



RESEARCH ARTICLE

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## ANTICIPATORY GUIDANCE IN PEDIATRIC DENTISTRY-A LITERATURE REVIEW

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### ABSTRACT

Anticipatory guidance is to educate adolescents on the detrimental effects associated with these risky behaviours in hopes that they may elect not to participate in these activities when pressured by their peers. Childhood often takes place at home, and parents, being the primary role models, have a major influence on their children's oral hygiene and dietary practices. . A child's oral health begins in utero. Bacteria causing Early Childhood Caries (ECC) are easily transmitted from parents/ caregivers to child and when left untreated can lead to ain, infection, as well as difficulty in eating, speaking, and even learning. By applying Anticipatory Guidance to dental preventive education in an organized way by all pedodontists will bring the attention of parents and be more successful in preventive dentistry.

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## INTRODUCTION

Infancy and toddlerhood are considered as dynamic stages in terms of dental development and stabilization of the oral health habits. Improving maternal knowledge about these periods plays a major role in developing oral health habits and preventing diseases like ECC. *The American Academy of Paediatric Dentistry* introduced anticipatory guidance to present this information. Therefore, the best time to start informative programs is the prenatal period. <sup>1</sup>Those parents who are expecting the birth of their child, especially their first, will welcome the preventive advice the most. The anticipatory guidance is relatively new in dentistry and is described as a consultancy technique which discusses children's needs at a particular stage of life.<sup>1</sup>In addition, it is important for mothers to have sufficient information on the condition of their oral health. Hence, the guidance emphasizes on the importance of mother's oral health and the possibility of transmission of cariogenic bacteria to their child. Anticipatory guidance is the *implementation of preventive strategies* based on a risk assessment.

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The goal of this form of anticipatory guidance is to educate adolescents on the detrimental effects associated with these risky behaviours in hopes that they may elect not to participate in these activities when pressured by their peers .Childhood often takes place at home, and parents, being the primary role models, have a major influence on their children's oral hygiene and dietary practices. Indeed, studies have shown that oral health education (OHE) that targets parents, especially mothers, is useful within the prevention of ECC<sup>5-6</sup>. One technique that has been suggested to extend the effectiveness of OHE is targeting the oldsters through anticipatory guidance. A child's oral health begins in utero. Bacteria causing Early Childhood Caries (ECC) are easily transmitted from parents/ caregivers to child and when left untreated can lead to pain, infection, as well as difficulty in eating, speaking and even learning. These difficulties can have effect on cognitive development, school readiness and self-esteem thus reducing the child's quality of life. The effects of ECC including an increased risk of caries in the mixed and permanent dentition, often persist into adulthood. In a society where mothers play a significant role in rearing their childhood, it is important to instil the education on anticipatory guidance regarding infant oral health care when they are expecting a baby.

## Definition

Anticipatory Guidance (AG) is a proactive development based counselling technique that focus on the needs of a child at each stage of life.<sup>1-2</sup> Anticipatory guidance defined as the preparation of a patient for an anticipated development and/or situational crisis. Anticipatory guidance is the term often used to describe the discussion and implementation of such a plan with the patient and/or parents. It is compliment to Caries Assessment Tool. The aim of AG is to deal with protective factors in effort to stop oral ill health. Basically a counselling which provides info to parents that some situations which can occur can be avoided by following these instructions It is a proactive counselling of parents and patients about developmental changes that will occur in the interval between health supervision visits that includes information about daily caretaking specific to that upcoming interval<sup>6</sup>. Individualized discussion and counselling are an integral part of each visit and parents will be counselled on: Oral hygiene maintenance and its importance, Dietary habits, Development of oral tissues, Fluoride needs, Non – nutritive habits, Use of antimicrobials and medications on oral health, Speech and language development, Injury prevention, Tobacco abuse, substance abuse, and intraoral and perioral piercing.

These factor affect not only the physical health but also the emotional health and psychological well-being of the individual. Anticipatory Guidance needs to start from the prenatal period itself as the health status of the mother significantly affects the child. Anticipatory guidance also presumes that developmental information should cover the period until the next health supervision visit. A list of topic areas for anticipatory guidance and the knowledge base needed for each area; these should be considered when covering anticipatory guidance for the “pre-three” children, which is children in their first 36 months of life. The disease in childhood in which main anticipatory guidance was given is Early Childhood Caries which is *by the presence of one or more decayed (non - cavitated or cavitated) missing (because of caries) or filled tooth surfaces in any primary tooth in a child up to 6 years of age.*<sup>1-2</sup> Anticipatory guidance as defined by Nowak and Casamassimo is that the “process of providing information about the youngsters to their parents by alerting them to impending changes, teaching them their role in maximizing their children’s developmental potential, and identifying their children’s special needs.

