DENTAL CARIES IN THE CHILD AND ADOLESCENT

LECTURE BY,
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objectives

- To understand the carious process and the various factors affecting it
- To know the various preventive and comprehensive management of caries

CARIES

- Caries (Latin)
  = Rot / Decay

- Ker (Greek)
  = Death

DEFINITION

- Caries is a process of enamel or dentin dissolution that is caused by bacterial action at the tooth surface and is mediated by physiochemical flow of water dissolved ions

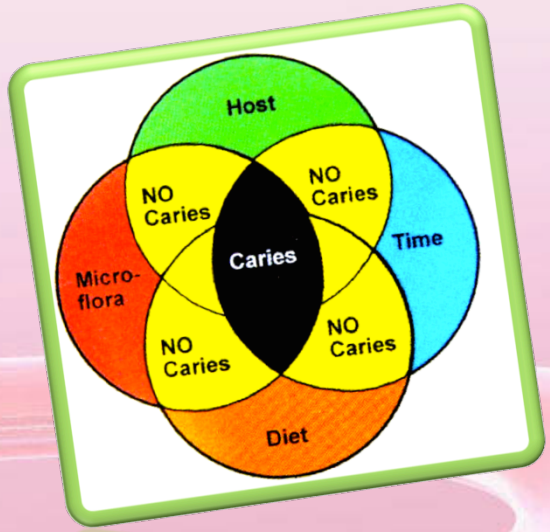
  Ostrom (1980)

- Caries is essentially a progressive loss by acid dissolution of the apatite (mineral) component of the enamel then the dentin, or of the cementum then dentin

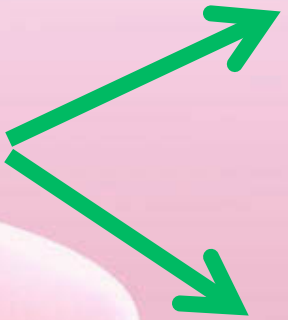
  Hume (1993)

etiology

- Host (tooth in the oral environment)
- Aciduric bacteria
- Dietary substrate



- Critical pH for dissolution of enamel = 5.5
- Caries in dentin = at higher pH
- Other factors
  - anatomic
  - behavioral
  - dietary
  - genetic
  - socio economic
  - therapeutic



favorable

unfavorable

Caries progression

- Typically begins in the enamel and progress slowly

Reversal

Arrested

Frank cavitation

tooth

- Composition

  surface more resistant than sub surface

- Morphological characteristics

  enamel hypoplasia

  deep pit and fissures

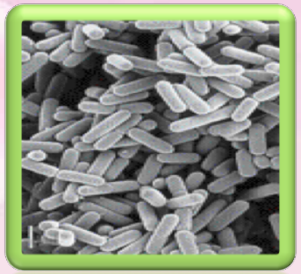
- Position

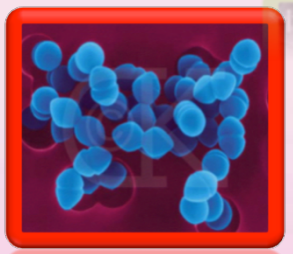
Role of microorganisms

- *Orland & Fitzgerald*

  No caries in the absence of micro organisms

  Animals in germ free environment- no caries





- Common microorganisms ;-

  streptococci
  lactobacilli
  diphtheriods
  yeast
  staphylococci
  some strains of sarcinae

  produce acid

  ↓

  decalcify tooth structure

- S.mutans → most virulent

  Can readily ferment carbohydrate

  Can synthesize dextran from sucrose

  Ability to adhere and grow and smooth and hard tooth surfaces

- *Loesche*

  - ✓ S.mutans &Lactobacillus – odontopathogens
  - ✓ Aciduricity of S.mutans - cariogenicity
  - ✓ S. sobrinus – smooth surface caries & rampant caries
  - ✓ Treatment strategies that interferes with the colonization of S. mutans may have a profound effect on the incidence of caries in human

- *Wan et al*

  S.mutans colonization – by 3 months

  50% infants -- by 6 months

  84% -- by 24 months

- *Davey & Rogers*

  S.mutans transmitted orally from mother to infant

- *Kohleret al*

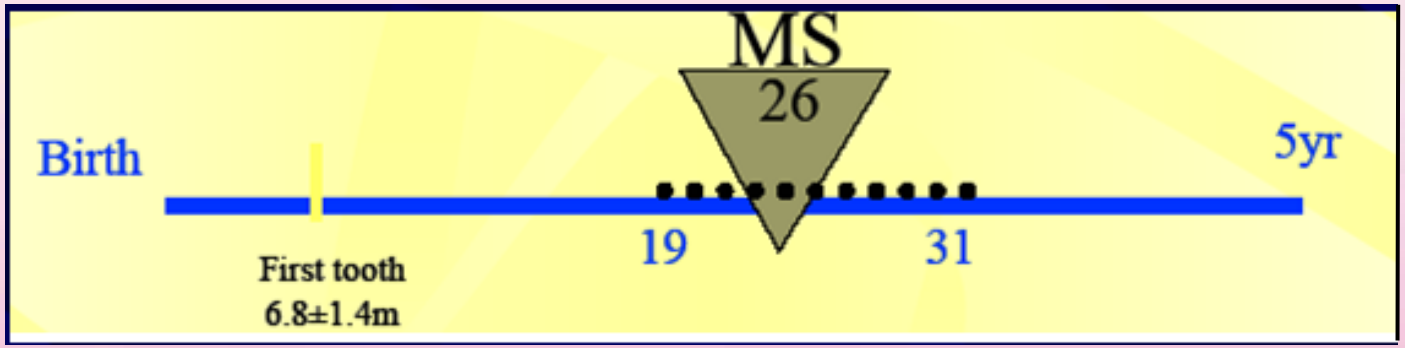
  Reducing no of S.mutans in mothers – delayed colonization in infants

  Earlier the colonization – higher the caries prevalence at 4

- *Caufield ,Cutter*

  WINDOW OF INFECTIVITY → 19 - 33 months

  mother- the source



- *krass et al*

  Second window of Infectivity – permanent dentition 6-12 yrs

Role of acids

- The acids that initially decalcify the enamel have a ph of 5.5 to 5.2 or less and are formed in the plaque material , which is an organic nitrogenous mass of microorganisms firmly attached to the tooth structure.

