

# Minimal intervention dentistry: part 3. Paediatric dental care – prevention and management protocols using caries risk assessment for infants and young children

F. J. Ramos-Gomez,<sup>1</sup> Y. O. Crystal,<sup>2</sup> S. Domejean<sup>3</sup> and J. D. B. Featherstone<sup>4</sup>

## VERIFIABLE CPD PAPER

Recent increases in caries prevalence in young children throughout the world highlight the need for a simple but effective infant oral care programme. This programme needs to include a medical disease prevention management model with an early establishment of a dental home and a treatment approach based on individual patient risk. This article presents an updated approach with practical forms and tools based on the principles of caries management by risk assessment, CAMBRA. This method will aid the general practitioner to develop and maintain a comprehensive protocol adequate for infant and young children oral care visits. Perinatal oral health is vitally important in preventing early childhood caries (ECC) in young children. Providing dental treatment to expectant mothers and their young children in a 'dual parallel track' is an effective innovative strategy and an efficient practice builder. It promotes prevention rather than intervention, and this may be the best way to achieve long-lasting oral health for young patients. General dental practice can adopt easy protocols that will promote early preventive visits and anticipatory guidance/counselling rather than waiting for the need for restorative treatment.

### IN BRIEF

- Examines the problem of early childhood caries and how it can be minimised.
- Informs caries is a transmissible, infectious disease, which can be passed from mother to child.
- Stresses the importance of risk assessment and preventive dentistry in paediatric healthcare.

### MINIMAL INTERVENTION DENTISTRY

1. From 'compulsive' restorative dentistry to rational therapeutic strategies
2. Caries risk assessment in adults
3. **Paediatric dental care – prevention and management protocols using caries risk assessment for infants and young children**
4. Detection and diagnosis of initial caries lesions
5. Atraumatic restorative treatment (ART) – a minimum intervention and minimally invasive approach for the management of dental caries
6. Caries inhibition by resin infiltration
7. Minimally invasive operative caries management – rationale and techniques

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<sup>1</sup>University of California, Los Angeles, USA; <sup>2</sup>New-York University, USA; <sup>3</sup>CHU Clermont-Ferrand, Service d'Odontologie, Hôtel-Dieu, F-63,001 Clermont-Ferrand, France; <sup>4</sup>University of California, San Francisco, USA  
\*Correspondence to: Francisco Ramos-Gomez  
Email: frg@dentistry.ucla.edu; Tel: +1 310 825 9460

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### INTRODUCTION

Despite progress made in caries control worldwide by the protective effects of fluoride, increased dissemination of oral hygiene information and widespread healthy diet education, dental caries still remains the most common chronic childhood disease. Consequently, it is a major financial burden on society in many countries throughout the world. In recent years, reports show that caries in the primary dentition has been increasing in the USA, UK, Canada, Australia, the Netherlands and other countries.<sup>1–8</sup>

Early childhood caries (ECC) is more prevalent among young children from low socioeconomic, ethnic minority populations.<sup>9</sup> This uneven distribution occurs in many developed countries with 25% of children bearing 75% of the affected surfaces. Dental caries is a preventable and transmissible infectious disease; it is well documented that the presence of caries in the primary dentition is one of the best indicators for future caries in the permanent dentition.<sup>10,11</sup> Thus, the early and

accurate identification of children at risk is of great importance for cost-effective caries control. Signs of ECC can be detected soon after the eruption of the first tooth. If risk indicators are identified early and oral health preventive practices are implemented at a young age, the disease can be controlled and its progression slowed.