**Caries Risk Assessment:** Risk assessment may be a key element and its goal is to stop disease by identifying and minimizing causative factors (eg, microbial burden, dietary habits, plaque accumulation) and optimizing protective factors (eg, fluoride exposure, oral hygiene, sealants).<sup>6</sup> Children are most likely to develop caries if Streptococci mutans are acquired at an early age. Early Childhood Caries can be a costly, devastating disease with lasting detrimental effects on the dentition and systemic health. Tool to identify the risk factors mainly causing Early Childhood Caries. Risk assessment can assure preventive care is tailored to each individual’s needs and direct resources to those for whom preventive interventions provide the greatest benefit. Caries-risk assessment for infants determines the patient’s relative risk for dental disease and allows for the institution of appropriate strategies as the primary dentition begins to erupt. Caries-risk assessment also allows health care professionals to identify and refer high caries-risk patients for

appropriate dental management. The early establishment of a dental home, including Early Childhood Caries prevention and management, is the ideal approach to infant oral health care. The inclusion of oral health education into the curriculum of medical, dental, nursing, and allied health professional programs can facilitate the acceptance of the age one dental visit. Recent studies, noting that a majority of paediatricians and general dentists were not advising patients to see a dentist by one year of age, point to the need for increased infant oral health care education in the medical and dental communities.<sup>8</sup> Anticipatory guidance to reduce the risk of dental caries should include counselling regarding brushing of child’s teeth twice daily with the appropriate amount of fluoridated toothpaste, diet analysis, and counselling to reduce the consumption of sugar-containing beverages.<sup>9</sup> The use of fluoride for the prevention and control of caries is documented to be both safe and effective.<sup>10</sup>

Optimal exposure to fluoride is important to all dentate infants and children. Systemically-administered fluoride should be considered for all children who do not receive fluoride by consuming fluoridated water (less than 0.7 part per million) in after determining all other dietary sources of fluoride exposure.<sup>11</sup> The correct amount of fluoridated toothpaste should be used twice daily by all children regardless of risk. No more than a smear or rice-sized amount of fluoridated toothpaste should be used for children under age three.<sup>12</sup> Professionally-applied fluoride varnish should be considered for children at risk for caries. The AAP recommends the inclusion of the first caries risk assessment by child health professionals at age 6 months during well child visits and that referrals to a dentist for the establishment of dental home occur within 6 months of the eruption of the first primary tooth and no later than age 1 year. This is particularly critical for children considered at high risk for dental caries (AAP 2007; AAPDF 2007). Caries risk assessment is the determination of the likelihood of the incidence of caries (ie. The number of new cavitated or incipient lesions) during a certain time period.

**Contribution of Dietary Factors to Dental Caries and Disparities in Caries:** Understanding the roles of diet, eating behaviours, demographics, and environmental factors in contributing to increased caries rates in children is essential to improving their oral health. In particular, an established relationship has been reported linking malnutrition in children, inappropriate infant feeding practices, and excessive intakes of simple sugars to ECC. The association of dental caries to excessive sugar intake has been affirmed by an expert panel of the World Health Organization, whose members reviewed the strength of evidence linking dietary factors to caries in 2003. The panel reported an increased risk of caries associated with frequent and total intake of simple sugars, although longitudinal studies to support the role of specific nutrient and food components in caries risk or progression are lacking. Multiple environmental, social, and personal factors associated with eating behaviours.

**Malnutrition:** Malnutrition results from adverse changes in dietary intake, digestive and metabolic malfunctions, or the excretion of essential metabolically required nutrients. Undernutrition—an insufficient intake of nutrients, over nutrition an intake beyond required needs, and nutrient imbalances are all forms of malnutrition. Over nutrition is commonly associated with the substitution of low-cost, low nutrient– dense foods such as snacks that contain excessive

quantities of sugar, salt, and fat for lower energy, high nutrient– dense foods such as fruits. Dietary quality data expressed in the Healthy Eating Index from the same source for 2- to 5-yearold children indicates those with the best dietary practices are 44% less likely to exhibit severe ECC compared with children with the worst practices. Increased consumption of sugar-sweetened beverages, candy, chips, and cookies provides excessive calories to the child, increases the risk of caries, and when combined with inadequate intake of fruits and vegetables, deprives the child of nutrients essential to growth and development. Low-nutrient–dense foods are ubiquitous and largely responsible for many chronic health problems in both developing nations and developed parts of the world.<sup>15</sup> Programs to improve children’s oral and general health include the following necessary elements:

- J **Dietary counsel.** Health professionals and others as appropriate need to counsel parents, other caretakers, and children to moderate sugar, salt, and fat intake to achieve adequate growth and development and adhere to high quality diets, following dietary guidelines by using MyPyramid resources provided by the USDA.<sup>15, 30</sup> Education should include the role of frequency of consumption of sugary foods and beverages and why frequency can increase caries risk.
- J **Advocacy.** Health professionals and allies should organize, lead, and work with local community, state, and national organizations to improve access necessary for a healthful diet, including, for example, the promotion of legislation to provide incentives for establishing well-stocked supermarkets and grocery stores in poor neighbourhoods.
- J **Health professional training.** Health professional training and continuing education should include skill development in diet promotion and counselling in support of oral and general health. Representation on local, regional, and state boards involved in improving environments that support healthy communities, schools, and families should be sought and leadership should be achieved.
- J **Advice to expectant mothers.** Educational protocols need to be established to advise pregnant women about healthy diets and provide guidance on infant feeding, emphasizing the value of breast feeding and the necessity of restricting night-time bottle feeding to decrease caries risk.
- J **Guidance on home eating patterns.** Parents should be advised that they are role models able to set eating behaviours at home by providing high-quality meals and having fruits and vegetables and other healthy foods available as snacks. Advice should include discouraging frequent consumption of high-fat, high-sugar foods and the realization that acceptance of new foods may require repeated presentations of the food. Community resources to assist families in developing skills in purchasing and preparing healthy foods and meals should be included in patient education.
- J **Cultural/ethnic sensitivity.** Family demographics, cultural/ethnic practices, and food related environmental issues should be routinely taken into consideration to tailor education and counselling to the unique needs of a family.
- J **Skilled health care providers.** Multidisciplinary teams including dental professionals, paediatricians, nurses, registered dietitians, family practice physicians, and

other allied health care professionals should be trained to screen, educate, and counsel children and families to access care and seek medical and dental homes with active health promotion programs that include diet, nutrition, and dental education resources. Awareness among primary care providers of the potential association between obesity and caries can lead to early interventions and improved health status for all children.

