



Good
Morning !!

HAVE A LOVELY DAY !!

Fluoride delivery methods

1. Topical Fluorides

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TOPICAL FLUORIDES

- CLASSIFICATION OF FLUORIDE THERAPY
- TOPICAL FLUORIDES
 - **PROFESSIONALLY APPLIED**
 - SODIUM FLUORIDE
 - STANNOUS FLUORIDE
 - APF
 - FLUORIDE VARNISHES
 - **SELF APPLIED**
 - DENTIFRICES
 - MOUTH RINSES

FLUORIDE DELIVERY

METHODS

Topical
fluorides

Swish
and
swallow

Systemic
fluorides

High
concentration over
a short period
of time

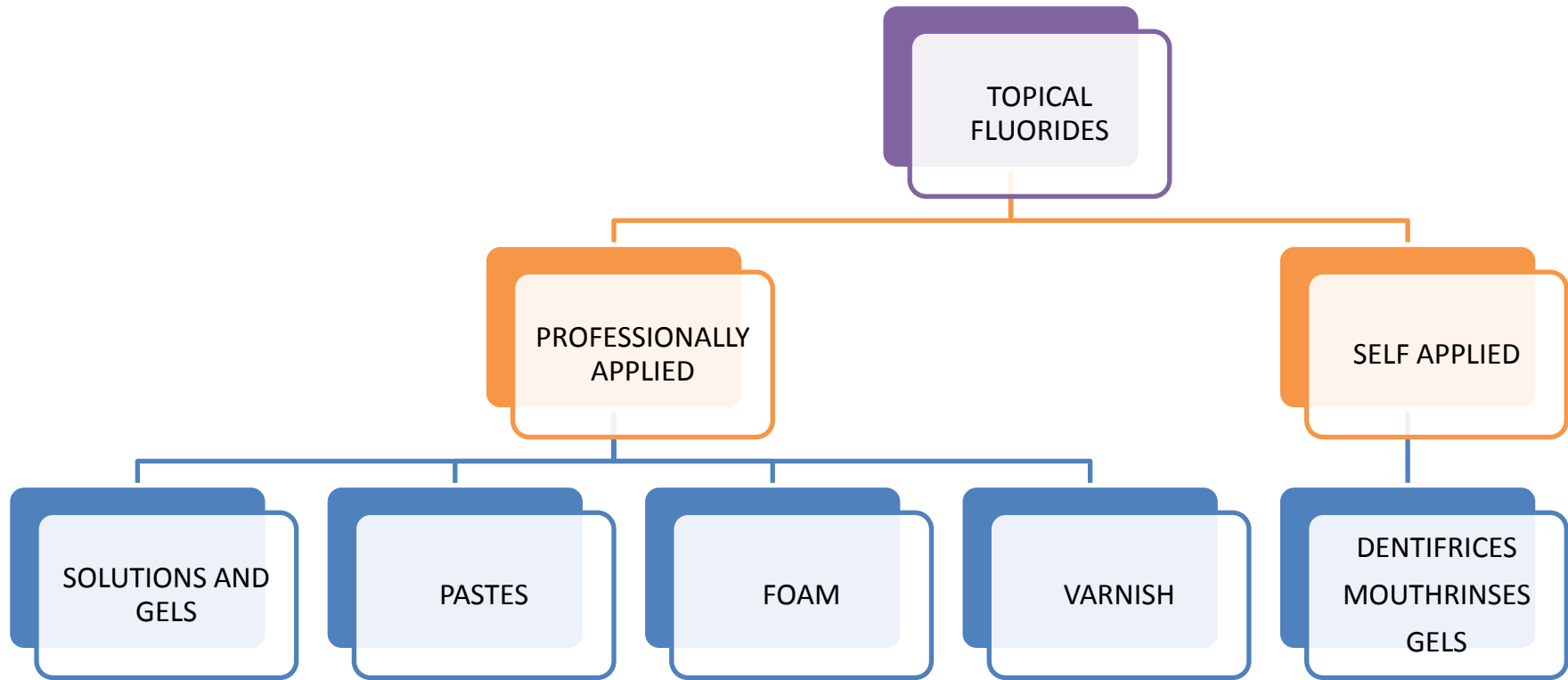
Low
concentration
over
a long period
of time

Low
concentration
over
a long period
of time

Interaction with
minerals in the
teeth

Circulate in blood
stream
Incorporated into
the developing
tooth

METHOD OF DELIVERY



Definition

- Topically applied fluorides – provide fluoride for a local chemical reaction to exposed surfaces of the erupted dentition.

INDICATIONS (THOSE SUSCEPTIBLE TO DECAY)

1. Those with high caries activity
2. Radiation of head and neck (salivary glands affected – causing xerostomia)
3. Mentally and physically challenged (poor dexterity to maintain oral hygiene)
4. Those undergoing ortho, perio, and restorative treatment (difficult to maintain tooth surfaces plaque free)

- Fluoride treatments **are not limited** to use on children.

- Many adults with a high caries rate or root exposure can also benefit from professional fluoride application.

SODIUM FLUORIDE

- FIRST FLUORIDE COMPOUND TO BE USED FOR TOPICAL APPLICATION
- Powder, gel and solution available.