In the USA, the American Dental Association (ADA), the American Academy of Paediatric Dentistry (AAPD), the American Academy of Paediatrics (AAP), the American Association of Public Health Dentistry (AAPHD) and the Academy of General Dentistry (AGD) all recommend that a child should see a dentist and establish a 'dental home' by one year of age or when the first tooth erupts.<sup>12–16</sup> A dental home is defined as the ongoing relationship between the dentist and the patient where accessible and coordinated oral healthcare can be delivered comprehensively while actively involving family participation.<sup>17</sup> Despite the widespread advocacy of a 'medical' and a 'dental home' by age one, infant oral health visits have not yet been

embraced universally by practicing clinicians. Many paediatricians are unaware of current oral health evidence-based protocols and recommendations and refer children only when there is clinical evidence of established dental disease. Since family physicians and paediatricians often see children up to six times before age two, it is crucial to take these appointments as opportunities to increase awareness of oral health evaluations and screen young children for caries risk and refer for dental care.<sup>18</sup> However, general dentists have to be prepared to accept these young children for their first dental visit's evaluation and treatment. This article presents an updated, simple and systematic six-step protocol for an infant oral examination that will ease implementation of early visits into dental practice.<sup>19</sup> Due to the infectious and transmissible nature of dental caries, the first step in preventing the development of ECC is to provide perinatal oral healthcare to expectant mothers as soon as possible.

### PERINATAL ORAL HEALTH

Caries is a transmissible, infectious disease. If this disease keeps progressing, surface cavitation and destruction of dental tissue worsens over time. The mutans streptococci (MS) group of bacteria (primarily *streptococcus mutans* and *streptococcus sobrinus*) are key pathogens in the caries process, due to their ability to adhere to smooth tooth surfaces and produce acid.<sup>20</sup> Generally, colonisation of MS in the oral cavity of children is the result of transmission of these organisms from the child's primary caregiver.<sup>21</sup> A direct relationship exists between MS levels in adult caregivers and that of caries prevalence in their children.<sup>22</sup> Factors influencing colonisation include frequent sugar exposure in the infants and habits that allowed salivary transfer from mother/caregiver to infants. Maternal factors, such as high levels of MS, poor oral hygiene, low socioeconomic status and frequent snacking increase the risk of bacterial transmission to her infant.<sup>23</sup> Infants have been identified with high levels of MS in their mouths even before the eruption of the first tooth.<sup>19</sup> Therefore, it is critical to consider an infant oral care programme in the context of a participating pair or mother-and-child dyad, which includes comprehensive maternal perinatal oral healthcare, counselling and treatment.

**Table 1** CAMBRA for dental providers (0–5 years) assessment tool\*\*

Biological factors	High risk factors	Moderate risk factors	Protective factors
Mother/primary caregiver has active caries	Yes		
Parent/caregiver has low socioeconomic status	Yes		
Child has >3 between meal sugar containing snacks or beverages per day	Yes		
Child is put to bed with a bottle containing any sugar	Yes		
Child has special health care needs		Yes	
Child is a recent immigrant		Yes	
<b>Protective Factors</b>			
Child receives optimally fluoridated drinking water or fluoride supplements			Yes
Child has teeth brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Primary caregiver uses xylitol chewing gum/lozenges			Yes
<b>Clinical Findings</b>			
Child has more than one dmfs	Yes		
Child has active white spot lesions or enamel defects	Yes		
Child has elevated mutans streptococci	Yes		
Child has plaque on teeth		Yes	
Overall assessment of the child's dental caries risk: <b>High</b> <b>Moderate</b> <b>Low</b>			
**Modified from Ramos-Gomez et al. CDA Journal 2007; 35: 687-702; and ADA caries risk assessment forms available at <a href="http://www.ada.org/sections/professionalResources/pdfs/topic_caries_over6.pdf">http://www.ada.org/sections/professionalResources/pdfs/topic_caries_over6.pdf</a> (accessed October 2012). Copyright 2007/2010 California Dental Association. Reprinted with permission			