**Prenatal Counselling:** Maternal oral health and caries status adversely affects infant’s oral health as vertical transmission of streptococci mutans has been well documented and the condition so caused is also aptly named as “Maternally derived Streptococcus Mutans disease.”<sup>46</sup>Elicit any previous illness. History regarding Drugs Also studies have revealed a reduction in the caries activity in children whose mothers used xylitol products as xylitol significantly reduces the levels of mutans streptococci by disrupting the energy production processes leading to a futile energy consumption cycle and cell death. Preterm infants and infants with very low birth weight experience a higher incidence of enamel (tooth) defects and enamel hypoplasia. Studies has shown that periodontal disease has been linked to preterm labour. So expecting mothers should take the required professional advice to make sure optimal oral health for the infant. Identifying mothers with high levels of cavity and poor oral health and educating them on the importance of their own oral health and therefore the future health of their unborn child can help change their trajectory of oral health. Timely delivery of educational information and preventive therapies to these parents may reduce the incidence of ECC, prevent the need for dental rehabilitation, and improve the oral health of their children.<sup>47</sup>Physicians, nurses, and other health care professionals are far more likely to see expectant or new mothers and their infants than are dentists.

Therefore, it is essential that these providers be aware of oral anomalies and associated risk factors of dental caries in order to make appropriate decisions regarding timely and effective interventions for pregnant women and facilitate the establishment of a dental home for the child. Most of the pregnant women get no instructions during their pregnancy regarding oral health even though pregnancy is a phase of increased acceptance of instructions that should be used as an opportunity to introduce preventive programs. Improving maternal knowledge plays a major role in preventing ECC and in developing good oral health habits in their children. Therefore the best time to start these informative programs is the prenatal period. Those parents who are expecting the birth of their child, especially their first, will welcome the preventive advice the most. Few studies have explored the effects of oral health education on pregnant women. The results of these studies indicate that the presentation of anticipatory guidance led to the increase in the knowledge about maternal, infant and toddler’s oral health care. Cardenas and Damon evaluated the gain in knowledge of oral health after pregnant women were educated about it and they reported an improvement in knowledge after a 10 minute presentation on dental anticipatory guidance immediately and after a month.<sup>48</sup>Keeping in mind the importance of measuring the knowledge and attitude of pregnant women related to infant and toddler’s oral health care and lack of studies carried out on this issue in this particular population, the present study is aimed at providing pregnant women with an anticipatory

guidance and evaluating its effect on promoting the knowledge and attitude of the pregnant mothers regarding infant and toddler's oral health care.

**Development of Oral Tissues:** The eruption sequence, the ages of eruption of the primary teeth (from about 6 months to 3 years of age) and the associated conditions has to be explained during counselling<sup>50</sup>. Emphasis must be placed on importance of primary teeth for chewing, speaking, jaw development, overall growth and self-esteem. Hygiene practices such as brushing and flossing to be inculcated at the earliest to facilitate the maintenance of oral health. Importance of balanced diet and restriction of intake of refined carbohydrates is to be stressed upon to minimize colonization by cariogenic flora. Certain conditions in the oral cavity of the infant which are of clinical significance such as Epstein Pearls, Bohn's Nodules and Gingival cysts of the new-born are to be discussed and the parents have to be reassured as they do not warrant any treatment

### Child Examination

Proper positioning of child is critical in conducting an effective and efficient clinical examination. Knee –to – Knee positioning is recommended for children aged 6 months to 3 years and up to 5 years for children with special health care needs.<sup>51</sup> This Knee –to - knee position allows

- ) The child to see the parent throughout the examination
- ) Reduces anxiety for the child
- ) Allows parents to directly observe the oral findings and to receive hygiene instructions
- ) Helps in stabilizing the child during examination

Examination of the infant's mouth includes examination of baby's gums. The *first examination is recommended at the time of the eruption of the first tooth and no later than 12 months of age.*<sup>52</sup> The most common interval of examination is six months; however, some patients may require examination and preventive services at more or less frequent intervals, based upon historical, clinical, and radiographic findings. Re-evaluation and reinforcement of preventive activities helps give instructions for the caregiver of the child or adolescent, continuous evaluation of the patient's health status, and repetitive exposure to dental procedures, potentially allaying anxiety and fear for the apprehensive child or adolescent.<sup>53</sup> Natal teeth may be retained as they are primary teeth. Extraction of these teeth may be contemplated if they are likely to be aspirated or significantly irritate the tongue (Riga-Fede's disease) or lip. The need for establishment of a dental home and regular dental visits for the child should be stressed. Once the child is over 3 years the importance of sealant placement on primary teeth and afterward permanent teeth should be told to the parents.