2 TECHNIQUES FOR APPLICATION

1942

Bibby Technique
0.1% Sodium
Fluoride

1948

Knutson's Technique
2% Sodium Fluoride

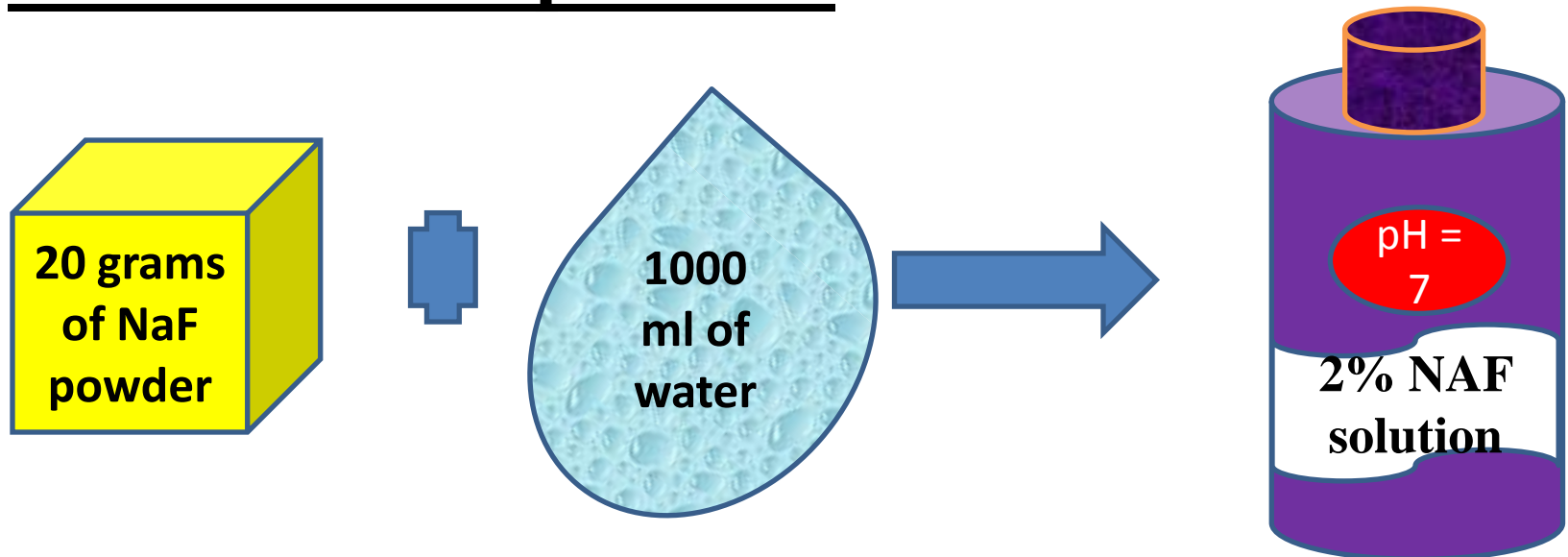
After 3 Years Of Age,
Applied Thrice A
Year,

