surrounding the concept of ‘teachable moments’ in healthcare. This involves recognising and taking opportunities during life-altering moments when advice can have its greatest impact, for example pregnancy or cancer diagnosis (Public Health England, 2014). This period is used to ‘motivate

individuals to spontaneously adopt risk-reducing health behaviours' (Mcbride et al., 2003).

Hospitalisation in particular appears to have significance as a 'teachable moment', for instance, an increase in the uptake of smoking cessation for patients who were hospitalised compared to those who were not (Glasgow et al., 1991). What must be ascertained is the family's readiness for change at this teachable moment (Lawson and Flocke, 2009).

7.2.5.4 Practicalities of tailoring prevention in a DGA pathway of care

One central theme which emerged was the need to tailor prevention to the patients in the pathway. Tailoring is defined as 'providing highly individualised communication', appropriate to an individual's understanding and needs (Kreuter et al., 2000), and evidence exists for its use in healthcare (Hawkins et al., 2008). When considering the research findings, it would appear that limited tailoring is occurring at present.

Stakeholders thought that tailoring in the RHCG DGA pathway would involve reinforcing evidence-based prevention at different pathway stages, in a local setting where possible, providing prevention in a way the family understand to maximise cognition, and undertaken by a trained individual who appreciates the circumstances and background of the family.

7.2.5.4.1 Practical prevention at the different stages along the DGA pathway of care

There were conflicting ideas from stakeholders as to when prevention was appropriate in the RHCG pathway of care. Most stakeholders agreed that prevention should be provided at the point of referral.

The majority of stakeholders supported the addition of a prevention intervention at paediatric assessment. Olley and colleagues (2011) found that 55% of parents were in favour of a prevention intervention at the pre-DGA assessment visit (Olley et al., 2011). In a study in Wolverhampton, preventive advice was given at the pre-assessment clinic and patients were then rebooked for fluoride varnish application and fissure sealants post-DGA (Raja et al., 2016). In the previously cited article by Aljafari et al. (2015), patients perceived prevention advice from tertiary services as more credible than prevention given within

primary care services, highlighting that hospital services must capitalise upon this.

Goodwin et al. (2015a) evaluated the type of prevention parents would value and when they would like this within a DGA pathway. This study concluded that most parents welcomed information on diet and oral hygiene advice at the hospital, 'either at triage or another opportunity' (Goodwin et al., 2015a).

The suggestion of a formal pre-DGA assessment akin to the medical pre-assessment, where prevention is undertaken, was an interesting concept; however, this would add to the number of appointments (as medical pre-assessment was undertaken on the day of DGA) and may increase pressures on these socioeconomically deprived families.

The PDS Dentists discussed that on the day of DGA, support workers could give advice in the hours before the DGA while families are a 'captive audience'. They acknowledged this can be a stressful time for families.

Placing fluoride varnish immediately following dental extractions whilst the child is still under GA was not specifically mentioned by stakeholders. This application takes a matter of seconds and should be considered as an additional preventive measure in the pathway.

7.2.5.4.2 How should prevention be delivered?

Stakeholders thought a DGA prevention package should include evidence-based prevention advice as already clearly outlined for professionals; however, many stakeholders desired new ways as to the 'how' of providing prevention. Olley et al (2011) described that any intervention should be tailored to the child as well as the parent, for example the use of DVDs. In this smartphone generation, the recent explosion of apps and technology-based health interventions may be a resource as yet untapped to engage children in improving oral heath behaviours; however, literature is scarce at present. A randomised controlled trial utilising video games for preventive advice showed that both a video game and one-on-one verbal advice increased knowledge of preventive messages in the short term, but neither led to overall behaviour change (Aljafari et al., 2017). These

findings complement the recent Cochrane review whereb only minimal behaviour change was noted following chair-side preventive advice (Harris et al., 2012).

The Faculty of General Dental Practitioners document (2013) in line with Marmot (2010), advocates that GDPs should be sensitive to the impact of the family's socioeconomic background when considering how to influence oral health (Faculty of General Dental Practitioners, 2013). A recent study showed that parents of children within a DGA pathway would welcome preventive information that is not confusing and contradictory (Goodwin et al., 2015a). Findings from a 2011 Canadian study investigating parent's beliefs and attitudes post-DGA in relation to their oral health behaviours, showed that the majority of parents felt 'overwhelmed' with the amount of information to facilitate behaviour change, and noted conflicting advice from dental and medical practitioners and 'junk-food' advertising campaigns (Amin and Harrison, 2009).

Many stakeholders described that knowledge and information giving is not enough (Wingood, 1997). The concept of motivational interviewing to facilitate behaviour change and brief interventions which are 'clear, concise and evidence-based' have been advocated (Public Health England, 2014). Stakeholders thought patients would not want to be 'lectured' or patronised, and thus the discussion should be in a supportive and nonthreatening manner.

7.2.5.4.3 Who should provide prevention?

Stakeholders had varied responses in relation to who the responsibility lies with for undertaking prevention, but that overall prevention was 'everyone's job' (Section 6.5.2).

In order to maximise the likelihood that patients will undergo behaviour change, health professionals need to be motivated and passionate about prevention. It is thus very important that the right individuals are formally delegated the role of prevention at specific stages, in addition to the dentist.

One suggestion was a DHSW or an 'oral health educator' to provide prevention. However, DHSWs under the current remit do not apply fluoride varnish, thus an EDDN may be best placed to provide a full direct clinical prevention package. The DHSW role may be more appropriate in engaging the family to attend within

the pathway and return for follow-up care, with adjunctive home visits as required. This ties in with the SDNAP report (2016) findings, where parents of irregular attendees thought ‘home visits’ would help and valued the provision of prevention at appointments already arranged as part of the DGA pathway.

The suggestion for a student prevention clinic running alongside paediatric assessment ties in with the current European Academy of Paediatric Dentistry framework for undergraduate education in Paediatric Dentistry advising that all dental students should ‘be competent to plan and apply individualized preventive dental care from birth to adolescence’ (European Academy of Paediatric Dentistry).

Stakeholders described therapists working in the PDS who could be used in providing prevention locally. The SDNAP report (2016) described under-utilisation of hygienists and therapists nationally, thus this may be another avenue to explore.

7.2.5.4.4 Local PDS access to paediatric assessment clinic and PDS post-operative review

A majority of stakeholders favoured a local-access model for paediatric assessment clinic prior to DGA, to be located in a number of local PDS sites. This suggestion reflected the socioeconomic backgrounds of the majority of families who present in this pathway, to contend with the impact of social inequalities on their ability to access care. This is in line with the patient preferences within Scotland’s Oral Health Plan (2016), where patients ‘preferred to be seen locally rather than travelling to a dental hospital’, and the SDNAP document (2016) which reported that patients felt their ‘other needs’ were better taken into account by the PDS.

Stakeholders suggested a review period for patients in the PDS for a time post-DGA. Scotland's Oral Health Plan (Scottish Government, 2016) recommends that the majority of patients would be expected to return to their GDP for prevention; however, that specialist services should be used when the GDP feels further assistance is required. Olley et al. found that 61% of parents participating in a DGA care pathway did not plan to arrange any follow-up appointment at their general dentist post-DGA (Olley et al., 2011). The current

conventional primary care-based prevention model has clearly not been successful for many children requiring a DGA, thus specialist review for a number of months in the PDS post-anaesthetic would be justified.

7.2.5.5 Training and education of stakeholders

Training and education of particular groups of stakeholders in the pathway was suggested.

Interestingly, GDPs may not always be aware of evidence-based prevention guidelines (Aljafari et al., 2015); however, the recent SDNAP report (2016) stated that only 8.4% of GDPs mentioned 'training' as a barrier to providing prevention. This poses the question: do GDPs not require further training in prevention, or do they not realise that they require training? Many stakeholders alluded to the fact that fluoride varnish application rates are universally low, whether in Childsmile or GDHS, thus novel ways of educating practitioners may be required. Further training was suggested for GDPs in line with the SDNAP report (2016) which demonstrated that only 59% of GDPs had an awareness of the PDS remit, and a third of GDPs were not aware of referral protocols for their local Dental Hospital.

Increasing the knowledge and priority of prevention is important not just for clinicians but also for the NHS Pathway Management team. Managerial perceptions of front-line resource requirements were inaccurate as they described the requirement of 'toothbrushing sinks' for toothbrushing. This is not the case, as toothbrush instruction can be undertaken chair-side, with very basic resources. This may reflect an overall discord between front-line and strategic understanding which could be addressed by further training.

Training in multiagency working for all would facilitate engagement of patients in the pathway of care by increasing stakeholder knowledge of the support services available surrounding the pathway of care, e.g. in contacting Childsmile, DHSWs or Social Work.

It was surprising that newly qualified dentists were not aware of the concepts of wellbeing and the 'Named Person'. All stakeholders (particularly those on the

front-line) should have training on GIRFEC and the new Children and Young Person (Scotland) Act 2014 including how and when to liaise with the 'Named Person'. This in turn requires local protocols to be devised incorporating the philosophy of the Act in a more practical way.

7.2.5.6 Defining and acquiring the resources to support prevention in the pathway

Stakeholders recognised that the pathway of care exists within a landscape of DGAs placing huge pressures on an already pressurised NHS, creating a funding crisis for an entirely preventable condition.

Many stakeholders described the elements which they considered necessary to integrate prevention into the pathway of care. These included staffing, information technology and radiography resources. The Christie Commission (Christie, 2011) emphasised a reform towards the 'preventive spend', and thus, within this pathway of care for a preventable disease, provision of resources supporting prevention must be to the fore. In the SDNAP report (2016), 44.8% of GDPs cited remuneration as a challenge to providing preventive advice, thus further strategic realignment may be required to address this.

Stakeholders felt that new Health and Social Care Partnerships, which were brought into being from 1st April 2016, may help or hinder proposed changes to the care pathway. These Partnerships control strategic development and contracting of services, thus it is important to acknowledge their future role in planning of local NHS dental services. In this instance, changes in the pathway of care will involve business decisions with associated downstream repercussions. Commissioning the 'Prevention Pathway' in Greater Glasgow and Clyde would require careful alignment with current and future financial strategies to ascertain its feasibility.

7.2.6 Prevention pathway model

The 'Prevention Pathway' model (Figure 16, page 134) was developed as a culmination of the research findings to integrate prevention into this DGA pathway of care. The 'Prevention Pathway' vision combines the ethos of collaborative working with practical clinical prevention packages. This vision of a patient-centred holistic pathway of care, with prevention at its core, akin to the 'Oral Health Pathway' of Health Board A (Section 6.4.2), would align with the Ottowa Charter (World Health Organisation, 1986).

Providing prevention at each stage in the pathway aligns with NHS England's current approach of 'Make Every Contact Count' (Public Health England, 2016); especially as these families do not regularly present to health services, and yet they are within reach, albeit for a short time in this pathway of care. In line with Aljafari et al. (2015), prevention and support in a DGA pathway could 'provide the missing link between primary and secondary care services'.

This vision also aligns with Scotland's Oral Health Plan (2016). This document explicitly recommends a 'preventive care pathway', to support and encourage attendance and follow-up of high-caries risk children, making use of Childsmile and the 'DHSW network'.

A current lack of infrastructure, resources, information sharing, skills, remuneration, ownership and responsibility may hinder this vision; however, following discussions with key stakeholders as part of this Master's research, there now exists a key group of impassioned individuals and groups who have already contemplated the issues in the pathway, which could facilitate future buy-in and engagement for a multidisciplinary working group. This would align with the 'local managed clinical networks' vision within Scotland's Oral Health Plan (2016) to include 'consultants, specialists and non-specialists, therapists and hygienists and middle-tier career grade PDS and Hospital Dental staff' amongst many others from Health, Education and Local Authority.

A good example of an established integrated pathway 'moving seamlessly between home, school and NHS' is the school asthma service, where roles and responsibilities are clearly defined, local partnerships have been created, and all individuals and groups are trained in how to give advice and care for these 'high-risk' patients to maximise patient outcomes, whether at school, home, or in the NHS (Procter et al., 2015). Lessons could be learned from pathways such as this in transforming the RHCG care pathway.

7.3 Methodological strengths and limitations

Overall, this is the first time to the author's knowledge that a needs assessment from a stakeholder perspective to integrate prevention into a DGA pathway of care has been undertaken in NHS GGC. It was undertaken in response to an identified need to improve and integrate prevention in the pathway of care.

Strengths included a two-phase design, sampling of all key strategic and front-line service providers and a robust analytic approach. Limitations included the local context of the needs assessment (rather than a study of all national DGA pathways of care), the omission of service user perspectives, and the impact of the pace of the research. The positive and negative implications of the role of the clinician-researcher as a Paediatric Dentist are discussed.

7.3.1 Research design and approach

7.3.1.1 In-depth qualitative case study approach

The qualitative needs assessment approach was a key strength to the study, as it drew rich descriptions of stakeholder experiences of the pathway of care that otherwise would not have emerged from a more quantitative approach. The needs assessment uncovered a breadth of in-depth views both from internal front-line stakeholders within the pathway, and external stakeholders with knowledge of the wider policy context surrounding the DGA pathway.

