A Change Project to Improve Dental Services Provision to Preschool Children in Primary Care

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Abstract

Dental decay is a troublesome disease that could significantly impact on children’s oral and general health. Early prevention is crucial and despite the public preventive strategies in Ireland the decay rate in preschool children remains significantly high. The Health Service Executive provides a range of routine dental services to children in priority groups through the School Programme of the Public Dental Service. Preschool children are not routinely covered by this programme and their receipt of dental care is limited to general oral health messages provided through primary care child services. The financial restrictions have reduced children’s access to the public dental clinics which made the problem worse for preschool children. The project was concerned with providing early routine preventive interventions by Public Health Nurses in the form of oral health education for parents and oral health assessment for preschool children within primary care settings. The rationale for change was to optimise the role of primary care team members by integrating oral health services into their routine care for patients. This integration was achieved by implementing a basic dental training programme to assist the Public Health Nurses in delivering the new service more effectively and adequately. The change model used in implementing the project was Young’s meta-model which made the project process more organised and progress with ease. The project evaluation process provided positive results and feedback on the implementation of the change. The future outcomes of children’s oral health depend on the trained nurses’ and their implementation of the change.
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Chapter 1

Introduction
1.1 Introduction

Oral health is an important aspect of child care throughout the world (IOHSGI, 2012). In the context of Primary Care (PC) in Ireland, child oral health has received a certain amount of attention though one could debate its sufficiency. The Public Dental Service (PDS) is a subset of PC although dental teams usually operate as independent units. The author being a Public Dental Practitioner is aware of the shortcomings of the current system in solely targeting school children and advocates the need for change. This report will outline the implementation of a change project to introduce a new preventive dental service for preschool children.

1.2 Nature of the change

This change project is founded on the basic principles of quality, equity and fairness for all children. The nature of the change is to introduce a new dental service for preschool children to be delivered under PC settings by current non-dental healthcare professionals. The focus is to integrate oral and dental health components into the child services delivered by Public Health Nurses (PHNs) at developmental visits. The proposed new intervention comprises two elements of basic oral and dental health assessment for children less than five years of age, and oral and dental health promotion and education for the children’s parents and carers.

1.3 Rationale for carrying out the project

The promotion of good oral and dental health and the protection of children’s teeth against dental decay should be a public priority in any healthcare system (IOHSGI, 2012). Dental decay is a preventable disease yet it is one of the most
common chronic childhood diseases (US Department of Health and Human Services, 2000). Early access to oral and dental care is a basic need for all children and their parents and carers (IOHSGI, 2009). The new service is proposed to be a timely, evidence-based, cost-effective and a holistic approach to the child’s good health and wellbeing. The rationale for carrying out the project lies in the importance of the initiative to the primary healthcare system and stakeholders.

1.3.1 Change through various stakeholders’ perspectives

Primary care in Ireland aims to serve the public by meeting 90-95 per cent of health service needs (DOHC, 2001a). While some aspects of primary care are satisfactory, there are deficiencies necessitating development and change. This initiative is considered a major development towards achieving the goals sought by the Department of Health and Children’s Health Strategies (2001a; 2001b; 2004). The change project will contribute to a better infrastructure of primary care by linking specialties and reducing fragmentation (DOHC, 2001a; 2001b). It will promote teamwork and increase skill mix (HSE, 2010c). The project seeks to embed dental care as an integral part of the system and is a step towards transforming primary care into a team-based provider of equitable and quality health services (HSE, 2008a).

Oral health policies and evidence-based guidelines exist to regulate dental care provision to children in Ireland (IOHSGI, 2008; 2009; 2010; 2012). Providing early OHA in primary care to preschool children is important to regularly monitor their dental development and detect dental decay earlier for immediate referral for treatment (dela Cruz, Rozier, & Slade, 2004). Early education and oral health promotion will encourage parents and carers’ to practice the appropriate home oral care for children from an early age (Kranz & Rozier, 2011; Owens, 2011).
Public dental teams have a professional and ethical obligation to ensure appropriate and equal delivery of dental care to all children. The public dental clinics operate on a school-based system while the service for preschool children remains underdeveloped. In addition, the restrictions and moratorium following the announcement of the financial crisis in 2008 have impacted on the current state-funded dental schemes (HSE, 2010a). The project will allow cost effective dental services provision thus combating the effects of deteriorating finances. It will increase the pool of skills for dental teams and relieve the pressure they are under. Additionally, the proposed change will establish a more equitable child care and enforce the oral health element in the primary health system (IOHSGI, 2012).

Public Health Nurses’ role is important to patients, dental teams and primary care (DOHC, 2001a; 2011). They provide child services through developmental visits and deliver oral health messages to parents of young children (Conway, 2010). The change will aim to re-enforce this element of the child service and further strengthen PHNs’ skills in providing an improved element of oral health. This will be a step forwards for PHNs towards a holistic approach of patient care. It will encourage them to function in an integrated and inter-disciplinary health system where teamwork is a dominant feature. The training aspect of the change project is an opportunity for staff education which is recommended for the PHNs’ continuous personal and professional development (HSE, 2009).

1.4 Aims and objectives

The vision of the change project is to improve oral health and wellbeing of preschool children. This vision can only be achieved by the combined efforts of all stakeholders at national level to fully implement preventive strategies (IOHSGI, 2009). Therefore, the project aims to introduce and establish a new dental service whereby early preventive interventions can be regularly provided.
to preschool children. This service is intended to be delivered by local PHNs at developmental visits. It will constitute an Oral Health Education (OHE) programme for parents and carers and an Oral Health Assessment (OHA) programme for the children.

In achieving the aim of the project, the following objectives were set:

- To develop and implement a training and development programme for PHNs on child oral and dental health care to assist in establishing the new service.
- To design a patient specific information leaflet on dental care for young children to assist in the implementation and dissemination of the initiative.

The project’s objectives and activities were set to be Specific, Measurable, Achievable, Realistic and Time-bound (SMART) for successful implementation and evaluation of the change. To secure implementation it was the author’s duty, as a qualified dental practitioner, to:

1. Develop an adequate basic dental training programme and information leaflet.
2. Assure adequate implementation of cost-effective and evidence-based approaches, and dental best-practice as recommended by guidelines in Ireland.
3. Deliver a three-hour training programme to the PHNs to ascertain the required level of competency prior to the implementation of the new service.

Additionally, the project’s outcome evaluation was based on the ability of the trained PHNs to:

4. Demonstrate satisfactory knowledge of relevant aspects of child oral health.
5. Feel confident to carry out OHA for young children.
6. Feel confident to provide the appropriate OHE and preventive home care and diet advice to parents and carers of young children.
7. Demonstrate evidence of transferring the acquired new knowledge to practice.
8. Demonstrate evidence of satisfactory implementation of the new service.

1.5 Summary
In the following chapters, the evidence in support of the change will be highlighted, the change process will be outlined and the change evaluation and outcomes presented. The final chapter will discuss the organisational impact of the change and recommendations for future improvements.
Chapter 2

Literature Review
2.1 Introduction

Dental decay is a troublesome disease that can affect children from as early as a child’s second year (Welbury, 2001). Fortunately, it is a preventable disease and modern dentistry has revolutionised key strategies, methods and approaches to eliminate it (IOHSGI, 2009). This chapter will present a systematic review of the literature on dental decay and the key strategies for its prevention in preschool children less than five years of age in Ireland. The first part will outline the literature search strategy and sources of information and highlight the inclusion criteria. The main themes and topics that emerged will be presented and form the basis upon which the review will be structured. The concluding part will outline the link between the reviewed literature and the change project.

2.2 Search strategy and sources of information

The search was started by examining literature on dental decay in its broader context. It was narrowed down to include the literature and guidelines on preventive strategies of dental decay commissioned by the Health Service Executive (HSE) in Ireland (IOHSGI, 2008; 2009; 2010; 2012). The main websites used in searching for evidence-based guidelines and methodologies involved in their development are outlined in appendices 1 and 2 respectively. The search was narrowed further by selecting the literature directly related to young children of preschool age in Ireland (Appendix 3). Additional inclusion criteria were set for the selected preventive interventions to be cost-effective and suitable for application in primary care settings.

The literature was generally obtained from journals, web-based databases and current textbooks on Paediatric Dentistry. Internet-based search engines including the RCSI eJournal Portal and Google Scholar were utilised. Over 25
articles and governmental reports on dental decay and preventive strategies and ten articles and reports on the financial crisis were reviewed. Seven of the reviewed articles on financial crisis were directly related to healthcare, six were relevant to the Irish healthcare system and four were relevant to dental services.

2.3 Themes

Four themes emerged from the literature search and were selected to be the main focus of the review. These themes are:


2. Financial considerations.

3. Primary care in Ireland.

4. Training and education in healthcare.
2.3.1 Child oral health in Ireland

2.3.1.1 Child health and dental decay

The preventable nature of dental decay is a distinguishing feature that facilitates its management. It is associated with certain risk factors the scope of which is beyond this report (Chankanka et al., 2011; Iida, Auinger, Billings, & Weitzman, 2007). In simple terms, the presence of dental plaque bacteria and fermentable carbohydrates or refined sugars in high amounts and for a significant period of time on the teeth of otherwise healthy children could cause dental decay (Welbury, 2001). In other words, generally speaking the combination of poor oral hygiene and poor diet or the frequent intake of sugary snacks is associated with higher decay rate.

The impact of decay on child oral health is significant and could cause severe localised and systemic complications. The accompanying pain, infection and disfigurement of the dentition are causes of distress to children and parents. A severe dental infection could spread and affect adjacent vital organs or obstruct the airway. The need to prematurely extract the affected tooth makes the child’s management extremely challenging. This is further complicated if hospitalisation or administration of local or general anaesthesia were indicated (Welbury, 2001).

These complications could be avoided by adopting an early and systematic approach in implementing preventive strategies (Owens, 2008). An early and systematic service will allow early detection of oral disease and timely interventions (Riter, Maier, & Grossman, 2008). This normally involves simple, non-traumatic and minimally invasive techniques. Early interventions can prevent future need for advanced and costly treatment (Jones & Tomar, 2005).
2.3.1.2 Current systems

Oral health for children is a recognised public health priority as dental decay is amongst the most common chronic diseases of childhood. According to the U.S. Department of Health and Human Services (2000), it is five times more common than asthma and seven times more common than hay fever. If early intervention to prevent it is not implemented, it can prove more costly and challenging to manage and control in the older child (DOHC, 2003).

Every health system should operate on the basic principles of quality, equity and fairness (DOH, 1994; DOHC, 2001a). According to the Government of Ireland’s Health Acts (1953; 1970; 2004), all children have the right to access a full range of health services and other comprehensive state-funded medical and dental care. The children’s age-based eligibility to state-funded dental services has been subject to amendments and limited resources. This has led to variations in the availability and continuity of oral and dental health care at a national level (IOHSGI, 2012).

The HSE has an explicit statutory requirement, as the national health authority in the Republic of Ireland, to provide free dental services to all children as part of a subset of defined ‘core-services’ under the primary care setting (DOHC, 2001b). The aim of the Public Dental Service is to reduce dental disease in all children and provide adequate treatment services (DOH, 1994). The PDS operates through public clinics to provide emergency service to cover all children under 16. It provides routine services for children attending national schools through the School Dental Programme (IOHSGI, 2012).