4 Applications
3,7,11, 13 Years

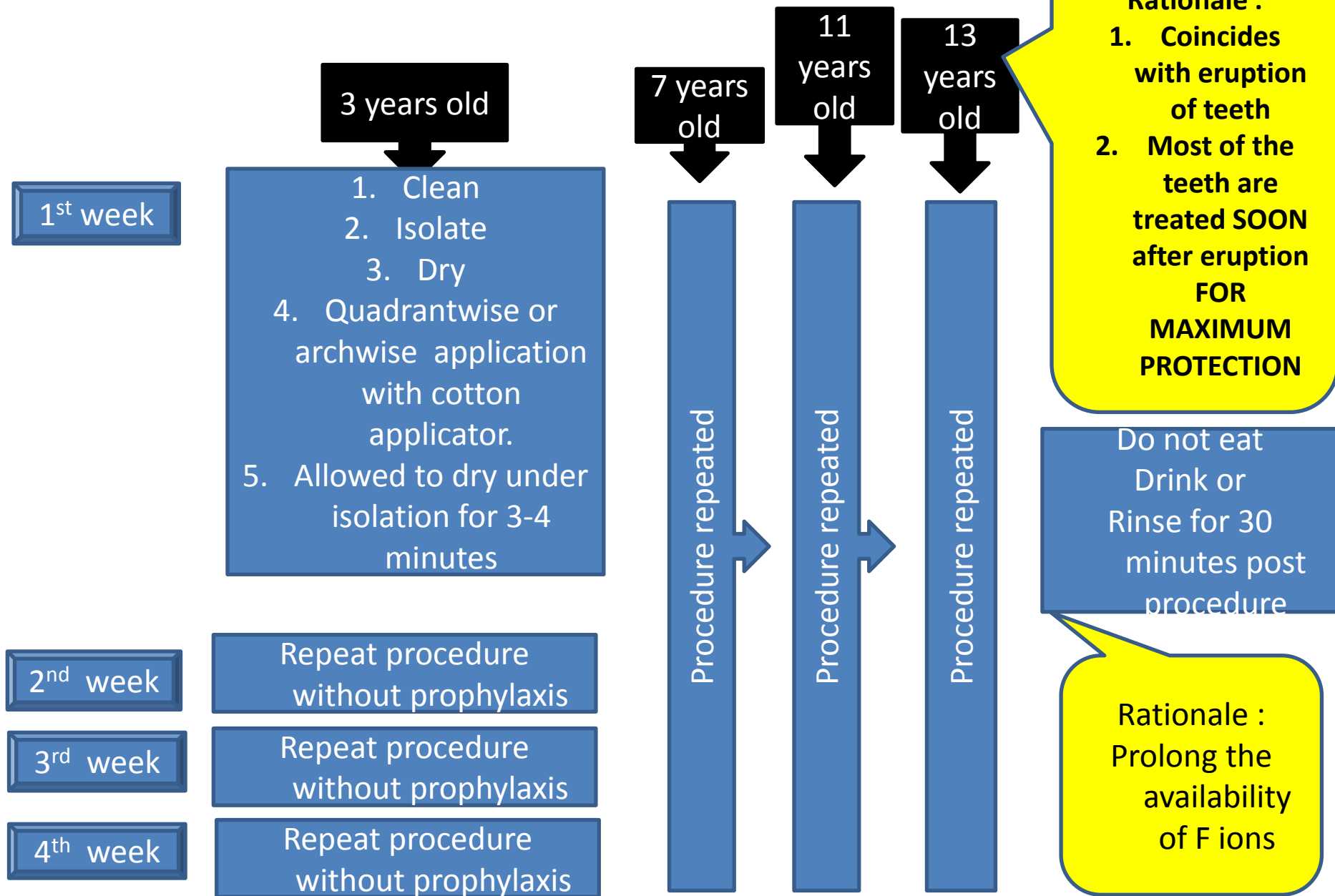
2% NEUTRAL SODIUM FLUORIDE

9200 ppm OF
FLUORIDE

- FIRST FLUORIDE COMPOUND
- A minimum of 4 applications of 2% NaF causes 30% caries reduction
- Method Of Preparation

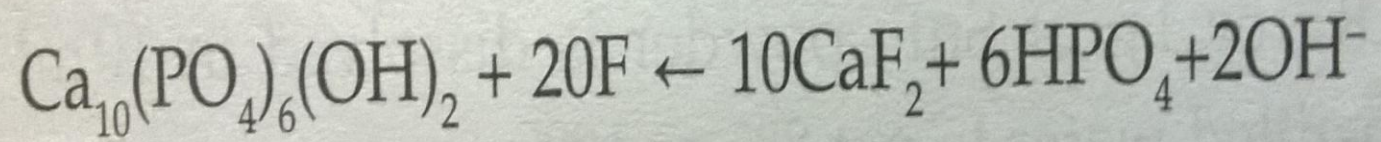


Knutson's technique



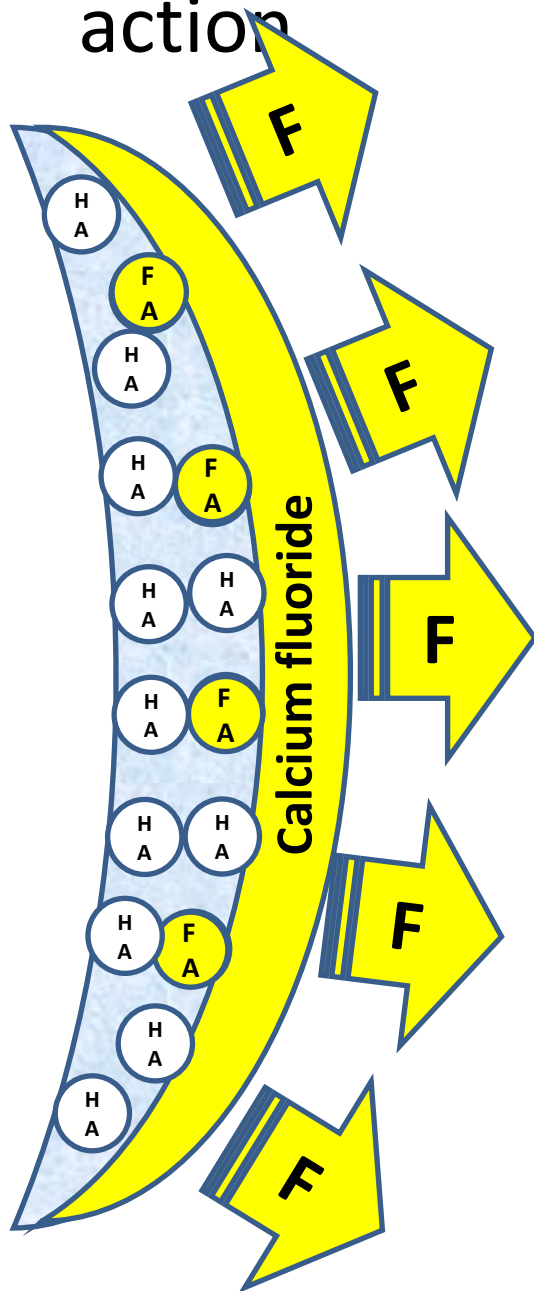
REACTION

MAJOR
PRODUCT



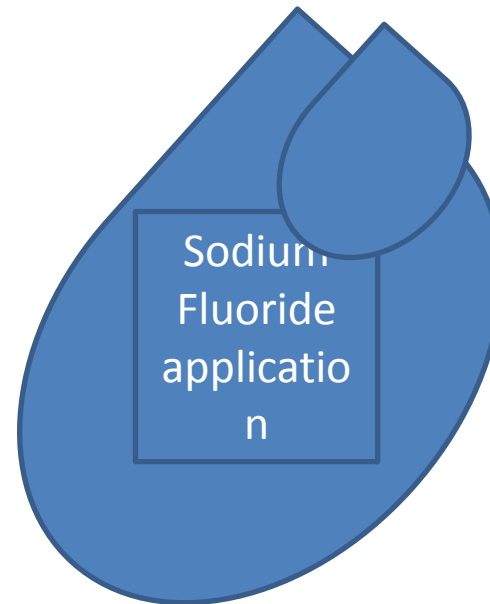
PHOSPH
ATE
LOSS

Mechanism of action



- F LEACHES FROM caF.
- RESERVOIR

“CHOKING
OFF EFFECT”