Dental professionals are beginning to recognise the essential role a mother plays in ensuring her child's oral health. Improving expectant mothers' oral health by reducing pathogenic bacteria levels in their own mouths, will delay the acquisition of oral bacteria and the development of ECC in their children.<sup>20</sup> Restoring carious lesions, by itself, is insufficient to reduce a mother's risk of transmitting cariogenic bacteria to her offspring. An effective perinatal program should institute practices such as therapeutic interventions and lifestyle modification counselling both during pre- and post-partum to reduce maternal MS and lactobacilli levels.<sup>24</sup> Unfortunately, pregnant women often do not receive oral healthcare and education in a timely manner. Many women do not know they should seek dental care during their pregnancy. Of those who do, they often encounter dentists unwilling to provide care to pregnant mothers. New mothers are also more likely to be receptive to

ideas that would improve their offspring's oral health,<sup>25</sup> making this the best 'window of opportunity' for preventive care. Therefore, dental, medical and obstetric providers have the prime opportunity to educate mothers with positive reinforcement and effective behavioural changes that could affect significantly their children's future oral health.

### INITIAL INFANT ORAL CARE VISIT

Infants and parents (caregivers) will benefit from an early infant oral health visit and the establishment of a 'dental home'. An infant oral health visit should include caries risk assessment, individualised preventive strategies and anticipatory guidance.<sup>26,27</sup> Establishing periodicity supervision of care intervals and age-appropriate 'care paths' is determined based on the risk of disease of each individual patient.<sup>28</sup> Infants and toddlers are not expected to be cooperative during an oral examination; crying and movement are common responses.

Explaining to the caregivers exactly what to expect during this visit and engaging them to participate may allay some of their fears and concerns.

An infant oral health visit consists of a six-step protocol:

1. Caries risk assessment
2. Proper positioning of the child (knee-to-knee exam)
3. Age appropriate tooth brushing prophylaxis
4. Clinical examination of the child's oral cavity and dentition
5. Fluoride varnish treatment
6. Assignment of risk, anticipatory guidance and counselling.

### Caries risk assessment

An individualised risk assessment of an infant or toddler for developing caries serves as the foundation for healthcare providers and parents/caregivers to identify and understand the child's ECC risk factors. A systematic assessment of caries risk serves as a guide for dentists to design treatment and preventive protocols for children already with disease and those deemed at risk. For optimal outcomes, caries risk assessment should be done as early as possible, and preferably before the onset of the disease process. Due to the fact that caries in the primary dentition is a strong predictor of caries in the permanent dentition, caries risk assessment and management is crucial, as is the subsequent follow-up.<sup>29,30</sup> The caries balance concept states that the progression or reversal of dental caries is determined by the balance between pathological factors and caries protective factors.<sup>31-33</sup> Risk factors are determined from an interview with the parent and from a clinical assessment of the child (Table 1).

During the interview with the parent/caregiver, the assessment should explore biological and lifestyle risk factors that contribute to the development or progression of caries. Examples of risk factors include recently placed dental restorations in the mother, low socioeconomic status of the family, low health literacy of caregiver, the child's frequent intake of fermentable carbohydrates, sleeping with a bottle that contains liquids other than water and prolonged use of a 'sippy cup' containing milk, juice or a sweetened beverage.

Clinical disease indicators from oral examinations are used to diagnose caries. These include cavitated carious lesions, white spot lesions/decalcifications observed visually or by radiographs and recent restorations. However, these physical manifestations of caries do not tell us why the disease is present (Fig. 1). In the three clinical cases presented in Figure 1, the clinical signs (cariou lesions at different clinical stages) indicate the presence of active cariou processes. The caries risk assessment and the determination of the pathological factors, in particular, will guide the decision-making and the customisation of the therapeutic and the prevention strategies, specific to each patient.

Biological risk factors, also known as pathological factors, include presence of plaque, gingival bleeding (an indicator of dense plaque), low pH and dry mouth. Any of these recorded indicators can be then combined with the data from the interview to determine the risk for that patient (Fig. 2). In older children, the presence of dental or orthodontic appliances increases plaque retention and the risk for caries.