Pragmatism proved the ideal qualitative approach, in preference to any of the more abstract approaches (for example, grounded theory). Grounded theory is a form of thematic analysis which assumes no pre-existing conceptualisation

(Ritchie and Lewis, 2003) and is completely bottom-up and data driven; however, in this study, there was already an underlying knowledge base of the pathway which required further exploration in a pragmatic fashion.

A key strength to this study was its two-phase design, as the initial scoping exercise better informed the development of the main needs assessment phase of the research project.

The purposive sampling of key stakeholders internal and external to the pathway and the subsequent snowballing of additional key informants gave substantial breadth to the sample and further strengthened the findings.

Interviews and focus groups proved to be appropriate data collection tools for this study, given that there were specific roles of interest (such as NHS Managers in the pathway) and pre-defined homogeneous groups (such as GMPs or GDPs).

They allowed a face-to-face in-depth discussion of the pathway in a candid and semi-structured fashion. By utilising these data collection methods, complex issues could be tackled via in-depth questions in a face-to-face setting.

However, in some cases, interviews and focus groups had to be undertaken twice due to a lack of time in the initial sitting. In other cases, the topic guide had to be modified to 'cut to the chase' as the time was pressured (25 minutes) in particular with the GDPs and GMPs. This may have influenced the depth of discussion. A 'funnel approach' to questioning allowed the PR to progressively narrow focus and clarify (Tracy, 2013).

Focus groups were made homogeneous where possible to allow participants the freedom to air views in the comfort of their own peers and 'capitalise on shared experiences' (Kitzinger 1995). The majority of focus groups in this study were 'naturally occurring', with peers working in the same circles (Kitzinger 1995). This facilitated group dynamic, allowed for open discussion and minimised hierarchical bias. For focus groups, the same basic guidelines for conducting interviews exist but with the complicating factor of a larger group to manage and facilitate. This involved the researcher ensuring all voices were heard and

maintaining focus on the research questions whilst managing those who may have tried to dominate the encounter.

The PR requested a large round table for focus groups, sitting within the group to facilitate discussion. This encouraged a 'structured eavesdropping' approach (Powney, 1988) rather than simply a 'question and answer' session (Gill et al., 2008). It was prudent to create rapport with participants where possible, especially as some of the topics to be covered were complex, such as articulating problems with the pathway and potential barriers to change.

A limitation of this study was that the scope did not extend to a national study of DGA pathways and prevention. The focus was on a local pathway of care, without a formal 'comparative' element, and external Health Boards were only included if specifically signposted as having good preventive practice rather than sampling each NHS Health Board in Scotland. This was due to the timeframe of a Master's thesis. Thus there may be other boards in Scotland with good examples of preventive practice which were not included. At the time of writing up this thesis, the SDNAP report (2016) was released, which outlined the specific boards with preventive linkages within DGA pathways. This could provide the basis for further research.

Health Boards A and B were recognised as having good examples of preventive practice within this thesis; however, detail was only available for Board A as this was the most well-known and established model of good practice.

7.3.1.2 Stakeholder inclusion

There were no key stakeholder groups within the intended sampling frame that were not represented within the study. The focus of the research was on the staff involved in the pathway; however, it may have been informative to include patients in the study. This was considered from the outset, but would have extensively broadened the scope of the study beyond what was possible within the time constraints of a Master's degree. The recent SDNAP report (2016) included national qualitative data on patient perceptions of DGA services in Scotland, and these have been considered in the discussion.

Recruitment of General Dental and Medical Practitioners proved challenging as financial incentives were not available; thus a limitation of this study was the small sample size of GDPs and GMPs compared to the number of individuals in these roles within NHS GGC. Both GMP and GDP practices sampled were 'Deep-End' practices, with a large concentration of patients from areas of high socioeconomic deprivation. As this mirrored the cohort of patients who regularly present in the pathway of care, these practices were seen as suitable stakeholders to include. A greater number may have been beneficial, particularly within the GDP group, to reflect further views from this key stakeholder group in the pathway and to ascertain if other opinions were as polarised as those in the study.

Interestingly, the GMP stakeholders were recruited through a Child Protection study day, which one might have considered may have influenced the type of respondent. As shown in the research findings, this was not always the case.

7.3.1.3 Analytic approach

A rigorous approach to transcription, coding and analysis of data was undertaken under the supervision of an experienced qualitative researcher and triangulation was undertaken where appropriate. Framework analysis is often used in healthcare research (Ward et al., 2013) as the process is sufficiently rigorous. Both the PR and one of the research supervisors jointly discussed themes following their initial development by the PR. Framework analysis was beneficial as it gave structure to the thematic analysis given the great volume of data to be considered. It allowed the PR to immerse herself and better understand the data for themes to emerge iteratively, and it allowed for an increased transparency of the methodology (see Appendices 6 and 7).

7.3.1.4 Impact of professional role of the principal researcher on the conduct of fieldwork

The reflexive role of the PR as a clinician researcher proved a strength as the combination of pre-existing knowledge from a service perspective coupled with rigorous research methodology lead to a robustness of findings.

'Clinician-Researchers' are individuals who 'wear two hats' by operating on the front-line and also within research (Yanos and Ziedonis, 2006), and disclosing the clinician's role to the research participants is crucial (Mcnair et al., 2008). The background of the PR as a clinical trainee in Paediatric Dentistry was important to consider in view of the conduct of the study.

Already being embedded within the NHS and having a personal knowledge of the DGA pathway and its staff gave the PR a 'head start' in terms of the ability to recruit and develop a rapport with participants. The PR also had the local awareness to ask key questions.

Conversely, this familiarity could have led to participants suppressing views they thought were not 'on-message' or feeling 'judged', which may in turn have affected their answers (Hiller and Vears, 2016). The PR considered that the GDPs could have potentially felt the pressures of having a Paediatric Dentist present and this may have led to an alteration in their responses; however, it is interesting to note that in fact the GDPs were entirely candid about their feelings towards difficulties in caring for the dental health of paediatric patients and their role in dental prevention.

In a number of focus groups, the PR was frequently asked questions by the stakeholders about her own viewpoint. This is a positive consideration in that they viewed her as a peer and promoted free-flow of conversation; however, this was not the object of the exercise and these questions had to be fielded back to the wider group.

7.3.1.5 Impact of professional role of the principal researcher on the conduct of analysis

The PR had to be constantly aware of the potential impact of her professional role as a Paediatric Dentist on the analysis, as the assessments and treatments for DGA happen in the same working vicinity as the PR. The potential existed for the PR to 'bring to the table' predefined perspectives on prevention and dental caries from a front-line position. A constant reflexive stance and maintaining insight and independence between her professional role and her role as a researcher was paramount.

7.3.2 The impact of the pace of research on the wider landscape

As with most research that is being conducted in a real world setting rather than under experimental conditions, during the course of the research the environment changes, new policies are introduced and legislation moves forward. At the time of final writing up, over two years had passed since the time of the first interview.

During the data collection period, stakeholders had limited responses in relation to linkages with wider child health policy and programmes, perhaps due to lack of knowledge; however, in the intervening period following discussions at local clinical governance meetings, it is evident that legislation and the wider child health landscape is certainly beginning to come to the forefront of stakeholder's considerations.

Certain factors which at the time were progressive and only mentioned by one or two stakeholders are now embedded in practice. For example, on the comprehensive care DGA lists, fluoride varnish is now automatically applied at the end of treatment. The same may already be occurring in the extraction-only DGA list, but at the time of data collection it was not a standardised aspect of the treatment provided.

Within the context of this project (having had so much opposition), at the time of writing-up, the role of the 'Named Person' had not yet been finalised. This does not affect the roles of Health Visitor and Education in linking with this pathway.

Following many interviews and focus groups, there was a drive from stakeholders to take stock and make changes. This informal call-to-action of stakeholders within a needs assessment can occur as a direct consequence of undertaking this type of in-depth study (Stevens et al., 2004). Following some of the interviews and focus groups with key stakeholders, an Early Years Collaborative pilot was initiated. This 'Plan-Do-Study-Act' pilot recruited a local dental practice and followed any patients referred for a DGA through the pathway of care, and prompted DHSW assistance in providing families with additional support to encourage engagement. It is known that the pace of undertaking research does

not always match this immediate empowerment and transformational potential, and is a recognised problem with research informing practice generally (Chiu, 2003). There can be tensions in the wait for research to reach its conclusions before implementing new strategies in an otherwise short-termist society.

During the course of this research, changes were already happening out-with the control of the PR, such as the move to a different floor of the GDHS building for PDS paediatric assessment, and staffing changes including within the NHS Pathway Management interviewed as part of this project. The PR was made aware at the time of write-up that a separate medical pre-assessment appointment now exists for children undergoing DGA since 2015, and this is another avenue which could be yet investigated.

7.4 Recommendations

7.4.1 Strategic recommendations

Strategic recommendations include collaborative working, Childsmile linkages, creation of a multidisciplinary working group, consideration of a DGA as a significant event, education and training of stakeholders, improved communication, amending national guidelines, and addressing the wider social determinants.

7.4.1.1 Collaborative working

- Agencies (Healthcare, Education, Local Authority) should work efficiently and effectively together to ensure patients receive prevention and treatment in the RHCG DGA pathway of care.

- Feedback loops should be in place for families who are not engaging within the DGA pathway of care to include liaison with the ‘Named Person’ (Health Visiting or Education), GMPs, Social Work and Childsmile (see below) as well as with dental professionals.

7.4.1.2 Linkages with Childsmile

- Childsmile could utilise DHSWs to assist families in attending appointments if they are not engaging with the DGA pathway of care.

7.4.1.3 A multidisciplinary working group aligned to oral health

- A multidisciplinary working group aligned to oral health should be developed, with a GIRFEC mind-set, to facilitate collaborative working in the RHCG DGA pathway of care. Suggestions for inclusion in this group are Childsmile, NDIP Co-ordinators, GDP sub-committee, NHS Pathway Managers, PDS Managers, Consultants in Paediatric Dentistry, Dental Public Health (Strategic) stakeholders, Scottish Government (GIRFEC), Social Work, Education, and Health Visiting stakeholders.

- Visible leadership should be employed to promote the ethos of GIRFEC to all those involved in the DGA pathway of care.

7.4.1.4 Significant event

- A DGA should be rebranded as a 'significant event' within and out-with the pathway of care.

7.4.1.5 Education and training of stakeholders

It is clear that future training is required to achieve effective multi-agency collaboration. Education is required for many groups and individuals including GDPs, GMPS, the 'Named Person', and Health Visitors so that the same tailored preventive messages are coming from all fronts. The following specific training needs have been identified:

- Oral health training should be provided for the 'Named Person'.

- Thresholds of well-being and welfare and information sharing should be established for dentistry, and guidance on contacting the 'Named Person'.

- Training of GDPs should be undertaken to include standard advice for families before they are referred into pathway (what to expect generally

in the pathway and tailored prevention advice). There should be development of the role of the responsible GDP in general practice to keep track of vulnerable families, in particular those children referred for DGA.

- There should be efforts to increase awareness of the EYC among primary care practitioners in the hope that small Plan-Do-Study-Act cycles of change could be initiated locally in integrating prevention with families in the RHCG DGA care pathway.

- More practical prevention guidance could be developed to guide GDPs in delivering tailored prevention.

- More work is required out-with the DGA pathway in relation to linking with NDIP letters in NHS GGC to identify children before they present in the RHCG DGA pathway.

7.4.1.6 Improved information technology

- Further efforts should be undertaken to improve information technology in NHS GGC to facilitate better patient surveillance throughout the DGA care pathway, including consideration of how to make the date of DGA visible to stakeholders. Email alert suggested.

- Work should be undertaken on an integrated child record to aid information sharing for all agencies, to include: patient participation, SIMD, DGA dates, and emergency attendances. This record should incorporate alerts for children who are not brought to appointments in the pathway so that referrers are notified.

7.4.1.7 Improved communication

- There is a need to improve the information sent out to families prior to the paediatric assessment clinic appointment, to include: who should attend with the child, how long the appointment will last, that the child should not be fasted, and describing that prevention will be undertaken.

- All written communication from the RHCG DGA care pathway to referrers should also contain details of what prevention has been undertaken in the hospital services and what prevention is still required in primary care.

- The addition of an administrative staff member would be beneficial to manage the administrative output from the DGA pathway of care (including the enhanced administration required for families not engaging).

7.4.1.8 National DGA Guidelines to reflect prevention

As mentioned previously, the UK guideline document from the British Society of Paediatric Dentistry and Royal College of Anaesthetists (Adewale et al., 2011) gives administrative recommendations for written information to be given to families of paediatric patients following assessment and on the day of DGA, but without mention of preventive information at any stage.

- Consideration should be given to amending or developing national guidance to reflect the importance of prevention within DGA pathways, with detail on what prevention should be undertaken at each stage in the pathway of care and by which groups of individuals.

Currently the national document recommends that there is a follow-up arranged post-DGA ‘where appropriate’.

- Guidance should be amended to reflect that all of these children require review post-DGA.