- Acids-
  - lactic acids
  - aspartic acids
  - butyric acids
  - acetic acids
  - propionic acids

  by products of the microorganisms - carbohydrate metabolism

BACTERIAL ACIDS

↓

Drop in pH (5.5 or below)

↓

Subsurface demineralization (incipient caries→ 10-15 μ beneath)

↓

Surface disintegration (at ph below 3-4)

↓

Frank cavitation

Role of dietary carbohydrates

- Carbohydrates;~ glucose, fructose, sucrose

↓

Easily fermented by bacteria

↓

Produce acids

↓

Dissolution of hydroxyapatite

Risk of caries is increased if,

sugar taken frequently b/w 2 meals

sticky sugar

SUCROSE~ the arch criminal

Role of plaque

- Plaque helps in initiation of caries by,
  - → Harbors cariogenic bacteria
  - → Holds the acid for a longer duration.
  - → Protects the acids produced by the cariogenic bacteria from getting neutralized by the buffering actions of saliva

ROLE OF SALIVA

Saliva, which is super saturated with calcium and phosphate and has acid buffering capacity, diffuses into plaque, where it neutralizes the microbial acids and repairs the damaged enamel.

- pH
- rate of flow
- viscosity
- acid neutralizing power
- calcium, fluoride & phosphorus content
- anti bacterial property

SALIVARY DEFICIENCY

Can be due to ,

- Emotional disturbances
- Mumps
- Immune disorders – Sjogren's syndrome, Ectodermal dysplasia
- Oncology patients
- Interruption in the central pathways of secretary nerves
- Vit B complex deficiency
- Tranquilizers & Antihistamines
- Myesthenia gravis

Determination of salivary flow

- Adequate salivary flow;-

- *Crossner*

  5-15 years- saliva rate ↑ , Boys>Girls

- Evaluation of adequacy of salivary flow

  USF (Unstimulated salivary flow)- <0.1ml → salivary gland hypofunction

  Schirmer technique

  SSF (stimulated salivary flow)- <0.5ml/ min → abnormal

Treatment

- Emotional disturbance – Psychotherapy
- Inadequacies in diet ~~ Monthly analysis of dietary improvement
- Dehydration ~~ increased fluid intake
- Radiation damage / Immune disorders ~~ sialagogue eg; pilocarpine, cevimeline etc
- Gustatory stimulants (sugar candy)
- Masticatory stimulants (xylitol chewing gums)

- VISCOSITY OF SALIVA

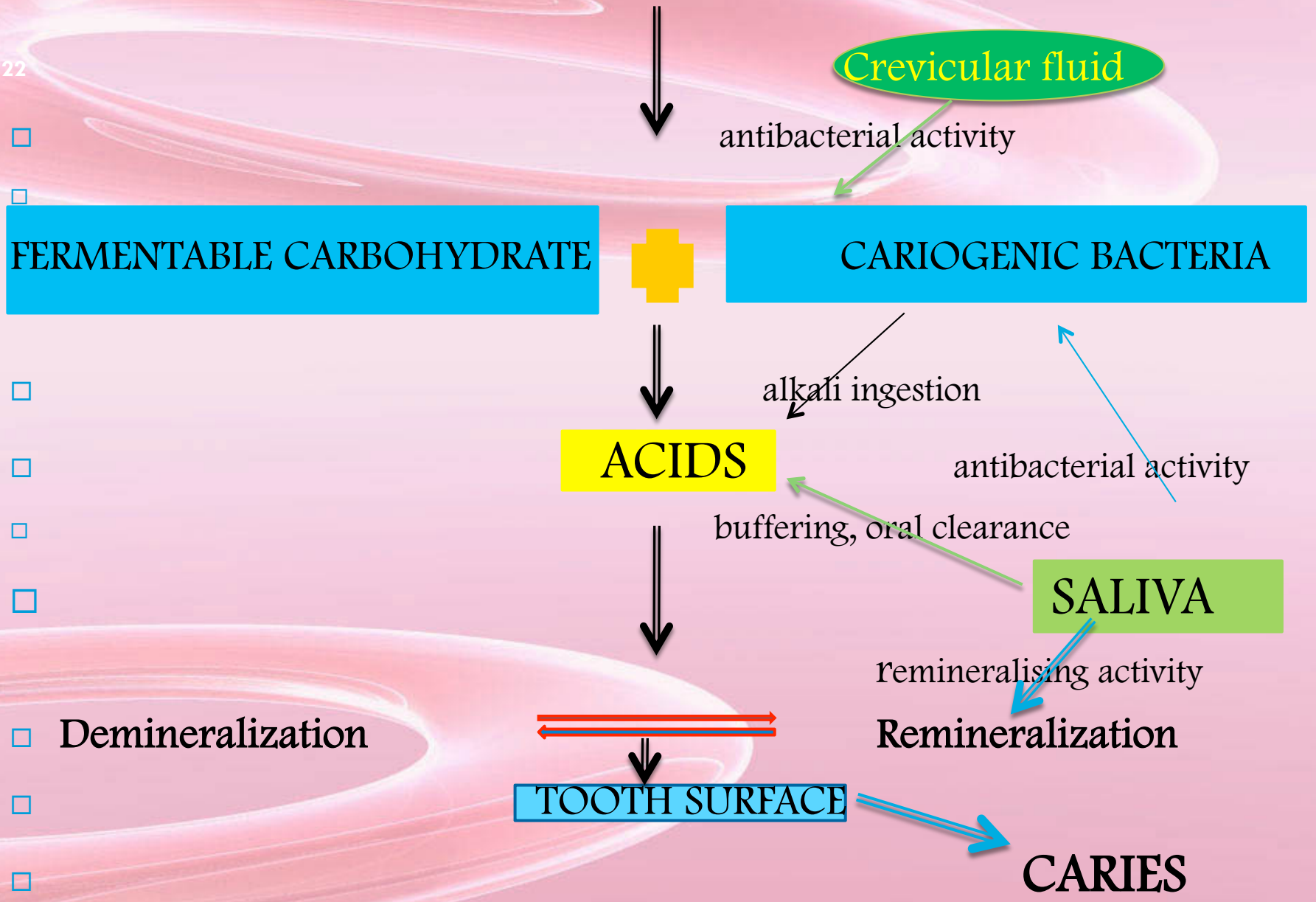
- Viscosity depend on → type of nervous stimulation, particular gland

- Thick , ropy saliva → poor oral hygiene

- Excess carbohydrate→ sparse flow, highly viscous saliva
- Antihistaminic drugs → viscosity increases

- REDUCED SUGAR INTAKE MAY BE EFFECTIVE IN ALTERING VISCOSITY

cariogenicity of sugars, frequency of ingestion, oral clearance



Demineralization

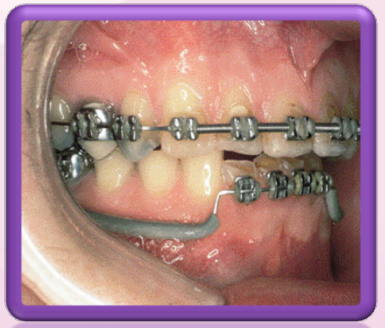
Remineralization

Development of dental caries is considered as a continuous dynamic process involving repeating periods of demineralization by organic acids of microbial origin and subsequent remineralization by salivary components, but in which the overall environment is imbalanced towards demineralization

OTHER FACTORS influencing caries

PRESENCE OF APPLIANCES AND RESTORATION

- Partial dentures, Space maintainers, Orthodontic appliances encourage plaque retention→ increased bacterial population



- Patients with moderate caries activity → increases

- *Rosenbloom& Tinanoff*

  S.mutans levels elevated during active orthodontic treatment

- *Wright et al*

  ↓S.mutans immediately after restoration.