Protective factors, which are indicators that may reduce a child's risk for ECC, can also be assessed during the interview with the parent. These factors include optimal exposure to fluoride, access to regular dental care (for example, the presence of a dental home), consistent brushing with fluoride toothpaste, use of fluoridated tap water and xylitol among other combination therapy.

### Proper positioning

Proper positioning of the child is critical to conducting an effective and efficient clinical exam in a young child. In general, the knee-to-knee position should be used with children aged six months to three years, or up to age five with children who have special healthcare needs. Children older than three years may be able to sit forward on their caregiver's lap or sit alone in a chair. Examiners and caregivers need to work together to transition the child smoothly from the interview to the exam (Fig. 3).

The clinician should explain what will happen (tell, show and do) before starting, and anticipate that young children may cry since crying is developmentally appropriate for children of this age. Knee-to-knee positioning allows the child to see the



Fig. 1a Cariou lesions at different clinical stages: child, 18 months old, with advanced cavitated lesions



Fig. 1b Child, three years old, with cavitated lesions localised on the buccal surfaces of the anterior maxillary teeth



Fig. 1c Child, three years old, with cervical white spot lesions (reversible enamel lesions) localised on the canines and posterior teeth



Fig. 2 Biological risk factors. Three-year-old child, with high caries risk. Presence of visible dental plaque, gingival bleeding and cervical white spots lesions on the posterior teeth



Fig. 3 The knee-to-knee position

Table 2 Caries management protocol for 0–2-year-olds

Risk category (ages 0 to 2 years)	Diagnostic			Fluoride	Preventive intervention
	Periodic oral exams	Radiographs	Saliva test		
Low	Annual	Posterior bitewings at 12–24 month intervals if proximal surfaces cannot be examined visually or with a probe	Optional baseline	In office: no Home: brush twice a day w/ smear of F toothpaste	Not required
Moderate	Every six months	Posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Recommended	In office: F varnish initial visit & recalls Home: Brush twice a day w/smear of F toothpaste Caregiver: OTC sodium fluoride treatment rinses	Child: xylitol wipes Caregiver: two sticks of gum or two mints four times a day
Moderate; non-compliant	Every three to six months	Posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit & recalls Home: Brush twice a day w/smear of F toothpaste combined w/smear of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses	Child: xylitol wipes Caregiver: two sticks of gum or two mints four times a day
High	Every three months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit & recalls Home: Brush twice a day w/smear of F toothpaste combined w/smear of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses	Child: xylitol wipes Caregiver: two sticks of gum or two mints four times a day
High; non-compliant	Every one to three months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit & recalls Home: Brush twice a day w/smear of F toothpaste combined w/smear of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses	Child: xylitol wipes Caregiver: two sticks of gum or two mints four times a day
Extreme	Every one to three months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit and recalls Home: Brush twice a day w/smear of F toothpaste combined w/smear of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses	Child: xylitol wipes Caregiver: two sticks of gum or two mints four times a day

parent throughout the exam. It also allows the parent/caregiver to observe clinical findings and hygiene demonstrations directly, while gently helping to stabilise the child safely for the clinical examination. If the child can perceive a friendly and comfortable interaction between the clinician and caretaker, he or she will be more likely to cooperate and result in a smoother examination.

### Toothbrush prophylaxis

Toothbrush prophylaxis is efficient in removing plaque in most young children. It is non-threatening to young children and serves to demonstrate the proper technique of brushing to the caregiver. The examiner retracts the child's lips and cheeks and demonstrates brushing along the gingival margins. The spongy handle of an age-appropriate sized toothbrush can be used to prop open the child's mouth. The handle of a second toothbrush can be used as a mouth prop. During this 'tell-show-do' encounter, the caregiver should be encouraged to brush their child's teeth

at least twice a day, especially before bedtime. The use of fluoride toothpaste should be emphasised since fluoride has been shown to be effective topically to prevent caries. Parents and caregivers should be instructed to use a 'pea-sized' amount of fluoride toothpaste for children age two to six and a 'smear' for children under age two.<sup>34,35</sup>