Advantages

Disadvantages

- Stable in plastic container.
 - Acceptable taste
 - Non irritant to gingival tissues
 - Does not discolor tooth
 - Multiple chair procedure in public health programmes
- the solution is allowed to dry for 3 minutes
 - 4 Specific age applications – makes it easy to plan other procedures in public health programme

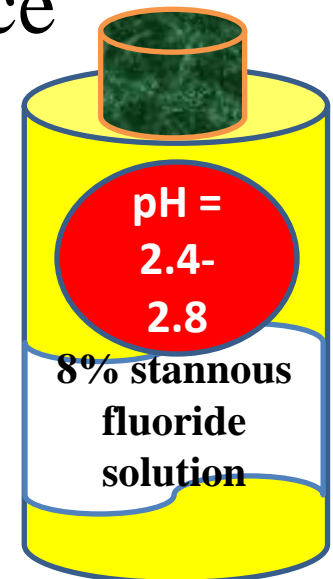
- 4 visits within a short interval

Stannous fluoride

- 8% stannous fluoride = 2% available fluoride (children)
- 10% stannous fluoride = 2.5% available fluoride (adult)
- But there is no actual clinical difference between the two



'0' number
gelatin capsule



Muhler's technique

1st
application

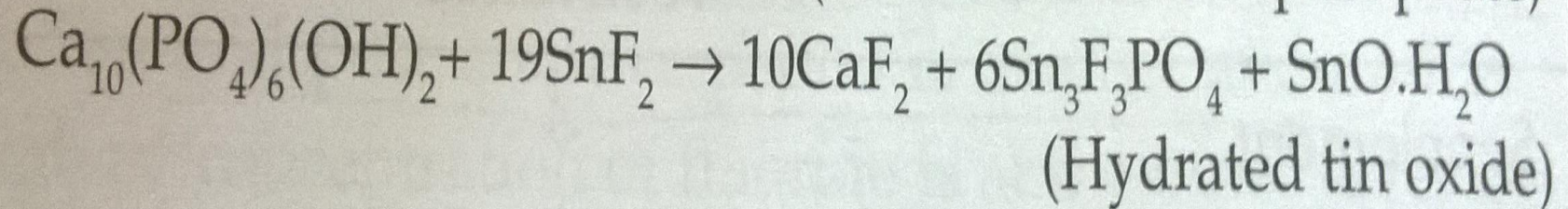
1. Clean – 5-10 seconds, use unwaxed dental floss for interproximal areas
2. Isolate
3. Dry
4. Paint – on technique for application
5. Allowed to dry under isolation for 3-4 minutes

After 6
months

Repeat procedure

REACTION

(Stannous trifluorophosphate)



