INFANT ORAL HEALTH CARE

Dept of Pedodontics and Preventive Dentistry

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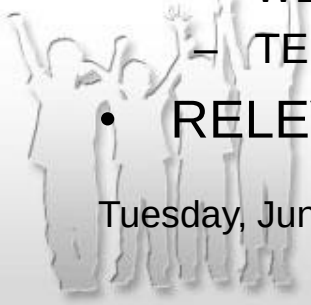


INTRODUCTION

- CDC and NIH (2000): reported that

  ‘Caries is the most prevalent infectious disease in our world’s children.’

- Dye BA (2007) reported :

  decreased prevalence of Dental Caries in children of older age groups and increased prevalence of Dental caries in children < 5 yrs.

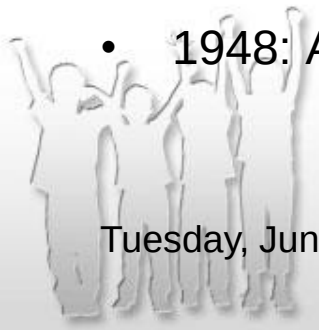
DEFINITION OF INFANT ORAL HEALTH

- According to AAPD:

Professional intervention within 6 months after the eruption of the first primary tooth or no later than 12 months of age directed at factors affecting the oral cavity, counseling on oral disease risks and delivery of anticipatory guidance.

HISTORICAL BACKGROUND

- 1927: American Society for the Prevention of Dentistry for Children (ASPD) was founded.
- 1937: G V Black proposed oral care beginning “as soon as a baby has a tooth”.
- 1941: ASPD was renamed American Society of Dentistry for Children.
- 1942: American Board of Pedodontics was founded.
- 1948: American.Academy of Pedodontics was founded.



- 1967: AAP began promoting children's healthcare that includes oral health.
- 1986: AAPD's first infant oral health care policy statement approved.
- 1994: The term Early childhood caries was adopted at CDC meeting.
- 2002: 'Dental home concept' was established – JADA publication

GOALS OF INFANT ORAL HEALTH PROGRAM

- To **identify**, **intercept** and **modify** the potentially harmful parenting practices that may adversely affect the infant's oral health.
- **Parent education** right from the prenatal period highlighting the importance of their role in the prevention of dental disease for their child.
- **Parent/ caregiver orientation** to perceive dental services as an integral part of infant's overall health program.
- **Periodic evaluation** of the oro-facial development and oral health by the clinician.

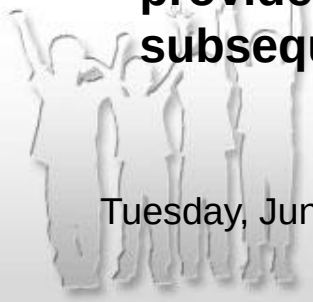
PREVENTION AND MANAGEMENT PROTOCOLS FOR INFANTS

Tuesday, June 11, 2024

- Early and accurate identification of children at risk is of great importance for cost-effective caries control.

- Since family physicians and pediatricians often see the child up to six times before age 2, 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. (**Ismail A I, Nainar SM et al**)

- **Nowak** (1997) has stated that “ **the goal of the first oral supervision visit is to assess the risk for dental disease, initiate a preventive program, provide anticipatory guidance and decide in the periodicity of subsequent visits**”.



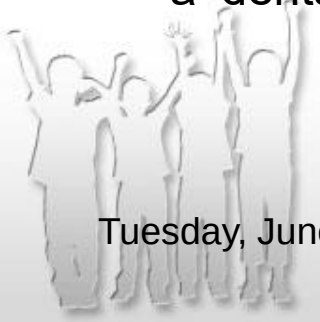
DENTAL HOME CONCEPT

- In 1992, the American Academy of Pediatrics (AAP) suggested a ‘medical home’ concept for primary paediatric healthcare.

- Following suit, the AAPD proposed the model of a ‘dental home’ concept to establish a relationship between each parent and dentist.

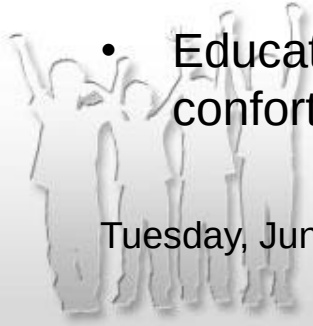
A dental home is defined as the ongoing relationship between the dentist and the parent where accessible and coordinated oral health care can be delivered comprehensively while actively involving family participation.[25]

- ADA and AAPD recommend that a child should see a dentist and establish a ‘dental home’ by one year of age or when the first tooth erupts.



REQUIREMENTS OF DENTAL HOME

- Comprehensive oral health care including acute care and preventive services in accordance with AAPD periodicity schedules.
- Comprehensive assessment for oral diseases and conditions.
- Individualized preventive dental health program based upon a caries-risk assessment and a periodontal disease risk assessment.
- Anticipatory guidance about growth and development issues (ie teething, digit or pacifier habit.)
- Plan for acute dental trauma.
- Information about proper care of the child’s teeth and gingivae.
- Dietary counselling.
- Referrals to dental specialists when care cannot directly be provided within the dental home.
- Education regarding future referral to a dentist knowledgeable and confortable with adult oral health issues for continuing oral heath care.



STEPS AT DENTAL HOME

- HISTORY:
  - Prenatal, birth and postnatal history

- EXAMINATION:
  - General examination and orofacial examination

RISK ASSESSMENT:

- By assessing various factors like dietary factors, feeding practices etc.
- Risk assessment helps in customization of a preventive protocol.

ANTICIPATORY GUIDANCE

- **Definition by AAPD**:

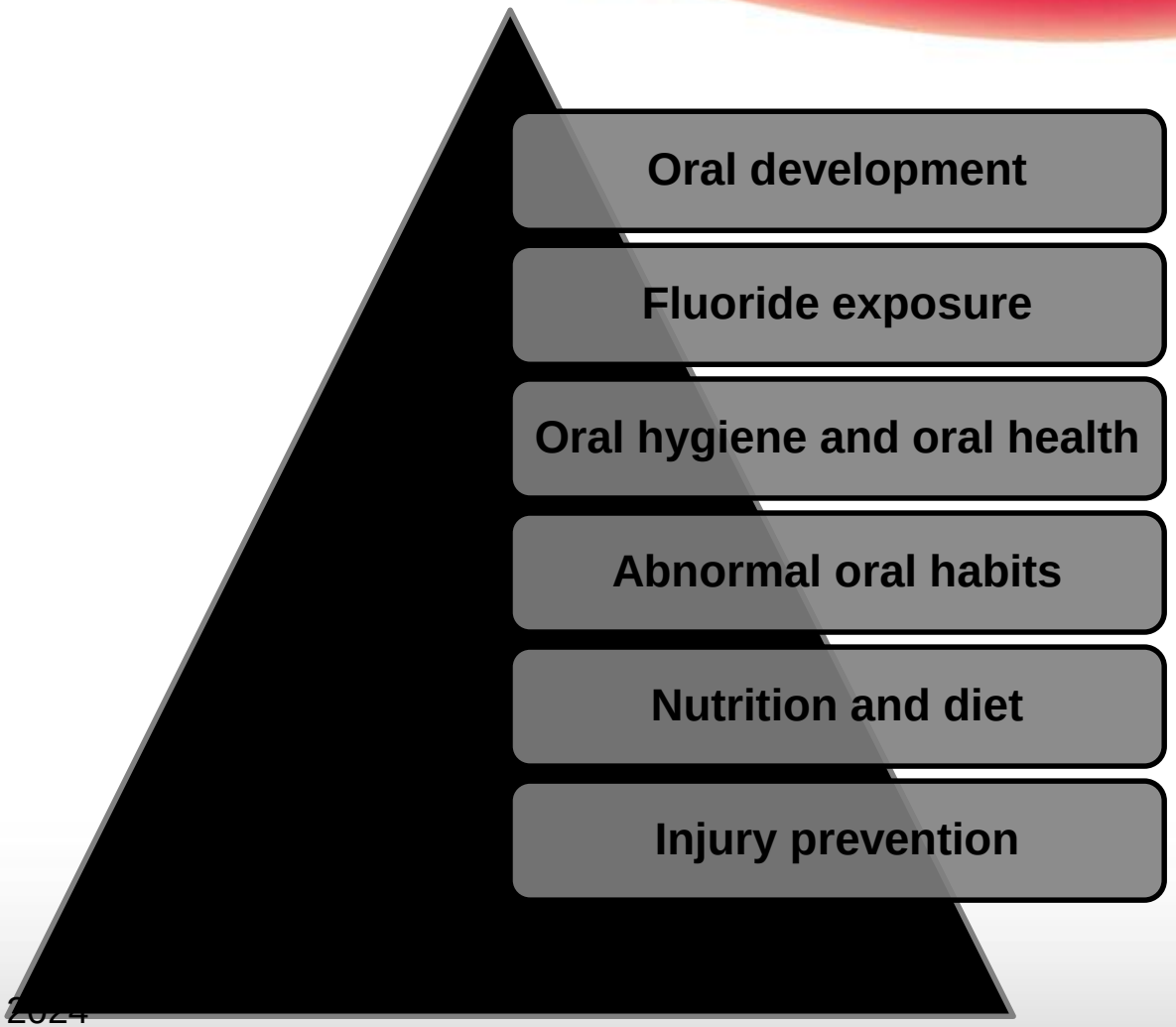
  "***The process to provide practical, developmentally appropriate information about the children's health to prepare parents for the significant physical, emotional and psychological milestones***."

- Aims:
  - Delivery of appropriate information.
  - Discussion based counselling.

- AAPD has identified three developmental age ranges associated with specific milestones.
- Each age range has six specific entiites called ‘ content areas’.
- Content areas:
  - Oral development
  - Fluoride adequacy
  - Oral hygiene
  - Diet and nutrition
  - Habits
  - Injury prevention

AAPD's Age Ranges

Content areas



PERINATAL ORAL HEALTH

- Generally, colonization of Strep. Mutans in the oral cavity of children is the result of transmission of these organisms from the child's primary caregiver. (Seki M et al)

- A direct relationship exists between MS levels in adult caregivers and that of caries prevalence in their children. (Douglas JM et al)

PERINATAL ORAL HEALTH

- Improving expectant mother's 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. (Ramos-Gomes F)

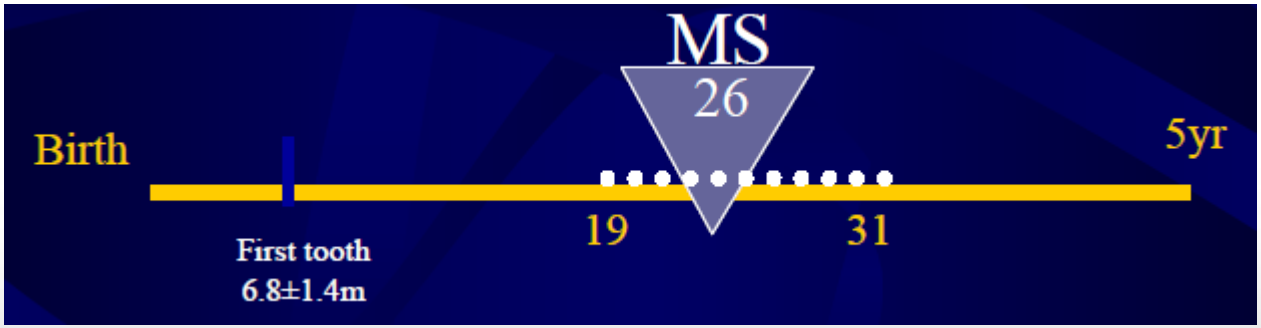
- Therapeutic intervention and lifestyle modification counseling both during pre- and post-partum should be practiced, to reduce maternal MS and lactobacilli levels.

WINDOW OF INFECTIVITY

- The “window of infectivity,” defined as the time of initial colonization of the infant’s oral environment with the cariogenic bacteria mutans streptococci (MS) is of clinical importance.

- Earlier the colonization of a young child’s mouth, greater is their caries risk.

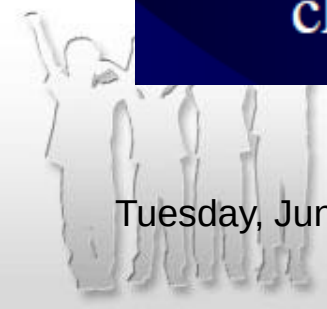
- Early studies reported that the “window of infectivity” for MS occurs at a mean age of 27 months.



WINDOW OF INFECTIVITY

"Window of Infectivity" seen earlier than 19 months of age

- Mohan (1998): 20% of the children in the study were infected by 14months of age
- Karn (1998): Evidence of MS colonization as early as 10months
- Milgrom (2000): MS colonization seen at 6 months.
- Milgrom (2000): Colonization noted in pre-dentate children (4/16)



II WINDOW OF INFECTIVITY

A 2nd window is speculated at approximately 6 years of age when 1st molars are erupting

Straetemans (1998) found that about 75% of children uninfected at age 5 became infected by age 11

Colonization of infant's oral cavity

Vertical transmission

- From mother to infant. (Davey AL et al, Berkowitz RJ, Douglass JM et al)
- The genotypes of streptococcus mutans in infants appear to be identical to that present in mother.
- Maternal factors associated with infant colonization (Wan AK et al 2010)
  - Salivary levels of mutans streptococci
  - Mother's oral hygiene
  - Periodontal status
  - Snack frequency
  - Socioeconomic status
- Berkowitz RJ (2006), Law V (2007) and Tanner ACR (2002): furrows of tongue can also harbour mutans streptococci in predentate infants.

Horizontal transmission

- Between members of a group.
- Siblings of similar age.
- Children in a day care centre.

Effect of mode of delivery on oral microflora

- First exposure to micro-organisms in vaginally delivered infants occurs during passage through the birth canal, whereas the first exposure to bacteria in infants born by Caesarian section (C-section) is from the skin of parents and health providers, and medical equipment.

