

First tooth, first visit, zero cavities: a practical approach to the infant oral health visit

Précis

Get it done in year one! A practical approach to an infant oral health visit is presented to encourage commencement of oral healthcare at this important age.

Abstract

The IDA adopted a formal policy on children's oral health in 2011. There is increasing evidence to support early dental visits for children. The background to the infant oral health visit is discussed and a systematic approach to the practicalities of the visit is offered. General dental practitioners are encouraged to offer the first oral health visit before the first birthday, and this paper aims to give them practical advice concerning this visit. The feature is accompanied by a companion paper that reviews the literature pertaining to the topic, and serves to complement the recent clinical feature published in the *Journal of the Irish Dental Association*.

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Introduction

The Irish Dental Association (IDA) adopted a formal policy on children's oral health in 2011.¹ This was the second policy position paper from the Association, highlighting its standing on child oral health promotion in Ireland. This standpoint is echoed by the World Health Organisation (WHO),² the European Academy of Paediatric Dentistry (EAPD),³ the American Academy of Pediatric Dentistry (AAPD),⁴ and the British Society of Paediatric Dentistry (BSPD).⁵ Given the preventable nature of dental caries, early identification of the children at risk and the utilisation of appropriate preventive measures by the dental team are to be encouraged.

The Irish standpoint

Measures supporting public dental health in Ireland have achieved enormous progress, particularly for children. There has been a reduction of 75% in the mean decayed, missing, or filled teeth (DMFT) index scores for 12-15 year olds and in the mean DMFT scores for five year olds between the 1960s and 2002.⁶ Community water fluoridation was one of the greatest public health successes of the 20th century,⁷ being effective in both disadvantaged and non-disadvantaged communities. The dental profession should continue to work hard to advocate for continued community water fluoridation.

Fluoride toothpastes were introduced into Ireland in the 1970s. Supported by



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This link <http://bit.ly/2iNCSII> contains four demonstration videos on examining and brushing infants' and toddlers' teeth, which were made with the support of UCD and the Genetics Department at Our Lady's Children's Hospital Crumlin.

TABLE 1: Resources for practitioners

Source	Title	Year
Oral Health Services Guideline Initiative (University College Cork, Ireland)	Oral Health Assessment ¹⁵	2012
	Pit and Fissure Sealants ¹⁶	2010
	Prevention of Dental Caries in Children and Adolescents ¹⁷ (includes Caries Risk Assessment Checklist)	2009
	Topical Fluorides ¹⁸	2008
Scottish Intercollegiate Guidelines Network (SIGN)	Dental interventions to prevent caries in children ¹⁹	2014
Scottish Dental Clinical Effectiveness Programme (SDCEP)	Prevention and Management of Dental Caries in Children ²⁰	2010
Childsmile	Professionals ²¹	
European Academy of Paediatric Dentistry (EAPD)	Guidelines on Prevention of Early Childhood Caries ³	2008
	Guidelines on the use of fluoride in children ²²	2009
American Academy of Pediatric Dentistry (AAPD)	Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents ²³	2014
	Guideline on Infant Oral Health Care ¹⁴	2014
	Guideline on Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents ²⁴	2013
Nova Scotia Dental Association	Knee-To-Knee Training Video ²⁵	2013

more than half a century of research, the benefits of fluoride toothpastes are firmly established. Full-strength formulations (1,450ppm) are best, and twice a day use, without rinsing afterwards, increases the benefit.⁸ Full strength fluoride toothpaste is now recommended for all children in Ireland over the age of two, and for high caries risk children under that age.⁹

Medicines formulated for children are subject to the European Medicines Agency's "Guideline on pharmaceutical development of medicines for paediatric use",¹⁰ which states: "Frequent and/or high doses of sweetening agents should preferably be avoided in paediatric formulations intended for long-term use. The use of cariogenic sugars should be carefully justified". Doctors are encouraged to prescribe sugar-free formulations where available and appropriate.