Stannous

High
Concentration

Low
concentrat
ions

fluorohydroxyapatite

Tin
hydroxyphosphate

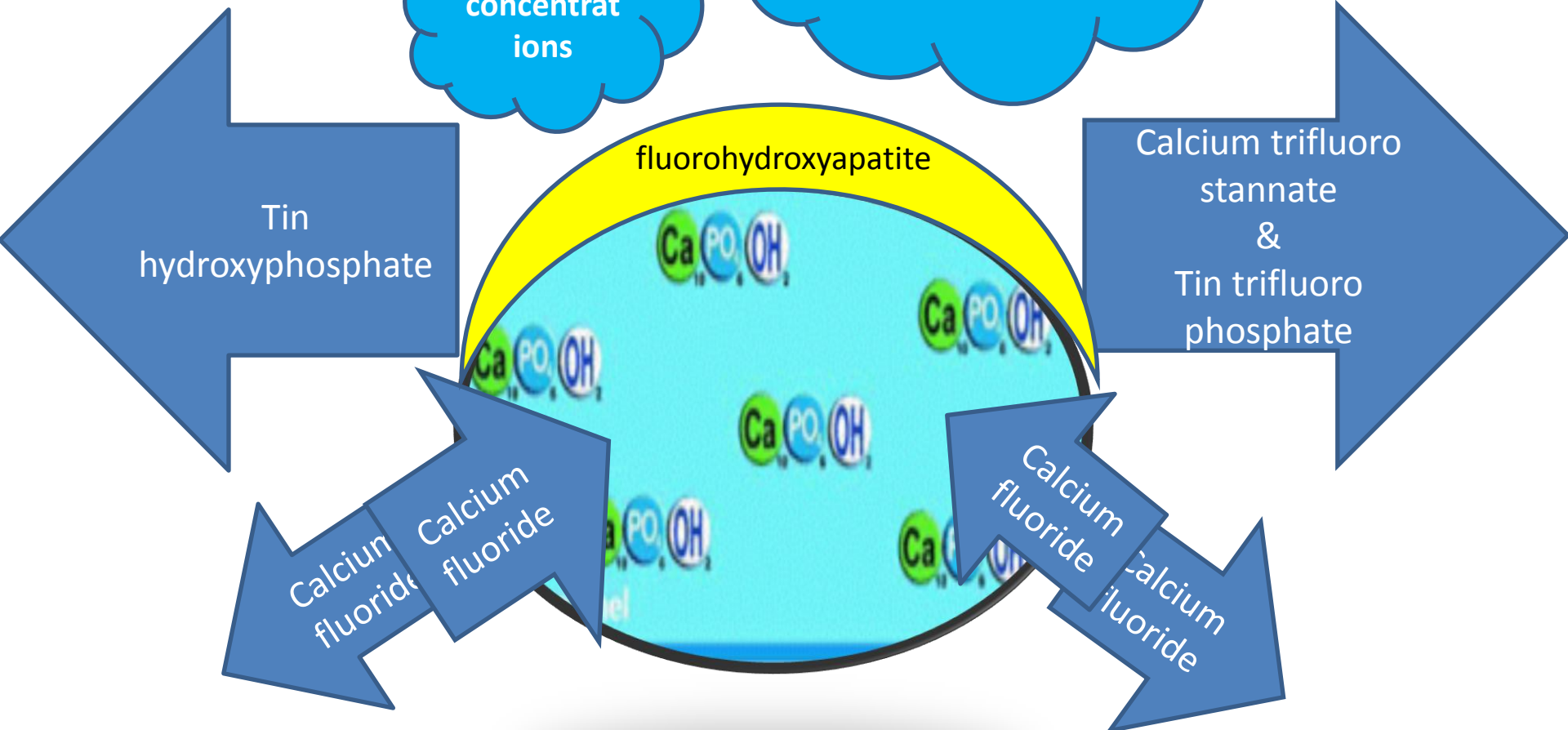
Calcium trifluoro
stannate
&
Tin trifluoro
phosphate

Calcium
fluoride

Calcium
fluoride

Calcium
fluoride

Calcium
fluoride



Advantages

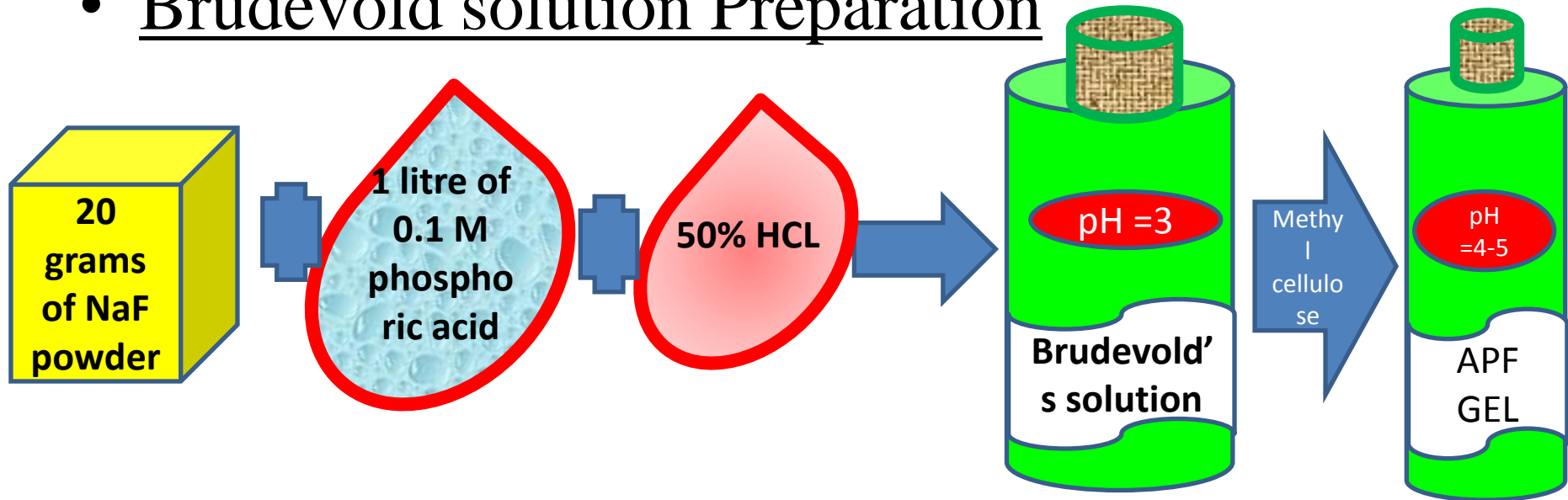
Disadvantages

- The 6 months recall conforms to usual dentist's patient recall
- Administrative difficulties – need to arrange 4 appointments is not there

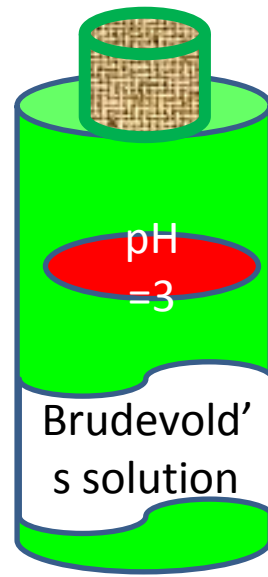
- Unstable
- Disagreeable astringent taste
- Tissue irritant – gingival blanching
- Light brown pigmentation of teeth. Staining occurs in association with caries, restoration margins, and hypocalcified regions