- Guidance should be clearer on which children should be considered for review by the PDS.

- Guidance should also reflect the multi-agency working required to engage these children in the pathway and beyond.

7.4.1.9 Addressing the wider social determinants

- There was recognition that to best support these families through the pathway and beyond, there was a need to address the wider social determinants beyond clinical prevention.

7.4.2 Recommendations for practice

7.4.2.1 Practical recommendations at defined stages of the pathway of care

7.4.2.1.1 Referral

- Tailored prevention should be provided at point of referral by GDP as per SDCEP guidelines.

- All patients should have a 'significant event' logged with their 'Named Person' and GMP (patient to be placed on GMP 'vulnerable families' list) as a result of the DGA referral.

- Multi-agency liaison should be undertaken where required if the child is not engaging.

- Childsmile/DHSW should be informed if the patient requires extra support with engagement or if there is a previous 'WNB' history.

- A follow-up appointment for the patient should be arranged at the time of referral where possible.

7.4.2.1.2 Paediatric Assessment

- Clinician should ensure all patient details are correct, and obtain details of the Health Visitor/school and social worker if applicable.

- Tailored prevention should be undertaken at paediatric assessment clinic in a quiet side room utilising either an undergraduate student clinic, therapist, hygienist or EDDN.

- Fluoride varnish application should also be undertaken at this appointment if more than three months has elapsed since last application.

- The ‘whole family approach’ should be employed and include prevention for other siblings where necessary.

- The PDS Dentist should decide if the child requires retention in the PDS post-GA (selected children and their siblings).

- Multi-agency liaison should be undertaken where required if the child is not engaging.

- DHSWs should be utilised again to assist with engagement if there is an issue, with ‘home visits’ where indicated.

7.4.2.1.3 Local access to paediatric assessment clinic where possible

- Consideration of ‘satellite’ local PDS paediatric assessment clinics with orthopantomogram facilities.

7.4.2.1.4 The day of DGA

- Further work is required as to whether it is appropriate for an individual to give preventive advice to families on the day; possibly in the form of advice in the hours before DGA by a DHSW or other support worker.

- Fluoride varnish placement should be undertaken following extractions under DGA (as this practice is now standard for any child at increased caries risk following dental treatment under GA in the comprehensive care DGA list).

- Multi-agency liaison should be undertaken where required if the child is not engaging.

- DHSW should be utilised to assist with engagement if there is an issue, with ‘home visits’ where indicated.

7.4.2.1.5 Follow-up

- There should be a strong focus on the role of the PDS in reviewing vulnerable families post-DGA.

- Tailored prevention should be undertaken at review and beyond.

- DHSW should assist with engagement if required, with ‘home visits’ where indicated.

7.4.3 Future development and research

It is evident that further work is required to fully explore the integration of prevention with DGA pathways of care.

- One important area of development would be to take the proposed recommendations back to stakeholders for validation, in line with the ‘Implementing GIRFEC Summary Guide for Operational Managers’ which highlights that dialogues should occur so as ‘processes are in place to understand and include views or feedback of key stakeholders in the planning processes’ (Scottish Government, 2010a).

- Another suggestion would be to work with families locally, undertaking further qualitative research to investigate what families think is required to improve prevention in this DGA pathway using some of the suggestions made in the findings as prompts and probes. This would include evaluating exactly how to tailor prevention, and could provide insight into the perceived needs of the service users of this particular DGA pathway.

- Additional research should incorporate the views of Clinical Psychologists in discussions as to what prevention is appropriate on the day of paediatric assessment and the day of DGA, as this was a recurring theme from key stakeholders.

- An extension of the needs assessment could be undertaken to include all other NHS boards in Scotland providing ‘extraction-only’ DGA services as mapped by the SDNAP report (2016) for any other models of good preventive practice.

- Consideration should be given to the development and testing of novel ways to provide prevention information, for example a smartphone app where patients and families can follow themselves in the pathway of care and log their prevention in a patient friendly way, where referrers can

also access this. This may include games whereby patients work towards a reward by getting 'prevention points' depending on what prevention is undertaken.

- A local feasibility study could then be undertaken to ascertain if the proposed changes be made (to include economic feasibility), along with an evaluation of the outcome of suggested interventions.

Chapter summary:

Chapter 7 evaluated the research findings in context of the available literature. A 'Prevention Pathway' with an oral health aligned ethos to maximise engagement and tailor prevention to these vulnerable families has been described. Chapter 8 will now conclude this Master's research project.

8 Conclusion

Chapter 8 presents the conclusion of this Master's thesis.

8.1 Conclusion

This systems-level needs assessment was undertaken with a view to making recommendations at a local level on how to optimise prevention in the RHCG DGA care pathway. Overall, there was a consensus that the pathway was designed to facilitate treatment, with no focus on prevention.

Overall recommendations include tailoring prevention to patients using a proposed 'Prevention Pathway' model, with prevention integrated at every appropriate 'contact point', and the use of support workers and Extended Duties Dental Nurses where possible.

Robust clinical prevention packages can be instigated and integrated within this pathway, but they will be ineffective if patients are not brought to appointments. Patients may be trying hard to reach the RHCG service but perhaps the service is not yet orientated to reach out to them. Stakeholders highlighted that a multiagency response to oral health is required in this pathway, to facilitate both prevention and engagement for these vulnerable patients. Childsmile and the PDS, two strategic behemoths well equipped to deal with targeted 'in-need' populations, should be better utilised in capturing these high-risk patients as they present in the pathway, to best give them the skills to journey towards oral health.

An overarching change in ethos and improved communication should facilitate this alongside the development of a multidisciplinary working group. However, strong leadership is required to take this forward, with buy-in from different sectors, including Local Authority, Health and Education.

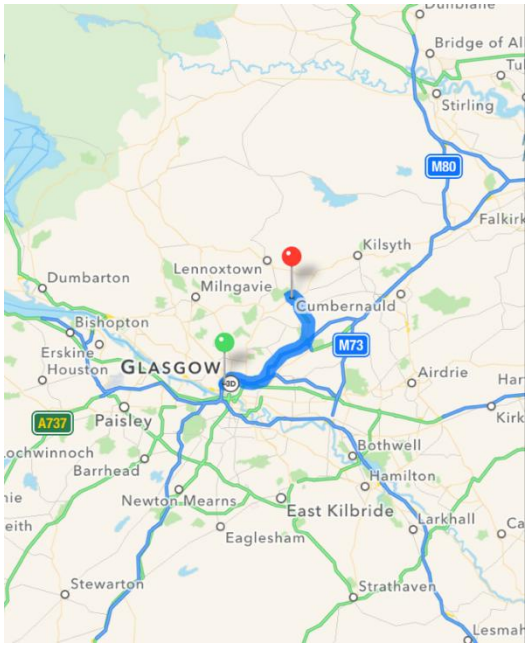
It is anticipated that recommendations made could re-orientate the current pathway of care so that a preventive ethos is at the forefront. If prevention and engagement opportunities are capitalised upon, in time the burden of GAs on families and society as a whole may reduce.

Appendices

1 List of Paediatric PDS clinics in NHS GGC and NHS Health Boards in Scotland

List of PDS clinics in NHS GGC

Public Dental Service Clinics in GGC
Drumchapel Health Centre **Castlemilk Health Centre** **Maryhill Health Centre** **Pollok Health Centre** **Possilpark Health Centre** **Springburn Health Centre** **Kirkintilloch Clinic** **Townhead Health Centre** **Bridgeton Health Centre** **Govan Health Centre** **Greenock Health Centre** **Community Centre for Health** **Royal Alexandria District General Hospital, Paisley** **Gorbals Health Centre** **Govanhill Health Centre** **Parkhead Health Centre** **Vale of Leven District General Hospital, Alexandria**

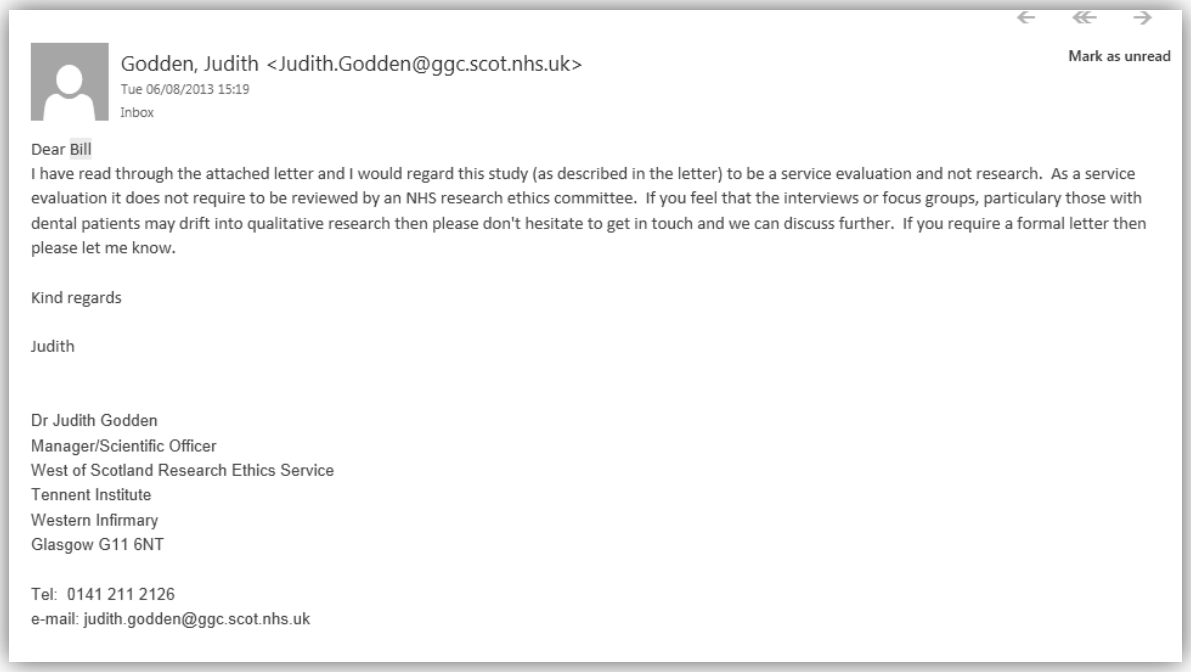


Example of distance (approximately 30 minutes drive) from a PDS clinic (Kirkintilloch clinic) to Glasgow Dental Hospital and School. The closest PDS clinics are 20-30 minutes walking distance to GDHS.

List of NHS Health Boards in Scotland

Abbreviation	NHS Health Board
AA	Ayrshire & Arran
B	Borders
DG	Dumfries & Galloway
F	Fife
FV	Forth Valley
G	Grampian
GGC	Greater Glasgow & Clyde
H	Highland
La	Lanarkshire
Lo	Lothian
O	Orkney
S	Shetland
T	Tayside
WI	Western Isles

2 Ethical Approval



Godden, Judith <Judith.Godden@ggc.scot.nhs.uk>
Tue 06/08/2013 15:19
Inbox

Mark as unread

Dear Bill
I have read through the attached letter and I would regard this study (as described in the letter) to be a service evaluation and not research. As a service evaluation it does not require to be reviewed by an NHS research ethics committee. If you feel that the interviews or focus groups, particulary those with dental patients may drift into qualitative research then please don't hesitate to get in touch and we can discuss further. If you require a formal letter then please let me know.

Kind regards

Judith

Dr Judith Godden
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University of Glasgow | College of Medical, Veterinary & Life Sciences

8th April 2014

Dear Nora O Murchu

MVLS College Ethics Committee

Project Title: Assessing the Provision of Dental Prevention in the Care Pathway for Children Undergoing Dental General Anaesthesia 'Extraction Only' Treatment at the Royal Hospital for Sick Children Glasgow - a Systems Level Needs Assessment.
Project No: 200130096

The College Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the proposed study. They are happy therefore to approve the project, subject to the following conditions

- Project end date: February 2016
- The research should be carried out only on the sites, and/or with the groups defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment, except when it is necessary to change the protocol to eliminate hazard to the subjects or where the change involves only the administrative aspects of the project. The Ethics Committee should be informed of any such changes.
- You should submit a short end of study report to the Ethics Committee within 3 months of completion.

Yours sincerely

Andrew C. Rankin

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3 ‘With Scotland’ Conference Poster as Part of Scoping Exercise

University of Glasgow | College of Medical, Veterinary & Life Sciences

High Decay Risk Children requiring Dental Extractions under General Anaesthetic in Glasgow:

A Novel Interactive Brainstorming Poster. Can You Help?

O’Murchu NE, Campbell C, Sherriff A

University of Glasgow MVLS (Community Oral Health)

Are you based in healthcare, social care or education? If so, can you help these hard-to-reach children access dental preventive care?

We are undertaking qualitative research to improve access to prevention in the dental general anaesthetic (DGA) care pathway in the Royal Hospital for Sick Children, Glasgow. This is part of an MSc by research at the University of Glasgow. We are engaging stakeholders from all spheres of health and social care via focus groups and interviews to understand current practice and how this might be improved to achieve better outcomes for children.