Unfortunately, the absence of a current oral health policy, the lack of up-to-date epidemiological data, and the decline in access to care for adults of lower socioeconomic status in recent years are signs of the underfunding and low priority given to oral health and dental services in Ireland. Without doubt, these issues have an impact on our children's oral health both directly and indirectly. There appears to be some lack of awareness among parents and non-dental healthcare providers around the issue of early childhood caries, its causes, effects and the measures that can be employed to prevent its occurrence. Infant feeding practices are important in the development of early childhood

caries, and frequent ingestion of sugar-sweetened drinks and snacks are high-risk factors for both caries and obesity. There is very limited care provided by the public dental services for pre-school children in Ireland. This is concerning as dental caries is the most common chronic disease of childhood in Ireland, a situation which is echoed internationally.

Oral health-related quality of life and general health

The WHO accurately describes the impact of poor oral health, particularly caries, on the child and family: "Severe caries detracts from children's quality of life: they experience pain, discomfort, disfigurement, acute and chronic infections, and eating and sleep disruption as well as higher risk of hospitalisation, high treatment costs and loss of school days with the consequently diminished ability to learn. Caries affects nutrition, growth and weight gain. Children of three years of age with nursing caries weighed about 1kg less than control children because toothache and infection alter eating and sleeping habits, dietary intake and metabolic processes".²

The IDA, in its policy on children's oral health,¹ values oral health as "an integral part of the overall health and well-being of children", which reflects the WHO standpoint. Health spending is limited by the available resources. Current per capita public spend on health in Ireland is in the region of €3,100 per annum, based on a total public health expenditure of €14.2bn in 2015,¹¹ for a

population of 4.58 million at the 2011 census. It is easy to see how operative treatment (restoration and extractions) of a dentition affected by severe early childhood caries, which is likely to require general anaesthesia, could deplete per capita healthcare resources very quickly. A health promoting and preventive strategy is urgently needed, in line with early child health strategies.

Preventable nature of oral disease in childhood

Dental caries is largely preventable. The reader is directed to the companion paper by Duane *et al.*, published in this edition of the *Journal*.

The dental home

Central to many effective models of oral healthcare is the concept of the dental home: the patient-centred, family-friendly relationship between healthcare provider and patient that fosters primary oral healthcare, and enables appropriate referral to secondary and tertiary services as needed.¹² The emphasis is on the relationship between the dentist (or other suitable healthcare provider), their team, and the family. This is akin to the medical home, which is usually facilitated by the general medical practitioner, supported by a practice nurse and with a network of local, regional and supra-regional referral pathways. Most pre-school children in Ireland lack a dental home, but the available oral health workforce, led by dentists, could be organised and developed to provide a dental home for all children. The workforce would consist of the obvious: dentists; dental hygienists; dental nurses; and, oral health promoters. Some less obvious members of the healthcare team such as public health nurses, general medical practitioners and area medical officers have also been recruited in some healthcare systems internationally to serve as the first point of contact for risk assessment and implementation of caries preventive measures.

Rationale for timing of the first oral health visit

Antenatal oral healthcare for expectant mothers is recommended as a good first step in establishing a healthy oral environment for the mother-baby partnership. Given that transmission of cariogenic bacteria is thought to occur around the time of eruption of the first tooth,¹³ and in light of the normal developmental milestones and dietary changes of children in the first year of life, timing of the first oral health visit to coincide with these events is sensible. Weaning from milk to solid foods is recommended around six months, and dietary habits begin to become established. Preventive advice can be given at appropriate times in a format known as anticipatory guidance, which involves giving proactive advice and counselling that focuses on the child's needs at different stages. In this way, parents receive tailored advice that meets their child's current and upcoming developmental needs. Both the EAPD and the AAPD recommend that children should have their first dental visit with counselling during the first year of life.^{3,14} Offering an infant oral health visit can help build a family-friendly environment, enhancing a dental practice.

Special healthcare needs

Children with special healthcare needs such as craniofacial anomalies or other medical, physical or intellectual conditions can be at increased risk of developing dental caries, and may also be at increased risk from the effects of the disease. They should receive targeted preventive care in line with the best available evidence. The early oral health visit can help identify these children and afford them an increased level of protection to counteract their vulnerability.

Clinical guidelines and toolkits

There are many useful guidelines and clinical practice toolkits available to the practitioner to aid them in their management of the young child with and without caries.^{3,14-25} These resources, both Irish and international, are listed in **Table 1**.