- Different modes of delivery lead to differences in the intestinal microbiota in infants (Penders *et al., 2006;* Dominguez-Bello *et al., 2010).*

P Lif Holgerson et al. Mode of birth delivery affects oral microflora in infants

Effect of mode of delivery on oral microflora

- In the oral cavity, mutans streptococci were detected more frequently and at a younger age in children delivered by C-section than in those delivered vaginally (Li *et al., 2005).*

- These authors hypothesized that C-section, compared with vaginal birth, lowered the exposure to commensal, protective bacteria from the mother during birth, reducing the natural barrier to colonization by oral pathogens

P Lif Holgerson et al. Mode of birth delivery affects oral microflora in infants

Predentate infants

- The majority of studies report that S. mutans first appears in the mouth with the eruption of the first teeth (Berkowitz et al., 1975; Caufield et al.,1993), and only two cross-sectional studies have mentioned its presence in predentate infants, as incidental findings on small numbers of children (Edwardsson and Mejare, 1978; Milgrom et al., 2000).

Oral colonization of streptococcus mutans in six-month old predentate infants. AKL Wan, WK Seow et al.

Oral flora of pre-dentate mouth

- Since the oral cavity of the neonate lacks teeth and only mucosal surfaces are available during the first months of life, organisms with ligands for the tooth are absent.

- Epithelial binding sites for group A streptococci and their lipoteichoic acid in the oral cavity of term newborn infants are absent or minimal at birth, but reach adult levels between 48 and 72 hours after birth.

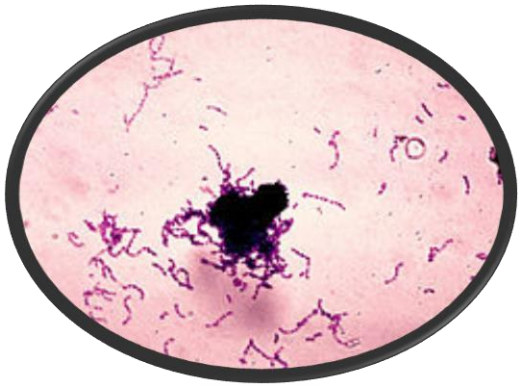
- The oral colonization patterns differ among individuals already in infancy; variable bacterial load in saliva and other close contacts and the frequency of this bacterial exposure may partly account for individual differences.

Oral colonization of streptococcus mutans in six-month old predentate infants. AKL Wan, WK Seow et al.

RELEVANT STUDIES

Kosai (2000)

- DNA fingerprinting of 76 subjects from 20 families in Japan
- 144 genotypes containing 144 Streptococci mutans
- 70 genotypes found in children
  - 36 (51.4%) in agreement with their mothers
  - 22 (31.4%) in agreement with their fathers
  - 12 (18.6%) did not correspond with either parent
- Results conclude transmission could be from father or other source besides the mother



Mattos-Graner (2001)

- *S.mutans* isolated from 35 children in a Brazilian nursery (age 12-30m)
- 76 MS isolates were identified
- 2 unrelated children carried identical strains
- Conclusions- lateral transmission can occur among daycare children with prolonged exposure
  - daycare environments favor the spread of infectious agents

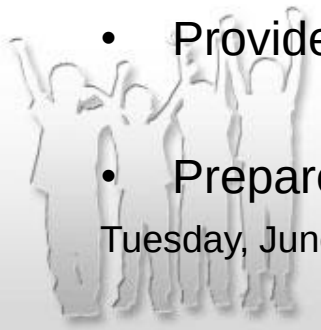
But Dental caries is preventable, by early risk assessment to identify parent-infant groups who are at increased risk for Early childhood caries.

Rationale for the timing of the first oral evaluation

Arthur J. Nowak, DMD

Pediatric Dentistry – 19:1, 1997

- To determine the risk status of the infant based on information obtained from the parents and to perform a screening examination of infants' mouths
- Assess transmission of Streptococcus Mutans.
- Dietary Assessment.
- Assess risk factors.
- Teach proper care for the child's teeth.
- Provide guidance for injury prevention.
- Prepare to provide preventive, interceptive or restorative services.



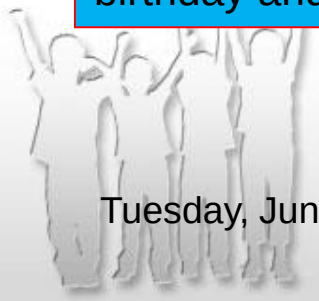
DIET COUNSELLING DURING THE INFANT ORAL HEALTH VISIT

S M Hashim Nainar, Shamsia Mohummed

Pediatr Dent 2004;26(5):459-62

Breastfeeding:
Exclusive breastfeeding till 6 months followed by addition of iron-enriched solid foods between 6-12 months of age.
Ad libitum nocturnal breast-feeding should be avoided after the first primary tooth begins to erupt.

Weaning:
AAPD suggests breast-feeding for atleast 12 months and “thereafter for as long as mutually desired.”
It has been observed that breast-feeding for over 1 year and at night beyond eruption of teeth may be associated with Early Childhood Caries.
AAPD recommends that infants should drink from a cup as they approach their frist birthday and be weaned from the bottle at 12-14 months of age.



DIET COUNSELLING DURING THE INFANT ORAL HEALTH VISIT

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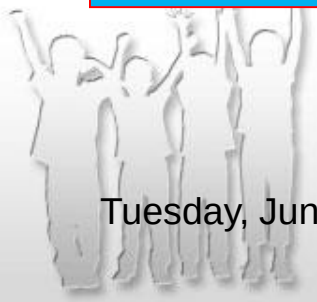
Dietary fluoride supplements:

Infants exposure to drinking water fluoride should be determined.
Infants > 6 months of age exposed to water with less than 0.3 ppm fluoride, dietary fluoride supplements of 0.25 mg fluoride per day should be prescribed.
Irrespective of fluoride exposure in water dietary supplements should not be prescribed for infants under the age of 6 months.

Bottle feeding:

Infant formulas are acidogenic and possess cariogenic potential.
Parents need to be aware of deleterious effects of inappropriate bottle usage and the need for good oral hygiene practices upon the first primary tooth's eruption.



Composition of breast milk

- Fundamental composition of breast milk includes, protein, salt, and sugar, which are all contained in a fat suspension

- Mature human milk contains :
  - 3-5% = fat,
  - 0.8-0.9% = protein,
  - 6.9- 7.2% =carbohydrate calculated as lactose, and
  - 0.2% mineral constituents expressed as ash.

- Its energy content is 60--75 kcal/100 ml.

- Contains over 200 nutritional, as well as functional, components.

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

Composition of breast milk

Colostrum

- Colostrum is the fluid secreted the first three to seven days postpartum.
- Compared to mature milk, colostrum is slightly yellow, more viscous, and thicker.
- The noticeable yellow coloring of this fluid is due to the high amount of carotenoids, which is higher than in mature milk.
- Colostrum is lower in calories, contains less sugar than mature milk.
- However, colostrum does contain more protein and electrolytes. Immunoglobulin A (IgA) is the principal protein found in colostrum. IgA helps protect the infant from gastrointestinal tract infections (Kretchmer & Zimmermann, 1997).

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

Composition of breast milk

Transitional Milk

- One week postpartum colostrum changes into transitional milk.
- Transitional milk is between colostrum and mature milk, it is composed of more protein and less fat and less lactose than mature milk.
- Fully mature milk is produced at about three weeks postpartum, but this rate may vary from mother to mother.
- For instance, a mother who has breastfed previously is more likely to produce mature milk sooner, than a mother who is breastfeeding for the first time (Kretchmer & Zimmermann, 1997).