The school programme is conducted by Public Dental Practitioners and includes oral health education, assessment, and treatment services comprising a range of routine preventive and operative interventions. This is currently conducted in a ‘target class’ approach with significant national and local
variations in the ‘target’ classes receiving routine dental services. The ‘target class’ approach has always been criticised for not achieving the equitable level of care aspired by the national health strategies which is further compounded by the lack of clarity on specification of what classes to be targeted and methods of delivery. The shortcomings of the PDS have always been ascribed to limited resources (IOHSGI, 2012).

It could be argued that the limitations of the current dental services may lie in the ways preventive strategies are currently implemented and the sub-optimal use of resources. Ideally, the ‘target class’ approach and any other system for dental services must operate against a strong background of preventive strategies at population level (IOHSGI, 2012).

2.3.1.3 Preventive strategies

The preventive strategies currently implemented in Ireland are based on recommendations and guidelines supported by strong evidence-based scientific studies (IOHSGI, 2008; 2009; 2010; 2012). One of the most established public strategies is water fluoridation and has been in place since the mid-1960s (Parnell, Whelton, & O’Mullane, 2009). Whelton et al. (2006) reported that 71% of the population in the Republic of Ireland has fluoridated domestic water. This report is not an arena to present the benefits and risks of fluoride and water fluoridation or to debate the effectiveness of other preventive modalities such as fluoride varnishes and fissure sealant application. The effectiveness of these strategies is established and can be enhanced further when combined with routine dental care and timely service delivery (IOHSGI, 2008; 2010).

The fact that the school programme is the only established state-funded system for routine dental service provision means preschool and younger
children are merely covered by the emergency service. They may only be seen on request by parents or by referral from other healthcare professionals. This fluid system might explain the relative lack in the literature of national data for the oral health for preschool children in Ireland (IOHSGI, 2009). The unsystematic manner of service delivery to this age group is surprising given that the need for such programmes has previously been highlighted (Gelbier, 2002; Whelton et al., 2006). The report by Gelbier (2002) emphasised that prevention of oral disease should be taken seriously in Ireland and must be provided for younger children if improvements in oral health are to be achieved.

A number of local studies on preschool children completed in Ireland over the last 20 years report a recurring theme that decay is a problem in preschool children (IOHSGI, 2009). The most recent study by Whelton et al. (2006) has shown that approximately one third of 3-year-olds in Ireland had dental decay. The percentages of 5-year-olds who had dental decay in 2002 were 37% in fluoridated areas and 55% in non-fluoridated areas. The latter percentage was higher in comparison to an overall figure of 43% for the same age group in the United Kingdom (Lader et al., 2005). These percentages indicate the prevalence of disease among preschool children is significantly high even in fluoridated areas (Parnell, Connolly, O’Farrell, Cronin, Flannery, & Whelton, 2007). The provision of routine preventive interventions to preschool children through the Public Dental Service is of the utmost importance yet such programmes are rare (IOHSGI, 2009).

The author’s emphasis on preschool children as recipients of routine preventive dental services originates from the strong belief in the traditional philosophy of ‘prevention better than cure’. Population-level preventive strategies are highly effective if combined with the appropriate home care measures and regular access to professional preventive interventions (Kranz & Rozier, 2011; Riter et al., 2008). These should particularly focus on promoting oral health and educating parents of the merits of good home care and proper diet to their
child’s dental health (DOHC, 2003; Owens, 2008). Given the nature of dental decay, it is of the utmost importance to integrate a common risk factor approach in implementing preventive strategies (Dental Health Foundation Ireland, 2008). This will encourage early adequate home dental care and significantly reduce the prevalence of disease.

The advocacy of oral health services for preschool children is for the purpose of monitoring and early detection of oral disease. This will facilitate early referral and better planning and management of the child’s future oral health (dela Cruz et al., 2004). The sever complications and difficulty of managing the disease further supports the argument for early prevention. The high cost of treatment compared to the benefits, cost-effectiveness and simplicity of early oral health assessment and referral further support the emphasis on prevention (Edelstein, 2011; Jones & Tomar, 2005; Rozier, 1997).

There is an obvious need for a systematic approach, a new service, or perhaps an enhanced version of the ‘target class’ approach that will include preschool children as prime recipients of routine dental care. Oral health education and promotion in combination with regular dental assessment could significantly reduce oral diseases and attain good oral health. The author maintains that the high prevalence of dental decay in preschool children, the national variations in service delivery and the limitations of the current PDS further highlight the need for a new plan.

2.3.2 Financial considerations

Dental services are costly, in constant demand and time and resource consuming. The PDS has always been subject to high demand and limited resources since it was established in the 1950s (IOHSGI, 2012). The literature search revealed that only 19% of Irish 5-year-olds receive dental care privately.
(Parnell et al., 2007). This implies that over 80% of parents attend public clinics to meet their children’s oral health needs. The demand has further increased in recent years with financial reviews reporting major budgetary constraints and restrictions (HSE, 2010a; 2010d; 2012a). A close investigation of the current financial status of the PDS is indicated to examine the feasibility of introducing change and improvement plans.

2.3.2.1 Discussion

The HSE has experienced major changes and budgetary constraints in recent years (HSE, 2012a; 2012b). The recession cost €1.75 billion by 2010 the majority of which was achieved through significant reductions to public sector pay and public health staff numbers (Burke & Considine, 2011). The reports have shown major reductions in dental funding and the routine state-funded dental services (HSE, 2010a; 2010d). The early retirement scheme and the moratorium have significantly impacted on the PDS and no plans are being considered to replace retirees (DOH, 2011). These generally mean that it would be unlikely to secure resources for new services.

There is evidence in the literature that low finance could pose risks on patients and staff (Runciman et al., 2010; WHO, 2008). The increase in workload and staff fatigue could increase the risk of clinical errors and compromise patient’s safety. Staff dissatisfaction could lower job retention and delay services (Silvester, Lendon, Bevan, Steyn, & Walley, 2004). The gaps in primary care have led to increased demand on emergency and secondary care services further creating bottlenecks and compromising the care for patients who are most in need (HSE, 2010d; 2012b). These risks along with the existing limitations of the PDS would more likely exacerbate if solutions are not implemented (HSE, 2007; Nolan, 2007).
It might be argued that public health services are dictated by politicians and policy makers. It is established that service provision is limited by resources and proposals to implement new dental interventions modalities would understandably face opposition. However, it is not acceptable to dismiss an obvious need for a particular service nor would it be right not to attempt rectifying an existing gap (Institute of Medicine, 1999). Numerous examples of medical disasters and the consequences of failure to include defensible and beneficial changes in the British NHS are given by Tallis (2004). The HSE is in no better position as Whelton et al., (2006) found that three out of four oral health goals for 5-year-old children set by the Department of Health in 1994 were not achieved by 2002. This was prior to the financial crisis and the future of oral health and public dental services yet remains uncertain (Economist Intelligence Unit, 2011).

2.3.2.2 Creative reforms

Maintaining the current financial status quo is not an option and managers should be creative in implementing change (HSE, 2008b). They should focus on reducing waste, managing risks and minimizing the impacts of recession (DOHC, 2009; HSE, 2007; Irish Society for Quality & Safety in Healthcare, 2011). They must improve services through team-work and encourage staff innovation and positive thinking (Bamford & Griffin, 2008; NHS Modernisation Agency, 2002). Leading healthcare organizations through education, communication and collaboration of stakeholders will overcome barriers and improve quality of care (HSE, 2010b; McAuliffe & Van Vaerenbergh, 2006; Owens, 2011).

The concepts of quality and sustainability in healthcare organisations could be achieved through integration and workforce planning (DOHC, 2001a; 2009). Management should promote adequate planning and allocation of resources to
optimise skill mix utilisation and ensure maximum service effectiveness and efficiency (DOHC, 2009; 2010b). Improvement initiatives particularly directed at preventing dental decay in preschool children could lower future costs of the service and allow reallocating current resources where the expertise of dental staff is needed most (DOHC, 2010b). These approaches of service delivery are congruent with the new direction of primary care which could bring the concepts of integration, cost-effectiveness and quality in primary care to a new level (DOHC, 2001a).

2.3.3 Primary care in Ireland

2.3.3.1 The new direction

The Health Strategy set out by the Department of Health and Children (2001a) highlights a vision of a new direction for primary care as the centre of health service delivery in Ireland. The goal of the new direction is to build a robust primary care system with high quality, patient-centeredness, equity and sustainability being the pillars upon which the system stands. The focus on primary care stems from the central role it plays as the first point of contact the patients have with the healthcare system. The aim is to deliver a wide range of integrated, multi-disciplinary and high-quality services in a team-based approach within the primary care settings (DOHC, 2001a; 2001b).

Oral health is an integral part of children’s general health and the duty of care is upon primary care as an integrated unit not a fragmented responsibility of single teams (DOH, 1994; DOHC, 2001a; 2001b). The author’s emphasis on integration stems from the numerous benefits team-work could bring to healthcare organisations (Glouberman & Mintzberg, 2001). The integration of dental services into primary care could offer cost effective solutions where children’s eligibility is restricted by availability of resources (IOHSGI, 2012). It
will increase the pool of skills and number of staff providing dental services thus reducing general demand and enhancing the access of high-risk children to the system (HSE, 2006; 2008b; 2010d; NHS Modernisation Agency, 2002). It is envisaged that this project could achieve the goals of integration through the involvement of PHNs in child services.

2.3.3.2 The role of Public Health Nurses

The concepts of patient-centeredness and flexibility should always be advocated as strategies when planning and allocating resources (DOHC, 2009). The strategic framework for role expansion of nurses further supports the notion of integrating PHNs into various teams (DOHC, 2011). They are a valuable asset to primary care in general and a potential resource for the PDS in particular (IOHSGI, 2009; dela Cruz et al., 2004). They have a great potential and possess qualities and skills that could facilitate their integration into dental services (Lundqvist & Axelsson, 2007).

In one of the guidelines for preventing dental decay, it is recommended that parents are given strict instructions on feeding habits and tooth brushing at the earliest stage of their child’s development. It is also stated that “Oral health education and diet advice should be incorporated into each child’s developmental visits from age 8 months and at any appropriate opportunity that arises” (IOHSGI, 2009).

It might be argued that PHNs are not employed to work as dental staff or their integration into other teams could face resistance as it entails an increase in their workload (Bamford & Griffin, 2008). However, PHNs currently provide child and parent support services and information packs through the Child Health Information Service Project (CHISP) as part of their job (Conway, 2010). They have regular contact with parents and young children from birth and
provide oral health promotion and information messages at developmental visits. This is crucial when planning integration and the author advocates that dental care should remain part of child services provided by all health professionals in primary care (DOHC, 2009; 2011).

Managers should bear in mind the level of skills required to achieve integration. The role of PHNs’ as dental staff could be achieved through professional education and the receipt of appropriate dental training (DOHC, 2009; HSE, 2010b).

2.3.4 Training and education in healthcare

The concept of training and education in healthcare organisations should be pursued by every possible method (HSE, 2009; 2010b). It is vital for managing risks and empowering teams and organisations (Brower, 1995; Hancock, Campbell, Bignell, & Kilgour, 2005; Harris, 2006). A high level of expertise is essential for healthcare professionals whether through formal undergraduate and postgraduate education or through workplace training and mentoring (DOHC, 2009). Training and education in healthcare are crucial to meet the increasing demand on public services and maintain an up to date profile to tackle advancements in various health issues (HSE, 2010b; LeBrasseur, Whissell, & Ojha, 2002). They are vital for delivering the goals of the transformational programme for primary care (HSE, 2008a). Staff training supports the integration and team-based approaches of primary care and facilitates life-long staff education to work in the required manner (HSE, 2009).