**Peri Natal Oral Health & Oral Hygiene:** The perinatal period is defined as the period around the time of birth, beginning with the completion of the 20th to 28th week of gestation and ending one to four weeks after birth.<sup>54</sup> It is essential for the health and well-being of their new-born children. It is critical to think about an infant oral care programme within the context of mother – child pair or "dyad" that has comprehensive maternal perinatal oral health care and treatment as there exists an immediate

relationship between adult caregiver levels of Mutans Streptococci and therefore the levels of Mutans Streptococci and Caries prevalence in their children. Parents should be instructed to start wiping the baby's mouth with a soft cloth or finger along the baby's upper and lower gums twice a day. Also to brush with a soft toothbrush and a smear of fluoridated toothpaste as soon as the first tooth erupts into the oral cavity. Parents should also be advised against sharing of utensils and cups with their babies to reduce the spread of bacteria. Practitioners should counsel parents that high frequency consumption of sugars by bottle-feeding, Sippy cup use, or between meal consumption of sugars increases the risk of caries.<sup>55</sup> The American Academy of Paediatrics has recommended children one through six years of age consume no more than four to six ounces of 100 percent fruit juice per day, from a cup (i.e., not a bottle or covered cup).<sup>56</sup> Epidemiological research shows that human milk and breast-feeding of infants provide general health, nutritional, developmental, and psychological advantages while significantly decreasing risk for a large number of acute and chronic diseases.<sup>52</sup> Frequent night-time bottle-feeding with milk and ad libitum breast-feeding are associated, but not consistently implicated, with ECC.<sup>57</sup> Parents also should be counselled that prolonged non-nutritive oral habits may contribute to deleterious changes in the child's occlusion and facial development.

**Management of perinatal and infant oral health:** *Oral health care for pregnant and lactating women.* The perinatal period is an opportune time to educate and perform dental treatment on expectant mothers.<sup>54-56</sup> Pregnancy care visits provide a teachable moment for physicians, dentists, and nurses to educate women about the following:

- Diet including the adequate quality and quantity of nutrients for the mother-to-be and the unborn child. This education also should include information regarding the caries process and food cravings that may increase the mother's caries risk.
- Comprehensive oral examination, dental prophylaxis, and treatment during pregnancy. Dental treatment during pregnancy, including dental radiographs with proper shielding and local anaesthetic, is safe in all trimesters and optimal in the second trimester. Due to possible patient discomfort, elective treatment sometimes could also be deferred until after delivery.
- Proper oral hygiene, using a fluoridated toothpaste, chewing sugar-free gum, and eating small amounts of nutritious food throughout the day to help minimize their caries risk. Continued breast-feeding along with complementary foods for a period of one year or longer.<sup>59</sup> the transfer of drugs and therapeutics into breastmilk should be considered, especially in infants younger than six months of age.<sup>60</sup>

**Oral health care for the infant:** Parents should be encouraged establish a dental home for infants by 12 months of age that includes the following:

- ) an initial visit with thorough medical (infant) and dental (parent and infant) histories, a radical oral , performance of an age-appropriate tooth and gum cleaning demonstration, and fluoride varnish treatment if indicated.<sup>61</sup>

|                               | LOW RISK   | MODERATE RISK  | HIGH RISK  |
|-------------------------------|--|--|--|
| <b>Clinical conditions</b>    | 1. No carious teeth in past 24 months<br>2. No enamel demineralization(enamel caries “white spot lesions”)<br>3. No visible plaque; no gingivitis  | 1. Carious teeth in the past 24 months<br>2. One area of enamel demineralization(enamel caries “white spot lesions”)<br>3. Gingivitis  | 1. caries teeth in the past 12 months<br>2. more than one are of enamel demineralization ( enamel caries “white spot lesions”)<br>3. visible plaque in anterior (front teeth)<br>4. radiographic enamel caries<br>5. High titers of Newton’s streptococci<br>6. wearing dental or orthodontic appliances<br>7. enamel hypoplasia |
| Environmental characteristics | 1.Optimal systemic and topic fluoride exposure<br>2.Consumption of simple sugars or foods strongly associated with caries irritation primarily at mealtimes<br>3.High caregiver socioeconomic status<br>4.Regular use of dental care in an established dental home | 1.Suboptimal systemic fluoride exposure with optimal topical exposure<br>2.Occasional (ie one to two) between meal exposure to simple sugars or foods strongly associated with caries<br>3. Midlevel caregiver socioeconomic status (ie. Eligible for school lunch program or state children’s health insurance program)<br>4.Irregular use of dental services | 1. Frequent (ie. Three or more) between meal exposures to simple sugars or foods strongly associated with caries<br>2. Low level caregiver socioeconomic status (ie. Eligible for Medicaid)  |
| General Health Conditions     |  |  | 1.No usual source of dental care<br>2.Active caries present in the mother<br>3.Children with special health care needs<br>4.Conditions impairing saliva composition/flow   |