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

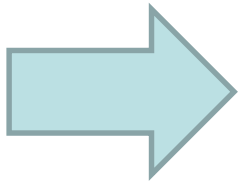
Composition of breast milk

- In all women the basic components are the same, however, during each stage of lactation the level of milk constituents change from the beginning of the feeding to the end, day to day, and diurnally (every 24 hours) (Kretchmer & Zimmermann, 1997).

- Two to three weeks postpartum changes in breast milk composition occur. The alveolar cells evolve resulting into a mature milk secretion.

Low in lactose and fat.

High in electrolytes and protein



High in lactose and fat.

Low in electrolytes and protein

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

Composition of breast milk

Composition of Mature Breast Milk

Macronutrient (per100mL)	Colostrum	Mature Milk
Energy	58 Kcal	58-72 Kcal
Total Protein	2.3 g	0.9 g
IgA	364 mg	142 mg
Casein	140 mg	187 mg
Lactoferrin	330 mg	167 mg
α–Lactalbumin	218 mg	161 mg
Total Fat	2.9 g	4.2 g
Lactose	5.3 g	7.0 g
Cholesterol	27 mg	16 mg

(Kretchmer & Zimmermann,1997)

The following table presents a comparison of colostrum (1-5 days postpartum) and mature milk (more than 30 days postpartum) in terms of the amount of various components present in 100 ml of breast milk. In addition to the components presented below, breast milk also includes a variety of amino acids, fatty acids, other minerals and trace minerals, and nitrogen (Kretchmer & Zimmermann, 1997).

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

Composition of breast milk

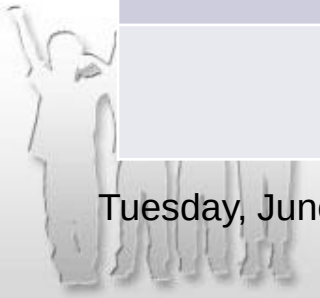
Micronutrient (per 100mL)	Colostrum	Mature Milk
Vitamins		
Vit. A	189 µg	60 µg
β-carotene	112 µg	23 µg
Vit. E	1280 µg	315 µg
Vit. D	0 µg	0.05 µg
Vit. K	0.23 µg	0.21 µg
Ascorbic Acid	4.4 mg	4.0 mg
Thiamin	1.5 µg	14 µg
Riboflavin	25 µg	35 µg
Niacin	75 µg	150 µg
Folic Acid	0 µg	8.5 µg
Vit. B-6	12 µg	18 µg
Biotin	0.1 µg	0.6 µg
Pantothenic Acid	183 µg	240 µg
Vit. B-12	200 ng	45 ng
Minerals		
Ca	23 mg	28 mg
P	14 mg	15 mg
Na	48 mg	18 mg
Mg	3.4 mg	3.0 mg
K	74 mg	58 mg
Trace Minerals		
Fe	45 µg	40 µg
I	12 µg	11µg
Se	0 µg	2.0 µg
Zn	540 µg	120 µg

(Kretchmer & Zimmermann, 1997)

The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

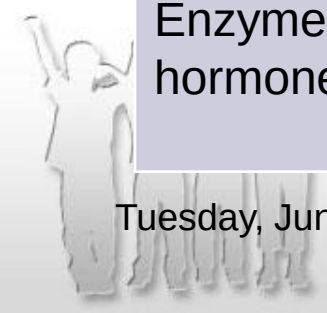
Comparison of breast milk and formula milk

Nutrient factor	Breast milk	Formula
Fats	Rich in brain building omega 3 fats. (DHA etc)	No DHA
	Lipase	No lipase
	Cholesterol high	No cholesterol
	Absorption easy and complete	Incomplete absorption
Protein	Soft, easily digestible whey protein	Harder to digest casein
	Completely absorbed	Incomplete
	Lysozyme	Absent
	Lactoferrin for intestinal health	Lactoferrin absent



The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

Nutrient factor	Breast milk	Formula
Proteins	Rich in growth factors	Deficient
Carbohydrates	Lactose	Absent In some formulas
	Oligosaccharides	Deficient
Immune boosters	Immunoglobulins	Few
	WBCs	No WBCs
Vitamins and minerals	Iron, zinc and calcium better absorbed	Not that well
	Iron is 50-75 % absorbed	5-10%
	Selenium	Less
Enzymes and hormones	Lipase and amylase Hormones Varies with diet of mother	Enzymes dead. No hormones. Tastes the same



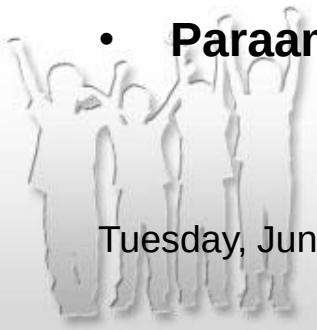
The composition of human milk. Jenness R. Semin Perinatol 1979Jul; 3(3):225-39

ADVANTAGES OF BREASTFEEDING

- **It has the right composition in terms of essential nutrients.**
- **The feeds need no preparation and there is no equipment to sterilize.**
- **Contains anti-infective factors which cannot be manufactured or added to infant formulae.**
- **It is of psychological advantage to the mother and child, increases bond strength and there is a sense of accomplishment to the mother.**
- **Child being fed on breast milk is less likely to develop arterial disease because of fat, as fats in breast milk are better emulsified.**
- **Easily digestible.**
- **Breast milk has low osmotic load.**
- **Confers passive immunity to the baby.**

ANTI-INFECTIVE AND ANTICARIOGENIC AGENTS IN HUMAN MILK

- **Immunoglobulins**:
  - Secretory IgA, IgG and IgM
- **Cellular elements**:
  - Lymphoid cells
  - Polymorphonuclear cells
- **Opsonic** and **chemotactic** activities of C3 and C4 complement system
- **Unsaturated lactoferrin and transferrin**
- **Lysozyme**
- **Lactoperoxidase**
- **Specific inhibitors (non immunoglobulins):**
  - Antiviral and antistaphylococcal factors
- **Growth factors** for Lactobacillus bifidus
- **Paraaminobenzoic acid**: some protection against malaria.



Investigation of the role of human breast milk in caries development

Pamela R. Erickson, DDS, PhD Elham Mazhari

Pediatric Dentistry – 21:2, 1999

From this study, we conclude that:

1. HBM does not cause a significant pH drop in plaque.
2. HBM supports moderate bacterial growth.
3. Calcium and phorphorus are actually deposited onto enamel powder after incubation with HBM.
4. The buffer capacity of HBM is very poor.
5. HBM is not cariogenic in an in vitro model, unless another carbohydrate source is available for bacterial fermentation.

THE JOURNAL OF THE AMERICAN DENTAL ASSOCIATION

JADA

Breastfeeding : An overview of oral and general health benefits

Lindsey Rennick Salone, William F. Vann, Jr. and Deborah L. Dee

JADA 2013;144(2):143-151

- Reduced health risks for breast fed children:
  - Against short term infections like acute otitis media, gastroenteritis and diarrhea.
  - Severe lower RTIs like pneumonia, bronchiolitis etc.
  - Necrotizing enterocolitis
  - Sudden infant death syndrome SIDS
  - Chronic diseases like asthma, obesity etc.