The growth in the importance of formal external accreditation has placed greater emphasis on training to achieving high quality and evidence-based best practice and adhering to high standards of patient care (HSE, 2007; 2009). The statutory requirement by PHNs’ regulatory body in Ireland An Bord Altranais for
continuous development and education dictates that training is mandatory to maintain highly skilled staff and ensure patient safety (An Bord Altranais, 2000; Murphy, 2005).

2.3.4.1 Dental training for non-dental professionals

There is evidence in the literature to support the importance of dental training for non-dental healthcare professionals in identifying young children who are at high risk of dental decay (IOHSGI, 2009). Three studies in the United States have tested the accuracy of trained non-dental health professionals at identifying dental decay in preschool children. In a study by Pierce, Rozier and Vann (2002), eleven paediatricians and one nurse practitioner were able to correctly identify the children with and without dental decay with two hours of dental training. The accuracy by which dental decay could be correctly identified (i.e. sensitivity and specificity) is directly related to, and increases with, the increase in the number of training hours received. Another study showed that sensitivity and specificity of a nurse practitioner in accurately identifying children with dental decay were 92.2% and 99.3% respectively after five hours training (Beltrán, Malvitz, & Eklund, 1997).

2.4 Summary

The need for integration and the lack of funding to achieve it have been highlighted. The future of children's oral health in Ireland lies in the systematic and enhanced utility of existing services to deliver preventive dental interventions. This change project will focus on PHNs' training and patient education to achieve the desired goals of integration.
Chapter 3

Change Process
3.1 Critical discussion on change and different change models

3.1.1 Introduction

Change is complex and has been researched for decades. The concept of organisational change in particular has occupied a considerable space in the literature. It has been reported that the vastness of the literature on change itself, as opposed to the concept of change, that forms a barrier to understanding the key elements that have significant impact on change. These elements could be basic yet overlooked by managers when implementing change (Young, 2009).

3.1.2 Change and different change models – A critique

3.1.2.1 Discussion

A key element that contributes to the success of organisational change is planning. Thorough planning prior to embarking on change initiatives is crucial and the utility of models to guide the planning for change contributes to its success (Young, 2009). In an analysis of 52 evaluations of planned change, it was found that planning can be made more efficient and successful if guided by a change process theory (Robertson, Roberts, & Porras, 1992). The need to develop change models and theories was highlighted by Young (2009) who placed a greater emphasis on guidance and planning for change. These are paramount to success as seventy per cent of planned change initiatives were reported to fail (Washington & Hacker, 2005).

Kurt Lewin’s planned approach to change led to many advances in the field of change. The Field Theory, Action Research, Group Dynamics and the Three-Step model Lewin developed are still relevant to the modern world. Burnes
(2004) reported that these theories were viewed as a unified whole, each theme supports the other and all are necessary for the success of change. Lewin’s 3-model of change is often referred to as the main contribution to organisational change, though it was recognised that his intention was for all four concepts to become an integrated approach to analysing, understanding and effecting change at organisational level (Burnes, 2004).

3.1.2.2 Change models

Searching the literature on models for planning and guiding change resulted in similarities in views being found amongst scholars. A shared view was that successful change comes as a result of methodological and guided planning.

Young (2009) presented and shared Lewin’s views on the need to adopt a holistic approach when making change. Lewin’s Field Theory highlighted that the importance of any aspect of a situation can better be assessed by looking at the situation as a whole. It implies that if the forces affecting individuals and organisations can be identified, plotted and assessed, it would be possible to choose which forces need to be diminished or strengthened to achieve the desired change (Young, 2009).

Burnes (2004) reported that Lewin’s Field Theory was criticised as being only relevant to small and stable organisations. This was later disapproved when the theory regained popularity in the late 20th century with the work of Argyris (1993) and Hirschhorn (1988) on understanding resistance to change. These and many change scholars developed their models of change based on Lewin’s Field Theory (Kippenberger, 1998). To date, this theory remains popular and a potent tool to map different forces influencing organisations.
Change does not happen by applying academic books and theories alone (Young, 2009). It requires action and successful action is based on correct analysis of the situation, identifying alternative solutions and choosing the most appropriate one for the current situation (Burnes, 2004). Managers must combine their academic knowledge on change with skills they can only acquire through active learning and application of that knowledge (Appelbaum & Wohl, 2000).

Lewin’s theories on Action Research and Group Dynamics stressed that change is only effective if taken place at group level and if change processes were collaborative and participative involving all those affected by the change (Burnes, 2004; Young, 2009). Lewin was concerned that the application of his theories lacked permanency and feared that change to a ‘higher’ level, as opposed to change to a ‘new’ level, of group performance is short lived (Burne, 2004). That formed the basis for developing his Three-Step model of change where change happens by ‘unfreezing’ the present level, ‘moving’ to, and ‘refreezing’ the organisation at, the new level (Young, 2009).

Pettigrew (1990a; 1990b) argues that change is a complex and dynamic process that does not have a specific starting or finishing point. Lewin’s planned approach was criticised for being linear and too prescriptive and that his theories applied to stable environments. They were also criticised for having a limited scope and not being suitable for big-scale change projects. Burnes (2004) additionally reported that Lewin’s work was criticised for disregarding the importance of power and politics and it ultimately failed to compete with new concepts of organisational culture, power and transformational leadership.

In the author’s opinion, despite the criticism of Lewin’s planned approach of change, his work on Field Theory and force analysis yet remain valuable tools in planning organisational change. There is a need for adopting a broader
attitude when searching the change literature. A wider approach to planning change and a variety of models and theories to guide change should be utilised. This is a skill that all managers should develop if change is to be implemented successfully (Baulcomb, 2003).

Young (2009) validated the view that organisational change is a dynamic process and change progress is hugely influenced by variables such as leadership styles, organisational culture and resistance. His advocacy of Lewin's action-oriented and holistic philosophy and his mere attempt to connect different theories enhanced the opportunity of finding stronger models for guiding change. In his analysis of change literature, Young (2009) conceptualised organisations in a process-oriented manner which allowed a systemic approach to planning change. Adopting such approach added further robustness and rigor to his change model.

In developing his model, Young (2009) examined the literature on organisational change within different paradigms which were found to share common constructs. To support his finding, a thematic analysis was conducted and allowed nine common themes to emerge which formed the basis for Young’s meta-model for guiding change.

Kotter’s philosophy and 8-Steps' model on transformational change have gained popularity in the corporate world (Wilson, 2001). Kotter's (2007) model advocates eight steps that leaders and managers should do in the right order. He argues that major change initiatives produce minimally satisfying results which most eventually fail. He recognises the reason for such failure is in the lack of deep understanding of the nature of change and managers’ failure to realise that transformation is a process. Young (2009) similarly argued that transformation does not ideally happen suddenly unless in a crisis situation. It must advance through stages and managers risk failure by not following the
necessary steps (Kotter, 2007; Young, 2009). The two scholars highlighted an obvious need to follow a model when planning change initiatives.

When Lewin’s theories were criticised for being relevant to incremental and isolated change, Burnes (2004) and Young (2009) clarified that from a magnitude, not speed, perspective, incremental change can most certainly lead to radical transformation. Young (2009) further built on that notion by providing his nine-step meta-model for change which, like Kotter’s model, encompasses steps that, if followed correctly, the final result would not only lead to change, it would align the organisation towards transforming itself.

3.1.3 Summary

The author highlighted the interrelation in the change literature between Lewin’s theories, Young’s meta-model and Kotter’s transformation philosophy. It is noteworthy that the utility of various change theories is for the benefit and robustness of change. Although this project was served by the work of the three change scholars, Young’s model was found to be comprehensive and encompassing of other theories and chosen to guide the change process. The nine steps were found more representative of the change processes the author engaged in. Furthermore, the ease of transition between each step of Young’s model facilitated the smoother progression of the project processes. The reference to Kotter’s and Lewin’s theories in the next section will be made for emphasis and to add rigour to the report where relevant.
3.2 The change project and processes

3.2.1 Introduction

Change in healthcare organisations has often been claimed to fail while transformation efforts have been more successful. Despite the validity of such a statement, change and transformation remain interdependent and are often used interchangeably (Appelbaum & Wohl, 2000). This section will present the change project and processes that were conducted by the author using Young’s (2009) model to achieve the aims and objectives outlined in chapter one. It is hoped that the vision of this change project could be the first step towards successfully transforming the organisation.

3.2.2 The change processes

3.2.2.1 Pre-change paradigm

Prior to the emergence of the project’s idea, the author often questioned what possible change should and could be implemented and what tools and resources are available to help in the process. Being a clinician, the author shared a constant sense of need for change, albeit non urgent, with colleagues and co-workers. The local management encouraged staff at formal and informal meetings to discuss issues related to patient care and service quality. This active searching was the ‘counselling-based’ model described by Young (2009). It was the ‘pre-change paradigm’ that helped the author and colleagues select areas of the services and stakeholders that could benefit from a change in present practices. One of these areas was the dental services for preschool children.
3.2.2.2 Stimulus

Prior to the announcement of the financial crisis in Ireland in 2008, the reports presented in chapter two showed the prevalence of dental decay was high among preschool children. This ‘stimulus’ created a sense of need for change within the author’s organisation. Experienced clinical staff anecdotally reported an observed higher decay rate in young children. The high prevalence of disease remained a reality due to limited resources and child dental services continued to be primarily school-based.

The recession was the most powerful ‘stimulus’ that prompted change. This and other stimuli urged for a close examination of the issue from various perspectives in searching for a solution (Kotter, 2007). The management’s resolution was to effect change towards downsizing the services. Further reductions implied that the notion of a new service for preschool children could indefinitely be dismissed. The project idea started to materialise as the author recalled a previous request from a local PHN for information on child oral health.

3.2.2.3 Consideration

The change theme that transpired was based on the concept that organisational learning could become the new change paradigm (Burnes, Cooper, & West, 2003; Kotter & Schlesinger, 2008). Any organisation is able to transform itself by developing and involving all its staff members. Therefore, the author’s idea was to utilise the concepts of organisational learning and team working to ‘unfreeze’ the current delivery of dental services to preschool children and ‘move’ it to a new level (McAuliffe & Van Vaerenbergh, 2006). This transition will be facilitated by implementing evidence-based and cost-effective strategies in implementing the new service.
Sirkin and Keenan (2005) presented a simple framework that could measure the success of change initiatives. They suggested that managers allocate a score for each of four factors of Duration, Integrity, Commitment, and Effort (DICE) which will influence the project’s success. A simple calculation using this framework gave a total score of eight (D= 1, I= 2, C= 4 & E=1) indicating that the project was in the ‘Win Zone’ and very likely to succeed.

The proposal for change was submitted for consideration and approval by the local management which was vital for initiating change. The project was deemed low budget and a giant step forward to improving quality of care (Sirkin & Keenan, 2005). It was agreed by the author and management the benefits were greater than the risks which established Kotter’s (2007) guiding coalition.