- J Assessing the infant’s risk of developing caries and determining a prevention plan, anticipatory guidance regarding the effects of diet on the dentition, use of fluoride, and interval for periodic re-evaluation.
- J Caries management of infants and toddlers with known risk factors for ECC. This should be provided by practitioners who have the training and expertise to manage both the young child and the disease process.
- J Injury prevention counselling to prevent orofacial trauma. Discussions should include play objects, pacifiers, car seats, and electric cords.<sup>61</sup>
- J Counselling regarding teething. While many children have no apparent difficulties, teething can lead to intermittent localized areas of discomfort, irritability, and excessive salivation. Treatment of symptoms includes oral analgesics and chilled teething rings for the child.<sup>58</sup> Use of topical anaesthetics, including over-the-counter teething gels, to relieve discomfort should be avoided due to potential toxicity of these products in infants<sup>62</sup>
- J Discussion regarding atypical frenum attachments that may be associated with problems with breast-feeding. In some cases, frenuloplasty or frenectomy may be a successful approach to facilitate breast-feeding; however, there is a need for more evidence-based research to determine indications for treatment.<sup>63</sup>
- J Counselling regarding non-nutritive oral habits (e.g., digit or pacifier sucking,bruxism, abnormal tongue thrust) which may apply forces to teeth and dentoalveolar structures.
- J It is important to discuss the need for early sucking and the need to wean infants from these habits before malocclusion or skeletal dysplasia occur.<sup>64</sup>
- J The desired goal of oral health counselling is for improved oral health behaviours.
- J Motivational interviewing (**MI**) has been successful in promoting change in health be-haviors.<sup>65</sup> MI is a personalized approach that raises caregiver and child awareness of the problems, setting oral health goals, and co-evaluating if current behaviours are consistent with the goals.

**Teething:** Eruption of primary teeth at about 6-9 months can go unnoticed or can be stressful for the child causing irritation, restlessness, drooling of saliva, loss of appetite. Discomfort may be reduced by

- J Chewing on a hard or frozen teething ring.
- J Applying pressure over the gums or rubbing them with clean fingers.
- J Temporarily numbing the gums by applying topical anaesthetics.

For a 5year old child the parents should be informed about the eruption of the first permanent molar and that a baby tooth will not be lost when this occurs.

**Diet, Nutrition And Food Choices:** Caries conducive dietary practices appear to be established early by 12 months of age. The Parents / caregivers should be informed against putting baby to bed with a bottle. The ill effects of feeding are also to be intimated. Children should be encouraged to use the cup as early as possible (by 1 year of age). Acids in carbonated beverages can have a deleterious effect on tooth enamel causing erosion. Prolonged bottle feeding with sugar containing drinks and frequent between meal consumption of sugar containing snacks or drinks (juice, formula, soda) should be thoroughly discouraged. Parents should be educated that the frequency of sugar exposures is more detrimental to oral health rather than the amount of sugar. Dietary analysis is to be done at periodic intervals and the role of dietary choices on oral health, malnutrition and obesity is to be addressed through nutritional and preventive oral health counselling Restrict snack only during meal times not only type of food, form frequency Diet chart food that are added sugar are circled, detergent food/ anticariogenic.

Healthy alternatives are to be suggested for replacing the cariogenic foods.Emphasis should also be placed on importance of balanced diet for children. Parents and patients should even be educated about the complications of Eating Disorders in young adolescents like Bulimia and anorexia which are psychosomatic in nature, end in cervical erosion.

The effective management of food intake and nutrition are both key to healthiness.

| ASSESSMENT DENTAL HEALTH DIET SCORE: |                 |                                   |
|--------------------------------------|-----------------|-----------------------------------|
| SCORE                                | RESULT          | INTERPRETATION                    |
| 72-96                                | Excellent       | Counseling not required           |
| 64-72                                | Adequate        | Educate the patient               |
| 56-64                                | Barely adequate | Counseling required               |
| 56 OR less                           | Not adequate    | Counseling with diet modification |

Score < 56 diet counselling is emphasized:

#### Diet Analysis

|                   | SAT  |      | SUN  |      | MON  |      | TUES |      |
|-------------------|------|------|------|------|------|------|------|------|
|                   | Time | Item | Time | Item | Time | Item | Time | Item |
| Before breakfast  |      |      |      |      |      |      |      |      |
| Breakfast         |      |      |      |      |      |      |      |      |
| Morning           |      |      |      |      |      |      |      |      |
| Mid-day meal      |      |      |      |      |      |      |      |      |
| Afternoon         |      |      |      |      |      |      |      |      |
| Evening meal      |      |      |      |      |      |      |      |      |
| Evening and night |      |      |      |      |      |      |      |      |

**Fluoride Needs:** Since fluoride contributes to the prevention, inhibition and reversal of caries, the family's source of drinking water (bottled versus tap water, filtered or non-filtered, water treated by reverse osmosis) is to be assessed for the content of fluoride.<sup>67</sup>Supplements of fluoride or topical fluoride applications should be advised depending upon the needs of the patient. The harmful effects of fluorosis are to be highlighted to all or any patients from areas of high natural fluoride content. Uses of non-fluoride preventive measures such as xylitol wipes, chlorhexidine mouthwashes, CPPACP are to be considered to minimize the caries risk.<sup>68</sup>The body's natural repair mechanism for dental caries, or demineralization, is remineralization, a process whereby minerals from saliva diffuse back into the porous subsurface region of the caries lesion.