- Reduced health risks for mothers who breast-feed:
  - Protection against breast cancer, ovarian cancer
  - Psychological satisfaction and feeling of completion.

OTHER STUDIES

- **Karjalainen and colleagues** examined 148 Finnish children with and without a posterior crossbite. They found that those with no posterior crossbite had had a higher mean duration of breast milk's being their only milk source as an infant than did those who had a posterior crossbite.

- In a cross-sectional study of 359, 6-year-old children in Brazil, **Peres and colleagues** found that the prevalence of posterior crossbite was lowest in children who were breastfed for at least nine months compared with those who were breastfed for a shorter duration.

BREAST FEEDING vs BOTTLE FEEDING

FUNCTIONS:

- Breast- feeding stimulates muscles around the mouth and tongue activity for normal growth of teeth and jaws,

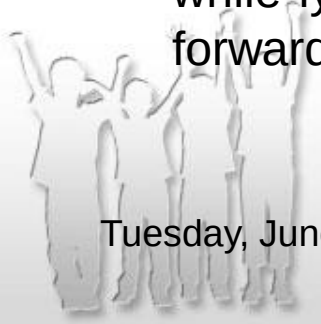
  while muscles don't have to work hard for bottle-feeding. Hance normal growth of teeth and jaws may get affected.

- Breast- feeding allows milk flow on demand ie by action of infant's lips,

  while milk flows from the bottle in a continuous flow.

- Breast-feeding aloows gravity working correctly on the muscles involved in swallowing,

  while lying on the back for bottle-feeding keeps the tongue in an unnatural forward position to keep from drowning.



BREAST FEEDING vs BOTTLE FEEDING

NUTRITION

- Milk is more nutritious as it is a complete source of all required nutrients,

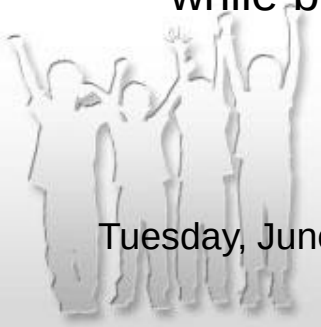
  while bottle fed milk may not provide complete nutrition as some children are not able to digest it easily because of the nature of its fat.

- Breast milk has high percentage of lactalbumin rich in sulfur containing amino acids,

  while bottle fed milk has less percentage.

- Colostrum may contain a gut control factor that stimulates growth of gastrointestinal tract,

  while bottle fed milk has no colostrum.



BREAST FEEDING vs BOTTLE FEEDING

- Infant controls own intake of breast milk and reduces possibility of over-feeding,

  while in bottle feeding, there is no control and infant may gain more weight during first year of life, which is not desirable.

Risk of Bottle-feeding for Rapid Weight Gain During the First Year of Life

Ruowei Li, MD, PhD; Joselito Magadia, PhD; Sara B. Fein, PhD; Laurence M. Grummer-Strawn, PhD

Arch Pediatr Adolesc Med. 2012;166(5):431-436

- The purpose of this study was to compare infant weight gain by both milk type (human vs nonhuman milk) and feeding mode (breast vs bottle) and examine whether bottle-fed infants gain weight more rapidly than those fed at the breast during the first year.

- Mechanism behind breast feeding and childhood obesity are unclear. In addition to the biological mechanism of unique properties of breast milk, such as leptin and adiponectin found in human milk, the ability of breastfed infants to self-regulate their energy intake might be another possibility.

Risk of Bottle-feeding for Rapid Weight Gain During the First Year of Life

Ruowei Li, MD, PhD; Joselito Magadia, PhD; Sara B. Fein, PhD; Laurence M. Grummer-Strawn, PhD

Arch Pediatr Adolesc Med. 2012;166(5):431-436

- Infants categorized as consuming “human milk by bottle only” and “nonhuman milk by bottle only” gained more weight than infants fed at the breast only.

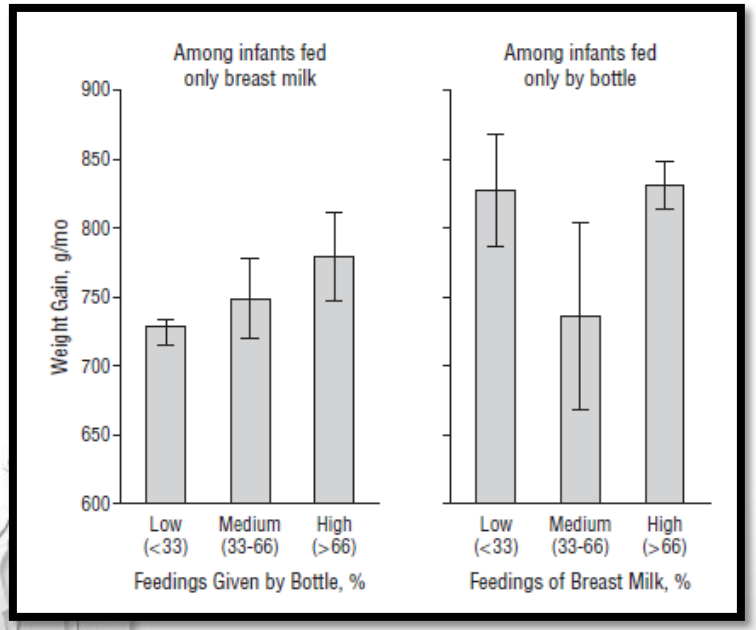


Table 4. Multilevel Analyses of Associations of Weight Gain With Increment in Proportion of Milk Feedings Either as Breastmilk or by Bottle for 1899 Infants[a]

	No.	Mean	95% CI
Proportion of Bottle Feedings	**Weight Gain by Every 10% Change in Proportion of Breastmilk Feedings, g/mo**		
Low (<33%)	2730	−15.36	−26.95 to −3.77
Medium (33%-66%)	495	0.75	−9.59 to 11.09
High (>66%)	2494	−5.89	−10.42 to −1.36
Proportion of Breastmilk Feedings	**Weight Gain by Every 10% Change in Proportion of Bottle-feedings, g/mo**		
Low (<33%)	2287	−0.19	−17.78 to 17.38
Medium (33%-66%)	398	−8.13	−22.69 to 6.43
High (>66%)	3034	8.08	4.45 to 11.71

CARIES RISK ASSESSMENT

Background factors and history

- Maternal factors
- Parental level of awareness and education
- Prenatal and postnatal medical history

Clinical examination

Microbial sampling:

- Tongue impression with wooden spatula technique by Kohler and Bratthall
- Simple chair side methods like Dentocult SM strip

CARIES RISK ASSESSMENT

- **Caries balance concept** states that the progression or reversal of dental caries is determined by the balance between pathological factors and protective factors.

- Risk factors are determined by interviews with parents and a clinical assessment.