3.2.2.4 Validation of the need

Young (2009) explained the vital role of a transformational leader at this stage of the change process. It is noteworthy to stress that the mere presence of, and the skills possessed by the author actively helped overcome the status quo and ignited the project to start (Murphy, 2005; Washington & Hacker, 2005). The author utilised personal and professional knowledge and skills to brainstorm issues around the project and sought assistance from the line manager and the PHNs represented by their change agent as key stakeholders (IHI, 2004a). The dental team members were supportive of the change and no resistance was encountered as the initiative was to their patients’ benefit as previously discussed in chapter two.

Transformational leadership requires dedicated followers (Grayson & Speckhart, 2006). The author visited the offices of PHN’s at the initial stages of the initiative and informally raised and discussed the project’s idea with one of the PHNs. The proposal was received with great enthusiasm and the nurse
volunteered to become a change agent and a linking bridge with other PHNs (Kotter, 2007; Kotter & Schlesinger, 2008). This voluntary offer deepened the PHNs’ readiness and support to deliver the project. This support validated the need to improve dental services for preschool children, the need for enhanced approaches for primary care and for management to adopt integrated workforce planning and role expansion frameworks when allocating resources (DOHC, 2009; 2011).

3.2.2.5 Preparation

This stage was the most critical in the process of change as the success of the project was dependant on the careful planning and timely execution and implementation of tactical strategies. This could turn resistance into a driving force in favour of the change (Sirkin & Keenan, 2005; Waddell & Sohal, 1998).

The process started by conducting the literature search and gathering information using simple data collection methods (IHI, 2004b). Introductory structured questionnaires were submitted for completion by PHNs (Appendix 4). Three analyses were performed and shown in appendices 5, 6 and 7. The PESTLE and Force Field analyses were used respectively to examine external issues related to the organisation and outline the driving and opposing forces that could influence the success and progress of the project (Baulcomb, 2003). The SWOT analysis shown in appendix 7 was performed to assist in devising the main strategies that will be followed in approaching the initiative (HSE, 2010c).

The benefits of thorough preparation, planning and conducting the questionnaires and analyses were numerous. They determined the methodology of literature search, defined project’s dimensions and the parameters within which the change could be implemented. They determined
the project’s activities and key stakeholders directly involved and affected by the change. Thorough planning aided the formulation of themes, aims and objectives and established clear criteria for success (Young, 2009). This assisted in developing the training programme and selecting the appropriate cost-effective preventive interventions to be delivered by the new service. The SWOT analysis recognised the preventable nature of dental decay and the availability of guidelines for its prevention to be strengths in favour of change. The opportunity arising by the PHNs’ request of oral health information narrowed the search for preventive strategies that could be implemented by non-dental staff. The weakness represented in the lack of adequate skills gave rise to the idea of implementing the training programme to equip the PHNs and put them in the right position for the new service (Burnes et al., 2003).

Furthermore, the threat posed by the PHNs’ workload and the danger of resistance and low participation encouraged motivational strategies for canvassing support (Hofstede, 1980; Salmon & Young, 2011). An application was made to the PHNs’ regulatory body An Bord Altranais for recognition of the training. This was accepted and an approval granted for the training to contribute to Continuous Professional Development (CPD).

The Force Field analysis recognised the ‘power’ of knowledge to be a strong driver for change (Alimo-Metcalfe & Alban-Metcalfe, 2005; Baulcomb, 2003). The fact that the change topic area was the author’s specialty helped preparing the teaching material used in conducting the training programme (Washington & Hacker, 2005). The author’s comprehensive knowledge of the subject helped authenticate and validate the content of the training programme and made communicating the vision easier (Kotter, 2007; Kotter & Schlesinger, 2008). The author’s leadership and power of knowledge and the empowerment of the PHNs with knowledge through training and staff development were potent drivers for change (Ancona, Malone, Orlikowski, & Senge, 2007; Brower, 1995).
The introductory questionnaires provided information on the current child services provided by PHNs’. The author was able to measure and take their needs and expectations into account when preparing the training programme. The teaching material was carefully selected within set parameters from evidence-based literature with the aid of clinical photography. Appendix 8 shows a selection of the topics addressed by the training programme. The author managed to design this material based on the abilities and job requirements of the PHNs. The training programme and information leaflet were finalised by the author then submitted for approval by the line manager. They were deemed appropriate and it was agreed that the training programme was adequate for implementation.

The author’s leadership and effort at conducting preparatory activities by examining the change through different perspectives of stakeholders was effective in reducing resistance and promoting the project (Ancona et al., 2007; Goleman, 2004). It is claimed that resistance could result from lack of knowledge and transparency between teams (Goleman, 2004; Gosling & Mintzberg, 2003). Once sufficient information were gathered and a clear provisional action plan formulated, the vision, aims and objectives were articulated to the line manager, PHNs and dental teams. The clear communication raised their appreciation and awareness of the project’s importance and increased the likelihood of accepting and supporting the change (Hancock et al., 2005; Washington & Hacker, 2005).

The activities of collecting and analysing data and inputs from external and internal environments, canvassing opinions of stakeholders and communicating the need for change helped reduce resistance and secure support and commitment (Todnem By, 2005). The general support from all stakeholders was remarkable and the level of PHNs’ engagement remained high throughout the process. The line manager and PHNs in particular were deeply involved and the close proximity of their offices facilitated access and communication.
(McAuliffe & Van Vaerenbergh, 2006). The ease of access allowed regular meetings and discussions with the change agent and line manager. Correspondence was done mostly through personal and telephone contact due to time constraints and limited access of some stakeholders to computers.

3.2.2.6 Commitment to act

Adopting Young's (2009) model offered an organised and smoother path for change. Kotter's (2007) steps of forming powerful guiding coalition, creating a vision for the desired change and empowering teams to act on the vision were being carefully observed. The involvement of various stakeholders was advantageous and solved the issue of the lack of IT support. The local line manager had sufficient technical skills and provided IT support on the day of the training. The PHNs' enthusiasm and willingness to accept change validated the author's choice of deeply committed change agents. The author secured the PHNs' commitment by presenting them with the approval document received from An Bord Altranais for CPD. They expressed greater enthusiasm especially since the budgetary constrains have reduced their in-post training allowances and expenses (HSE, 2010a).

The clarity and ease of communication and correspondence helped reduce resistance and secure commitment and dedication to the initiative (Kotter, 2007). The author utilised these factors to discuss project-related issues with PHNs and continuously seek feedback. This facilitated the generation and development of new ideas to improve the progress and processes of change. This was vital in achieving the best outcomes at individual and organisational levels (Young, 2009). By the end of the preparation stage, resistance had diminished by the deeply committed stakeholders.
3.2.2.7 *Do-Check-Act*

After four weeks of effective planning and preparation and with the momentum created by enthusiastic PHNs, the date, time and venue for the training was announced and agreed upon by the author and PHNs. A three-hour session was successfully delivered. The teaching material was diverse and included various aspects of dental issues with a particular emphasis on prevention of dental decay (Appendix 8). The session was interactive and participants showed motivation and interest in the topics presented. The training's open style allowed issues to be discussed at any stage of the session. At the end of this cycle of plan-do-check-act, the author learnt a few personal and technical lessons that could be used for future improvements and developments (Deming, 1982). The first lesson learned from the first cycle was that the training programme presentation was adequate and the handouts given were appropriate.

The author had planned to complete the dental information leaflet and present certificates of attendance at the same day of the training session (Appendices 9 & 10). The certificates were delayed for unforeseeable reasons and had to be presented a week later. The author is aware that the delay in presenting the certificates was inevitable though one might argue that it could have been avoided by prior planning and improved communication. The inevitability lies in the possible difference between the numbers of anticipated and actual participants. These could differ and it would have otherwise been wasteful to present a certain number of certificates and discard the remainders. This would negate the project’s principles of waste reduction and cost-effective utility of available resources.

Despite the delay, the PHNs were accommodating and grateful for the effort. The rapport, mutual respect, trust and understanding they had with the author were dominant during the entire period of the project. This relationship was an
incentive for the author to work harder, keep promises and meet agreed deadlines; which in return was reciprocated by the PHNs’ loyalty and dedication to the initiative.

3.2.2.8 Specific results

The PHNs’ participation was satisfactory and the evaluation tools implemented at the training session are presented in full detail in chapter four. At the end of the training, the nurses were impressed when completing the post-training evaluation. They immediately noticed that the knowledge they gained was instant. This was encouraging to put it to the test and embed it in their daily practice. The outcomes of these evaluations were the immediate ‘short term wins’ Kotter (2007) described and were the first sign of more wins in the future.

3.2.2.9 New normal

During the immediate four weeks period after the training session and while compiling the information leaflet, the author continued to show support to the local PHNs through occasional and informal conversations without interfering with or ‘micro-manage’ their work practices (Young, 2009). This served to consolidate the previous achievements and cement the new connections made between the PHNs and the change in their work processes and structures (Kotter, 2007).

By the end of the fourth week after training, the process evaluation revealed a new norm had been established as will be presented in chapter four. The results from the training session encouraged more participation as the news of the new initiative started to spread through staff networking and communication. A request for another training session was received from ten
PHNs and school nurses from in and outside the author’s organisation. This was granted provisional approval by management and is being planned subject to clinical time and venue considerations.

3.2.2.10 Dissemination

The attained positive outcomes encouraged more activities for the purpose of dissemination and anchoring the change (Kotter, 2007). The author was invited by the line manager to present the project and training programme with its clinical content to fellow clinicians and colleagues at a staff meeting held the same week. This assisted in informing the dental teams of the results achieved and gaining additional support and feedback. A week after the meeting, a dental nurse sought the author’s assistance in giving a presentation on oral health to a group of leaving certificate students. The dental nurse was granted access to the training material and handout as a reference in educating the students which further assisted the goal of disseminating the project.

The second objective of the project was to produce a dental leaflet for patient education as a method for dissemination (Appendix 9). During the formulation process of the dental leaflet, continuous feedback was sought from PHNs, line manager and National Adult Literacy Agency (NALA), as well as consulting professional colleagues and Action Learning Facilitator (Joyce, 2012). The leaflet was completed within four weeks after the training session and subjected to a ‘smog’ test. It was deemed readable by persons aged 12 and above. It has been circulated and being presently utilised by dental teams, PHNs and local Health Promotion office.

Another method for dissemination was the production of a poster to present the change project to colleagues and classmates (Appendix 11). This was conducted in an Action Learning fashion to generate insightful learning and
feedback which helped improve the author personal and professional skills (Joyce, 2012). It is worth stating that new insights and great knowledge and new skills were acquired through action learning and reflection (Clouder, 2000). This will be presented in the reflective diary separately attached to this report.

3.2.3 Summary

The personal behaviours of all the stakeholders and the great enthusiasm they showed throughout the initiative were the potent factors that facilitated the progression and institutionalisation of the project (Kotter, 2006). The next chapter will outline and discuss the evaluation process and the results obtained.
Chapter 4

Evaluation
4.1 Introduction

Evaluation is a prerequisite for the success of change projects. McNamara, Joyce, & O’Hara (2010) stated that evaluation can generate valuable findings and more importantly the knowledge that can be employed for more development. It must be conducted in a systematic manner using the appropriate model or a combination of approaches the choice of which can be influenced by external and internal factors. There is a consensus amongst evaluation experts that successful evaluation of a programme or a process is not in one best model. The influential factors need to be steered and employed to serve the evaluation process and produce findings that most accurately reflect the merits of the programme being evaluated.