  But returned to normal later

HEREDITARY FACTORS

- Genetic influence on dental caries → minor
- More of environmental effect

Caries prevalence in preschool children

- High prevalence of dental caries in children of low socio economic group

- *Greenwell et al*
  - ✓ Children who are caries free in primary dentition- 84% of them are caries free in mixed dentition
  - ✓ Pit & fissure caries in primary teeth- smooth surface caries
  - ✓ 57% proximal molar caries in primary dentition- additional proximal lesions in mixed dentition
  - ✓ faciolingual decay – high incidence of additional caries

Caries prevalence in school children

- *Vargas & Crall*

61% ~ 6-12 yr → min 1 decayed/ filled primary tooth

40%(4116) 6-14yr → min 1 decayed/ filled permanent tooth

89.8%(1383)15-18y → min 1 Decayed/ filled permanent tooth

Low socioeconomic back ground ~ More caries prevalence

Rampant caries

- MASSLER

  " Suddenly appearing, Widespread, Rapidly burrowing type of caries, resulting in early involvement of the pulp and affecting those teeth usually regarded as immune to ordinary decay "

Etiology ;~~

Emotional disturbances

Unusual craving for sweets

Salivary deficiency

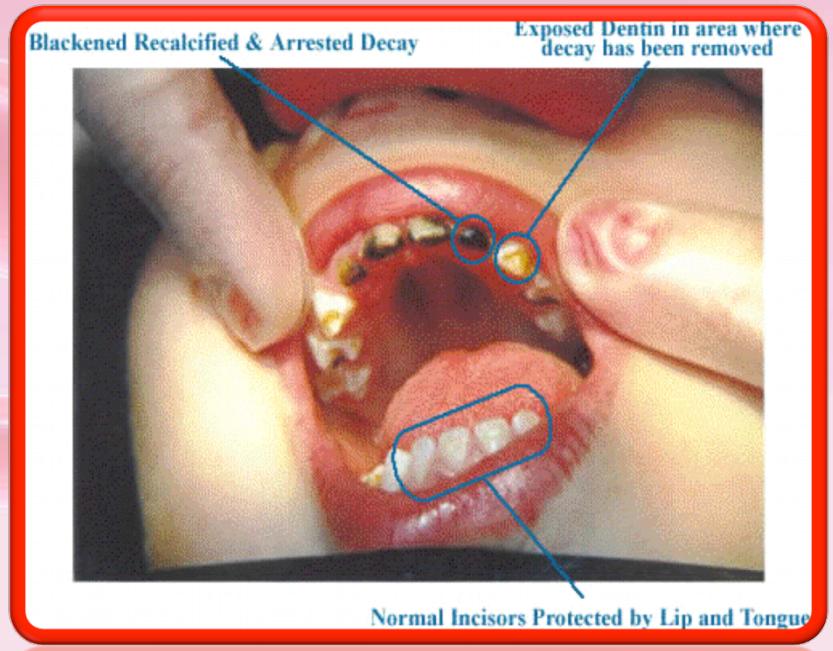
- Consistency of carious dentin

  Soft and cheese like

  Readily excavated in large amounts with a spoon excavator

- Cervical line enamel demineralization throughout the mouth &root caries

Early childhood caries/ nursing caries/ baby bottle tooth decay



- AAPD

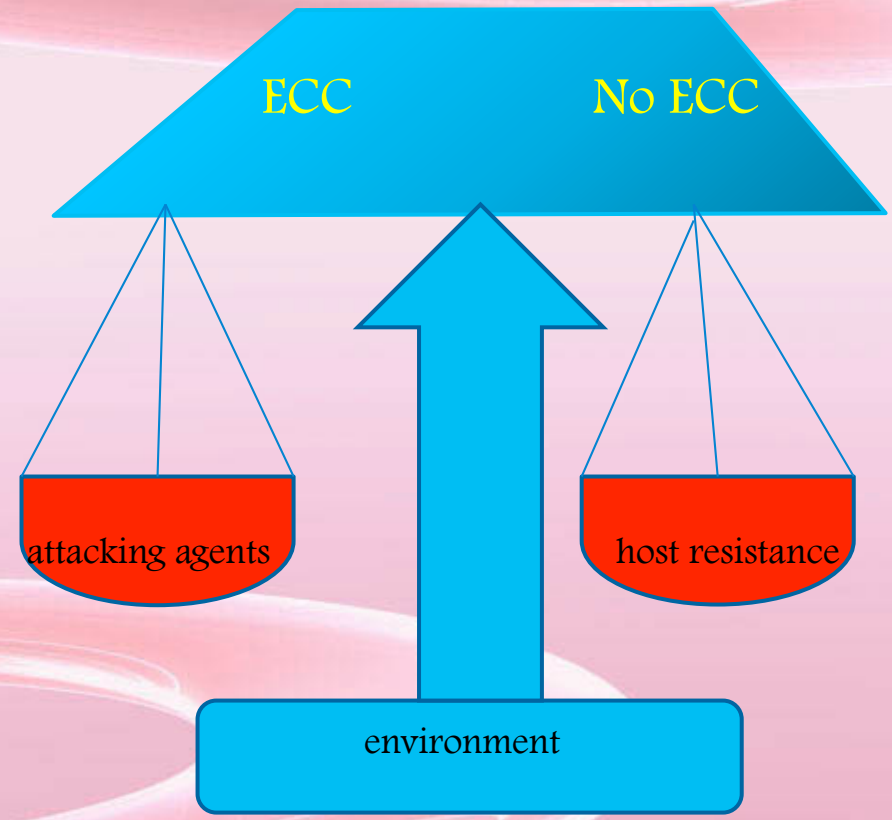
ECC → Presence of one or more decayed (non cavitated or cavitated), missing (due to caries), or filled tooth surfaces in any primary tooth in a child 71 months of age or younger.

S-ECC →In children younger than 3 years of age ,any sign of smooth-surface caries is indicative of severe early childhood caries

What puts the child at risk?