In Scotland, DGAs are the main reason for a paediatric hospital admission. Dental decay (caries) however, is a perfectly preventable disease [1]. Many young children at high risk of dental decay are not accessing or receiving preventive care[2] and are requiring multiple DGAs for dental extractions[3]. The DGA pathway may be our single chance to encourage engagement with dental services and oral health promotion[4]. How can we best support these families and ensure this happens?

In line with GIRFEC and the Children and Young Person’s Act, the adaption of the current care pathway could be a key point for enhanced collaboration from all agencies (education, social care, and health).

We invite you to share your expertise from your own field on how best to improve multi-agency working and information sharing in this care pathway. All data will be treated confidentially. With the aid of your suggestions for collaboration and information sharing, we can make recommendations to create a new legacy for future generations.

References:

1. SIGN Guideline 138: Dental Interventions to Prevent Caries in Children. Published March 2014. Available online at http://www.sign.ac.uk/pdf/SIGN138.pdf

4 Participant Information Package

Consent form for Interview

Centre Number:
Project Number:200130096
Subject Identification Number for this trial:

CONSENT FORM: INTERVIEW

Title of Project:

ASSESSING THE PROVISION OF DENTAL PREVENTION IN THE CARE PATHWAY FOR CHILDREN UNDERGOING DENTAL GENERAL ANAESTHETIC (DGA) 'EXTRACTION ONLY' AT THE ROYAL HOSPITAL FOR SICK CHILDREN GLASGOW:

A SYSTEMS-LEVEL NEEDS ASSESSMENT

Name of Researcher: Nora O'Murchu (no'murchu@nhs.net)

Please initial box

I confirm that I have read and understand the information sheet dated _____ (version _____) for the above study and have had the opportunity to ask questions. ☐

I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my legal rights being affected. ☐

I agree to take part in the above study. ☐

Name of subject	Date	Signature
Name of Person taking consent (if different from researcher)	Date	Signature
Researcher	Date	Signature

(1 copy for subject; 1 copy for researcher)

Consent form for Focus Group

Centre Number:
Project Number:200130086
Subject Identification Number for this trial:

CONSENT FORM: FOCUS GROUP

Title of Project:

ASSESSING THE PROVISION OF DENTAL PREVENTION IN THE CARE PATHWAY FOR CHILDREN UNDERGOING DENTAL GENERAL ANAESTHETIC (DGA) 'EXTRACTION ONLY' AT THE ROYAL HOSPITAL FOR SICK CHILDREN GLASGOW:

A SYSTEMS-LEVEL NEEDS ASSESSMENT

Name of Researcher: Nora O'Murchu (no'murchu@nhs.net)

Please initial box

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Name of subject	Date	Signature
Name of Person taking consent (if different from researcher)	Date	Signature
Researcher	Date	Signature

(1 copy for subject; 1 copy for researcher)

Participant information sheet for Focus Group

University of Glasgow | College of Medical, Veterinary & Life Sciences

Title of Project:
ASSESSING THE PROVISION OF DENTAL PREVENTION IN THE CARE PATHWAY FOR CHILDREN UNDERGOING DENTAL GENERAL ANAESTHETIC (DGA) 'EXTRACTION ONLY' AT THE ROYAL HOSPITAL FOR SICK CHILDREN GLASGOW:

A SYSTEMS-LEVEL NEEDS ASSESSMENT

PARTICIPANT INFORMATION SHEET: FOCUS GROUP

1. **Invitation**

I would like to invite you to participate in my MSc project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. If there is anything that is not clear, or if you would like more information, please contact us. Take the time to decide whether or not you wish to take part.

2. **What is the purpose of the study?**

I wish to evaluate the Greater Glasgow and Clyde Dental General Anaesthetic 'Extraction Only' pathway of care with specific emphasis on dental prevention. Every year, many children undergo general anaesthetic for extraction of teeth due to caries in Greater Glasgow and Clyde. Some may then need a second anaesthetic in later years, again, as a result of caries. This seems unacceptable for what is essentially a preventable disease, especially given the risks of general anaesthesia and the co-morbidities and anxieties that may result. I wish to collate views of stakeholders on the current system and (if deemed necessary) gather suggestions for potential change in the hope that recommendations made may help to decrease the overall burden of caries and perhaps in the longer term reduce the repeat dental general anaesthetic rate. This MSc project will run from January 2014 – January 2016. I will undertake approximately 6-7 interviews and 3-4 focus groups (6-10 participants) as part of this project, with each interview or focus group snowballing further names of persons of interest to the research.

4. **Why have I been chosen?**

You have been chosen to participate because you are a stakeholder in this particular pathway of care, or are involved in wider child health spheres.

5. **Do I have to take part?**

Participation is entirely voluntary. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

6. **What will happen to me if I take part?**

You have been invited to take part in a focus group. Usually we do not ask for more than 90 minutes of your time. I will send you a topic guide in advance of our meeting for your perusal.

7. **What do I have to do?**

We will explore the features of the current dental general anaesthetic pathway in NHS Greater Glasgow and Clyde and how it relates to external frameworks, policies and services. We will discuss in particular how the care pathway is functioning in relation to dental prevention. I will arrange our meeting at a mutually agreeable time and location.

8. **What are the possible disadvantages and risks of taking part?**

There are no direct risks involved in taking part in this research project.

9. **What are the possible benefits of taking part?**

You will receive no direct benefit from taking part in this study. The information that is collected during this study will give us a better understanding of the preventative aspects within the current pathway of care for Dental General Anaesthetics (Extraction Only) in Greater Glasgow and Clyde and should there be recommendations for change, these will be passed to relevant staff members for comments.

10. **Will my taking part in this study be kept confidential?**

All information will be kept strictly confidential and will be kept in a secure environment in accordance with the Data Protection Act 1998. The session will be audio recorded and anonymised when transcribed. You will be identified by an ID number only and you will have your name and address removed so that you cannot be recognised from it. You may choose to withdraw your data at any time.

11. **What will happen to the results of the research study?**

Findings will be summarised and analysed and the study will be published in a Master's thesis (e-copy will be available online) and peer-reviewed journals in order to contribute to international knowledge and inform service improvement. You will not be identified in any report/publication.

12. **Who is organising and funding the research?**

This research is self-funded.

13. **Who has reviewed the study?**

The project has been reviewed by the College Ethics Committee.

14. **Contact for Further Information**

Nora O'Murchu (principal researcher)

Email address: **no'murchu@nhs.net**

You will be given a copy of the information sheet and a signed consent form to keep.

Thank you for your participation.

Participant information sheet for Interview

University of Glasgow | College of Medical, Veterinary & Life Sciences

Title of Project:
ASSESSING THE PROVISION OF PREVENTION IN THE CARE PATHWAY FOR CHILDREN UNDERGOING DENTAL GENERAL ANAESTHETIC (DGA) 'EXTRACTION ONLY' AT THE ROYAL HOSPITAL FOR SICK CHILDREN GLASGOW:

A SYSTEMS-LEVEL NEEDS ASSESSMENT

PARTICIPANT INFORMATION SHEET: INTERVIEW

1. **Invitation**

I would like to invite you to participate in my MSc project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. If there is anything that is not clear, or if you would like more information, please contact us. Take the time to decide whether or not you wish to take part.

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You have been chosen to participate because you are a stakeholder in this particular pathway of care, or are involved in wider child health spheres.

5. **Do I have to take part?**

Participation is entirely voluntary. It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

6. **What will happen to me if I take part?**

You have been invited to take part in an in-depth interview. Usually we do not ask for more than 90 minutes of your time. I will send you a topic guide in advance of our meeting for your perusal.

7. **What do I have to do?**

We will explore the features of the current dental general anaesthetic pathway in NHS Greater Glasgow and Clyde and how it relates to external frameworks, policies and services. We will discuss in particular how the care pathway is functioning in relation to dental prevention. I will arrange our meeting at a mutually agreeable time and location.

8. **What are the possible disadvantages and risks of taking part?**

There are no direct risks involved in taking part in this research project.

9. **What are the possible benefits of taking part?**

You will receive no direct benefit from taking part in this study. The information that is collected during this study will give us a better understanding of the preventative aspects within the current pathway of care for Dental General Anaesthetics (Extraction Only) in Greater Glasgow and Clyde and should there be recommendations for change, these will be passed to relevant staff members for comments.

10. **Will my taking part in this study be kept confidential?**

All information will be kept strictly confidential and will be kept in a secure environment in accordance with the Data Protection Act 1998. The session will be audio recorded and anonymised when transcribed. You will be identified by an ID number only and you will have your name and address removed so that you cannot be recognised from it. You may choose to withdraw your data at any time.

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14. **Contact for Further Information**

Nora O'Murchu (principal researcher)

Email address: **no'murchu@nhs.net**

You will be given a copy of the information sheet and a signed consent form to keep.

Thank you for your participation.

Example Topic Guide (Internal)

(Focus Group)

Good morning everyone, thank you for agreeing to participate in a focus group as part of my Masters Project researching the Extraction-Only Dental General Anaesthetic Pathway of Care in the Royal Hospital for Sick Children in Greater Glasgow and Clyde (with specific emphasis on dental prevention).

Can you confirm that you give your consent to participate and you are happy for our conversation to be taped?

Thank you.

Firstly, I would like to begin by giving you a brief explanation of my Masters project and what I hope to achieve.

This MSc systems-level needs assessment will provide data from stakeholders:

1) individuals and groups with experience of the Glasgow paediatric general anaesthetic service for extractions only, (not including patients) and
2) individuals and groups from a wider public health arena implementing wider child health policy (including Childsmile)

to assess the provision of dental prevention in the pathway of care and investigate any other important issues in the current pathway.

The aim is that the current DGA care pathway may be optimised- in particular the dental prevention aspects and perhaps in the longer term, that any future intervention would be targeted at the appropriate patient group in the most appropriate way ('the patient-centred approach').

From your perspective I would like to learn more about the DGA pathway as it stands at present and also how national frameworks, policies, services and systems (especially those relating to **dental prevention)** may integrate with dental general anaesthetics and the follow-up period.

TOPIC ONE: KNOWLEDGE OF OUR CURRENT PATHWAY OF CARE IN GLASGOW

1. *Can you tell me a bit about your jobs?*
2. *Are you aware of any **external frameworks, policies, systems or services from wider child health spheres** which might be relevant to the dental general anaesthetic pathway of care in Glasgow?*

*3. This is the current Dental General Anaesthetic extraction only **pathway in Glasgow** Royal Hospital for Sick Children*

(Shown an arrow of the system on a separate sheet – "GAP arrow" attachment)

*Do you know of any existing **linkages** to wider external frameworks, policies, systems and services at present (including dental prevention)?*

4. Do you see potential for better integration and linkages with external frameworks etc. in this pathway of care?

Where do you see the potential?

5. How should the wider child health spheres/policies/frameworks best be linked to the extraction only pathway of care?
(Prompts: e.g. fail to attends, follow up period, child neglect, utilizing Childsmile in this pathway)

TOPIC TWO: OTHER HEALTH BOARDS DGA SYSTEMS – LESSONS TO BE LEARNED
*7. Are you aware of any relevant/good practice in **other boards** from which we can learn lessons in relation to dental general anaesthetic pathways of care and linking to prevention?*

8. If so, is this something that can be taken forward in Glasgow? What is good about it?

*9. Are you aware of any work around DGA systems **nationally**?*

*10. Are there any more general or national policies **planned/needed**?*

TOPIC THREE: CHANGES TO THE SYSTEM

*11. In revisiting some of the recommendations for change you have discussed; can you think of **any barriers** relating to each potential change? What is standing in our way?*

*12. What, if anything, can be done to **overcome these barriers** to change for each recommendation?*

*13. Is there anything else that we haven't discussed that you think it might be **important** for me to know or consider in relation to improving the current DGA system in Glasgow?*

*13. Do you have any recommendations of anyone else I should **speak to** in relation to this project?*

Thank you for your time everyone and for participating in this Masters project.

Example Topic Guide (External)

External Interview Topic Guide

Good morning X, thank you for agreeing to be interviewed as part of my Masters Project researching the Extraction-Only Dental General Anaesthetic Pathway of Care in the Royal Hospital for Sick Children in Greater Glasgow and Clyde with specific emphasis on dental prevention.

Can you confirm that you give your consent for this interview and you are happy for our conversation to be taped?

Thank you.

Firstly I would like to begin by giving you a brief explanation of my Masters project and what I hope to achieve.

This MSc systems-level needs assessment will provide data from stakeholders:

1) individuals and groups with experience of the Glasgow paediatric general anaesthetic service for extractions only, (not including patients) and
2) individuals and groups from a wider public health arena implementing wider child health policy (including Childsmile)

To assess the provision of dental prevention in the pathway of care and investigate any other important issues in the current pathway.

The aim is that the current DGA care pathway may be optimized- in particular the dental prevention aspects and perhaps in the longer term, that any future intervention would be targeted at the appropriate patient group in the most appropriate way ('the patient-centred approach').

From your perspective I would like to learn more about national frameworks, policies, services and systems especially those relating to **dental prevention** which may integrate with dental general anaesthetics and the follow-up period.