The cycle of demineralization and remineralization continues throughout the day. When fluoride is present in saliva it is adsorbed strongly to the demineralized surface of the tooth and protects its crystal surface against acid dissolution. Whether a lesion will progress, stay an equivalent or reverse is decided by the balance between protective factors and pathological factors. Exposure to post eruptive or topical fluoride has a greater protective effect than systemic fluoride. Fluoride helps prevent cavity by making the tooth more immune to acid attacks from plaque bacteria and sugars

within the mouth. It also reverses early decay. In children under 6 years aged, fluoride becomes incorporated into the event of permanent teeth, making it difficult for acids to demineralize the teeth. Fluoride also helps speed remineralization also as disrupts acid production in already erupted teeth of both children and adults.

**Non-Nutritive Habits:** Non – Nutritive oral habits and pacifier habits may apply forces to teeth and dento alveolar structures. Although the utilization of pacifiers and digit sucking are considered normal, habits of sufficient intensity, duration and frequency can contribute to deleterious changes in occlusion and facial development.<sup>70</sup>So it becomes important to discuss the need to wean from the habits as early as possible (by 3years of age). For school aged children and adolescents patient counselling regarding any existing habits (nail biting, bruxism, clenching) is appropriate.

**Sucking Habits:** Sucking is a natural reflex which is present in-utero and is generally given up by 4 – 5 years of age, but if it persists beyond this age it may result in malocclusions.<sup>71</sup>To break the habit, child must be educated about the harmful effects of thumb sucking. The source of stress also needs to be addressed. Pacifier sucking is to be discouraged. If in the early ages child uses a pacifier then certain precautions are to be taken such as

- )] Don't add or dip the pacifier into the flavouring agent.
- )] Never allow children to share a pacifier.
- )] Never leave an infant unattended with the pacifier in the mouth.
- )] Do not allow an infant to sleep with the pacifier.
- )] Pacifiers are to be kept clean .
- )] Replace the pacifier regularly to avoid using one that is torn or ripped.
- )] Never force a pacifier into child's mouth and never pull out one forcibly from the child's mouth.
- )] Never attach a pacifier to the child's body or crib with a string, ribbon or cord.
- )] Pacifier is to be wider than child's mouth. Use of the pacifier is to be discouraged if the entire pacifier fits into child's mouth.
- )] Never Substitute a bottle nipple for a pacifier.
- )] Discourage the habit as early as possible.

**Speech And Language Development:** Speech and language are integral components of child's early development. Deficiencies and abnormal delays in speech and language production should be recognized early and appropriate referral made to address these concerns.<sup>72</sup>Communication and Co-ordination of appliance therapy with a speech and language professional can assist in timely treatment of speech disorders.

#### Injury Prevention

Facial trauma that leads to fractured, displaced or lost tooth can have significant negative, functional, aesthetic and psychological effects on children. Greatest incidence of trauma to the primary dentition occurs at 2 – 3 years of age and most common injuries to the permanent dentition occur secondary to falls, traffic accidents and sports.<sup>73</sup>Practitioner needs to provide age appropriate injury prevention counselling for orofacial trauma. Initially discussions should include



advice regarding playing objects, pacifiers, car seats and electric cords. "Childproofing the home" becomes mandatory that has electrical cord safety and poison control. The utilization of "car seat" must be emphasized.

**Antimicrobials, Medications and Oral Health:** Presence of sucrose and/or other fermentable carbohydrates in the formulation of Paediatric medicines and the low pH values contribute to the cariogenic potential of these drugs.<sup>74</sup> One of the most common practices observed was the tendency to add sugar to the medicine to make the taste more acceptable thus contributing to the cariogenic potential of the drug. Patients with Respiratory and Renal diseases are at a greater risk of caries development. The use of sugar products (syrups, expectorants antibiotics in solution, tonics, and homeopathic products) make the child more susceptible to dental caries as they need to be administered for potentially longer duration of time period and at night especially when the salivary flow is less and reduced reflexes of swallowing and muscle movement thus ensuring the retention of carbohydrate intraorally for a greater duration<sup>75</sup>. Antimicrobial therapy may be a sort of oral treatment wont to eliminate or reduce the event of bacterial infections within the mouth. The therapy aims to stop periodontitis resulting from infections, which may cause painful, bleeding gums and loosening of your teeth.

#### GUIDELINES FOR 6 TO 12 MONTHS OF AGE

##### Milestones: the eruption of the first primary tooth

##### Oral development

- ) Review pattern of eruption
- ) Review teething information- local discomfort & irritability

##### Fluoride

- ) Assess fluoride status- no more than rice sized fluoridated toothpaste used twice daily
- ) Determine supplements if needed such as fluoride varnish

##### Oral hygiene/health

- ) Review oral hygiene techniques with parents
- ) Plan for next visit based on risk assessment

##### Habits

- ) Review pacifier use
- ) Discuss thumb sucking effects on mouth

##### Nutrition and diet

- ) Encourage weaning at the appropriate time
- ) Weaning should occur at 4 -6 months
- ) Stage 1 : 4-6 months - food must be sieved, pureed or very finely minced
- ) Stage 2 :6-9 months – minced and mashed food includes small soft lumps
- ) Stage 3 : 9-12 months – baby should eat similar foods to the rest of the family
- ) Discuss the role of sugar in dental caries initiation

#### Injury prevention

- ) Review what to do if patient has traumatic injury
- ) Provide emergency number