- poor oral hygiene of the care giver/child
- Inappropriate bottle or tippy cup use
- Diet high in sugar
- On-demand breastfeeding
- Frequent snacking on cariogenic snacks

Ecological model



Decay pattern

- Maxillary central incisors
- Maxillary lateral incisors

facial→lingual→ mesial→ distal

- Maxillary first molar
- Maxillary canine and second molar

facial→lingual→occlusal→ prominent surfaces

- Mandibular molars

- Mandibular incisors→ not affected
  - protection by tongue
  - cleansing saliva- sublingual glands near lower incisors

progression

- Demineralized dull area along the gum line on the labial surface

- Cavities involving neck of the tooth in RING like fassion

- Crown destroys → brown black root stumps

CLASSIFICATION OF ECC

- Type I (mild to moderate)

Molars & incisors

2 ~ 5 yrs

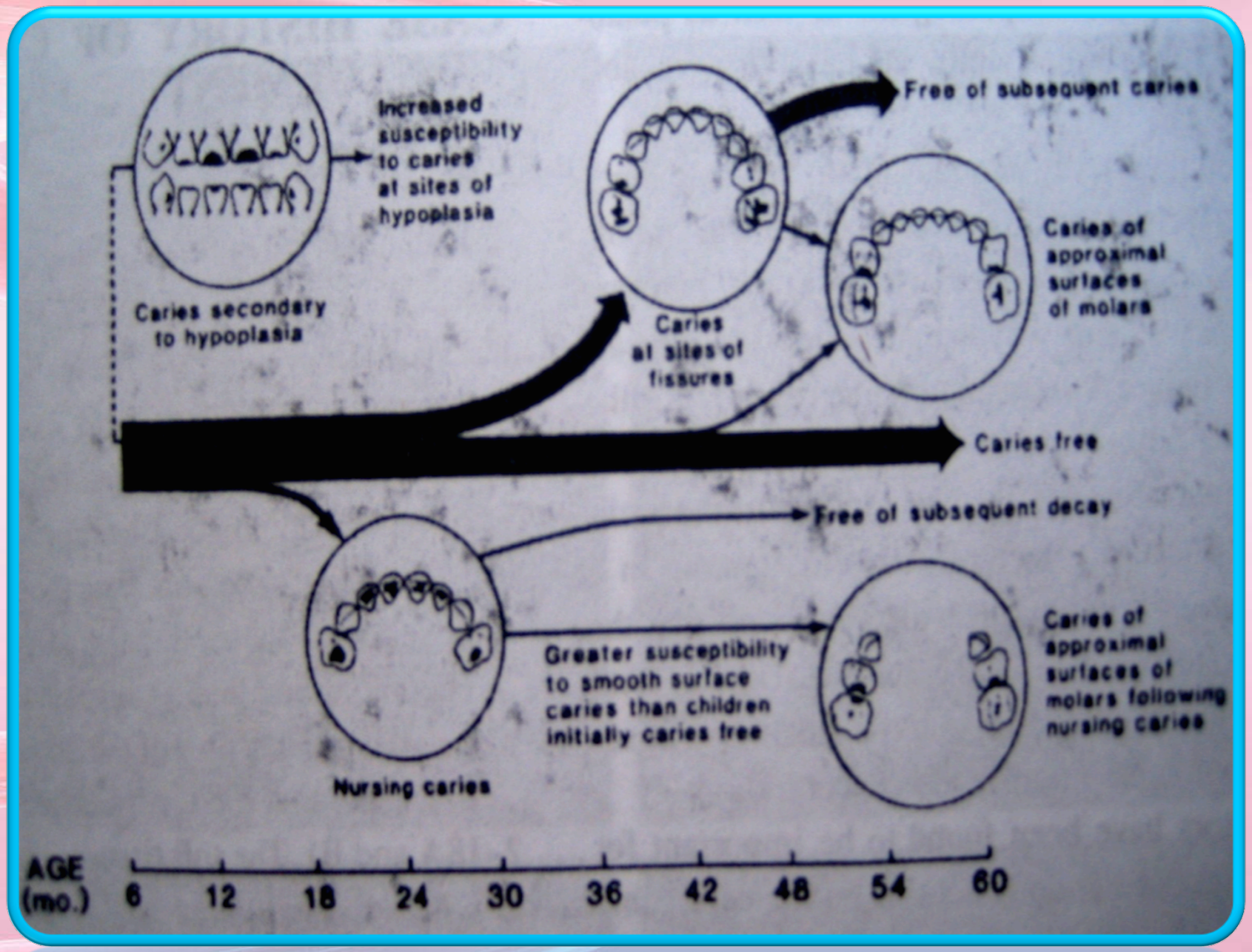
Cause ~~~ comb of cariogenic

Semisolid or solid food & poor oral hygiene

Type II (moderate to severe)

- Labio-lingual carious lesion affecting max incisors with / without molar caries, depending on age
- Seen soon after 1st tooth erupts
- Mand incisors unaffected
- Cause – inappropriate bottle feeding, / at will breasting feeding / comb, poor oral hygiene
- Proceeds to advanced stage unless controlled

- Type III (Severe)
  - Involve all teeth, including mand incisors
  - 3 – 5 yrs
  - Cause – comb factors & poor oral hygiene
  - Involves immune tooth surfaces


Increased susceptibility to caries at sites of hypoplasia
Caries secondary to hypoplasia
Caries at sites of fissures
Free of subsequent caries
Caries of approximal surfaces of molars
Caries free
Free of subsequent decay
Greater susceptibility to smooth surface caries than children initially caries free
Nursing caries
Caries of approximal surfaces of molars following nursing caries
AGE (mo.)
6
12
18
24
30
36
42
48
54
60

NURSING CARIES / RAMPANT CARIES

Nursing Caries

- Specific form of rampant caries
- Seen in all infants and toddlers
- Affects the primary dentition
- Maxillary incisors followed by molars. No mandibular incisors involved

Rampant Caries

- Acute, widespread caries with early pulpal involvement of teeth which are usually immune to decay
- Seen in all ages including adolescence
- Affects the primary and permanent dentition
- Surfaces considered to be immune to decay are affected. So mandibular incisors also affected

NURSING CARIES / RAMPANT CARIES

Nursing Caries

- Etiology

  bottle feeding before sleep

  pacifiers in honey

  prolonged at will breast feeding

- Treatment

  topical F initial stage

  maintenance till the transition

Rampant Caries

- Etiology

  frequent snacking , sticky food

  ↓salivary flow

  genetic background

- Treatment

  pulp therapy

  long term treatment for permanent teeth

- *Gardner, Norwood* recommended

  - *From birth, infant should be held while feeding*
  - *The child who falls asleep while nursing should be burped and then placed in bed*
  - *Brush child's tooth as soon as the tooth erupts*
  - *Discontinue nursing as soon as the child can drink from the cup*