Acidulated phosphate fluoride

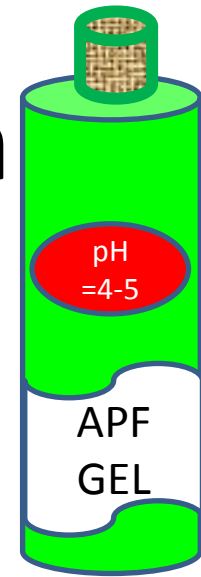
- Introduced in 1960 by Brudevold, Forsyth dental center – Boston , Massachusetts
- Brudevold solution Preparation



Technique Application



Paint on technique



Tray technique

TOPICAL FLUORIDE GELS



Tray selection

- An adequate tray should
 - *cover all the patient's dentition;*
 - *it should also have enough depth to reach beyond the neck of the teeth and*
 - *contact the alveolar mucosa to prevent saliva from diluting the fluoride gel.*
- *Appropriate size must be selected to avoid pinching of soft tissues*

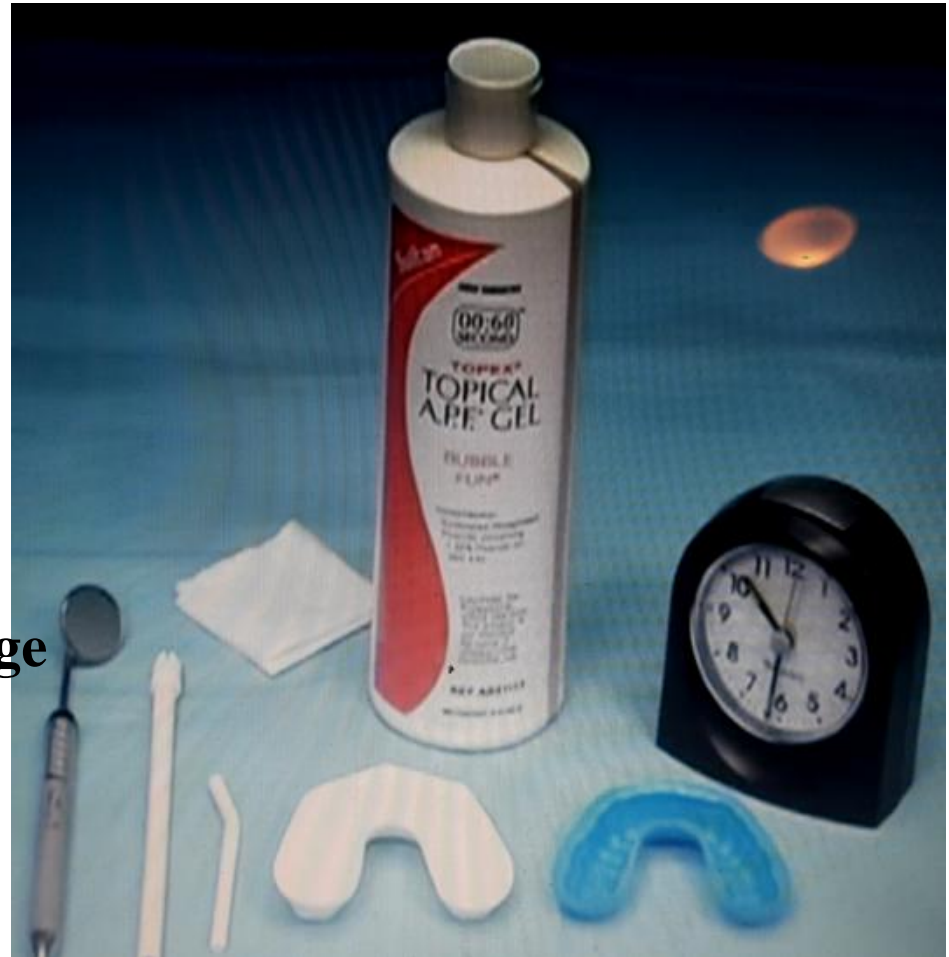
Delivery methods

- Gel,
- Foam,
- Varnish,
- Rinse.



Armamentarium

- **Mouth Mirror**
- **1 maxillary and 1 mandibular disposable fluoride tray,**
- **a 2x2 gauze square,**
- **saliva ejector, an air water syringe tip,**
- **and a timer or wrist watch.**
- **the appropriate fluoride agent**



Prior Instructions

- A rubber cup polish is not routinely necessary before fluoride application.
- A toothbrush is then recommended for biofilm removal.
- Review the patient's medical history for any contraindications such as food and dye allergies.
- A detailed explanation of the rationale and procedure must be given to the patient.
- The patient will need to be instructed to avoid swallowing the fluoride during the procedure.
- And that the duration of treatment will be 4 minutes.

Cross Contamination

- Before starting the procedure place a barrier over the fluoride bottle to reduce cross-contamination and to support the practice of standard precautions.