- Caries risk assessment form: 3 major categories:
  1. Biological risk factors
  2. Protective factors
  3. Disease indicators

Child's name: _____

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 more than three snacks or beverages containing sugar per day between meals	Yes		
Child is put to bed with a bottle containing natural or added sugar	Yes		
Child has special health care needs		Yes	
Child is a recent immigrant		Yes	
Protective factors			
Child receives fluoridated drinking water or fluoride supplements			Yes
Child's teeth are brushed daily with fluoridated toothpaste			Yes
Child receives topical fluoride from health professional			Yes
Child has dental home/regular dental care			Yes
Clinical findings			
Child has more than one decayed, missing, or filled tooth surface (DMFS)	Yes		
Child has active white spot lesions or enamel defects	Yes		
Child has elevated mutans streptococci	Yes		
Child has plaque on teeth		Yes	

Modified from: Ramos-Gomez F, Crall J, Slayton R, Featherstone JD. Caries risk assessment appropriate for the age one visit. J Calif Dent Assoc 2007;35(10):687-702; and ADA Caries Risk Assessment Forms.

Circling those conditions that apply to a specific patient helps the practitioner and parent understand the factors that contribute to or protect against caries. Risk assessment categorization of low, moderate, or high is based on a preponderance of factors. However, clinical judgment may justify the use of one factor in determining overall risk, for instance, frequent exposure to sugar-containing snacks or beverages, or more than one DMFS.

Overall assessment of the child's dental caries risk:

❑ **High** ❑ **Moderate** ❑ **Low**

Self-management goals:

1 _____ **2** _____

Practitioner signature: _____

Date: _____

Tue

Fig. 2. A sample caries risk assessment form for children from ages 1–5. (© Copyright 2010-2011

CARIES RISK ASSESSMENT

- ***Biological risk factors***: Biological or lifestyle factors that contribute to the development or progression of caries.

- ***Protective factors***: Biological or therapeutic factors, measures and behaviors that when uses consistently, could reduce a child's risk for ECC.

- ***Disease indicators***: Are findings obtained during clinical examination of the child, that are proven to have a strong correlation to the presence of the disease.

Risk assessment categorization of low, moderate or high is based on a preponderance of factors encircled on the form.

Caries-Risk Assessment Tool

- Provides an assessment at a point in time.
- Is intended to be use when clinical guidelines call for caries risk assessment.
- Allows the assessor to obtain reliable clinical, environmental, and general health information.
- Can NOT render a diagnosis.
- Can be used by clinicians with various levels of skill.

AAPD Caries-Risk Assessment Tool (CAT)

		LOW RISK	MODERATE RISK	HIGH RISK
CARIES RISK INDICATORS	CLINICAL CONDITIONS	No decayed teeth in the past 24 months.	Decayed teeth in past 24 months.	Decayed teeth in past 12 months.
		No enamel demineralization (white spot lesion)	1 area of enamel demineralization	More than 1 area of enamel demineralization
		No visible plaque, no gingivitis.	Gingivitis	Radiographic enamel caries. Visible plaque on anterior teeth. High titre of mutans streptococci. Wearing dental or orthodontic appliances. Enamel hypoplasia.

		LOW RISK	MODERATE RISK	HIGH RISK
CARIES RISK INDICATORS	ENVIRONMENTAL CHARACTERISTICS	Optimal systemic and topical fluoride exposure.	Suboptimal systemic fluoride exposure with optimal topical fluoride exposure.	Suboptimal topical fluoride exposure
		Consumption of simple sugars or foods strongly associated with caries initiation primarily at meal times.	Occasional between meal exposures to simple sugars of foods strongly associated with caries.	Frequent between-meal exposures to simple sugars or foods strongly associated with caries.
		High caregiver's socioeconomic status.	Mid-level caregiver socio economic status.	Low-level caregiver socio economic status.
		Regular use of dental care in a dental home.	Irregular use of dental services	No usual source of dental care. Active decay present in the mother of the child.

4-6 months

<u>Weaning</u>:

- Process of expanding the diet to include foods and drinks other than breast milk and infant formulae.
- It is a gradual process– the age at which it is started and the rate at which it progresses vary between babies.

Babies should not be weaned at an earlier age,

- They don’t have the neuromuscular coordination needed to move food from tip of tongue to the back of the mouth.
- Their gastrointestinal tract is too immature to digest and absorb the food as the enzymes are not fully developed.
- They kidneys cannot regulate the high solute load.

Stages of Weaning

3 stages:

stage 1: 4-6 months

stage 2: 6-9 months

stage 3: 9-12 months

Stage 1:

- Usual for solid food to be introduced before the first feed of the day.
- If a cereal is used, it should be reconstituted with breast milk, infant formula or boiled water.
- As the baby becomes used to taking food from a spoon, the consistency of the food should become thicker.
- At this stage, all food must be sieved, pureed or finely minced.
- Iron rich, fortified cereals and green vegetables are introduced to prevent iron deficiency.

Thicker consistency with some lumps; soft finger foods can also be introduced at this stage.

Stages of Weaning

Stage 2:

- Child is now able to chew and consequently minced and mashed food that includes small soft lumps can be given.
- At this stage, the child must never be left alone while feeding because of the risk of choking.

Mashed, chopped, minced consistency; more finger foods

Stage 3:

- Food no longer needs to be mashed, it can now be chopped and the infant should be encouraged to feed themselves, with supervision.
- Early morning milk feed is replaced by a drink of water or diluted fruit juice.

Mashed, chopped family foods and a variety of finger foods.

WHAT TO AVOID ??

Foods to avoid

SALT (which contains sodium)

Do not add any salt to foods for babies. Do not use stock cubes or gravy in your baby's food as they are often high in salt.

When you are cooking for the family, do not add salt, so your baby can share the family foods.

SUGAR

Sugar can encourage a sweet tooth and lead to tooth decay when first teeth start to come through. Try mashed banana, breast or formula milk to sweeten food if necessary.

HONEY

Don't give honey until your baby is one year old. Very occasionally, it can contain a type of bacteria, which can produce toxins in the baby's intestines and can cause a very serious illness (infant botulism).

Remember that honey is also a sugar and can lead to tooth decay.

NUTS

Whole nuts, including peanuts, should not be given to children under five years in case of choking.

LOW-FAT FOODS

Low-fat foods, whether yoghurt, fromage frais, cheese or fat spreads are not suitable for babies or children under two. Fat is an important source of calories and some vitamins which they need.

Does my child need supplements?

The UK Health Departments recommend that all babies aged six months onwards should be given a supplement containing vitamins A, C and D, such as Healthy Start vitamin drops, unless they are drinking 500ml (about a pint) of infant formula a day (infant formula has vitamins added to it). You can continue to give young children a supplement containing vitamins A, C and D until they are five years old, as this will help to make sure that they are getting enough of these vitamins.

www.bda.uk.com/foodfacts

Nursing bottle weaning and prevention of dental caries: a survey of pediatricians

Katalin Koranyi, MD L. Kaye Rasnake, PhD Kenneth J. Tarnowski, PhD

PEDIATRIC DENTISTRY/Copyright © 1991 by
The American Academy of Pediatric Dentistry
Volume 13, Number 1

- Most of the Pediatricians recommend that parents start weaning at approximately 9 months of age and accomplish soon after the first birthday (AAP1985)
- Bed time bottle feedings to be discouraged especially after tooth eruption.
- If bed time bottles are given, water is considered the only acceptable feeding substance (Feigal 1985)

4-6 months

Teething

- Symptoms:
  - Fussiness, irritability
  - Increased sucking
  - Loose stools
  - Increased drooling of saliva
  - High temperature
  - Swollen gums

- Symptomatic treatment of teething:
  - Sucking on teething rings
  - Numbing gels
  - Frozen pacifier
  - Teething tablets

- Fluoride assessment:
  - Systemic fluoride is most effective during this period.
  - Supplements should not be given with milk or infant formula.