TOPIC ONE: KNOWLEDGE OF OUR CURRENT PATHWAY OF CARE IN GLASGOW

1. *Can you tell me a bit about your job?*
2. *Are you aware of any **external frameworks, policies, systems or services from wider child health spheres** which might be relevant to the dental general anaesthetic pathway of care in Glasgow?*

May not be able to comment on the below:
3. This is the current Dental General Anaesthetic extraction only ***pathway in Glasgow*** *Royal Hospital for Sick Children*
(Shown an arrow of the system on a separate sheet)
Do you know of any existing ***linkages*** *to wider external frameworks, policies, systems and services at present (including dental prevention)?*

4. Do you see potential for better integration and linkages with external frameworks etc. in this pathway of care?
Where do you see the potential?

5. How should the wider child health spheres/policies/frameworks best be linked to the extraction only pathway of care?
(Prompts: e.g. fail to attends, follow up period, child neglect, utilizing Childsmile in this pathway, NDIP)

TOPIC TWO: OTHER HEALTH BOARDS DGA SYSTEMS – LESSONS TO BE LEARNED
7. Are you aware of any relevant/good practice in ***other boards*** *from which we can learn lessons in relation to dental general anaesthetic pathways of care and linking to prevention?*

8. If so, is this something that can be taken forward in Glasgow? What is good about it?

9. Are you aware of any work around DGA systems ***nationally****?*

10. Are there any more general or national policies ***planned/needed****?*

TOPIC THREE: CHANGES TO THE SYSTEM

10. Do you think changes should be made in relation to linking the DGA system with what you have mentioned above? (May have been covered earlier already)

What changes might improve the system in relation to linking with ***external policies, services and frameworks?*** *(May have been covered already)*

11. In revisiting some of the recommendations for change you have discussed, can you think of ***any barriers*** *relating to each potential change? What is*

standing in our way?

*12. What, if anything, can be done to **overcome these barriers** to change for each recommendation?*

*13. Is there anything else that we haven't discussed that you think it might be **important** for me to know or consider in relation to improving the current DGA system in Glasgow?*

*13. Do you have any recommendations of anyone else I should **speak to** in relation to this project?*

Thank you for your time and for participating in this Masters project.

5 University of Glasgow Data Protection Policy

University of Glasgow

Data Protection Policy

1.0 Policy Statement

The University of Glasgow is committed to the eight basic Principles underlying the Data Protection Act 1998 (DPA) and protecting the rights and freedoms of individuals with respect to the processing of their personal data. The University uses personal data for management, administration, and research, but the processing of the personal data must conform to this Policy and the University's Notification to the Information Commissioner.

The University of Glasgow fully recognises the "right to access", under section 7 of the DPA, of an individual to any personal data about themselves and will not restrict access to the personal data unless a statutory exemption applies.

2.0 Scope of the Policy

This policy has been established to ensure that the University of Glasgow complies with the DPA, and associated legislation such as the Privacy & Electronic Communications Regulations, the Regulation of the Investigatory Powers (Scotland) Act, and the Legal Business Practices Regulations.

The policy applies regardless of where the personal data is held and, in respect of IT systems that process personal data for University purposes, the ownership of the equipment. It applies to all personal data held by the University, which includes personal data held by all departments and staff, irrespective of its format. Personal data "held" by the University includes personal data created or received as well as personal data held by third parties on behalf of the University.

3.0 Responsibilities

3.1 The University of Glasgow is a Data Controller under the terms of the DPA and has a corporate responsibility to implement the provisions of the DPA. The University, as Data Controller, determines the purposes for which, and the manner in which, personal data is to be processed.

The University, in accordance with the 7th Principle of the DPA, must take appropriate measures against unauthorised or unlawful processing of personal data and against accidental loss or destruction, or damage to, personal data.

The University must maintain a general "right of access" by an individual to their own personal data held by the University and must maintain its records in accordance with the regulatory environment.

3.2 The Data Protection and Freedom of Information Office will be responsible for:

- Day to day data protection matters and for developing guidance and training for staff on DPA issues
- The maintenance of the University's Notification with the Information Commissioner
- The processing of all Subject Access Requests submitted to the University under section 7 of the DPA
- The administration of all complaints from, and investigations requested by, the Information Commissioner.

3.3 All members of staff who create, receive or maintain personal data have responsibilities under DPA. Staff must ensure that any request for personal data they receive is handled in compliance with this Policy. Specifically, members of staff are responsible for:

- Familiarising themselves with this Policy and the University's DPA Guidance.
- Seeking advice from the Data Protection & Freedom of Information Office when there is uncertainty about the appropriate action to take with respect to the processing of personal data – particularly when sensitive personal data, as defined in the DPA, is to be used for research purposes
- Managing documents and records in accordance with University procedures
- Ensuring that any personal data they hold is held securely, that it is accurate and up to date, and that any personal data they hold is not passed to any unauthorised third party.

3.4 Heads of Academic and Service Units are responsible for ensuring compliance with this Policy. Heads of Academic and Service Units should put in place clear guidelines governing who can release what categories of data to whom and in what circumstances.

3.5 Compliance with this Policy is compulsory for all staff employed by the University of Glasgow, and any member of staff who fails to comply with this Policy may be subject to disciplinary action.

4.0 Retention and Disposal of Personal Data

4.1 The 5th Principle of the DPA states that personal data must not be kept for longer than is necessary based on the purpose for which it was initially collected. To ensure compliance with this Principle, all Staff must follow the University Records Management policy, together with the associated guidance, which sets down recommended retention and disposal schedules. Only in exceptional circumstances, after consultation with the Data Protection and Freedom of Information Office, should personal data be kept indefinitely.

4.2 The disposal of any documents containing personal data must only be undertaken according to the University's guidance on confidential waste disposal.

5.0 Training

5.1 Data protection training is an important aspect of Data Protection compliance and required if you are working with personal data. Training is offered through Employee and Organisational Development (EOD) or by contacting the Data Protection and Freedom of Information Office directly. Training can be customised to suit the requirements of a particular College, School or Service.

5.2 There is also an online Data Protection training module which is available for current staff and new employees. It is advised that this module be undertaken in conjunction with the above training to measure awareness of the Act and how this may impact on everyday work scenarios at the University.

6.0 Notification to the Information Commissioner

6.1 Members of staff must promptly forward to the Data Protection and Freedom of Information Office any comments or complaints about, or omissions from, the University's Notification with the Information Commissioner.

For further information please see http://www.gla.ac.uk/services/dpfoioffice/ or contact:

DP&FOI Office

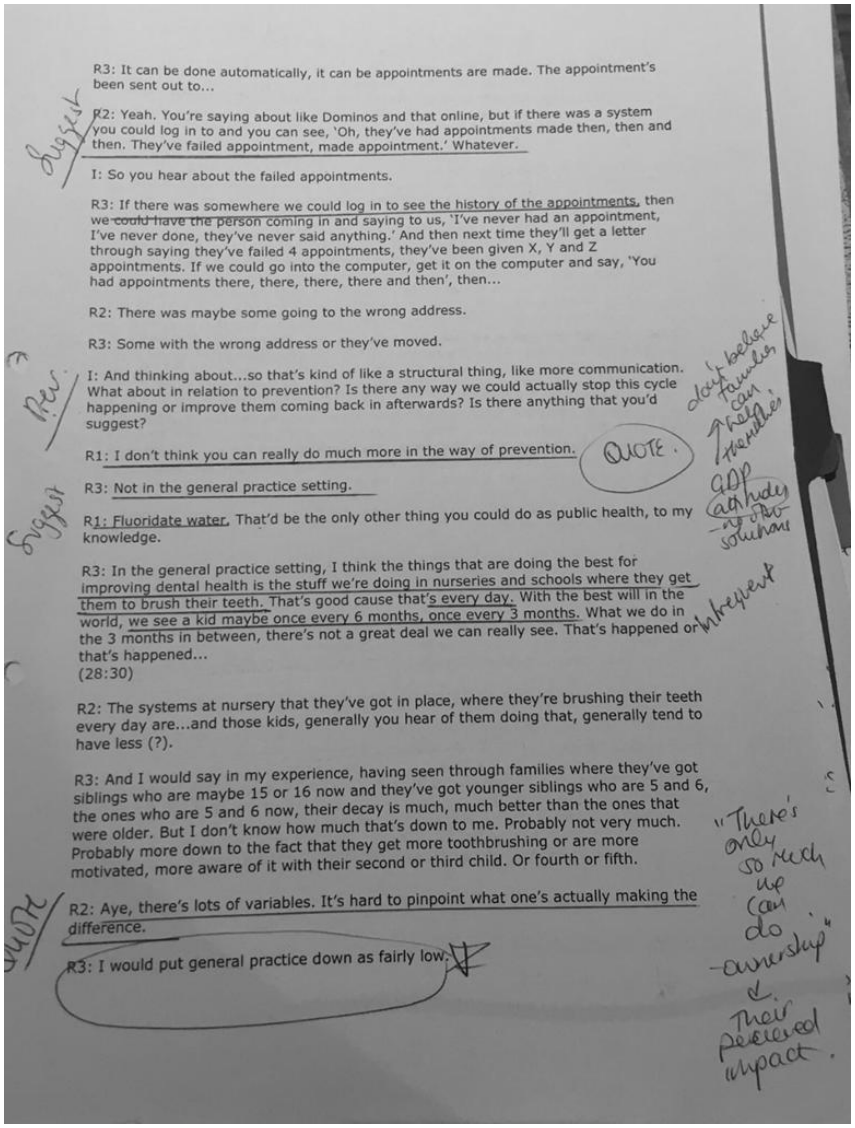
dp@gla.ac.uk

Ext.3111

6 Steps of Framework Analysis as Employed in This Study

Step 1: Familiarisation

Step one involved familiarisation with transcripts and hand-coding in the document margins to identify potential answers to the research questions (themes). Figure 17 is an example of this, with different paragraphs mapping to different themes (such as 'suggestions for improving prevention in the pathway').



R3: It can be done automatically, it can be appointments are made. The appointment's been sent out to...

R2: Yeah. You're saying about like Dominos and that online, but if there was a system you could log in to and you can see, 'Oh, they've had appointments made then, then and then. They've failed appointment, made appointment.' Whatever.

I: So you hear about the failed appointments.

R3: If there was somewhere we could log in to see the history of the appointments, then we could have the person coming in and saying to us, 'I've never had an appointment, I've never done, they've never said anything.' And then next time they'll get a letter through saying they've failed 4 appointments, they've been given X, Y and Z appointments. If we could go into the computer, get it on the computer and say, 'You had appointments there, there, there, there and then', then...

R2: There was maybe some going to the wrong address.

R3: Some with the wrong address or they've moved.

I: And thinking about...so that's kind of like a structural thing, like more communication. What about in relation to prevention? Is there any way we could actually stop this cycle happening or improve them coming back in afterwards? Is there anything that you'd suggest?

R1: I don't think you can really do much more in the way of prevention.

R3: Not in the general practice setting.

R1: Fluoridate water. That'd be the only other thing you could do as public health, to my knowledge.

R3: In the general practice setting, I think the things that are doing the best for improving dental health is the stuff we're doing in nurseries and schools where they get them to brush their teeth. That's good cause that's every day. With the best will in the world, we see a kid maybe once every 6 months, once every 3 months. What we do in the 3 months in between, there's not a great deal we can really see. That's happened or that's happened...
(28:30)

R2: The systems at nursery that they've got in place, where they're brushing their teeth every day are...and those kids, generally you hear of them doing that, generally tend to have less (?).

R3: And I would say in my experience, having seen through families where they've got siblings who are maybe 15 or 16 now and they've got younger siblings who are 5 and 6, the ones who are 5 and 6 now, their decay is much, much better than the ones that were older. But I don't know how much that's down to me. Probably not very much. Probably more down to the fact that they get more toothbrushing or are more motivated, more aware of it with their second or third child. Or fourth or fifth.

R2: Aye, there's lots of variables. It's hard to pinpoint what one's actually making the difference.

R3: I would put general practice down as fairly low.

Figure 17 – Hand-coded transcript of GDP focus group

Step 2: Identifying a thematic framework

Initial workings from each transcript (e.g. GDPs) were collated on an A4 sheet to show how the research questions/themes could be answered, with preliminary subthemes being raised (Figure 18). A personal reflection by the PR also was undertaken (see the last section of Figure 18).