### Clinical examination

The examiner 'counts' the child's teeth aloud, using the toothbrush handle as a mouth prop if necessary. Many providers make a game of this task, singing songs, engaging the child's attention, and if all else fails, distracting the child with a brightly coloured toothbrush or toy. Praise the child at each step for their cooperation and/or good behaviour. While 'counting' the teeth, the examiner also inspects the soft tissues, hard tissues and occlusion, if the child is able to cooperate. Data from the clinical exam results should be combined with data from the caregiver interview to determine the child's overall caries

risk and establish an oral diagnosis and formulate an individualised care (treatment) plan.

The following information should be documented:

- Visible plaque and its location
- White spot lesions
- Brown spots that on the occlusal surfaces may indicate caries
- Tooth defects, deep pits/fissures, tooth anomalies
- Missing and decayed teeth
- Existing restorations
- Defective restorations
- Gingivitis or other soft tissue abnormalities
- Occlusion
- Indications of trauma.

### Fluoride treatment

Fluoride is an important and cost-effective prevention method to strengthen tooth enamel and prevent caries. The ADA and the UK NHS Department of Health recommends that high caries risk children receive a full-mouth topical fluoride varnish (FV)

					Restoration
Sealants	Antibacterials	Anticipatory guidance/ counselling	Self-management goals	White spot/precavitated lesions	Existing lesions
No	No	Yes	No	n/a	n/a
Fluoride releasing sealants recommended on deep pits and fissures	No	Yes	No	Treat w/ fluoride products as indicated to promote remineralisation	n/a
Fluoride releasing sealants recommended on deep pits and fissures	Recommend for caregiver	Yes	Yes	Treat w/ fluoride products as indicated to promote remineralisation	n/a
Fluoride releasing sealants recommended on deep pits and fissures	Recommend for caregiver	Yes	Yes	Treat w/ fluoride products as indicated to promote remineralisation	ITR (interim therapeutic restorations) or conventional restorative treatment as patient cooperation and family circumstances allow
Fluoride releasing sealants recommended on deep pits and fissures	Recommend for caregiver	Yes	Yes	Treat w/ fluoride products as indicated to promote remineralisation	ITR or conventional restorative treatment as patient cooperation and family circumstances allow
Fluoride releasing sealants recommended on deep pits and fissures	Recommend for caregiver	Yes	Yes	Treat w/ fluoride products as indicated to promote remineralisation	ITR or conventional restorative treatment as patient cooperation and family circumstances allow

application and re-application consistently at three/four-month intervals.<sup>36</sup> A minimum of every six months is recommended for children at moderate caries risk even if the child lives in a community that already receives the benefits of water fluoridation. The provider should reiterate the cumulative benefit of the fluoride varnish, even if it has been mentioned earlier in the visit. After application, the caregiver should be reminded not to allow the child to brush their teeth or to eat crunchy/sticky foods for the rest of the day to allow fluoride varnish to be effective.

FV is one of the most efficacious and prevalent methods used by modern dentists to combat early childhood caries. According to the ADA, extensive research has shown FV to be safe and effective for patients of all ages.<sup>37</sup> FV is painless, quick to apply, and therefore can be used on very young children.<sup>38</sup> There is, however, widespread debate on the results in reference to differing recommendations for the frequency and periodicity of FV application. Some sources advocate FV treatments every six months, citing this

protocol as the most cost-effective method with the best outcome.<sup>39</sup> Others argue that three consecutive varnishes over a week's time-period, once annually, are more effective than semi-annual treatments.<sup>40-42</sup> Regardless, all sources agree that FV is useful as a necessary standard of care component for the prevention of dental caries and crucial as a tool in oral health maintenance for all ages.<sup>40-42</sup>