Baby steps: a systematic approach to the infant oral health visit

For practitioners who wish to offer the infant oral health visit in their practice, some new knowledge and skills may be needed, and it is hoped that the following advice and systematic approach will facilitate both the practitioner and the family. An example of a systematic approach to the visit that may be useful is given in **Appendix 1**. The visit should include a formal caries risk assessment, which is generally best achieved with the aid of a tool such as the Caries Risk Assessment Checklist (CRAC),¹⁷ which is suitable for all children, or a specific tool aimed at the 0-3 age group such as the AAPD's Caries-risk Assessment Tool (CAT).²³ It is important to remember that caries risk is dynamic, and regular reassessment of risk is appropriate.

The reader is directed to the recent clinical feature published in this *Journal* for a systematic approach to the infant oral health visit.²⁶ Having clear aims and objectives for the visit, employing techniques to minimise stress for all involved, using a systematic or *pro forma* approach to the history, examination and advice, and being prepared to manage or refer as appropriate if disease is encountered, should all help to make the visit enjoyable, beneficial and rewarding for all.

Troubleshooting

Although it is most unusual to find cavitated caries in children under one year of age, it is possible to find demineralisation. Such a finding may be disappointing, but it should be considered an opportunity to highlight issues early before cavitation occurs, and with appropriate advice and aggressive preventive measures, much of this disease can be arrested. Infants with early signs of caries should be placed on three-month recall for fluoride varnish application and review. At home, these high-risk infants should have their teeth brushed with a full-strength fluoride toothpaste (1,450ppm), with careful advice around how much to apply to the brush to minimise the potential for fluorosis. Dietary advice should emphasise the importance of water as the only safe drink for all babies at night time. Milk (cow's or formula) taken from a bottle throughout the night is highly cariogenic and this practice is to be highlighted and strongly discouraged. The authors find that photographs of carious incisors are a useful visual aid for educating parents who may be reluctant to discontinue night-time use of a bottle of milk.

Fluoride varnish should be applied for all children at this visit. The teeth should be dried with gauze, and varnish applied with a brush or gloved finger, to areas of high risk in particular. Concerns around fluoride toxicity with respect to fluoride varnish application are addressed by careful consideration and discussion of the appropriate dose. Fluoride varnish 22,600ppm (e.g., Duraphat or Profluorid) contains 22.6mg fluoride per ml. The correct dose for children under six is 0.25ml. The toxic dose of fluoride ingestion is estimated at 5mg of fluoride per kg of child body weight. The average one year old weighs approximately 9kg, and so the dose of 0.25ml of varnish, containing 5.6mg of fluoride, being approximately one-tenth of the toxic dose, is well within safe levels. Application up to four times a year is also safe with respect to concerns around chronic ingestion. A blob 5-7mm in diameter will be



FIGURE 1: Correct (0.25ml) amount of fluoride varnish for infants. One cent coin and micro brush for size comparison.



FIGURE 2: Fluoride varnish single-dose packet (0.25ml).

adequate (Figure 1). Single-dose packaging conveniently combines a brush with a small volume of fluoride varnish (Figure 2). Many of the single dose

varnishes available on the market are 0.4ml in volume, but Premier’s Enamel Pro Varnish comes in a bubblegum flavour in a 0.25ml single-dose packet.

Appendix 1 – Baby steps: a checklist for the infant oral health visit

History

- Child perinatal and ongoing medical history
- Caries risk assessment (CRAC or AAPD)
- Feeding practices (use of bottles of milk or other sweet liquid while asleep, between meals food and drink exposure)
- Systemic and topical fluoride status (water, formula and toothpaste)
- Non-nutritive sucking habits (thumb/soother)
- Trauma

Examination

- Knee-to-knee position
- Dry teeth with gauze, use a prop if needed
- Examine for caries, trauma and abnormalities of dental development, and soft tissues
- Toothbrushing demonstration, three-sided brush (Figure 3) if needed
- “Lift the lip” demonstration

Preventive care

- Remove any soft and hard deposits
- Apply 5% NaF fluoride varnish to erupted teeth

Treatment of severe early childhood caries (SECC)

- White spot lesions (Figure 4): this is SECC. Apply fluoride varnish, educate about oral health and diet. Advise home use of a smear of 1,450ppm fluoride toothpaste twice daily, without rinsing after brushing
- Cavitated lesions in upper incisors: manage as above, plus consider interim therapeutic restoration (ITR) with glass ionomer as a preventive



FIGURE 3: An example of a three-sided toothbrush (Dr Barman’s) in sizes for adults, children and toddlers. Available from www.sensationalkids.ie, www.amazon.co.uk, and from pharmacies nationwide.