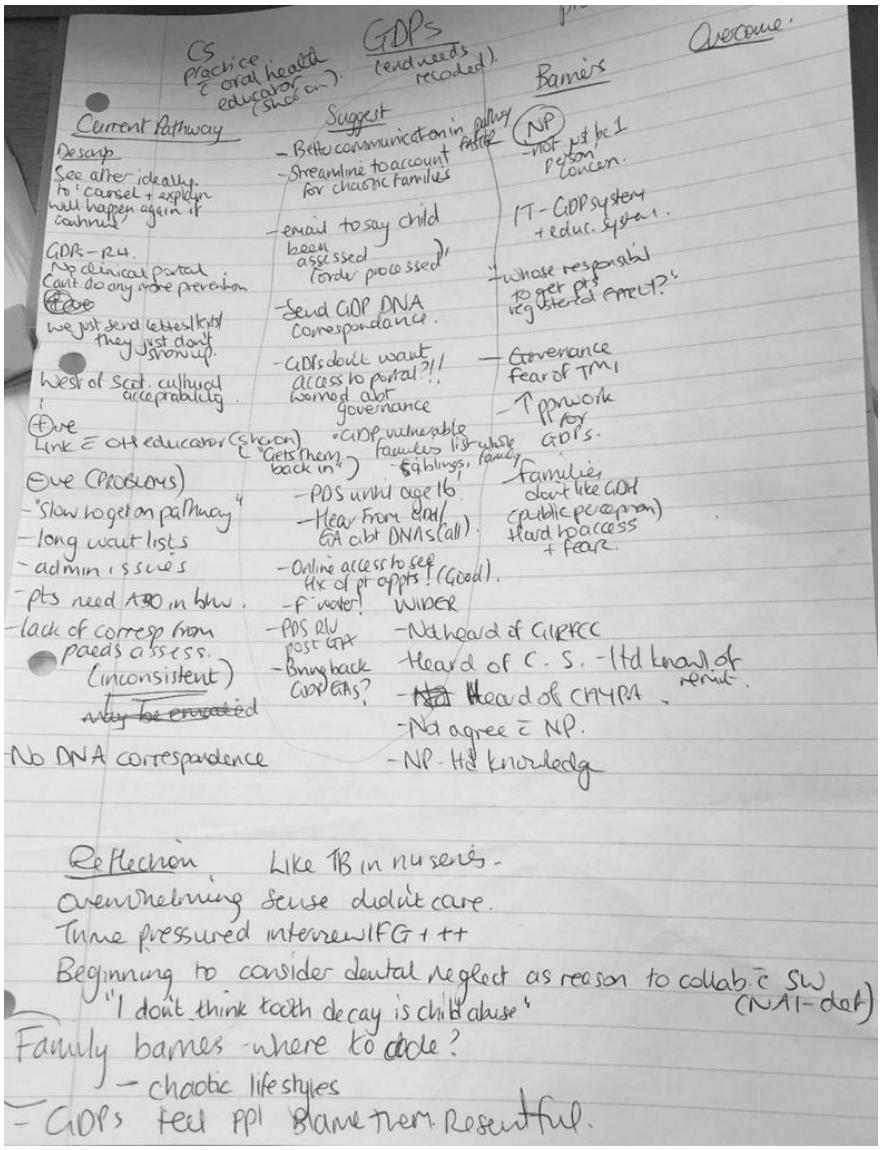


Figure 18 - Early thematic framework for GDP stakeholders

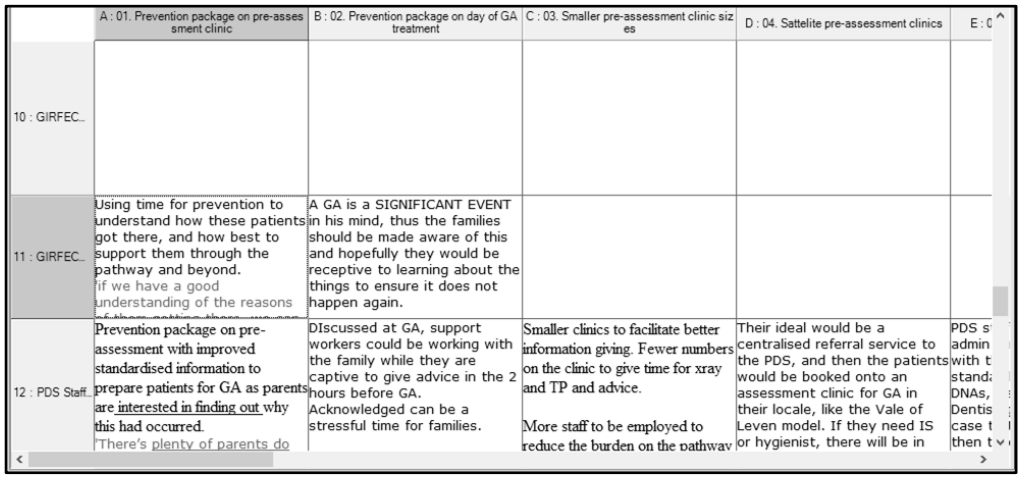
Step 3: Indexing

QSR Nvivo data management software was then used to assist in organising and analysing the data. Once the transcripts were inputted into Nvivo, each research question was then allocated its own matrix, with the data source being the coded participant case transcripts (see Table 7 and Figure 19). The horizontal rows of the matrix were the individual stakeholders, or 'cases', and columns were the different subthemes generated (see Table 7 and Figure 19). Nvivo enabled linkages with raw data to be maintained.

Summarising the data in the matrices assisted the PR in reflecting over the data. Matrices also allowed the PR to visually analyse the data and ascertain if any patterns existed by looking 'down' subthemes, or 'across' cases/participants, or combining both (see Table 7 below). If nothing was said by a stakeholder about a subtheme, the box remained blank.

Table 7 - Example of a framework matrix template for an overall 'theme'

Stakeholder	SUBTHEME 1	SUBTHEME 2	SUBTHEME 3	Etc..
Stakeholder 1	Stakeholder 1 response regarding subtheme 1	Stakeholder 1 response regarding subtheme 2	Stakeholder 1 response regarding subtheme 3	
Stakeholder 2	Stakeholder 2 response regarding subtheme 1	Stakeholder 2 response regarding subtheme 2	Etc..	
Etc…				



	A : 01. Prevention package on pre-assessment clinic	B : 02. Prevention package on day of GA treatment	C : 03. Smaller pre-assessment clinic sizes	D : 04. Sattelite pre-assessment clinics	E : 0
10 : GIRFEC..					
11 : GIRFEC..	Using time for prevention to understand how these patients got there, and how best to support them through the pathway and beyond. "if we have a good understanding of the reasons	A GA is a SIGNIFICANT EVENT in his mind, thus the families should be made aware of this and hopefully they would be receptive to learning about the things to ensure it does not happen again.			
12 : PDS Staff..	Prevention package on pre-assessment with improved standardised information to prepare patients for GA as parents are interested in finding out why this had occurred. "There's plenty of parents do	DIscussed at GA, support workers could be working with the family while they are captive to give advice in the 2 hours before GA. Acknowledged can be a stressful time for families.	Smaller clinics to facilitate better information giving. Fewer numbers on the clinic to give time for xray and TP and advice. More staff to be employed to reduce the burden on the pathway	Their ideal would be a centralised referral service to the PDS, and then the patients would be booked onto an assessment clinic for GA in their locale, like the Vale of Leven model. If they need IS or hygienist, there will be in	PDS s admin with t standa DNAs, Dentis case t then t

Figure 19 - An example of part of a framework matrix, summarising data for the theme 'Suggestions to improve prevention in the pathway of care'.

Not all of the information within each matrix was used in the 'Findings' section, as some subthemes were combined to make 'higher level' themes.

Step 4: Charting themes and subthemes

This penultimate step involved refinements to the initial framework once it had been applied again to the data (Ritchie and Spencer, 2002), adding any new categories or modifying existing categories (see Figure 20).

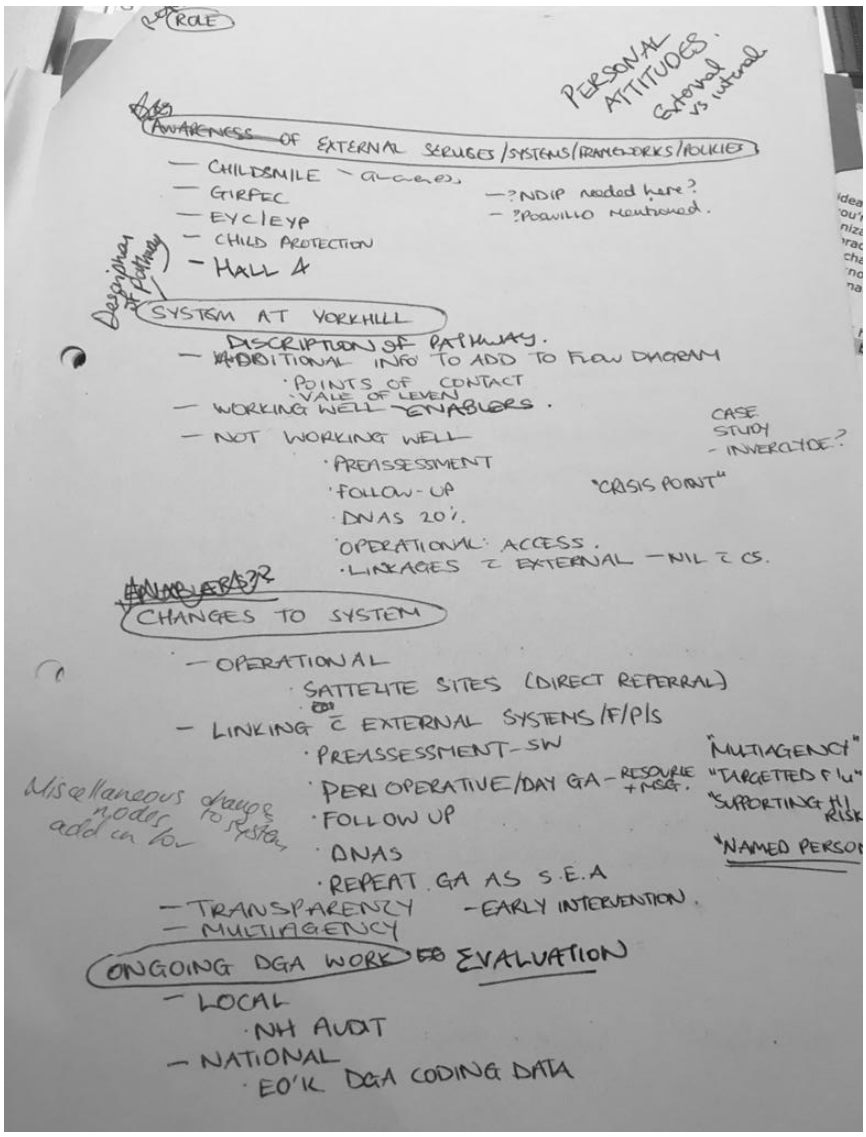


Figure 20 - Preliminary coding structure

Step 5: Mapping and interpretation

The fifth stage of mapping and interpretation involved final further reduction of the original data within the chosen framework ‘without losing context or content’. This led to the development of a final coding structure to best organise the overall findings for each theme (see Appendix 7 for coding structures).

7 Framework Analysis Coding Structures

The coding structure illustrations act as a visual aid to give an overview of the research findings.

- The research question (theme) is presented within the blue ‘thought bubble’.
- The subthemes are presented within the green ‘question bubbles’.
- Further subdivisions are presented in the blue boxes.

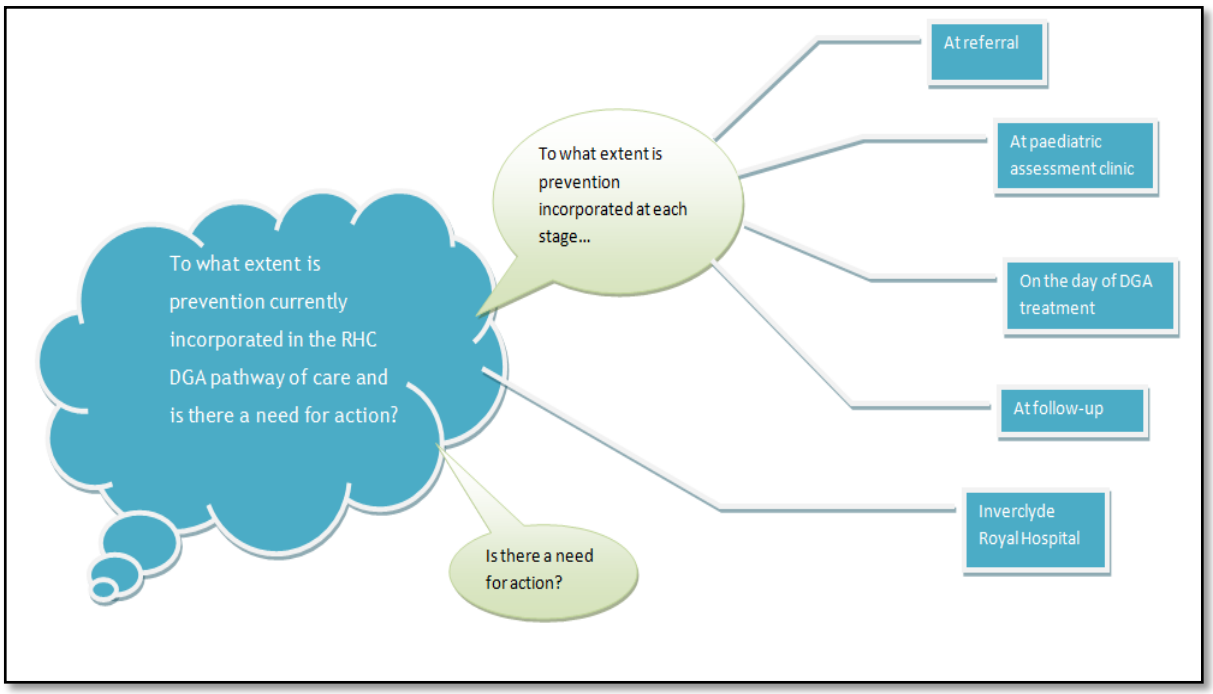


Figure 21 – Stage five of framework analysis: depicting the final coding structure mapped to research question 1 of Phase 2; to what extent is prevention currently incorporated in the pathway of care, and is there a need for action?