Tray Selection

- 2 types
- Maxillary / Mandibular.
- 3 Sizes-
- small, medium, and large.
- With gloved hands and the patient in an upright position
- select the appropriate fluoride tray that will cover the patient's entire exposed enamel. The complete dentition must be covered



Dispensing

- Dispense a narrow ribbon of fluoride gel into the selected trays.
- **No more than 1/3 of the tray height.**
- Make sure to have the fluoride gel spread evenly

Procedure

- Place the filled trays on the tray.
- Dry the patient's teeth thoroughly .Make sure to dry the facial, occlusal, and lingual surfaces.
- **Standing in the 8 o'clock position** –Mandibular tray first.
- Lift the patient's lower lip around the tray. The patient's head should be tilted forward at this time to avoid ingestion of excess fluoride. And a saliva ejector should be placed under the tongue.
- **Standing in the 9 o'clock position**-Maxillary tray

- Once the trays have been inserted ask the patient to close down and gently chew 2 to 3 times to ensure complete fluoride coverage.
- Timed for 4 minutes
- The patient must never be left unattended during the procedure.
- After the timed 4 minutes remove the saliva ejector and both trays. Because the patient has been instructed not to swallow or rinse ask them to expectorate .
- Utilizing a mouth mirror inspect the oral tissues for any reactions that may have occurred.
- Ask the patient whether they are experiencing any burning, tingling, or irritation.

Instructions

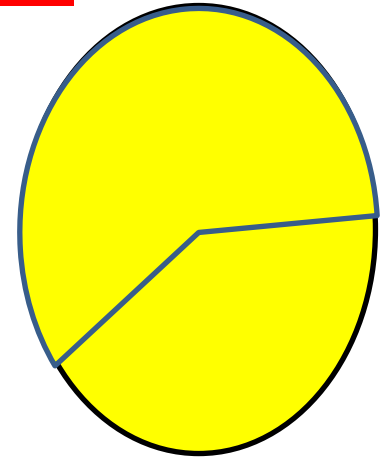
- Patient should avoid
- Eating,
- Drinking,
- Rinsing



FLUORIDE VARNISH

First developed by
– **Schmidt , 1964**

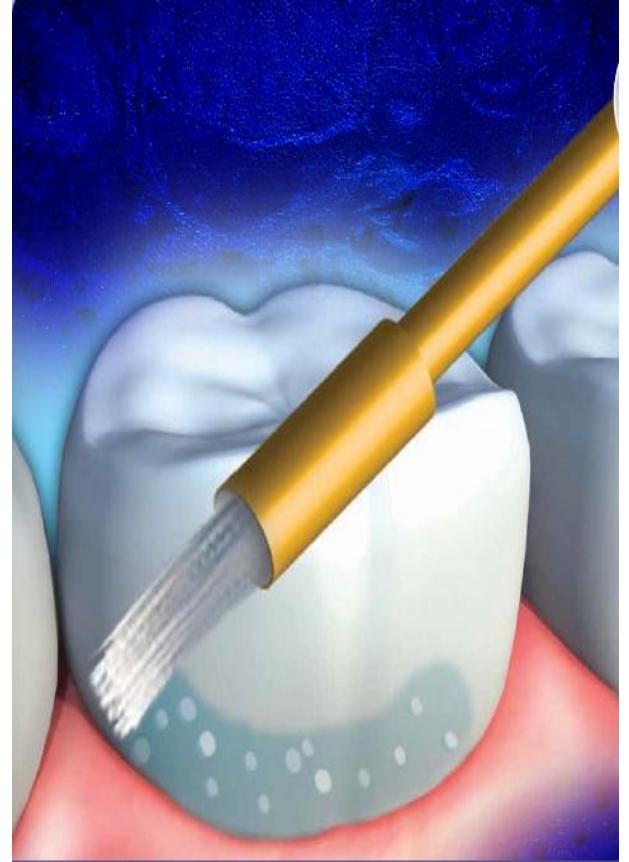
In all
currently
used topical
fluoride
agents.....
2/3rd of the
varnish is
lost



- Increase the time of contact between the teeth and the fluoride.
- So that there is deposition of more permanently bound FA is formed.

Varnish

- A type of paint with a solvent that evaporates to leave a hard, transparent, glossy film.
- Anything resembling such a paint



Duraphat (Germany)

- Sodium Fluoride in a neutral colophonium base (Organic lacquer)
- **2.26% or 22,600 ppm**
- Yellowish material
- Caries reduction-
30% to 40% (permanent teeth)
7% - 44% (primary teeth)