Anticipatory guidance for 6-12 months age group

- Milestones: eruption of first primary tooth
- Content areas:

Content areas					
Oral development	**Fluoride exposure**	**Oral hygiene/ health**	**Abnormal oral habits**	**Nutrition and Diet**	**Injury prevention**
Review pattern of eruption.	**Assess fluoride status.**	**Review oral hygiene techniques with the caregiver.**	**Review pacifier use**	**Encourage weaning at the proper age.**	**Review what to do if the child has traumatic injury.**
Review teething facts.	**Determine supplements if needed.**	**Plan for next visit based on risk assessment**	**Discuss effects of thumb-sucking.** **Discuss effects of breastfeeding on the mouth.**	**Discuss the role of sugar in dental caries initiation.**	**Provide an emergency number**

CONTENTS OF PART 2

- ROLE OF PEDIATRICIANS
  - Prenatal visit
- ORAL HYGIENE INSTRUCTIONS BY PEDODONTIST
- AAPD GUIDELINES FOR INFANT ORAL HEALTH
- AAPD GUIDELINES FOR FIRST DENTAL VISIT
- CONCLUSION
- REFERENCES

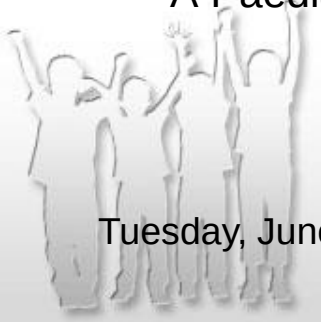
ROLE OF PAEDIATRICIANS

- Usually the first health care providers and monitor the growth and development of children.

- Topics to be discussed by a Paediatrician :
  - Tooth eruption
  - Preventive oral hygiene
  - Orofacial development
  - Fluoridation
  - Diet

- Johnson (1997) also discussed the interaction with Paediatrican at the time of weaning.

- A Paediatrician should be aware of Pediatric dentist in the vicinity.



The role of the pediatrician in the oral health of children: A national survey. Charlotte Lewis et al. 2001

Counselling

- Definition:

  “educating the parents regarding the child’s oral health status, optimal health care and informing them about the prevention of potential dental diseases.”

- Purpose:
  - To offer the dentist an insight into parental influences which may produce unnecessary anxieties.
  - Knowing about parental attitude towards dental health.
  - Educating the parents.

- Who does?
  - Paediatrician/ Gynaecologist/ Family physician
  - Pediatric Dentist

Prenatal counselling

- Motivational interviewing:
  - Counselling technique that relies on two-way communication between the clinician and the parent.
  - Therapeutic alliance
  - Interview to gather information

- Objectives:
  - Establishing a positive Pediatric dentist-family relationship.
  - Information gathering from the family
  - Anticipatory guidance
  - Establishing sequence of subsequent visits

Clinical Report—The Prenatal Visit George Cohen, Pediatrics 124(4),2008

First Dental visit

Parent's education for infants and toddlers

Content area	Dentist's role
Oral development	
Gumpads to completion of primary dentition	Discuss the pattern of eruption Discuss the myths about unhygienic habits practised during teething. Educate the parents about teething facts
Establishment of occlusion	Discuss the importance of primary teeth Discuss bruxism and its consequences
Fluorides	
Importance of topical and systemic fluorides	Recommendation against topical fluoride use till 3 yrs of age. Assess fluoride status and discuss supplements if needed.


Rationale for the timing of the first oral evaluation

Arthur J. Nowak, DMD

Pediatric Dentistry – 19:1, 199,

First Dental visit

Parent's education for infants and toddlers

Content area	Dentist's role
Oral hygiene/ health	
Care of gumpads	Clean the gumpads with a soft clean cloth after each feeding
Mouth cleaning techniques	Instruct the parent about use of soft brush and pea sized toothpaste. Brushing technique
Periodicity of dental visits	Educate the parents
Habits	
Non-nutritive sucking	Pacifier usage
Thumb-sucking	Discuss the ill-effects

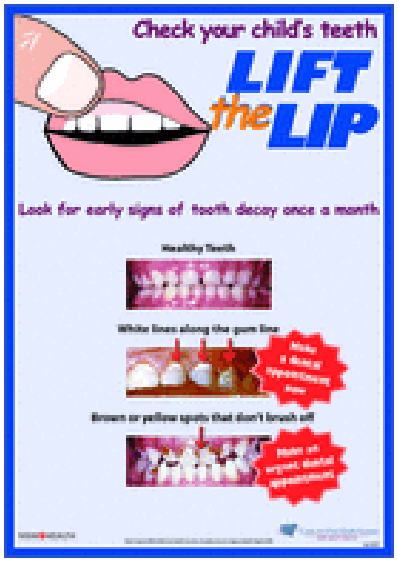
First Dental visit

Parent's education for infants and toddlers

Content area	Dentist's role
Nutrition and diet	
Baby bottle decay pattern	Feeding practices
Importance of diet	Sugar intake
Injury prevention	
Oral trauma	Referral Baby walker Car seat belt Not to be left alone. Safety measures at home.

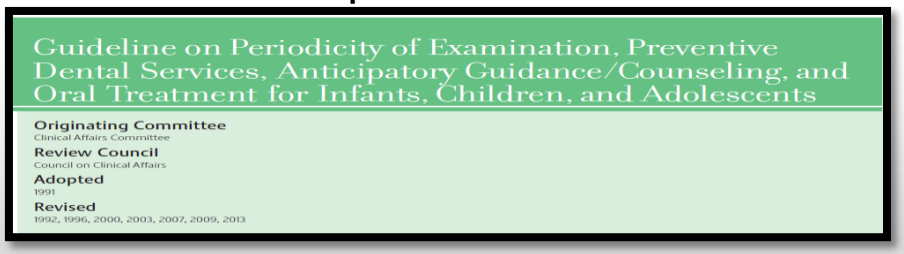
INITIAL INFANT ORAL CARE VISIT

- Should include caries risk assessment, individualized preventive strategies and anticipatory guidance.



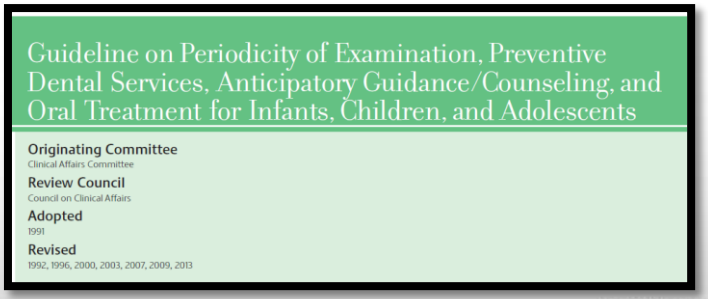
- Consists of a 6 step protocol:
  1. Caries risk assessment.
  2. Proper positioning of the child (knee-to-knee exam).
  3. Age appropriate tooth brushing prophylaxis.
  4. Clinical examination of the child's oral cavity and dentition.
  5. Flouride varnish treatment
  6. Assignment of risk, anticipatory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

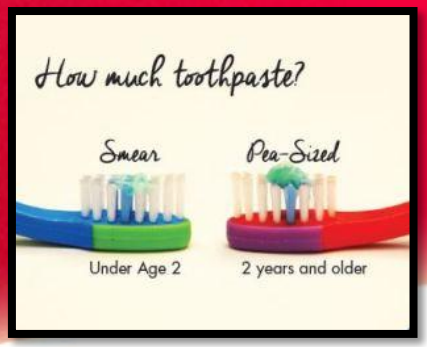
- Periodic supervision of care (knows as periodicity) should be determined based on the disease risk for each individual patient.