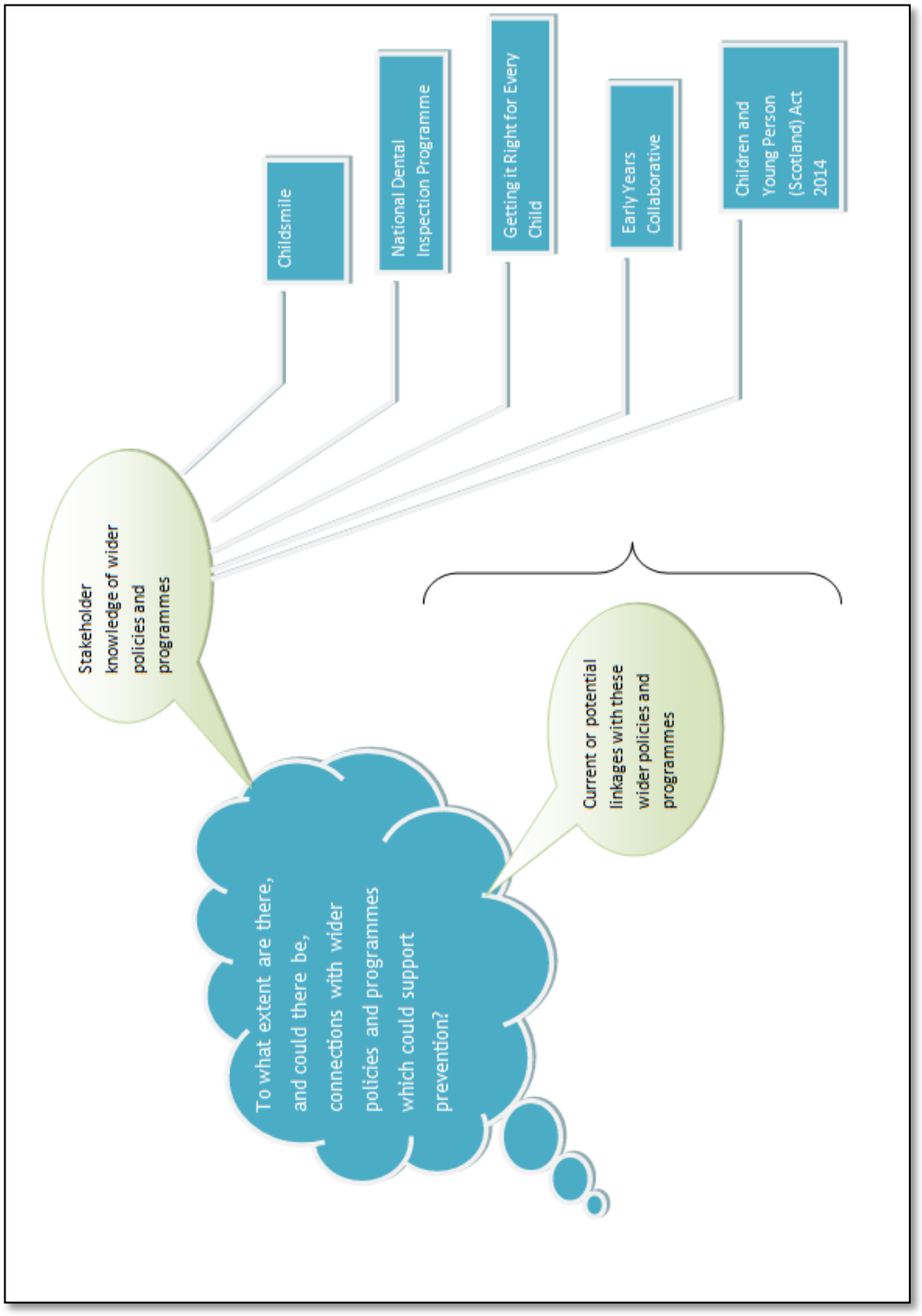


Figure 22 - Coding structure mapped to research question 2 of Phase 2: to what extent are there, and could there be connections with wider policies and programmes which could support prevention?

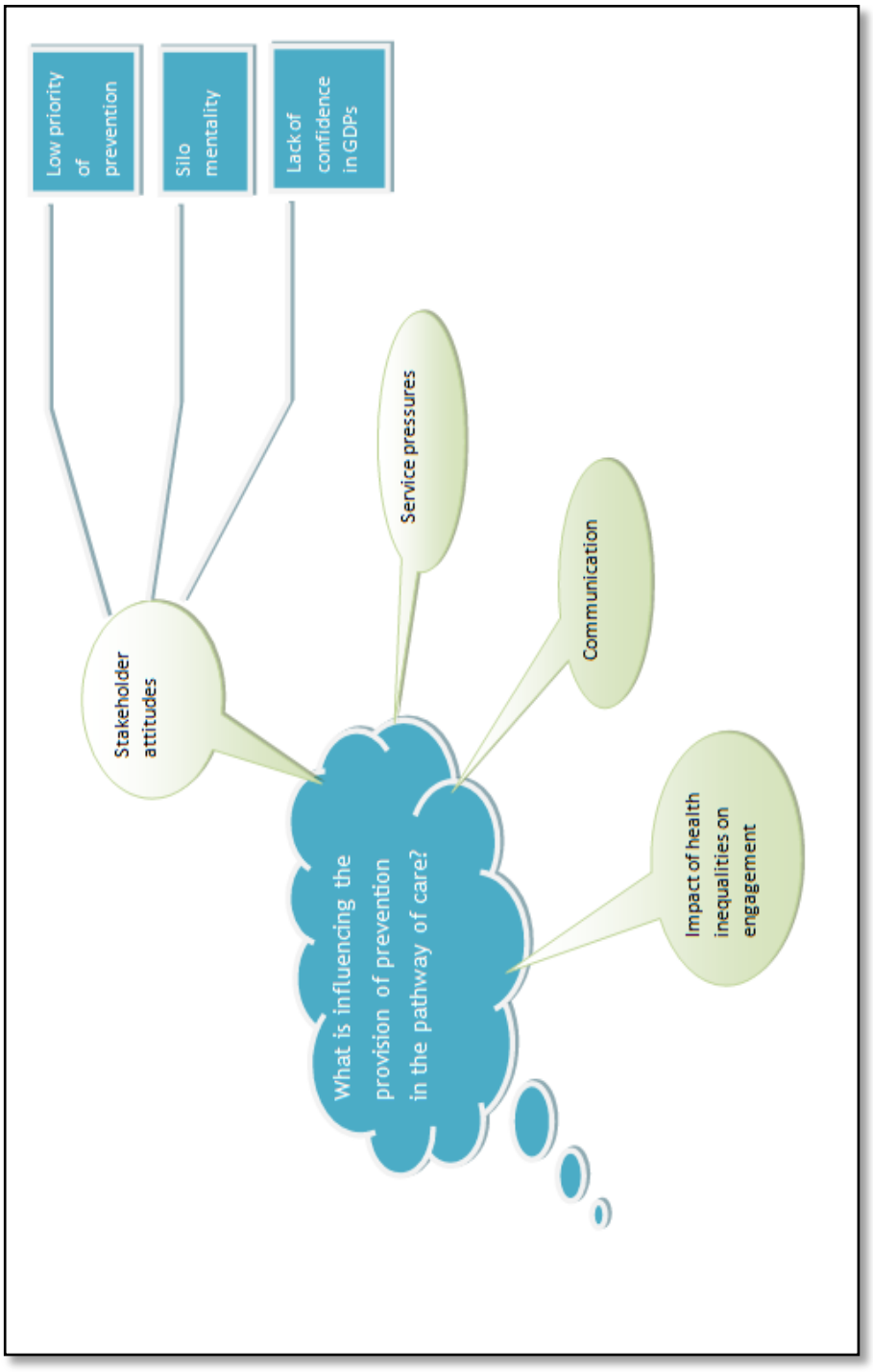


Figure 23 - Coding structure mapped to research question 3 of Phase 2: what is influencing provision of prevention in the pathway of care?

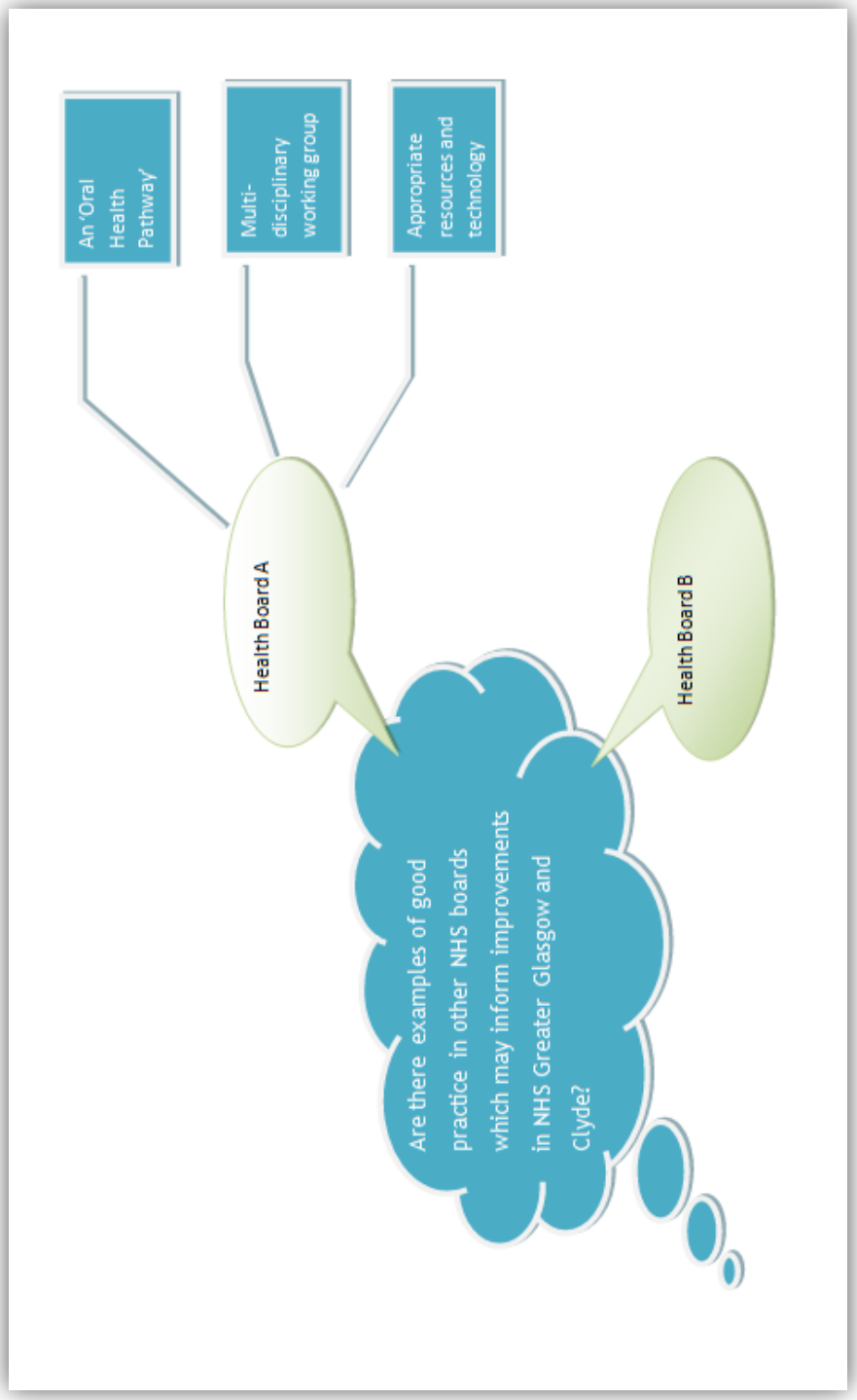


Figure 24 - Coding structure mapped to research question 4 of Phase 2: are there examples of good practice in other NHS boards which may inform improvements in NHS Greater Glasgow and Clyde?