### Assignment of risk, anticipatory guidance and counselling

An individualised care plan for each infant/caregiver is designed based upon the risk determined from the parent interview and the clinical examination of the child (Tables 2 and 3). A dual approach is essential for moderate and high caries risk children and their parent/caregivers. Strategies need to be employed to decrease the maternal or caregiver transmission of cariogenic bacteria to infants through the potential use of chlorhexidine rinse and xylitol products for caregivers, and fluoride varnish for both the caregiver and the child.<sup>34</sup> Additionally, the

necessary changes in the child's diet, tooth brushing and fluoride application can be identified from the risk analysis.

The science of caries prevention continues to evolve. Table 2 illustrates how to develop care paths for a practice's patients. There are many alternative approaches to the prevention and treatment of dental caries, with more emerging continuously. Care paths should remain dynamic and change over time as the effectiveness of new as well as current protocols is validated by scientific evidence.

Parents should be given additional information and anticipatory guidance on oral health prevention that is specific to the needs of their child. Such information includes oral hygiene, growth and development issues (that is, teething, digit or dummy habits), oral habits, diet and nutrition and injury prevention (Tables 2 and 3). The anticipatory guidance approach is designed to take advantage of time-critical opportunities to implement preventive health practices and reduce the child's risk of preventable oral disease.<sup>43-45</sup>

An important component of the visit is to counsel the parents to change specific factors which may contribute to active caries or to an increased caries risk in their child. Traditionally, generic recommendations, such as 'brush your teeth twice a day and don't eat sweets', have been offered to parents with limited success. Using family-centred, customised recommendations have been shown to be more promising as parents are more engaged in changing specific practices. Motivational interviewing is a counselling technique that relies on two-way communication between the clinician and the patient or parent<sup>46</sup> (Fig. 4). This includes establishing a therapeutic alliance (that builds rapport and trust), by asking questions to help parents identify the problem and listening to what they say, encouraging self-motivational statements, preparing for change (discussing the hurdles that interfere with action), responding to resistance and scheduling follow-up, as well as preparing the parent for the inevitable bumps in the road.<sup>47</sup>

Following the brief motivational interviewing (counselling), the parent/caregiver is asked to select two self-management goals or recommendations as their assignments before the next re-evaluation dental visit. The parent/caregiver is asked to commit to the two goals selected and is informed that the oral healthcare providers will follow-up on those goals with them at the next appointment (see Tables 2 and 3 for self-management goals for parent/caregiver).

### RECALL VISITS AND RECALL PERIODICITY

The clinician must consider each child's individual needs to determine the appropriate interval and frequency for oral examination;<sup>48</sup> some infants and toddlers with high caries risk should be re-evaluated on a monthly basis (Tables 2 and 3). Most children at high risk need to be seen on a three-month interval for re-evaluation. Those children in the moderate risk category need to be placed on a six-month interval and the low risk child at a 6-12 month range interval (Tables 2 and 3).

After the parent has been following the recommendations for three to six months, have them and their child come back for reassessment. Parents need encouragement

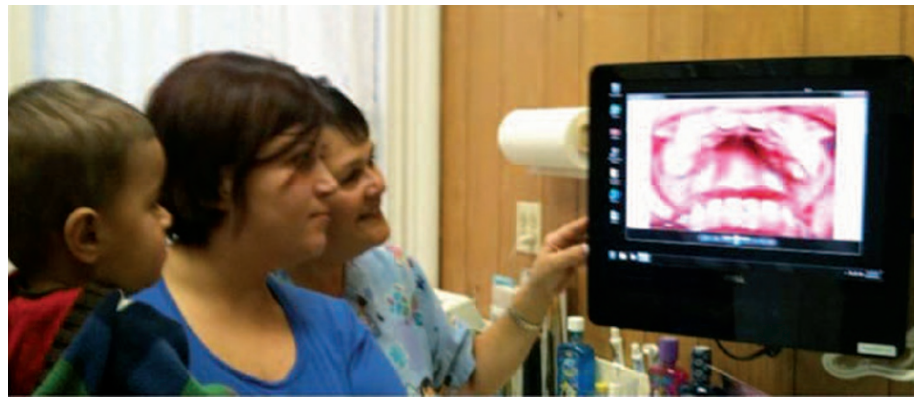


Fig. 4 The motivational interviewing (counselling)