FIGURE 4: Demineralised maxillary incisors in a child under three years old. This is severe early childhood caries. Note the inflamed gingivae as a result of plaque accumulation.

As children get a little older, examination can be resisted a little more strongly. Correct use of the knee-to-knee position is invaluable, and practitioners are advised to learn this simple yet effective technique by watching videos available online.²⁵ Informed consent for the examination should include adequate discussion of the method of examination, the likely time it will take, and a reassurance that the toddler's protest is entirely normal. By the same token, a toddler's protests about tooth brushing at home are reassuringly normal. Parents can be advised to brush a baby's teeth using the knee-to-knee position (two adults required), or on the bed or couch at home. Specialised three-sided brushes are recommended (Figure 3), perhaps with the use of a plastic toothbrush handle as a mouth prop if needed.

Prolonged non-nutritive sucking habits may be identified at the first oral health visit, and the orthodontic effects (anterior open bite, narrowed maxillary arch, protruding maxillary incisors) may already be evident. Parents

should be advised to use only orthodontic soothers, and to discontinue their use by around 18 months of age.

If it is identified that parents are using inappropriate foods for weaning, such as those with a high sugar or salt content, general nutrition advice should be given, and onward referral to a general medical practitioner or public health nurse may be necessary.

Some well-meaning, but poorly-informed parents begin using fluoridated toothpaste for their infants earlier than the recommended age of two years. For the infant identified as being at low risk for dental caries, the use of fluoride toothpaste is to be discouraged until two years of age, when the enamel of the permanent incisors is quite mature, and so the risk of cosmetically concerning fluorosis is low. It should be emphasised, however, that use of full-strength fluoride toothpaste is appropriate for high-risk children in this age group, as the caries-preventive effects outweigh the risks of fluorosis.

and therapeutic approach. Consider specialist referral

- Large cavitated lesions in incisors (Figure 5): manage as above, plus consider specialist referral. Use full coverage restorations, particularly if compliance for prevention is an issue (Figure 6)



FIGURE 5: Cavitated caries in the maxillary primary incisors. Note plaque and demineralisation of mandibular incisors and all first molars, and very young age. This child subsequently had full coverage restoration of all the erupted teeth.



FIGURE 6: Preoperative severe early childhood caries, buccal and lingual surfaces of maxillary incisors, and immediate postoperative restored maxillary primary incisors (NuSmile Zirconia crowns 52,51,61,62). Note the stainless steel crown restorations of the first primary molars.

- Extensive disease (Figure 7) with/without pulpal involvement: manage as above, plus consider referral to a specialist provider for definitive care

Establishing the dental home and periodicity of review

- Discuss ongoing relationship between dental team and patient in terms of the "dental home"
- Determine the interval for periodic review (three, six or 12 months) based on risk
- If needed, refer to a specialist provider, with arrangements for follow-up at the dental home



FIGURE 7: Extensive caries with pulpal involvement and abscess formation in an infant, secondary to prolonged ad lib night time feeding.

Key points for the infant oral health visit

The key points for the visit can be summarised as follows:

- caries risk assessment – includes medical, social and dental history;
- knee-to-knee examination;
- preventive care – oral hygiene demonstration, toothpaste advice, fluoride varnish;
- education – weaning, diet, drinks, pacifier use/cessation; and,
- establish the dental home.

Summary

The first oral health visit should be carried out within the first year of life. This affords the practitioner the opportunity to convey suitable preventive advice, to identify potential problems early, and to place children at high caries risk on the appropriate preventive programme. The general dental practitioner is encouraged to examine and provide oral healthcare and advice for infants and young children, and the resources, advice and techniques presented here aim to facilitate practitioners who wish to include this service in their practice.

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