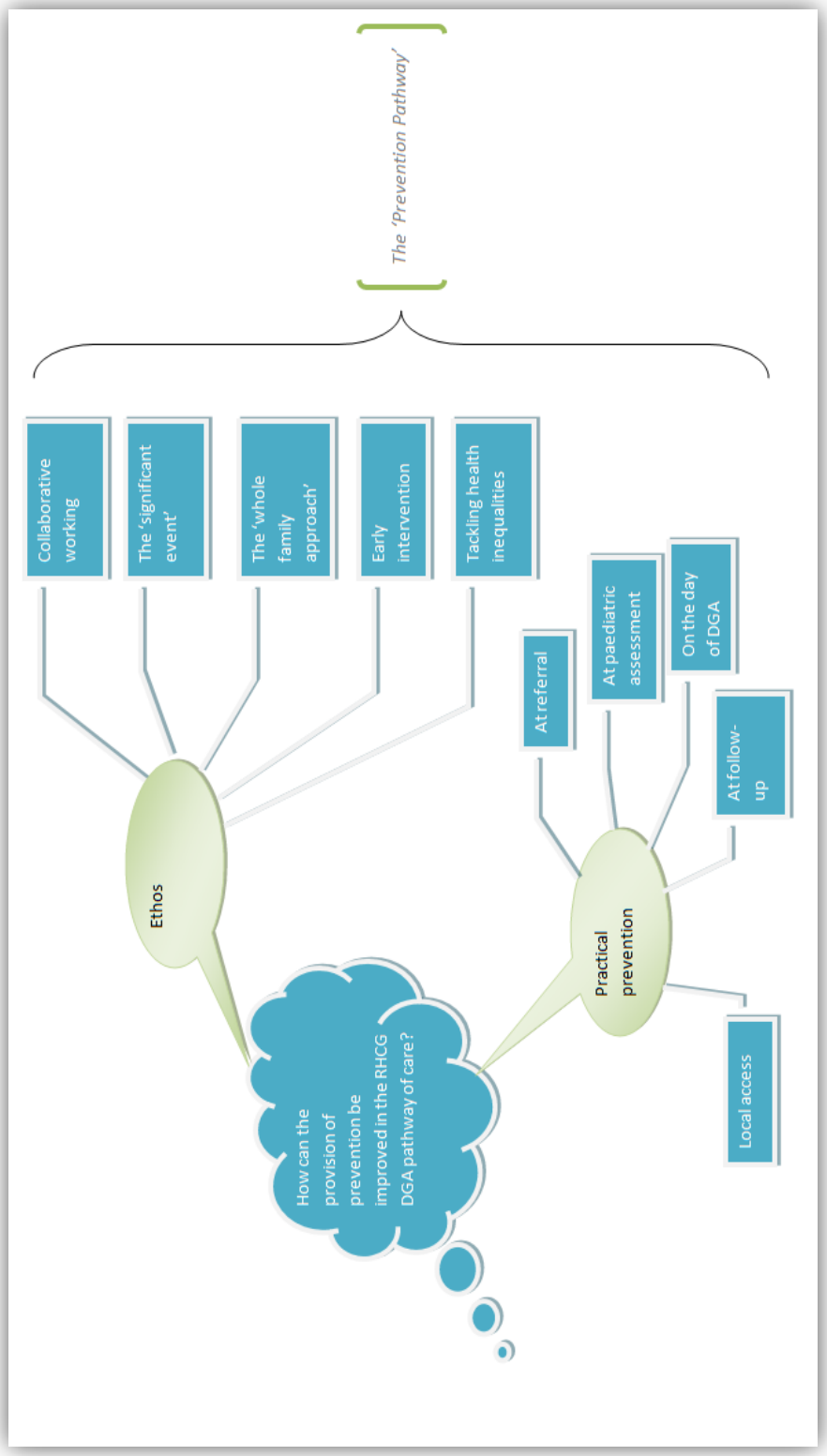


Figure 25 – Coding structure mapped to initial section of research question 5 of Phase 2

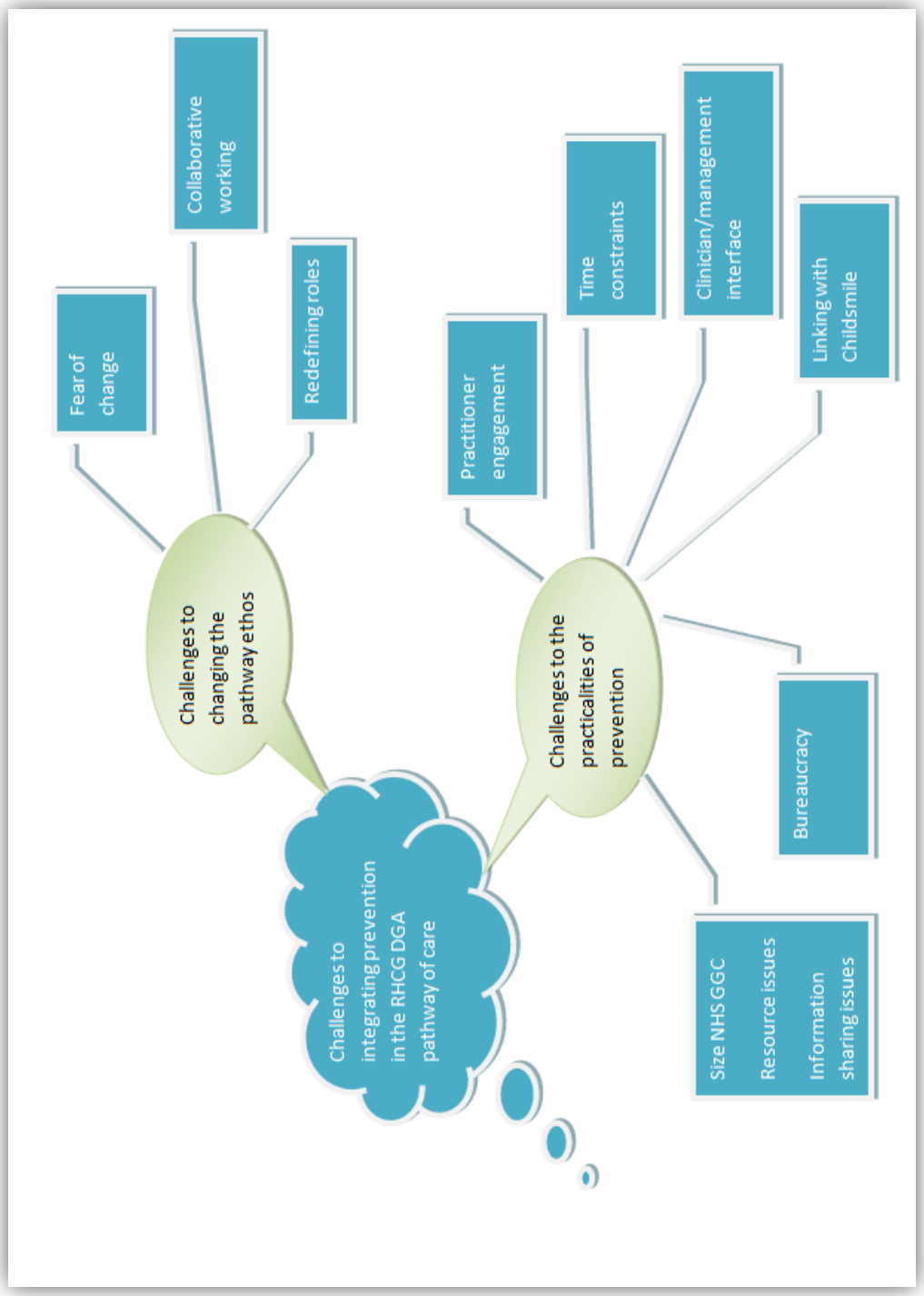


Figure 26 - Coding structure mapped to middle section of research question 5 Phase 2

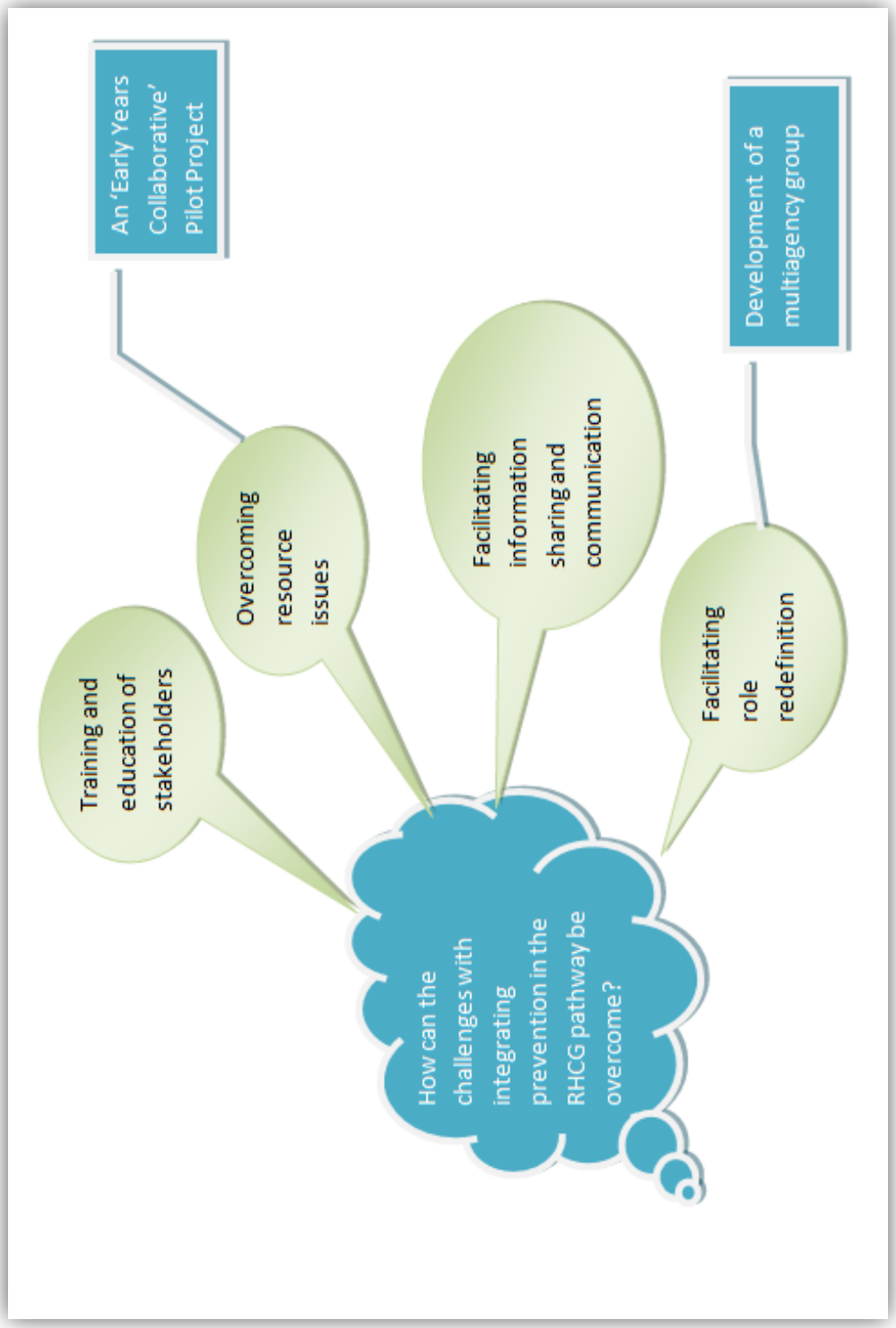


Figure 27 - Coding structure mapped to final section of research question 5 Phase 2

8 The Primary Care Provider Communication Pad: 'Triplicate Pad'

Glasgow Dental Hospital & School
378 Sauchiehall Street
GLASGOW G2 3ZJ

DEPARTMENT OF PAEDIATRIC DENTISTRY ☎Direct Dial 0141 211 9670

GDP Information	Patient Information

Dear ……..

The above patient was seen in the Department of Paediatric Dentistry at Glasgow Dental Hospital on the following date ……regarding: CARIES | TRAUMA | OTHER:

Examination revealed: **CARIES:** _____ | _____

_____

_____

_____

Treatment will be as follows (Please circle):

1. Comprehensive Care under GA at RHSC	2. Management of trauma within GDHS
3. Extractions only under GA at RHSC	4. All treatment and care within GDHS Paediatric Clinic

*(Unless noted in box 4 above, the responsibility **for the patient's routine examinations,** routine treatment and pain management remains with the primary care provider)*

PREVENTION ADVICE

This patient's caries risk is currently: HIGH MEDIUM LOW (This risk should be regularly reviewed)

The following Prevention Plan is recommended to be carried out in the Primary Care setting as per current SIGN guidelines:

Prevention Plan	(Please circle as appropriate)	
RECALL PERIOD	4 monthly	6 monthly
RADIOGRAPHIC PERIOD	6 months / 12 months	18 months / 24 months
FLUORIDE VARNISH (Duraphat)	4 monthly	6 monthly
TOOTHPASTE STRENGTH	1,000 ppm F	1,500 ppm F
TOOTHBRUSHING INSTRUCTION	YES	NO
DIETARY COUNSELLING	YES	NO
FISSURE SEALANTS TO BE APPLIED *(Notate teeth to be sealed)*	_____	_____

Thank you for your collaboration in improving this patient's oral health

(SIGN AND DATE)

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