4.2 Evaluation models

The author supports the notion that evaluation process and choice of models are hugely influenced by factors such as evaluator’s expertise and qualifications, organisational culture, time and availability of resources (McNamara et al., 2010). There was a certain degree of overlap between some aspects of the project process and the use of a single model would have undermined the objectives. A combination of two approaches was found to be more appropriate. Furthermore, while one model was found satisfactory for evaluating some aspects of the project, it failed to provide a robust tool to evaluate others (Bates, 2004).

Kirkpatrick & Kirkpatrick (2006) argue that a good evaluation can produce indicators that could predict success. Kirkpatrick’s model for evaluating training was found suitable for certain aspects of the training programme evaluation and implementation process while it was limited in evaluating stakeholders-related issues and the adequacy of the training for PHNs. The development of
stakeholders-based education programmes in healthcare organisations is essential for a quality service (HSE, 2010b).

It is argued by Bates (2004) that the limitations of Kirkpatrick’s model could compromise the training and evaluation processes and outcomes. The author found that Jacobs’ model as described by McNamara et al. (2010) could be an appropriate complementing approach to evaluate the implementation process of the project’s two objectives. The principles of Jacobs’ model are based on negotiations between stakeholders’ and utility of expertise and qualifications. It is concerned with engaging stakeholders in a constructive way throughout the processes of change and evaluation (McNamara et al., 2010).

4.3 Evaluation process

The use of Jacobs’ model and principles of utilising collaborative expertise was beneficial for successful implementation and evaluation of the training aspect of the project (McNamara et al., 2010). The process commenced with the setting of the project’s SMART objectives and outlining the activities involved in establishing them. The successful achievement of each of the eight activities outlined in chapter one was considered an indicator of successful implementation and evaluation of the change.

In implementing the two objectives, it has been demonstrated throughout this report that the author observed a strict evidence-based approach. The education material for the training programme and leaflet was carefully selected from and based upon dental best-practice as recommended by the guidelines (Appendices 1, 2 &3). The financial restrictions additionally dictated that the new preventive interventions must be cost-effective, suitable for implementation by non-dental personnel and remain within the scope of PHNs’.
By establishing these activities or success indicators the author managed to set the scene for the following steps in implementing the change.

The introductory questionnaires facilitated the implementation process and allowed determining the baseline, scope and dimensions of the training programme. The results obtained from the questionnaires could be summarised as follow:

- All PHNs have contact with young children and their parents.
- All PHNs said they incorporate an aspect of oral health education and diet advice to parents.
- 30% said they would carry out oral health assessment for young children.
- All PHNs expressed their concerns about the high prevalence of decay among underprivileged and lower-socioeconomic groups of children in the community. They stressed the urgent need for new and improved system of child dental care.
- 90% said they get asked about dental care by parents and highlighted the great demand for PHNs’ to have adequate dental knowledge as dictated by their job.
- None of the PHNs had received professional dental training and all expressed their interest to participate in the initiative.

To successfully achieve activities 3 to 8 of the implementation process, the evaluation proceeded by utilising Kirkpatrick’s model in assessing the delivery of the training and implementation of the change. This was conducted in complete anonymity and participants were assured the results would be treated with confidentiality (Gerrish & Mawson, 2005).

Kirkpatrick’s model describes four levels of learning that are evaluated in a sequential manner with each level measuring a different aspect of the training (Kirkpatrick & Kirkpatrick, 2006). The first level evaluates the trainees'
immediate ‘reaction’ to the training. Level two and three evaluates respectively the ‘learning’ from and ‘behaviour’ as a result of the training programme. Level four evaluates the ‘results’ of the learning acquired in the programme from an institutional and organisational perspective. This approach, being goal-based evaluation as stated by McNamara et al., (2010), was found reasonable in evaluating the skills of the author as a trainer, the behavioural aspects of the participants throughout the training process and the institutional results of the training based on the participants learning and behaviours.

Once the training material was developed and reviewed by the author and line manager, the first objective of the project was delivered by successfully conducting the three-hour training session. The uptake of the programme was good as seven out of eleven PHNs attended thus establishing the third indicator for success. The absence of the four PHNs was for involuntary reasons of sickness, annual and study leave and they have registered to attend the next training session scheduled shortly.

The first evaluation tool or level one ‘reaction’ was conducted immediately after the training session (Appendix 12). This provided tangible measures of aspects related to the author’s personal skills such as planning, organisation, communication, and managerial skills and the general satisfaction of the participants with the delivery of the training and various aspect of the project. It provided feedback on the specifics of the course such as the quality and relevance of the content, the clarity of the presentation and the overall impression of the PHNs about the programme.

The participants were asked to allocate each statement on the feedback sheet a grade on a Likert scale from (1) representing their strong disagreement to (4) representing their strong agreement with the statement. All participants allocated a grade (4) to all statements with one exception. One participant allocated a grade (3) to the following statements: ‘The presentation was
interactive and stimulating’ and ‘The venue was suitable and convenient’. The feedback they gave on the relevance and quality of the training programme was reassuring and reflected positive and satisfactory outcomes.

Level two ‘learning’ evaluation provided indications on the usefulness amount of learning acquired from the training. A pre- and post- training evaluation was conducted to assess the PHNs’ competence in implementing the new service. The learning was measured by asking participants to complete the pre- and post training evaluation sheets (Appendix 13). They were asked to rate their confidence in providing answers to questions related to children’s oral and dental health. The participants had to allocate a score on a Likert scale from (0) to (5) where (0) indicated no confidence, (3) indicated relative confidence and (5) indicated high confidence. The results are shown in Figure 1 on the next page and reflect good outcomes thus establishing success indicators 4, 5 & 6.
Figure 1: A bar graph depicting pre- and post- training results from level two ‘learning’ evaluation of the training programme.

X= The Scores 1 to 5 of PHNs’ Confidence in answering various Oral Health Questions (OHQ) they may be asked by patients at developmental visits.

Y= The Numbers 1 to 8 corresponding to the OHQ on the evaluation sheet. Bars in White and Black represent the Average Scores given by PHNs’ of their levels of confidence in answering each of the OHQ Pre- and Post- training respectively.

Themes of the OHQ:

1-Number of baby teeth in a healthy two-year-old child
2-Causes of Dental Decay
3-Methods of Protection from Dental Decay
4-Age & Methods of Tooth Brushing
5-Type of Toothpastes & Frequency of Brushing
6-Age of Supervised Brushing
7-‘Baby Bottle Decay’ (BBD)
8-Issues concerning BBD
Level three or ‘behaviour’ evaluation provided results on the post-training application of the new skills to practice (Appendix 14). By the end of the fourth week after the training, the third evaluation tool was collected only to find the new norm has been established. This evaluation was to assess compliance and the degree to which the initiative succeeded in embedding the dental component into the developmental visits of preschool children.

The participants were provided with data sheets in which they were required to document, over the four weeks period post training, the number of children seen at developmental visits, the number of OHA and OHE components given. The participants were reassured that the collected data were not intended to judge their workload. It was to assess their practical application of the training and transfer of the new knowledge to their job. The results are shown in Table 1 below and reflect a reasonably good behaviour and application of the new knowledge and skills thus achieving success indicator 7.

<table>
<thead>
<tr>
<th>Public Health Nurse</th>
<th>No. 1</th>
<th>No. 2</th>
<th>No. 3</th>
<th>No. 4</th>
<th>No. 5</th>
<th>No. 6</th>
</tr>
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<tbody>
<tr>
<td>Total number of children</td>
<td>32</td>
<td>21</td>
<td>19</td>
<td>20</td>
<td>49</td>
<td>28</td>
</tr>
<tr>
<td>Number of OHE given</td>
<td>29</td>
<td>21</td>
<td>19</td>
<td>20</td>
<td>49</td>
<td>27</td>
</tr>
<tr>
<td>Number of OHA given</td>
<td>25</td>
<td>20</td>
<td>19</td>
<td>20</td>
<td>49</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 1: Results and data collected from level three or ‘behaviour’ evaluation of the participating PHNs after training.
It is noteworthy that the degree of variations in the data obtained, from PHN No. 1 and No. 2 for example, is normal and to be expected as children are seen at developmental visits from as early as three months old. At this early age, an assessment of the child’s oral health is not applicable as no teeth may be present and oral health education for parents or carers would suffice.

The results obtained from the previous evaluation were found to be relevant to the fourth level of Kirkpatrick’s evaluation. These results reflect a good level of implementation of the new service from an organisational viewpoint. The author argues the mere fact that the participants have shown evidence of a reasonable level of delivery reflects their increasing efforts to implement and institutionalise the new service on a permanent basis. The author supports these statements with the fact that the data sheet from PHN No. 6 was, for unforeseeable reasons, collected much later in the process which further confirms the nurses’ continued commitment to the initiative thus establishing success indicator 8.

4.4 Objectives evaluation

It is noteworthy to mention that the author’s active communication, networking and collaboration assisted in the implementation and dissemination of the project (McAuliffe & Van Vaerenbergh, 2006; Murphy, 2005; Salmon & Young, 2011). The training programme and information leaflet were not mere objectives. They represented two independent improvement projects that could have been developed separately. The fact they were delivered simultaneously was beneficial as the leaflet was essentially a creative tool for continuous staff and patients’ education. It was a change project that helped disseminate and anchor the ‘short term wins’ achieved by the training (Kotter, 2007; Kotter & Schlesinger, 2008).
The two objectives were carefully selected and especially designed to assist indefinitely carry the change forward and ‘refreeze’ the service at the new and improved level (Baulcomb, 2003; Kippenberger, 1998). The leaflet was launched to authenticate the new service and appraise the PHNs’ dedication and commitment to the initiative (Grayson & Speckhart, 2006; Kotter, 2007; Wilson, 2001).

The success of the initiative further reflects the culture of dedication that the PHNs have to the job and their continuous efforts to serving patients at the highest potential (Glouberman & Mintzberg, 2001). The internal satisfaction of having new social norms and shared values, supported by the appropriate knowledge and education, and the pride of being able to deliver a comprehensive full-package service under the same settings was far rewarding to the PHNs (Bamford & Griffin, 2008; Bates, 2004; McAuliffe & Van Vaerenbergh, 2006 ).

In the author’s opinion, the fact that the PHNs had not received professional dental training prior to the project might have been a driver for participation. The new nature of the training and the diversity of the teaching material were motivational factors and strong drivers for PHNs to be interested in participating. This interest was not merely due to the new knowledge being contemplated to be part of their job. It was because at a personal level it provided them with new social norms. The initiative delivered various health messages and presented new healthy habits they could take home and practice as a daily routine (Hofstede, 1980; Kotter, 2007; Yiu & Saner, 2005).

4.5 Financial impact

The author is aware of all costs associated with the project. These include costs directly related to the training programme including the time, venue,
utilities, electronic appliances and stationery used. The costs associated with operating the new service include the overall pay and non-pay costs of utilising resources in providing the new service. The training disrupted services and clinical time allocated for patients. However, this was outweighed by the benefits of training and long term advantages and sustainability of the new service. These offer the organisation good value for money, time, and resources utilised.

The financial impact of the initiative could be highlighted by comparing the costs related to the new service and the costs incurred as a result of operating the old system. A dental examination for a preschool child would incur an annual salary pay cost of a dental surgeon and a dental nurse which are €73,275 and €29,251 respectively. The same service being conducted by a PHN on an equivalent point on the scale would cost €50,708 instead. The estimated annual saving by implementing the new service would be €51,818 (DOHC, 2010a).