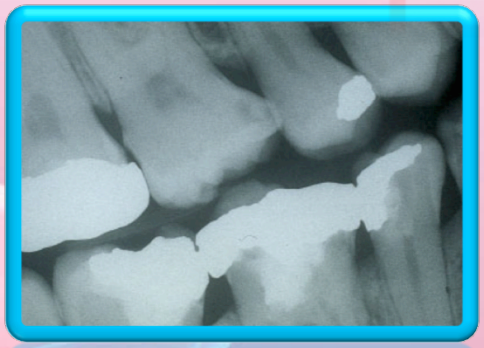
AAPD

Discourage excessive frequency of feeding times

Early dignosis of caries

CONVENTIONAL

- Visual examination
- Tactile examination
- Radiographs - conventional



NEWER METHODS

INFRARED LASER FLUORESCENCE (DIAGNO dent)

- For detection &quantification of dental caries of occlusal and smooth surfaces
- Capable of confirming the presence or absence of caries in otherwise suspicious areas

DIGITAL IMAGING FIBER OPTIC TRANS ILLUMINATION (DIFOTI)

- Use trans illumination to identify lesions located on the inter proximal surfaces of anterior teeth
- Latest advancement using charged couple device (CCD)
- Disadvantage;-

  can not determine depth of the lesion

QUANTITATIVE LIGHT FLUORESCENCE

- Early detection of dental caries on occlusal, buccal and lingual surfaces and the quantification of changes in early lesions associated with various preventive treatment

- Visible light source→ liquid filled light guide→CCD

- Disadvantage:-

  Inability to detect or monitor inter proximal lesions

CARIES DETECTION DYES

- Fuschin, Acid red system, 9-amino acridine

- Increased porosity through the development of capillary like micro voids is the earliest change in the carious lesion

- Very fluid solutions that can wet the enamel be used to deposit a fluorescent material in these pores

Caries risk assessment

TABLE 10-1 American Academy of Pediatrics Dentistry Caries-Risk Assessment Tool

CARIES RISK INDICATORS	LOW RISK	MODERATE RISK	HIGH RISK
CLINICAL CONDITIONS	• No carious teeth in past 24 months	• Carious teeth in the past 24 months	• Carious teeth in the past 12 months
	• No enamel demineralization (enamel caries "white spot lesions")	• One area of enamel demineralization (enamel caries "white spot lesions")	• More than one area of enamel demineralization (enamel caries "white spot lesions")
			• Radiographic enamel caries
	• No visible plaque; no gingivitis	• Gingivitis[a]	• Visible plaque on anterior (front) teeth
			• High titers of mutans streptococci
			• Wearing dental of Orthodontic appliances[b]
			• Enamel hypoplasia[c]
ENVIRONMENTAL CHARACTERSTICS	• Optimal systemic and topical fluoride exposure[d]	• Suboptimal systemic fluoride exposure with optimal topical exposure[d]	• Suboptimal topical fluoride expsure[d]
	• Consumption of simple sugars or foods strongly associated with caries initiation[e] primarily at mealtimes	• Occasional (e.g., one or two) between-meal exposures to simple sugars or foods strongly associated with caries	• Frequent (e.g., three or more) between-meal exposures to simple sugars or foods strongly associated with caries
	• High caregiver socioeconimic status[f]	• Midlevel caregiver socioeconomic status (e.g., eligible for school lunch program or SCHIP)	• Low-level caregiver socioeconomic status (e.g., eligible for Mediacid)
	• Regular use of dental care in an established dental home	• Irregular use of dental services	• No usual source of dental care
			• Active caries present in the mother
GENERAL HEALTH CONDITIONS			• Children with special health care needs[g]
			• Conditions impairing saliva composition/flow[h]

Control of dental caries

ACTIVE TREATMENT

- CONTROL OF ALL ACTIVE CARIOUS LESIONS

PREVENTIVE APPROACH

- REDUCTION IN THE INTAKE OF FREELY FERMENTABLE CARBOHYDRATES
- REDUCTION OF DENTAL PLAQUE (AND MICRO ORGANISMS) WITH GOOD ORAL HYGIENE PROCEDURES
- USE OF FLUORIDES AND TOPICAL ANTI MICROBIAL AGENTS
- RESTORATIVE DENTISTRY IN THE CONTROL PROGRAM
- PIT AND FISSURE SEALANTS
- CARIES VACCINE
- DENTAL CARIES ACTIVITY TESTS

CONTROL OF ACTIVE CARIOUS LESIONS

- RAMPANT CARIES/ ECC

AIM;~

Management of existing emergency

Arrest and control of the carious process

Institution of preventive procedures

Restoration and rehabilitation

Treatment proper in 3 visits

FIRST VISIT

- All lesions – Excavated and restored
- Indirect pulp capping / pulp therapy
- Abscess- drainage
- X-rays – assessment of status of succedaneous tooth
- Collection of saliva
- Topical fluoride application

PARENT COUNSELING

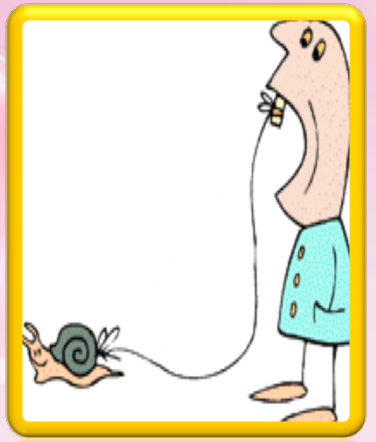
- The parent should be questioned about the child's feeding habits. Especially regarding the use of nocturnal bottles, demand the breast feeding, pacifiers dipped in sweetening agents
- The parents should be asked to try weaning the child from using the bottle as a pacifier while in bed
- In case of considerable emotional dependence on the bottle, suggest the use of fluoridated water
- The parent should be instructed to clean the child's teeth after every feed
- Parents are advised to maintain a diet record of the child for one week which include the time , amount of food given to the child , the type of food and the no of sugar exposures