early on when new behavioural change is required and time to ask questions regarding any difficulties with following the recommendations. They should be aware that changing home practices does not happen overnight. At these infant oral care visits, it is essential to reassess the risk status and monitor improvement on the previously set self-management goals. During these reassessment appointments, changes can be made and prevention protocols reinforced.

### CONCLUSIONS

Paediatric dentists and general dentists have the most influential role in preventing and reducing the severity of early childhood caries in young children. By embracing the concepts of the 'dental home', perinatal and infant oral health, providers can implement preventive and treatment protocols. These care paths are based on individually determined caries risk and utilize an appropriate age-specific caries risk assessment. For example, care for very young children should include preventive interventions such as fluoride varnish applications, sealants and use of xylitol products. When restoration is required but can't be performed readily for a variety of reasons, practitioners should consider interim therapeutic restorations (ITR), employing the use of hand or slow speed rotary instruments for partial caries removal followed by the application of adhesive, fluoride releasing restoratives such as auto-curing resin-modified glass ionomer cement.<sup>49</sup> Motivational interviewing, anticipatory guidance and setting self-management goals increases the probability for better oral health outcomes and behaviour, not just for the child, but for the whole family. Partnerships with other

healthcare professionals with the aim of providing preventive care for our high risk populations is crucial to achieving better oral health outcomes in the future. The overall aim is to lower the risk level over time and eliminate the need for further restorations by controlling the caries process.

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Table 3 Caries management protocol for 3–6-year-olds

Risk category Ages 3 to 6	Diagnostic			
	Periodic oral exams	Radiographs	Saliva test	Fluoride
Low	Annual	Posterior bitewings at 12–24 month intervals if proximal surfaces cannot be examined visually or with a probe	Optional Baseline	In office: no Home: Brush twice a day w/ pea size of F toothpaste
Moderate	Every 6 months	Posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Recommended	In office: F varnish initial visit and recalls Home: Brush twice a day w/pea- size of F toothpaste Caregiver: OTC Sodium Fluoride treatment rinses
Moderate; non-Compliant	Every 3–6 months	Posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit and recalls Home: Brush twice a day w/pea- size of F toothpaste combined w/pea-size of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses
High	Every 3 months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit and recalls Home: Brush twice a day w/pea-size of F toothpaste combined w/pea-size of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses
High; non-Compliant	Every 1–3 months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit and recalls Home: Brush twice a day w/pea-size of F toothpaste combined w/pea-size of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses
Extreme	Every 1–3 months	Anterior (#2 occlusal film) and posterior bitewings at 6–12 month intervals if proximal surfaces cannot be examined visually or with a probe	Required	In office: F varnish initial visit & recalls Home: Brush twice a day w/pea-size of F toothpaste combined w/pea-size of 900 ppm calcium- phosphate paste leave-on at bedtime Caregiver: OTC sodium fluoride treatment rinses

- experience at 3 years of age. *Caries Res* 2007; **41**: 392–398.
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## Erratum

Practice article (*BDJ* 2012; **213**: 447–451)

*'Minimal intervention dentistry: part 2. Caries risk assessment in adults'*

In the above practice article, the original article was actually adapted from: Fontana M, Gonzalez-Cabezas C. Evaluation du risque carieux chez l'adulte. *Réalités Cliniques* 2011; **22**: 213–219.

We apologise for any confusion caused by this error.