The additional non-pay direct and indirect costs of treatment include materials, utilities and additional costs of local or general anaesthesia and the associated costs of theatre if a hospital referral is indicated. These are higher than operating the new preventive service which makes it worthwhile to invest in.

Furthermore, the children’s early contact with medical or dental interventions could pose a risk on their lives with hospital acquired infections and complications (WHO, 2008). This further supports the need for preventive services. The new service is low budget and any risks posed or costs incurred meanwhile are negligible by comparison to the child’s wellbeing and the potential savings that could be achieved as a result of the new service.
4.6 Summary

The setting of SMART objectives, conducting analyses and engaging stakeholders through regular meetings facilitated adequate formulation and delivery of the dental training programme and leaflet. Achieving these objectives assisted the aim of the project and in successfully implementing and evaluating the change. The real challenge to implementation will be the future financial uncertainties.
Chapter 5

Discussion & Conclusion
5.1 Discussion

5.1.1 Organisational impact of the change and implications for management

The organisational impacts of the project have been outlined throughout chapters 2 and 3. The most important impact is the sustainability and cost-effectiveness of the new service and the benefits of early prevention to patients’ health and wellbeing. Appendix 15 shows a comparison of various organisational issues before and after being addressed by the project.

The change has created new relations between stakeholders and connected management with various primary care teams. This is vital as healthcare organisations are more successful when they operate collaboratively rather than being fragmented by hierarchical levels (McAuliffe & Van Vaerenbergh, 2006; WHO, 2008). Strong bonds between local management, dental teams and PHNs will support the PHNs' new skills and facilitate dental service provision through multiple pathways further ensuring sustainability and cost-effectiveness.

The financial impact is the most relevant implication for management and has been discussed in section 4.5 of this report. The author maintains that change is not a matter of coincidence. The costs and inconvenience of change must be tolerated for organisational success (Young, 2009). The new skills are sustainable resources and offer the organisation a valuable opportunity for transformation. If the cost of a better future implies the occasional investment in staff education, then management would be assured the best value for money (Yiu & Saner, 2005).

Post-implementation discussions with PHNs have shown that OHA and OHE are being provided with more confidence. The change agent has conveyed the
participants’ positive feedback and the noticeable difference the training has had on their daily practice. They expressed continuous commitment through their effort in providing OHE by means of patient education rather than solely handing the leaflet to parents.

5.1.2 Strengths and limitations of the project

This project’s idea was simple and the change processes were manageable. The tasks of producing the educational materials implemented in the initiative are achievable by many clinicians keen on effecting change while taking financial issues into account. The author had the added advantage of being empowered by knowledge and leadership skills acquired through professional postgraduate education (Hancock et al., 2005). This enhanced control of the change process and established a satisfactory basic preventive service that is needed by patients.

The level of stakeholders’ engagement was remarkable and added anchorage to the initiative. The main limitation is that the training programme is dependant on the author’s presence though this could have been rectified had greater emphasis been placed on engaging more dental team members. It is noteworthy that the initial engagement of a colleague dental practitioner was restricted by busy clinical schedules. However, engaging the line manager as a dental practitioner was sufficient to secure managerial, clinical and technological support to the initiative.

5.1.3 Implementation barriers

The literature review and project evaluation revealed that the current uncoordinated delivery of oral health services to preschool children was mainly
due to lack of resources. The project has provided an opportunity to surmount this barrier by means of education to improve the PHNs’ confidence to engage in and commit to the new service. The results have shown that implementation is progressing as planned. The remaining obstacle yet to overcome is the financial restrictions. This has been a strong barrier to implementation of improvement initiatives since the moratorium in 2009. The remaining number of trained PHNs is now less as one has retired shortly after the training session and, as the situation stands, would not be replaced (HSE, 2012a; 2012b).

5.1.4 Recommendations for future improvements

The initiative is currently implemented at a local level within the author’s organisation and despite the financial restrictions, it has a great potential for national application. A proposition was made for possible publication of the project which could create an opportunity for future national application of the initiative. This is yet to be accomplished. It has also been proposed that the educational material used for the training programme and leaflet be reserved as technical resources that could be utilised for future training and dissemination. The line manager has confirmed management’s support and that every effort would be made at informing fellow managers and principals of the initiative at a national level.

Audit is a powerful tool for quality improvements in healthcare (Gerrish & Mawson, 2005; Palmer, 2002). There are several recommendations for future audit of guidelines implementation (IOHSGI, 2009). The author considers patient’s records to be valuable for audit practices and data must be adequately entered and maintained. The child’s oral health notes entered by PHNs onto patient’s record at developmental visits are data that could be used for auditing the number of areas in Ireland that have implemented OHA programmes in primary care for preschool children. Therefore, it was
suggested by the author that participating PHNs keep records of their observations and note good oral health as 'no abnormalities detected' abbreviated as (NAD) in the child’s chart (HSE & QCCD, 2010). This could facilitate evaluation of the project and potentially allow the initiative’s national application.

Another consideration is to audit the number of dental teams providing follow-up assessment for high-risk preschool children identified by PHNs. The issue of the lack of a standardised systematic tool for referral was highlighted and the author has encouraged PHNs to contact dental teams with patients’ queries and referrals. The development of a standardised referral tool could be considered for future improvements as it could anchor the change, although the author is aware of the resources implications associated with such proposal.

5.2 Conclusion

In conclusion, a unique change project has been implemented despite the financial difficulties and limitations. A new set of preventive interventions for preschool children are being provided by the organisation through the Public Health Nurses as a result of this initiative. The success of the project was due to stakeholders’ dedication to the job. The author’s leadership energised by the power of knowledge was the mastermind and effective steering wheel for conducting the change.

True leaders do not lose sight of their followers along the way. They engage them, empower them and are their guiding stars. Transforming an organisation is attainable when powered by a strong culture of commitment and deep values are embedded in the heart of its norms. Bringing change in phases, approaching each phase slowly and wisely, mastering a mixture of tools, science and arts throughout the process while anchoring the wins on route, is a
simple yet proven recipe for success. It is hoped that this change is carried forward to achieve sustainability and better quality of primary care services for all children in Ireland.
References
References


Conway, E. (2010). *Caring for your baby: Birth to six months old*. Dublin: HSE.


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Appendices
Appendix 1: A list the websites searched for guidance on preventive strategies of dental decay in Ireland.


**Oral Health Services and Research Centre** website:


http://www.dohc.ie/other_health_issues/dental_research/oral_health_promotion.pdf?direct=1

**Scottish Intercollegiate Guidelines Network** (SIGN) website:

http://www.sign.ac.uk/pdf/sign50.pdf

http://www.sign.ac.uk/pdf/sign83.pdf
Appendix 2: A brief account on the methodologies involved in developing the guidelines for the prevention of dental decay in Ireland.

The strategies for the prevention of dental decay in Ireland are based on guidelines commissioned by the HSE. These guidelines represent the current and most scientifically valid evidence-based best practice for the prevention of dental decay. The full details on methodologies used in producing and validating these guidelines can be viewed on the website of Oral Health Services Research Centre (Appendix 1). The guidelines are fully compliant with best practice as specified by the AGREE Collaboration which is “an international collaboration for researchers and policy makers who seek to improve the quality and effectiveness of clinical practice guidelines……” (AGREE Collaboration, 2003).

The Scottish Intercollegiate Guidelines Network (SIGN) is another reliable organisation that has developed similar guidelines for the NHS in the UK and these further support the guidelines in Ireland. Some of their instruments and methodologies (e.g. SIGN 50) have been used in the development of the Irish guidelines. The full details of their approaches can be viewed on the SIGN’s website (Appendix 1).

The Guidelines Development Group (GDG) has developed and published the Irish Oral Health Services Guideline Initiative (2009) which covers a broad spectrum of strategies and interventions. The relevant recommendations and guidance have been selected and reproduced by the author from the original document as shown in Appendix 3.
Appendix 3: A list of the relevant recommended strategies for preventing dental decay in young children reproduced from the original guidelines document

Preventive strategies for preschool children (age 0–4 years)

POPULATION STRATEGIES

Oral health education and diet advice should be incorporated into each child’s developmental visits from age 8 months and at any appropriate opportunity that arises.

Oral health messages should be incorporated into relevant general health promotion interventions for young children, as part of a common risk factor approach to improving oral health.

**Age <2** Parents/carers should be encouraged to brush their child’s teeth as soon as the first tooth appears, using a soft toothbrush and water only.

**Age 2–4** Parents/carers should be encouraged to brush their child’s teeth, or help them to brush:

- with fluoride toothpaste containing at least 1,000 ppm F
- twice a day
- at bedtime and at one other time during the day
- using a small pea size amount of toothpaste

Children should be encouraged to spit out toothpaste and not rinse after brushing.

INDIVIDUAL STRATEGIES FOR HIGH CARIES RISK CHILDREN

A formal caries risk assessment should be done for children attending the dental clinic for dental assessment or emergency care, using the Caries Risk Assessment Checklist.

**Age 0–4** Parents/carers of children who are assessed as being at high caries risk should be encouraged to brush their child’s teeth:

- with fluoride toothpaste containing at least 1,000 ppm F
- twice a day
at bedtime and at one other time during the day

using a small pea size amount of toothpaste

Children should be encouraged to spit out toothpaste and not rinse after brushing

Oral health education for parents/carers should encourage healthy eating, in line with national dietary guidelines

Parents/carers of children who use a baby bottle should be advised never to put sweet drinks, including fruit juice, into the bottle

Parents/carers should be advised not to let their child sleep or nap with a baby bottle or feeder cup

Parents/carers should be encouraged to limit their child’s consumption of sugar-containing foods and drinks, and when possible, to confine their consumption to mealtimes

Parents/carers should be advised that foods and drinks containing sugar substitutes are available, but should be consumed in moderation

Sugar free medicines should be used when available

Resin-based fluoride varnish application (22,600 ppm F) should be offered to children who are assessed as being at high caries risk, at intervals of 6 months or 3 months

The use of chlorhexidine for caries prevention is not recommended

Recall of high caries risk children should be based on the clinician’s assessment of the child’s caries risk status using the Caries Risk Assessment Checklist, and should not exceed 12 months
Appendix 4: The introductory questionnaires to be completed by Public Health Nurses prior to the development of the training programme.

Name of participant: ___________________________________________

Year of qualification: ___________________________________________

Job title: _____________________________________________________

Work location: ________________________________________________

Registration Number: __________________________________________

Section (A):
1- Are you currently employed by the HSE? □ YES □ NO

2- Are you working: □ Full-time □ Part-time

3- Do you have regular contact with young and pre-school children and their parents as part of your job? □ YES □ NO

4- Do you carry out developmental visits for young children? □ YES □ NO
   (If your answer is NO, you can proceed to Section (B) now).