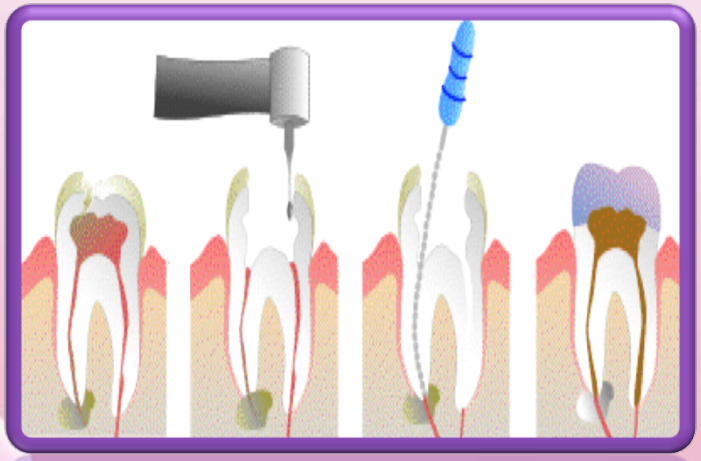
SECOND VISIT

- Reassess the restoration and redo if needed
- Analysis of diet chart &explanation of caries process
- Isolate the sugar factor- control the exposure
- Caries activity tests→ monthly monitoring for the successive treatment

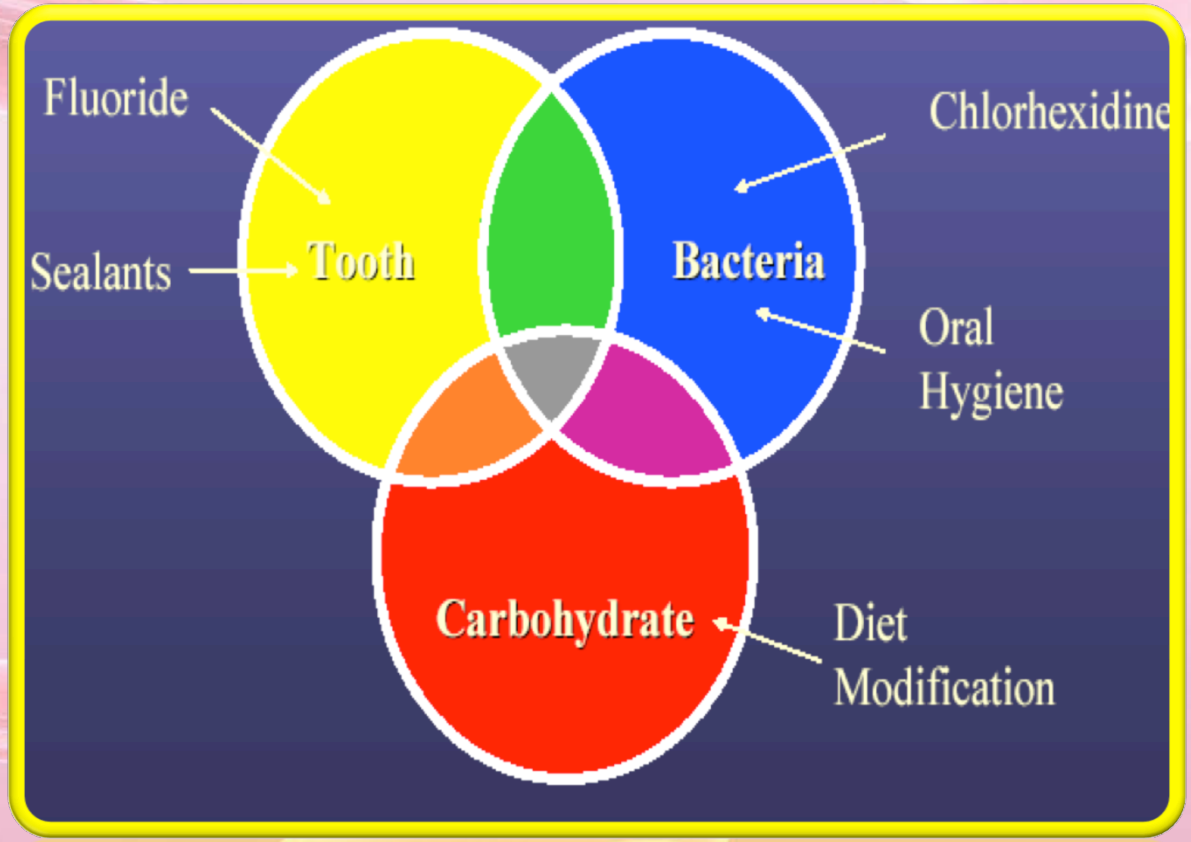
THIRD AND SUBSEQUENT VISITS

- Restoring all grossly decayed teeth
- Endodontic treatment
- Un restorable teeth- extraction
- Review and recall every 3 months





Prevention strategies



REDUCTION IN THE INTAKE OF CARBOHYDRATES

DIET COUNSELING

Step 1 → History taking

Interview~ non directive

Step 2 → Record of food intake and environmental stimuli or cues that influence eating patterns

Food intake diary;~ type, frequency, time of the day, preparation, amount

where, with whom, type of simultaneous activity, feelings of the patient

FOOD INTAKE DIARY

Instructions

1. Please record in detail everything you eat or drink. This includes between meal snacks, candies, gum, as well as regular meals.
2. The following should be included:
   a. The kind of food (chicken, apple, bread, etc.)
   b. The approximate amount in household measures, 1 cup (8 oz)
   c. The preparation (raw, cooked, fried, etc.)
   d. The order in which they are eaten at the meal
   e. The number of teaspoons of sugar or sugar products eaten as well as milk added to cereals, beverages, or other foods.
3. Particular information is essential on the time when meals and snacks are eaten.
4. Write the place (in the kitchen, den, at the movies) where the food is eaten and with whom (a friend, the family) the food is eaten.
5. Record what you are doing while eating (watching TV, reading, talking, etc.).
6. Please indicate why you ate (hungry, bored, anxious).

WHEN (Time)	*FOOD*	*AMT.*	*WHERE (Place)*	*WITH WHOM (Person)*	*DOING WHAT (Activity)*	*FEELINGS WHEN YOU EAT*
DAY 1						
7 AM	coffee sugar milk	1 cup ½ tsp. 1 tsp.	kitchen	alone	thinking	relaxed
9:30 AM	gum-sugarless	½ stick	office	employees	writing	relaxed
12 NOON	chowder	1 cup	coffeeroom	Deb	watching TV	relaxed
2 PM	gum-sugarless	½ stick	office	employees	writing	relaxed
6 PM	hamburger potatoes peas	1 patty 1 med. ½ cup	kitchen	children	talking	hungry
DAY 2						
7 AM	coffee sugar milk	1 cup ½ tsp. 1 tsp.	kitchen	alone	reading paper	relaxed
10 AM	gum-sugarless	½ stick	office	employees	talking	relaxed
12 NOON	tuna sandwich Tab	8 ozs.	coffeeroom	employees	watching TV	hungry
2 PM	gum-sugarless	½ stick	office	Dr.	talking	anxious
5:30 PM	beans/hot dogs	1 serving	kitchen	children	talking	anxious