#### GUIDELINES

- ) Complete the clinical oral examination with adjunctive diagnostic tools (e.g., radiographs as determined by child's history, clinical findings, and susceptibility to oral disease) to assess oral growth and development, pathology, and/ or injuries; provide diagnosis.<sup>78</sup>
- ) Provide oral hygiene counselling for parents, including the implications of the oral health of the caregiver. Remove supragingival and subgingival stains or deposits as indicated.
- ) Assess the child's systemic and topical fluoride status (including type of infant formula used, if any, and exposure to fluoridated toothpaste) and provide counselling regarding fluoride. Prescribe systemic fluoride supplements, if indicated, following assessment of total fluoride intake from drinking water, diet, and oral hygiene products.<sup>79-80</sup>
- ) Assess appropriateness of feeding practices, including bottle and breast-feeding, and provide counselling as indicated. Provide dietary counselling related to oral health.<sup>81</sup> Provide age-appropriate injury prevention counselling for orofacial trauma.
- ) Provide counselling for non-nutritive oral habits (e.g., digit, pacifiers).
- ) Provide required treatment and/or appropriate referral for any oral diseases or injuries.
- ) Provide anticipatory guidance.
- ) Consult with the child's physician as needed.<sup>82</sup>
- ) Complete a caries risk assessment.
- ) Determine the interval for periodic re-evaluation.

#### GUIDELINES FOR 12 TO 24 MONTHS OF AGE

##### Milestones: completion primary dentition, occlusal relationships establishment, arch length determined

##### Oral development

- ) Discuss importance of space maintaining
- ) Discuss about bruxism

##### Fluoride

- ) Re-assess fluoride status
- ) Discuss toxicity and how to manage accidental ingestion

##### Oral hygiene/health

- ) Review home oral care procedure and compliance
- ) Plan for next visit

##### Habits

- ) Review non-nutritive sucking
- ) Thumb sucking and pacifiers use
- ) Assess Anterior open bite, maxillary constriction

##### Nutrition and diet

- ) Discuss carbohydrate and their role in plaque development
- ) Discuss the frequency of carbohydrate intake as caries factor

### Injury prevention

- ) Discuss electric cord safety, child proofing the house, and use of car seats
- ) Develop plans for oral trauma management for preschool and child care

### GUIDELINES

- ) Re-do the procedures for ages six to 12 months every six months or as indicated by individual patient's risk status/susceptibility to disease.
- ) Assess appropriateness of feeding practices (including bottle, breast-feeding, and no-spill training cups) and provide counselling as indicated.<sup>83</sup>
- ) Review patient's fluoride status (including any childcare arrangements which can impact systemic fluoride intake) and supply parental counselling. Provide topical fluoride treatments every six months or as indicated by the individual patient's needs.<sup>84-85</sup>

### GUIDELINES FOR 2 to 6 year OF AGE

#### Milestones: loss of first primary tooth, eruption of first permanent molar or incisor

#### Oral development

- ) Review patterns of eruption, point out permanent incisor and molar
- ) Review healthy periodontal status

#### Fluoride

- ) Reassess fluoride status at periodic visit & determine both supplement and age appropriate vehicle
- ) Fluoridated toothpastes not more than a pea size
- ) Child should brush under the supervision of parents to ensure expectation

#### Oral hygiene/health

- ) Review home oral care procedures and compliance
- ) Discuss dental sealants and describe dental radiographs for next visit based on risk assessment

#### Habits

- ) If child is still sucking the thumb, discuss how to help him stop the habit

#### Nutrition and diet

- ) Review diet outside the home and its cariogenic potential
- ) Discourage the use of food as a behavioural tool

#### Injury prevention

- ) Encourage the use of helmets, mouth guards, and car seats

- ) Develop plans for oral trauma management
- ) Review difference between primary and permanent teeth with parents during examination

### GUIDELINES

- ) Repeat the procedures for 12 to 24 months every six months or as indicated by individual patient's risk status/ susceptibility to disease. Provide age-appropriate oral hygiene instructions.
- ) Scale and clean the teeth every six months or as indicated by individual patient's needs.<sup>86</sup>
- ) Provide pit and fissure sealants for caries-susceptible primary molars and permanent molars, premolars, and anterior teeth.
- ) Provide counselling and services (e.g., mouth guards) as needed for orofacial trauma prevention.<sup>87</sup>
- ) To give assessment/treatment or referral of developing malocclusion as indicated by individual patient's needs.
- ) To give required treatment and/or appropriate referral for any oral diseases, habits, or injuries as indicated.
- ) Assess speech and language development and provide appropriate referral as indicated.<sup>88-89</sup>

### GUIDELINES FOR 6 to 12 year OF AGE

#### Milestones: eruption of first permanent molar Oral development

- ) Discuss about the importance first permanent molar
- ) Discuss the various preventive measures to be taken at this stage to prevent progression of caries

#### Nutrition and diet

- ) Review diet outside the home and its caries potential

#### Fluorides

- ) Application topical fluorides if needed
- ) Regular use of tooth paste is recommended
- ) Oral hygiene practices
- ) Parents should continue to monitor brushing and flossing frequency and adequacy
- ) Application of pit and fissure sealants.<sup>81</sup>