5- In the space below list the number of visits and indicate the age and main aspects of the child’s health you normally check (eg. Weight, Height… etc)

   Visit 1: Age_______ Check:
   Visit 2: Age_______ Check:
   Visit 3: Age_______ Check:
   Visit 4: Age_______ Check:
   Visit 5: Age_______ Check:
   Visit 6: Age_______ Check:
   Visit 7: Age_______ Check:
   Visit 8: Age_______ Check:
   Visit 9: Age_______ Check:
6- During the child’s developmental visits, do you incorporate any aspect of oral health education and/or dental care? □ YES □ NO

Section (B):

7- In your opinion as a healthcare professional, is there a need to incorporate a dental component early in the child care program? □ YES □ NO

8- Do parents ask your advice on dental issues concerning their child’s teeth? □ YES □ NO

9- Do you provide any oral health education such as oral hygiene instructions and/or diet advice to the child’s parents? □ YES □ NO

10- Have you carried out any oral or dental assessment for young children as part of your job? □ YES □ NO

11- Have you received any professional training and feel confident to give dental advice and provide simple oral and/or dental assessment for young children? □ YES □ NO

12- The lecture in dental and oral health education will be carried out in February 2012 as part of the Public Health Nurses’ continuous professional development, would you be interested in participating? □ YES □ NO

Comments and suggestions:

Thank you for your time and cooperation.
Appendix 5: The PESTLE external analysis produced by the author to analyse the external issues that surround the change project and influence its implementation.

**Political factors:** There are no major political factors against the change project. The only political issue relevant to the project is that politicians and policy makers are continuously using the financial crisis and the constrained budgets to justify the moratorium, further cutbacks, deteriorating service delivery and the difficulties of initiating any change projects concerned with making improvements in service quality.

**Economic factors:** The moratorium and cutbacks continue with further loss of staff and resources. The current dental services are stretched and experiencing budgetary constraints. The deteriorating financial situation is forcing dental teams to consider downsizing their services and consequently preschool children will continue to be seen by request only.

**Social Factors:** The fragmentation of primary care teams makes it hard to achieve an integrated and team-based approach to service delivery. Although the teams such as PHNs and dental teams are efficient entities on their own, they can be made extremely efficient if they function as a single unit under primary care policies. The dental department is located in the same building as the PHNs’, yet they are independent and tend to functioning separately and have their own culture. Co-ordination may become challenging if change is not planned efficiently. Patients from lower socio-economic background could hugely benefit from such a project as prevalence of dental decay is higher in this group of children.

**Technological factors:** The local PHNs do not have access to computers while the dental clinic is partially computerised. The author’s communication with both dental teams and PHNs was done by traditional methods of, typed letters, phone calls and personal conversations most of the time with the occasional emails exchange the author had with management and some secretarial dental staff. IT support is not available to staff in the organisation and any technical difficulties would have taken considerable time to get fixed.

**Legal factors:** There are no legal issues against the change project. On the contrary, there is an ethical obligation of healthcare personnel to pursue better quality at personal and organisational level. PHNs provide health services to small children at developmental visits with the consent of the child’s parent or carer and the project aims to incorporate an oral health assessment and education within those settings for the benefit of the child and parents.

**Environmental factors:** Early prevention of dental decay is beneficial to patients, healthcare professionals and the environment as it will reduce their exposure to medical and dental interventions, restorative materials, medication and chemicals involved in providing all types of medical or dental care.
Appendix 6: Force Field Analysis

Drivers

- Consequences of financial crisis
- Full support of local management
- Project themes supported by guidelines
- Project considers valuable strategies:
  1. Evidence-based early Prevention
  2. Promote education/dental awareness
  3. Cost-effectiveness/waste reduction
  4. Quality and fairness for all children
- Low Budget / Good Timing
- Patients & PHNs interested and requested help
- PHNs located at the same building/
- Ease of access
- Dental training basic/ suitable for non-dental staff
- Training approved for CPD
- Training material related to Author’s specialty and field of work

Resistors

- Budgetary restrictions
- will challenge streamlining
- Time and availability of staff
- Lack of IT support
- Fragmentation/low coordination
- between Primary care teams
Appendix 7: The SWOT matrix produced by the author to reveal strengths, weaknesses/Limitations of the project and opportunities and threats around it.

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Opportunities</th>
</tr>
</thead>
</table>
| -Project topic is the author specialty and field of work. Gives the author ‘knowledge power’.  
-Preventable nature of dental decay.  
-Availability of guidelines and preventive strategies in Ireland.  
-Project’s main focus is on ‘homecare’ preventive strategies.  
-Timing is perfect with new guidance on Oral Health Assessment published Jan 2012.  
-Timing is perfect with more resources being lost because:  
-Project promotes team working and enhanced Primary care approach. AND  
-Cost-effectiveness is a key theme throughout the project. AND  
-It is a Low budget project that is in line with Quality and fairness health strategies.  
-Management fully supportive.  
-All stakeholders at advantage including patients. Project provides chance to educate PHNs and improve quality of their service.  
-PHNs get Category 1/CPD points for attending training session.  
-Easy Access will facilitate support between dental team and PHNs. | -Project provides an opportunity for organisational learning.  
-Project is a learning experience for all stakeholders.  
-Project is an opportunity to search the literature and improve general knowledge on the themes and topics involved.  
-Project is an opportunity to support the old dental guidelines by presenting the new ones.  
-Old and new dental guidelines are relevant to all primary care team members.  
-The PHNs' request for a dental component in their service was an opportunity to promote oral health.  
-The financial crisis was an opportunity to abandon existing wasteful activities and pursue a more cost-effectiveness culture of providing care.  
-Project was an opportunity to deliver an urgently needed service to preschool children that would have been on hold indefinitely for lack of resources.  
-Project is an opportunity of preventing a disease as part of ‘common risk factor’ approach.  
-Opportunity for teams to interact with more teams & disciplines. |

<table>
<thead>
<tr>
<th>Weaknesses/Limitations</th>
<th>Threats</th>
</tr>
</thead>
</table>
| -Project fully dependant on the author’s presence.  
-Project’s themes are applicable at a national level but the project in its current form remains limited to local level.  
-Streamlining project nationally will require more effort, more time and more resources the author does not have. | -PHNs may not be able to attend.  
-PHNs may not be enthused by training.  
-Project may lose momentum before it is completed.  
-Author may not be able to conduct the training sessions for lack of time or resources.  
-Training sessions is dependent on technology and IT support is not available. |

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Appendix 8: A Sample selection of the teaching material that was used for the training programme for the Public Health Nurses.

Discussion

- What Do I Need To Know as a PHN?
- Age of Tooth Eruption?
- Causes of Dental Decay?
- Brushing and Cleaning Techniques?
- Diet, Eating, Feeding Habits?
- Healthy v Decayed Teeth?
- Dental Emergencies?

Tooth Eruption

- Happens in Groups.
- ONE group of teeth every SIX months.
- Incisors at 6 months.
- First Molars at 12 months.
- Canines at 18 months.
- Second Molars at 24 months.
- Twenty Baby Teeth in Total At Two Years of Age.

<table>
<thead>
<tr>
<th>TOOTH</th>
<th>FIRST EVIDENCE OF CALCIFICATION</th>
<th>CROWN COMPLETED</th>
<th>TOOTH ERUPTS</th>
<th>ROOT COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3 MONTHS in utero</td>
<td>1</td>
<td>6 MONTHS</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td>1½</td>
</tr>
<tr>
<td>D</td>
<td>4 MONTHS in utero</td>
<td>YEAR</td>
<td>12 MONTHS</td>
<td>YEARS</td>
</tr>
<tr>
<td>C</td>
<td>5 MONTHS in utero</td>
<td>LATER</td>
<td>18 MONTHS</td>
<td>LATER</td>
</tr>
<tr>
<td>E</td>
<td>6 MONTHS in utero</td>
<td></td>
<td>24 MONTHS</td>
<td></td>
</tr>
</tbody>
</table>
Causes of Dental Decay (1)

- Plaque comprises 70% micro-organisms and bacteria.
- Diet influences the composition of plaque bacteria.
- Diet high in sugars increases the count of Mutans Streptococci bacteria (Strep. Mutans).
- Strep. Mutans are most particularly good at metabolising and fermenting dietary sugars to organic acids.
- Bacterial fermentation of sugars produces acids within the layers of plaque at the enamel surface.
- Acid formation lowers the plaque pH below the critical point at which enamel will dissolve.
- Normally the plaque pH rises above the critical point within Twenty minutes of food ingestion.
- After Forty minutes, plaque pH is neutralised and the demineralised enamel starts to remineralise.
- This process happens naturally with food ingestion.

SURFACE COATINGS ON TEETH

PLAQUE: is a sticky unmineralised coating composed of numerous bacteria and bacterial products, salivary proteins and glycoproteins, and some dietary components.

PLAQUE REVEALED BY DISCLOSING SOLUTION

Causes of Dental Decay (2)

- Poor Oral hygiene causes Plaque to build up.
- High Sugar intake will favour Strep. Mutans in plaque causing more acid production.
- Acid causes reversible demineralisation of enamel which can take the form of white lesions.
- If high amounts of plaque and sugar remain available in the mouth for a long period of time, plaque pH will remain low for longer causing irreversible enamel demineralisation.
- Repetitive cycles of irreversible demineralisation lead to enamel breakdown and cavitation.
Home Care Advice

Brushing and Cleaning

• Start at First Sign of Tooth Eruption.
• Soft Toothbrush and Water Initially.
• Twice Daily, at Bedtime and during the day.
• Use Fluoride Toothpaste in pea size amount.
• Use Fluoride Toothpaste containing at least 1,000ppm F.
• Do Not Rinse after Brushing, Spit out toothpaste.
• Supervised Brushing for Children Under the Age of 7.

Diet

• Dietary habits are established early in life.
• Encourage healthy eating.
• Discourage parents from introducing sugar to the child’s diet.
• Child’s consumption of sugar should be limited to mealtimes.
• Reduce both frequency and quantity of foods containing refined sugar/ fermentable carbohydrates.
• Sugar substitutes can be used to replace sugar in food products but these should be consumed in moderation.
• Non-cariogenic sweeteners can be divided into bulk sweeteners and intense sweeteners.

Feeding

Parents and carers of children who use a baby bottle should be advised:

• Never to put sweet drinks, including fruit juice into the bottle.
• Not to let their child sleep or nap with the bottle or feeder cup.

Nursing Caries

• Also known as Baby Bottle Caries.
• Caused by feeding children sweetened drinks and fruit juices.
• Commonly affect the upper anterior teeth while the lower anterior teeth are usually spared.
• Can be Rampant and affect All baby teeth if the child is let to nap or sleep at night with a bottle of milk.
Developmental Visits 3, 4, 5 & 6 are the most appropriate for Oral/Dental Health Care provision.

Developmental Visit (3)

- At 3 months old there are no teeth present.
- Encourage weaning the baby off the bottle.
- Advise parents not to introduce sugar to the baby’s diet.
- Advise parents to watch out for teeth when the baby is 6 months old and to use a soft toothbrush and water to clean them initially.

Developmental Visit (4)

- At 7-9 months old, check for teeth.
- Four front incisors should be present in both jaws.
- If the baby is still bottle fed, advise against sweetened drinks/juices in the bottle and never put the baby to sleep with a bottle of milk.
- Advise parents to keep brushing the baby’s teeth with water and in a few months’ time to start using a 1,000ppm fluoride toothpaste in very small amounts twice daily.

Developmental Visit (5 & 6)

- From 2 years old and over, check there are Twenty baby teeth present.
- Check teeth for nursing caries or visible tooth decay.
- Reinforce diet advice, bottle feeding should be stopped and sugar intake strictly controlled.
- Continue brushing twice daily with 1,000ppm Fluoride toothpaste in pea size amount.
- Older children should be supervised while brushing to the age of 7.