CLINICAL EXAMINATION

- Critical to conducting an effective and efficient clinical examination.
- LIFT THE LIP: to check plaque accumulations on gums and teeth
- Knee-to-knee positioning allows the child to see the parent throughout the examination, while the parent can directly observe findings and receive hygiene instructions while gently helping to stabilize the child during examination.
- Used in children of age 3 months to 3 years, or upto age 5 in children with special healthcare needs.





TOOTH BRUSH PROPHYLAXIS

- It is non-threatening to young children and serves to demonstrate correct brushing technique.
- The examiner retracts the child's lips and cheeks, and demonstrates brushing along the gingival margin.
- The spongy handle of an age-appropriate toothbrush can be used to prop open the mouth. The handle of a second toothbrush can be used as mouth prop.
- Parents and care-givers should be instructed to use pea-sized amount of flouridated toothpaste for children aged 2-6 and a 'smear' for children under age 2.

CLINICAL EXAMINATION

- The examiner counts the child's teeth aloud.
  - Mouth prop
  - Distracting attention of child

- While counting the teeth, the soft tissues, hard tissue and occlusion is also checked.

- Data from clinical examination is combined with data from caregiver's interview to determine the child's overall caries risk and establish an oral diagnosis and formulate an individualized care plan.

- Following information should be documented:
  - Visible plaque and its location
  - White spot lesions
  - Brown spots on occlusal surface that may indicate caries
  - Tooth defects, deep pit/fissures, tooth anomalies
  - Missing and decayed teeth
  - Existing restorations
  - Defective restorations
  - Gingivitis or other soft tissue abnormalities
  - Occlusion
  - Indications of trauma

FLOURIDE TREATMENT

- The ADA and the UK NHS Department of Health recommends that high caries risk children receive a full-mouth topical fluoride varnish (FV) application and re-application consistently at three/four-month intervals.

- 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 .

- 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 painless, quick to apply, and therefore can be used on very young children. (Moberg Skold U etal)

FLOURIDE TREATMENT

- Some sources advocate Flouride Varnish treatments every six months, citing this protocol as the most cost-effective method with the best outcome. (Irigoyen ME, Luengas I etal)

- Others argue that three consecutive varnishes over a week's time-period, once annually, are more effective than semi-annual treatments. (Marinho VC, Higgins JP)

ASSIGNMENT OF RISK, ANTICIPATORY GUIDANCE AND COUNSELLING

- An individualized care plan for each infant/ caregiver is designed based upon the risk determined from the parent interview and the clinical examination of the child.

- 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.

- 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 .

RECALL VISITS AND RECALL PERIODICITY

- Most children at high risk need to be seen on a three-month interval for re-evaluation.

- 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

Guideline on Infant Oral Health Care

Originating Committee
Clinical Affairs Committee – Infant Oral Health Subcommittee

Review Council
Council on Clinical Affairs

Adopted
1986

Revised
1989, 1994, 2001, 2004, 2009, 2011, 2012, 2014*

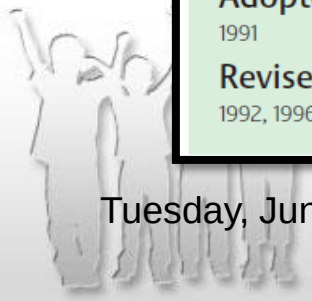
Guideline on Periodicity of Examination, Preventive Dental Services, Anticipatory Guidance/Counseling, and Oral Treatment for Infants, Children, and Adolescents

Originating Committee
Clinical Affairs Committee

Review Council
Council on Clinical Affairs

Adopted
1991

Revised
1992, 1996, 2000, 2003, 2007, 2009, 2013



AAPD GUIDELINES

FOR PARENTAL ORAL HEALTH


Guideline on Infant Oral Health Care

Originating Committee
Clinical Affairs Committee – Infant Oral Health Subcommittee
Review Council
Council on Clinical Affairs
Adopted
1986
Revised
1989, 1994, 2001, 2004, 2009, 2011, 2012, 2014*

- **Oral health education:**
  - Education on etiology and prevention of ECC.
  - Parent to avoid saliva sharing behaviour:
- **Comprehensive oral examination**: during pregnancy.
- **Professional oral healthcare:**
  - To minimize mutans reservoir.
  - Minimize transfer of mutans from mother to infant.
- **Oral hygiene**
- **Diet**:
  - Cariogenic foods should be avoided.
- **Fluoride**
  - 0.05% NaF once a day
  - 0.02% NaF twice a day

AAPD GUIDELINES

FOR INFANTS ORAL HEALTH:

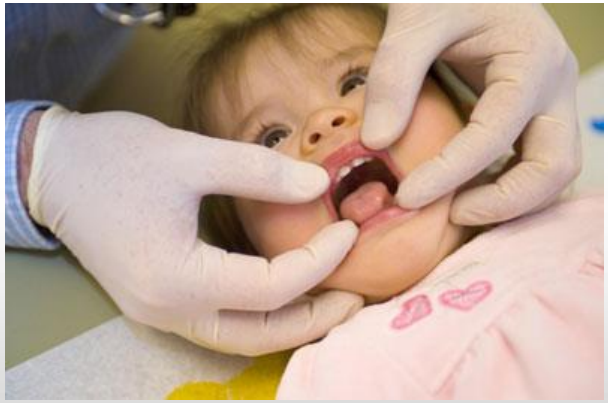
- **Oral health risk assessment:**
  - By 6 months of age.
- **Establishment of dental home**
- **Teething**
- **Oral hygiene measures**
- **Diet**:
  - Human breast milk
  - Breast feeding > 7 times daily after 12 months of age----- increases risk for ECC (Felders et CA 2010)
  - Nocturnal bottle feeding with juice, repeated use of sipping plus frequent in between meals consumption of sugar containing snacks or drinks ---- increased risk for ECC (Tinanoff NT 2002)
  - AAPD recommends children 1-6 years consume no more than 6 oz of fruit juice/ day from a cup (not a bottle or covered cup) and as part of a meal or snack.
- **Fluoride**
  - No more than smear or rice sized amount for children < 3 yrs.
  - No more than pea sized for children > 3 yrs
  - Fluoride varnish for high risk children
  - Systemic fluoride in children consuming fluoride deficient water <0.6 ppm fluoride.

CONCLUSION

Tuesday, June 11, 2024

Conclusion

- Prenatal care intervention program for pregnant women, to be shared between dental and obstetric communities, to prevent early colonization of infant's oral cavity.
- Caries risk assessment and age appropriate anticipatory guidance needs to be practiced by clinicians.
- Coordination between dental and medical communities can ensure optimal infant oral health.



THANK YOU

Tuesday, June 11, 2024