"Others" Category
(Fats, oils, and sweets)
eat sparingly
Milk Group
3-4 servings
Meat Group
2-3 servings
Vegetable Group
3-5 servings
Fruit Group
2-4 servings
Grain Group
6-11 servings

MILK *Group for calcium*

3-4 servings

Milk
1 cup

Yogurt
1 cup

Cheese
1½–2 oz

Cottage cheese
½ cup

Ice cream, ice milk, frozen yogurt
½ cup

MEAT *Group for iron*

2-3 servings

Cooked, lean meat
2-3 oz

Cooked, lean poultry, fish
2-3 oz

Egg
1

Peanut butter
2 tbsp

Cooked, dried peas, dried beans
½ cup

VEGETABLE *Group for vitamin A*

3-5 servings

Juice
¾ cup

Raw vegetable
½ cup

Raw leafy vegetable
1 cup

Cooked vegetable
½ cup

Potato
1 medium

FRUIT *Group for vitamin C*

2-4 servings

Juice
¾ cup

Raw, canned, or cooked fruit
½ cup

Apple, banana, orange, pear
1 medium

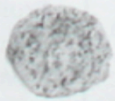
Grapefruit
½

Cantaloupe
¼

GRAIN *Group for fiber*

6-11 servings

Bread
1 slice



English muffin, hamburger bun
½

Ready-to-eat cereal
1 oz

Pasta, rice, grits, cooked cereal
½ cup

Tortilla, roll, muffin

How many servings are right for me???

- 1600 cal

  sedentary women and old adults

- 2200 cal

  children, teenage girls, active women, sedentary men . More for pregnant and breast feeding women

- 2800 cal

  teen age boys, active men, very active women

Sample diet for a day at 3 cal levels

	Lower (1600cal)	Moderate (2200)	Higher (2800)
Bread group servings	6	9	11
Vegetable group servings	3	4	5
Fruit group servings	2	3	4
Milk group servings	2-3	2-3	2-3
Meat group	5	6	7
Total fat (grams)	53	73	93

Recommendd food servings for children

Food group	preschool	6-12 yrs	Teen girls	Teen boys
milk	3	3-4	4	4
meat	2	2-3	2-3	2-3
vegetables	3	3-4	3-4	4-5
Fruit	2	2-3	2-3	3-4
grain	4	6-9	6-9	9-11

Step 3→ Analysis of the adequacy of diet

ANALYSIS OF THE DIET

Instructions: Put a check (√) for each item. Put (0) in the unmarked blocks.

FOOD GROUP	PORTION SIZE CONSIDERED ONE SERVING	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	AVERAGE	SUGGESTED DAILY AMOUNTS: CHILD	ADOLESCENT: Small Frame	ADOLESCENT: Medium Frame	ADOLESCENT: Large Frame	ADULT	DIFF
Vegetables and fruit	Vitamin C Rich 4 - 6 oz citrus juice ½ grapefruit, canteloupe 1 medium orange	√	√	0	0	0	< 1	1 or more	1	1 - 2	2 or more	1 or more	- 1
	Vitamin A Rich ½ cup carrots, broccoli, spinach, corn and other deep green and yellow types	0	0	0	√	0	< 1	1 or more	1	1 - 2	2 or more	1 or more	- 1
	Other ½ cup potatoes, peas, string beans 1 medium apple	0	√√	√√	√	0	1	2 or more	2	2	2 or more	2 or more	- 1
Bread and Cereals	1 slice bread 1 oz. (¾ cup) dry cereal ½–¾ cup cooked cereal, pasta	√√ √	√√ √	√√ √√	√√ √√	√√ √√ √√ √	> 4	4 or more	4 - 5	5 - 6	6 - 8	4 or more	OK
Milk and Cheese	1 cup (8 oz) Milk, yoghurt 1–1½ oz cheddar, processed cheese 1–1½ cup Cottage cheese	√√ √√	√	√	√√	√√ √	> 2	3 - 4	2 - 3	3 - 4 Servings	4 - 5	2	OK
Meat, poultry, fish, and beans	2 - 3 oz cooked lean meat, poultry, fish 2 eggs 4 Tbsp peanut butter 1 cup cooked dried peas, beans, or lentils	√√	√√ √	√	√√	√√ √√	> 2	2	2	2	2	2	OK

Step 4→ Analysis of form and frequency of ingested concentrated sweets

Step 5 → Analysis of physical form of diet

ANALYSIS OF SUGAR-SWEETENED FOOD INTAKE AND FOOD FORM

Instructions: Put a check (✓) for each item eaten. Put (0) in the unmarked blocks.

		FORM OF SUGAR-SWEETENED FOODS		PHYSICAL FORM OF OTHER FOODS	
		Liquid (soda, sugar in coffee, etc.)	*Solid (cookie, cake)*	*Firm (raw fruits & vegetables)*	*Soft (grd. meat, mashed or cooked foods)*
DAY 1	m*	✓	0	0	✓✓
	s+	✓✓✓	0	0	0
2	m	✓✓	1	0	✓✓✓✓
	s	✓✓	0	0	0
3	m	✓✓	1	0	✓✓
	s	✓	0	0	✓
4	m	✓	0	0	✓✓
	s	✓✓✓	1	0	✓
5	m	✓	0	0	✓✓
	s	✓✓✓	1	0	✓
SUB TOTAL		19	2 × 4	0	15
		19 + 8 = 27 Grand Total X 20		RATIO 0	15

Potential Acid Production = 540 minutes ÷ 5 number of days = 108 minutes of Potential Acid Production per day

- Step 6 → Analysis based on environmental cues or stimuli

  Place, activity, time, people and feelings

- Step 7→ Analysis of frequency of eating

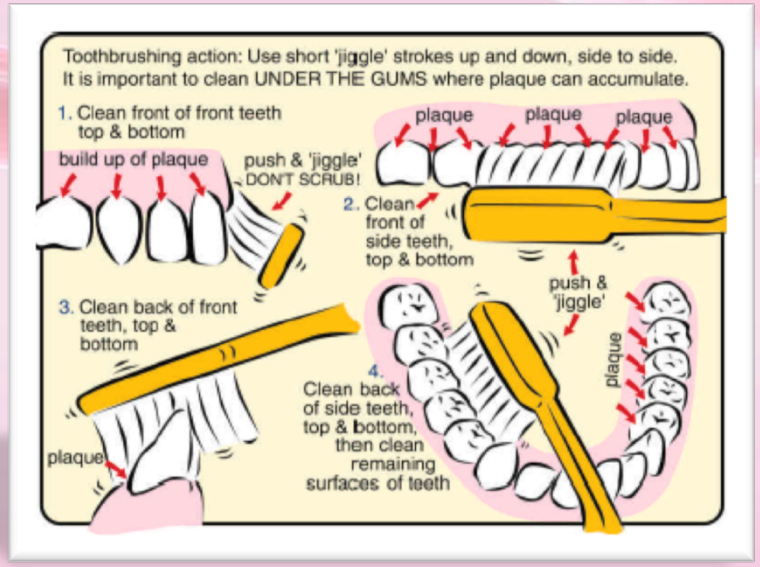
- Step 8 → Diagnosis

- Step 9→ Behavioral prescription

  - Explain the role of sweets in the initiation of the carious process
  - Prescribe a modification for the current behavioral pattern
  - Task analysis & / shaping
  - Positive reinforcement