Dental Emergencies: Accidents & Trauma

- Generally speaking, when a baby tooth is traumatised in any way, it is best not to intervene.
- Baby teeth lost prematurely by accident can not be re-implanted.
- Reassure the parents and advise them to control any bleeding and keep the traumatised area clean to prevent infection.
- Advise them to contact their doctor or dentist immediately if uncertain or if the child continues to be in pain.
Appendix 9: The Dental Health Information Leaflet produced by the author for patient education. (Top- Pages 1 & 4) (Bottom- Pages 2 & 3).
Remember

- Poor Oral Hygiene will allow PLAQUE to build up on baby teeth.
- Plaque contains harmful BACTERIA that feed particularly well on SUGAR and produce ACID.
- Sugary snacks given often can cause acid attacks leading to cavities.
- A diet low on sugars along with brushing removes plaque and reduces bacteria.

Good oral hygiene and diet will prevent pain and infection and avoid premature extraction of baby teeth.

- Healthcare professionals are there to help you and your baby, do not hesitate to seek advice if you have any questions.
Your Baby’s Diet

The DO’s

✔️ Give milk at mealtimes NOT all day.
✔️ Give only water at night if necessary.
✔️ Start weaning your baby from the bottle as soon as possible.
✔️ Keep sugary sweets to a minimum.
✔️ Restrict older children’s intake of sweets or limit to mealtimes only.
✔️ Consider healthy snacks but be aware of hidden sugars in products.

The DONT’s

❌ Don’t put sweetened drinks/fruit juices into a baby’s bottle.
❌ Don’t leave baby sleep with a bottle of milk.
❌ Don’t give sugar to small babies.

Brushing

Should start as soon as the teeth start appearing in your child’s mouth.

Use a soft toothbrush and water to start

Twice daily

At bedtime and during the day

Use pea sized amount of fluoride toothpaste when child’s swallowing is under control. Use toothpaste that has (1,000ppm F) written on it.

Older children should be supervised while brushing by a parent/carer up to the age of SEVEN.

After brushing do not rinse out your child’s teeth with water, encourage to spit out toothpaste.

Ask your dentist’s advice on the good diet and dental care earlier in the baby’s development.
Appendix 10: A Sample Certificate of Attendance for the participating Public Health Nurses.

Dental Department, xxxxxx Community Care
HSE, xxxx

This is to Certify that

_____________________________________

has attended

(Basic Dental Training for Public Health Nurses)

on February 14th 2012

Signature: Dr xxxxxxxxxxxxxxxx

Date: ______________
Appendix 11: The poster produced by the author for dissemination of the change project.

Dental Care for Baby Teeth
Student ID: 10106791
MSc Healthcare Management,
Institute of Leadership, Royal College of Surgeons in Ireland

Introduction & Background
Dental decay (DD) is troublesome, though of a preventable nature. In Ireland, Public Dental Service (PDS) for children has not established a system for preschool children. This is no longer feasible with the financial restrictions. For equity reasons, all children are entitled to dental services under Primary Care (PC). A team-based approach to service delivery is advocated. Public Health Nurses (PHNs) incorporate an element of oral health promotion at Developmental Visits (DV). This should be supported through PHN’s Continuous Professional Development (CPE), Training Programmes (TP) will improve PC.

Aims & Objectives
The aim is to introduce a new preventive dental service to be delivered by PHNs at DVs. The new service will provide:
(1) Oral Health Education (OHE) for parents &
(2) Oral Health Assessment (OHA) for children.

In establishing the new service, two SMART objectives were set to:
(1) Develop & Implement a basic TP for PHNs on child oral health care &
(2) Design an oral health information leaflet to assist in implementing & disseminating the project.

References

Evaluation
Evaluation started with questionnaires to determine needs and expectations of PHNs. Kirkpatrick’s model for evaluating training was used. It measured the participants’:
(1) Reactions;
(2) Learning & confidence Pre- & Post training (Figure 2);
(3) Behaviours & (4) Application of skills after training (Figure 3).

Organisational impact
- PHNs gained CPE & new skills.
- TP increased pool of skills & allowed better resource allocation.
- Dentists could be redeployed to tackle more urgent patients’ needs.
- New service could potentially lower DD & future costs for PDS.

Conclusion
The initiative was a local development. While it may not be financially feasible to apply it nationally, every effort must be made to improve child OH. This is one step towards transforming PC to an integrated, equitable, sustainable and team-based quality system.
Appendix 12: Evaluation of the Dental Training course for Public Health Nurses.

Give each statement a grade from 1 to 4 to indicate your choice

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Strongly Disagree</td>
<td>Disagree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>

The course was organised and communicated efficiently:

The course was delivered in a professional manner:

The course was completed timely and as planned:

The course was interesting and relevant to my practice:

The presentation was interactive and stimulating:

The content was appropriate and sufficient:

The content had practical application to my job:

The venue was suitable and convenient:

The audiovisual aids were appropriate and effective:

The course improved my understanding and knowledge about dental issues relevant to my job:

The course has helped to use my knowledge in practice with more confidence:

Overall the training was a valuable experience and I would encourage my colleagues to do it:

Comments:
Appendix 13: The Pre- and Post-training evaluation of the training programme.

Pre-training evaluation form:

Rate your confidence in providing an answer to parents asking the following questions where (0) is no confidence, (3) is somehow confident and (5) is very confident.

1- How many baby teeth should my 2-years-old baby have?

0 1 2 3 4 5

2- What can make my child’s teeth decay?

0 1 2 3 4 5

3- How can I protect my child’s teeth from decay?

0 1 2 3 4 5

4- At what stage should I start cleaning my baby’s teeth and what should I be using?

0 1 2 3 4 5

5- What type of toothpaste should I use and how often?

0 1 2 3 4 5

6- When do I start supervised brushing and to what age?

0 1 2 3 4 5

7- I heard of ‘baby bottle decay’, what is it and how can I prevent it?

0 1 2 3 4 5

8- Should I be concerned if my child has ‘baby bottle decay’ and why?

0 1 2 3 4 5
Post-training evaluation form:

Rate your confidence in providing an answer to parents asking the following questions where (0) is no confidence, (3) is somehow confident and (5) is very confident.

1- How many baby teeth should my 2-years-old baby have?
   0     1     2     3     4     5

2- What can make my child’s teeth decay?
   0     1     2     3     4     5

3- How can I protect my child’s teeth from decay?
   0     1     2     3     4     5

4- At what stage should I start cleaning my baby’s teeth and what should I be using?
   0     1     2     3     4     5

5- What type of toothpaste should I use and how often?
   0     1     2     3     4     5

6- When do I start supervised brushing and to what age?
   0     1     2     3     4     5

7- I heard of ‘baby bottle decay’, what is it and how can I prevent it?
   0     1     2     3     4     5

8- Should I be concerned if my child had ‘baby bottle decay’ and why?
   0     1     2     3     4     5
## Appendix 14: Post training application of oral health programme

Please insert the numbers required for the specific age groups provided below over the next four weeks

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Groups of children to be targeted at developmental visits:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Visit 3)        (Visit 4)        (Visit 5)        (Visit 6)</td>
</tr>
<tr>
<td></td>
<td>3 months         9 months         2 Years         3-4 Years</td>
</tr>
<tr>
<td>Total</td>
<td>Number of children examined</td>
</tr>
<tr>
<td>Number of Oral/Dental Health Education given</td>
<td></td>
</tr>
<tr>
<td>Number of Oral/Dental Health Assessment given</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Week 2</th>
<th>Groups of children to be targeted at developmental visits:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(Visit 3)        (Visit 4)        (Visit 5)        (Visit 6)</td>
</tr>
<tr>
<td></td>
<td>3 months         9 months         2 Years         3-4 Years</td>
</tr>
<tr>
<td>Total</td>
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<tr>
<td>Number of Oral/Dental Health Assessment given</td>
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</tbody>
</table>
### Week 3

<table>
<thead>
<tr>
<th>Groups of children to be targeted at developmental visits:</th>
<th>(Visit 3)</th>
<th>(Visit 4)</th>
<th>(Visit 5)</th>
<th>(Visit 6)</th>
</tr>
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<tbody>
<tr>
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<td>9 months</td>
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<td>Total Number of children examined</td>
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<tr>
<td>Number of Oral/Dental Health Education given</td>
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<td></td>
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<tr>
<td>Number of Oral/Dental Health Assessment given</td>
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</table>

### Week 4

<table>
<thead>
<tr>
<th>Groups of children to be targeted at developmental visits:</th>
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<th>(Visit 4)</th>
<th>(Visit 5)</th>
<th>(Visit 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 months</td>
<td>9 months</td>
<td>2 Years</td>
<td>3-4 Years</td>
</tr>
<tr>
<td>Total Number of children examined</td>
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<tr>
<td>Number of Oral/Dental Health Education given</td>
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<tr>
<td>Number of Oral/Dental Health Assessment given</td>
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</table>
# Appendix 15: The Project Impact Statement

<table>
<thead>
<tr>
<th>Describe here how things are now in relation to the issue</th>
<th>Describe here how things should (ideally) be when the issue has been addressed</th>
</tr>
</thead>
</table>
| **Behavioural:** describe current patterns of behaviour/attitudes of the key people involved with the issue:  
1- Dental staff struggling to provide treatment when resources are limited and prevention of decay is paramount.  
2- Management not prepared to cater for additional costs.  
3- Local public health nurses are keen to be part of the dental team. | **Behavioural:** what sort of behaviours would (ideally) be evident when the issue has been addressed?  
1- Acceptance of staff that financial crisis won’t resolve and must think positive-change direction of services to prevention more than treatment.  
2- Management should support local initiatives that are voluntary when staff is interested to participate.  
3- Public health nurses will feel empowered and be an effective part of the dental staff promoting oral health. |
| **Structural:** describe the way roles and responsibilities are currently organised:  
1- Dental service for preschool children is fluid.  
2- Dental service for priority groups is strained with more cutbacks and moratorium.  
3- Lack of dental training/involvement of other healthcare professionals as part of the dental team is a waste of resources/skills. | **Structural:** describe how roles/responsibilities would be organised once this issue has been addressed:  
1- Preschool children can receive basic dental care without the need to see the dentist.  
2- PHNs will become competent in providing this service.  
3- Dental staff will have more time to provide dental care to groups most in need. |
| **Personal:** describe how you participate in and contribute to the current reality:  
1- As a dentist, I try my best to treat preschool children in non priority groups but this service yet remain on request.  
2- There is a lack of resources and systematic approaches to empower the staff both dental and other healthcare professional. | **Personal:** describe how you will participate in and contribute to the new reality:  
1- I will personally participate in training and empowering public health nurses.  
2- I will make sure the change is cost effective and doesn’t have major cost implications.  
3- I will ensure all efforts and resources are directed in the direction of implementation and dissemination of the project. |
| **Cultural:** describe “how things are done around here” now, e.g. accepted ways of doing things, implicit understandings  
1- Accept the rule that says No treatment for baby teeth except for extraction.  
2- Any training means cost implication so must be declined.  
3- No other healthcare professional is able to provide dental care except for fully qualified dentists. | **Cultural:** what will be “the way things are done around here” when the issue has been addressed?  
1- Accept the crisis is not resolving soon and strained resources might become the norm. Do more with less.  
2- Accept and apply your belief in prevention better than cure and work accordingly.  
3- Accept the role of nurses is valuable and with proper training they are able to provide simple dental care where necessary without immediate referral to a dentist. |