#### Habits

- ) Educate about any oral habits if it is present
- ) Educate the parents about transitional changes in the developing dentition and the importance of primary and permanent dentition

### GUIDELINES

- ) Repeat the procedures for ages two to six years every six months or as indicated by individual patient's risk status/susceptibility to disease.<sup>90</sup>
- ) Provide substance abuse counselling (e.g., smoking, smoke-less tobacco).
- ) Provide counselling on intraoral/perioral piercing.<sup>91</sup>

### GUIDELINES FOR ADOLESCENTS



- ) Prevention of periodontal disease become a special concern
- ) At this age group the main process utilized are<sup>92</sup>
  - o Rejection of many parental values
  - o The beginning of independent struggle
  - o The testing out types of behavioural experimentation
  - o Detect the behavioural experiment.
- ) Parents are educated that they should treat the child at this stage very diplomatically.<sup>93</sup>
- ) Parents should have a friendly approach
- ) The child should be given enough emotional support from parents.
- ) As pedodontist ignore all problems and attach to patients emotionally.

#### Oral hygiene/health

- ) The adolescent patient possess the fine motor skills necessary for adequate tooth brushing and flossing
- ) Problems in compliance are likely to be encountered

#### Diet

- ) High frequency of sugar consumption
- ) Progression of lesion halted with an appropriate diet and aggressive topical fluoride therapy.<sup>94</sup>

#### Fluorides

- ) Systemic fluorides are no longer benefit after the last permanent tooth erupt at about age of 13 years, except for patients who have functional third molars<sup>95</sup>
- ) Topical fluorides are the most effective preventive measure of smooth surface decay<sup>96</sup>

#### Orthodontics

- ) Many Patients undergo orthodontic treatment at this stage
- ) High risk for both gingivitis and gingival hyperplasia and for dental caries.<sup>97</sup>
- ) Topical fluoride application and thorough removal of the plaque from gingival areas

#### Smokeless tobacco

- ) Peer pressure and advertising exert pressure on adolescent to establish a habit that may result in addiction.
- ) Parents should be instructed / counselled not to rag or punish the adolescent as it may further worsen the habit.<sup>98</sup>
- ) Discuss the health risk in smoking
- ) Instruct parents to avoid smoking in front of their children
- ) Discuss nicotine replacement and medication

#### GUIDELINES

- ) Repeat the procedures for ages six to 12 years every six months or as indicated by individual patient's risk status/susceptibility to disease.<sup>99</sup>
- ) During late adolescence, assess the presence, position, and development of third molars, giving consideration to removal when there is a high probability of disease or

pathology and/or the risks associated with early removal are less than the risks of later removal.<sup>100</sup>

- ) At an age determined by patient, parent, and paediatric dentist, inform the patient regarding continuing oral care.
- ) First examination at the eruption of the first tooth and no later than 12 months.
- ) Initially, responsibility of parent; as child develops jointly with parents, then when indicated, only by child.
- ) Initially play objects, pacifiers, car seats; then when learning to walk; sports, routine playing and intraoral/perioral piercing.
- ) At every appointment discuss role of refined carbohydrates; frequency of snacking.
- ) At first discuss need for additional sucking; digits vs. pacifiers; then the need to wean from habit before eruption of a permanent incisor.
- ) As per American Academy of Paediatrics/American Dental Association guidelines and the water source.
- ) Up to at least 16 years.
- ) By clinical examination.
- ) Especially for children at high risk for caries and periodontal disease.
- ) As per AAPD Guideline on Prescribing Dental Radiographs.
- ) Appropriate discussion and counselling should be an integral part of each visit for care.
- ) Note: Please refer to Smiles for Children Office Reference Manual for benefits and limitations.<sup>101</sup>

#### Conclusion

By applying Anticipatory Guidance to dental preventive education is an organized way by all pedodontist will bring attention of parents and be more successful in preventive dentistry. Early dental intervention using Anticipatory Guidance may be the next frontier in dental caries reduction.<sup>100-102</sup> Anticipatory guidance led to change in the score of knowledge about infant and toddler's oral health in intervention groups compared to control group. The direct presentation had superiority over indirect presentation in increasing knowledge about their oral health care. Dentists should do their utmost to educate parents especially the pregnant mothers on children's oral health in a culturally and linguistically appropriate manner as oral health literacy is ultimately a pathway to health equity. Primary care health providers can play a significant role in the prevention of ECC. They are encouraged to seek out and complete certification courses in ECC prevention, management and anticipatory guidance. Continuation research is needed to evaluate the impact of cultural practices on ECC, efficacy of primary healthcare provider initiated oral health anticipatory guidance, referrals for dental care and parent education for the reduction of ECC incidence. Clinicians need to understand the dental caries process, including the process of enamel demineralization and remineralization, and the factors contributing to caries balance. The importance of early identification and intervention for infants and toddlers at high risk for cavity and first care health provider-delivered anticipatory guidance during well-child care visits can't be overestimated. Primary care health providers and other child health professionals are most likely to encounter new mothers and infants during their well-child care visits. It is essential that primary care health providers be aware of the infectious

pathophysiology and associated risk factors of dental caries in very young patients so that they may make appropriate decisions regarding timely and effective intervention (AAP,2007; American Academy of Paediatric Dentistry Foundation (AAPDF),2007)<sup>104</sup>.

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