- Step 10→Dietary prescription

REDUCTION OF DENTAL PLAQUE WITH GOOD OREL HYGIENE MEASURES



USE OF FLUORIDES AND TOPICAL ANTIMICROBIAL AGENTS

- FLUORIDE APPLICATION

Dietary fluoride suppliment

age	<0.3ppm	0.3-0.6 ppm	>0.6 ppm
Birth-6 mnths	0	0	0
6 mnths - 3yrs	0.25mg	0	0
3yrs- 6yrs	0.5 mg	0.25mg	0
6-16	1mg	0.5mg	0

CHLORHEXIDINE AND THYMOL

- Used in oral rinse, dentifrice, chewing gum, varnish, &gel
- Thymol – included with chlorhexidine in some varnish preparations
- Added effect in high risk pts along with fluorides

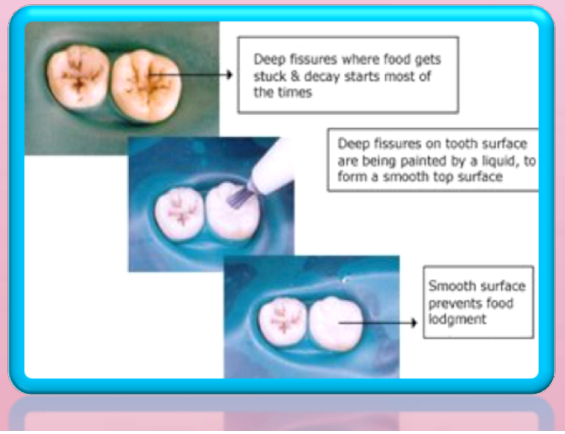
XYLITOL

- Low-calorie sweetener → inhibits the growth of S. mutans
- Metabolism by Oral Microorganisms : Human oral microorganisms do not have enzymes to utilize xylitol.
- Xylitol chewing gum reduces caries activity
- ↓ Transmission of S. mutans from gum chewing mothers to their children

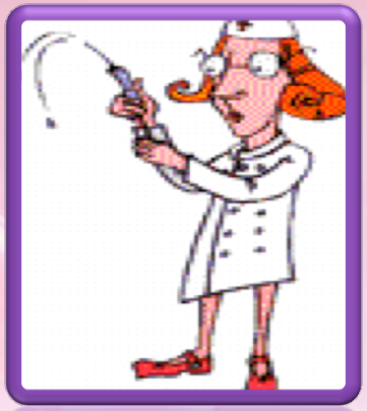
- RESTORATIVE DENTISTRY IN THE CONTROL PROGRAM

- PIT AND FISSURE SEALENTS

Are materials that is introduced into occlusal pit and fissures of caries susceptible teeth, thus forming a micromechanically bonded, protective layer cutting access of caries producing bact from their nutrient source



CARIES VACCINE



- Immunization specially targeted at neutralizing S.mutans

- BOWEN

  Monkeys remained caries free for 6 years→ intra oral ingestion of killed S.mutans

- Route of administration→ mucosal absorption by intra oral / intra nasal route

CARIES ACTIVITY TESTS

- To determine the need and extent of personalized preventive measures
- To serve as an index of success of therapeutic measures
- To motivate and to monitor the effectiveness of education progress relating to dietary and oral hygiene procedures
- To manage the progress of restorative procedures
- To identify high risk groups and individuals

LACTOBACILLUS COUNT TEST

- Hadley -- 1933
- Estimates the no of acidogenic & aciduric bacteria in pts saliva by counting the no of colonies appearing on tomato peptone agar plates (pH 5) after inoculation with a sample of saliva

CALORIMETRIC SNYDER TEST

- Snyder – 1951
- Measures the ability of salivary micro-organisms to form organic acids from a carbohydrate medium
- Indicator dye --- Bromocresol green
- Changes color – green to yellow – pH 5.4 to3.8

SWAB TEST

- Grainger et al –~ 1965
- Principle – Snyder's test
- Oral flora is sampled by swabbing buccal surfaces of teeth
- Incubated in medium
- Change in pH or color change is taken after 48 hrs

THINGS THAT CAN BE DONE by parent TO PREVENT NURSING BOTTLE CARIES

- Wipe the teeth and gums
- Brush their tooth as soon as the 1st tooth erupts
- Floss their teeth as soon as it begins to touch
- Examine the teeth once in a month
- Do not put the baby to sleep with the milk bottle/ or keep plain water
- Reduce the sugar consumption- do not add sugar to baby's food to make it tastier
- Don't let them drink sugar juices all day from sippy-cups
- By their 1st birth day , teach them to drink from cup
- Drink fluoridated water
- See your dentist between the age of 6-12 months
- If u suspect your child having dental problem, take him to the dentist as early as possible.

GOOD ORAL HEALTH SHOULD BEGIN AT BIRTH ,

AND SHOULD LAST A LIFE TIME

A plan for prevention of ecc in infants

- *Early dental examination*

- No signs of EC /low ECC risk
  - → Fluoridated dentifrices
  - → Review of dietary and oral hygiene practices

Signs of ECC/high ECC risk

- → Fluoridated supplements &dentifrices
- →Dietary counseling
- →Fluoride varnish
- → Sealants
- →Chlorhexidine varnish
- →Xylitol pacifiers

CONCLUSION

references

- Dentistry for the child and adolescent~ Mc Donald(204~255)

  Author~ Mc Donald

- Text book of pedodontics –Shobha Tandon (201~209)

  Author~ Tandon s

- Pediatric dental Medicine~ Forrester(164~167)

  Author – Stephen Wei

- Pediatric dentistry ~ Stephen Wei (14~17)

  Author~ Stephen Wei

- Nutrition in preventive dentistry~ Abraham. E. Nizel (453~475)

questions

- Early child hood caries and its clinical management (01,02)
- Role of salivary flow and viscosity in causation and progression of dental caries
- Discuss the measures available for the prevention of dental caries in the pre school child. (RGUHS- 97)
- Nursing bottle caries/ Feeding caries(98,96)
- Diet counseling in rampant caries (03)


Thank you