Fluoroprotector

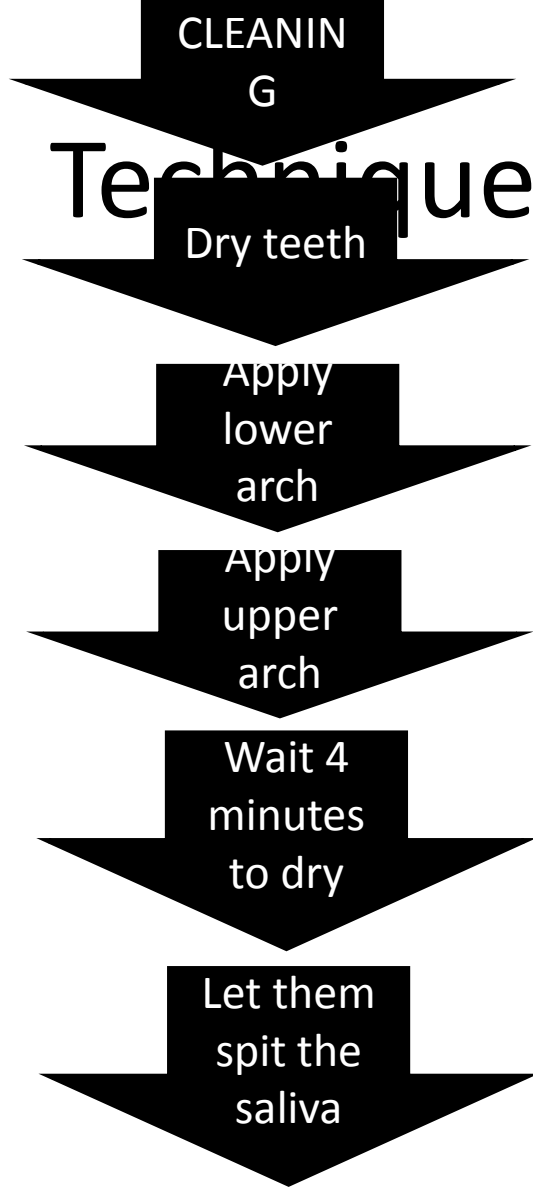
- Silane fluoride in Polyurethane based lacquer
- **0.7% or 7000 ppm**
- Comes in ampules
- A steep concentration gradient from the surface to the inside of both the silane and fluoride
- **Silanes** are effective medium of transport into enamel
- Caries reduction efficacy 1% to 17%

Carex

- 1.8% fluoride
- Efficacy equal to Duraphat at a lower concentration.

Controversial?

FLUORPROTECTOR	DURAPHAT
7000 ppm	22,600 ppm
But More uptake in Enamel	Less uptake
Less effective	More effective



Do not use cotton
FOR ISOLATION

Start with
proximal surface

0.3 to 0.5 ml
varnish
6.9 to 11.5 mg
of fluoride
Sufficient for
entire
dentition

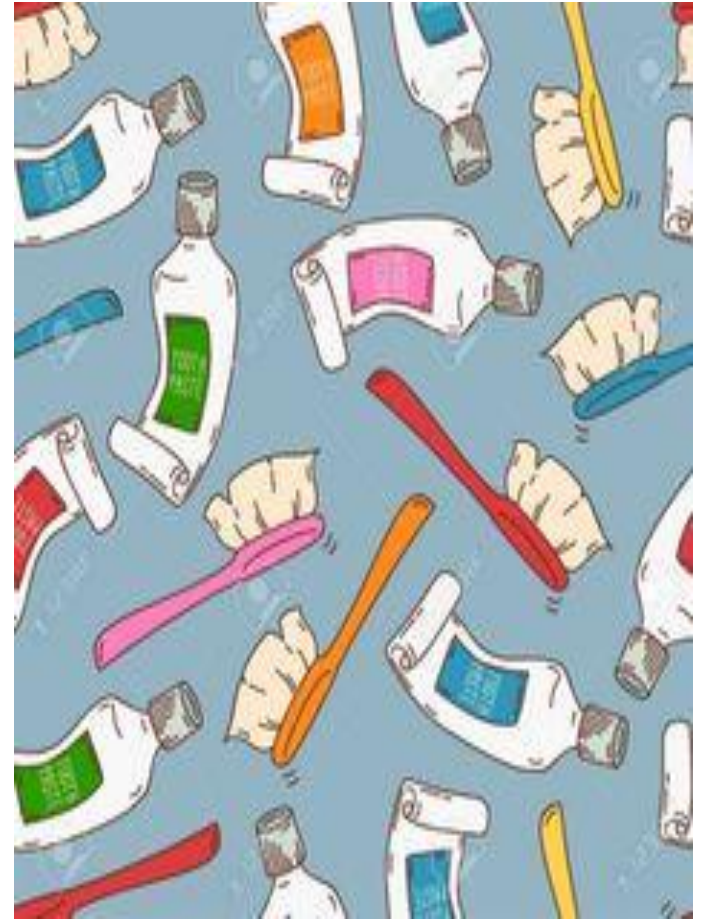
Repeated
every 4-6
months

Do not eat/rinse/drink for one hour
Only soft diet till next morning
(varnish for 24 – 48 hours is retained)

Benefits

- **a significant reduction in the incidence of dental caries**
- **the magnitude of the benefit is related to the frequency of application, particularly in children at high risk for caries.**

Dentifrices



DENTIFRICES

- At present fluoride is by far the most effective dentifrice additive for caries prevention.

4 EVALUATED TOOTHPASTES

Ionic

- SODIUM FLUORIDE
- STANNOUS FLUORIDE

Covalent

- SODIUM MONO FLUORO PHOSPHATE

Organic

- AMINE FLUORIDE

SODIUM MFP better than Stannous fluoride

- **SODIUM MFP**


- NEUTRAL pH (6.5)
- Greater stability to oxidation and hydrolysis
- Increased shelf life
- Increased availability of Fluoride
- No staining

- **STANNOUS FLUORIDE**

- NEUTRAL pH (6.5)
- less stability to oxidation and hydrolysis
- staining

Safety

- Family size toothpaste: 9 oz = 270 gm = 270 mgF
- Amount in the ribbon of toothpaste: 1 gm = 1 mgF
pea size of toothpaste=0.5gm
- 2 year old child
 - **Certainly lethal dose= 320 mgF**
 - **Safely tolerated dose= 80 mgF**



270 mgF

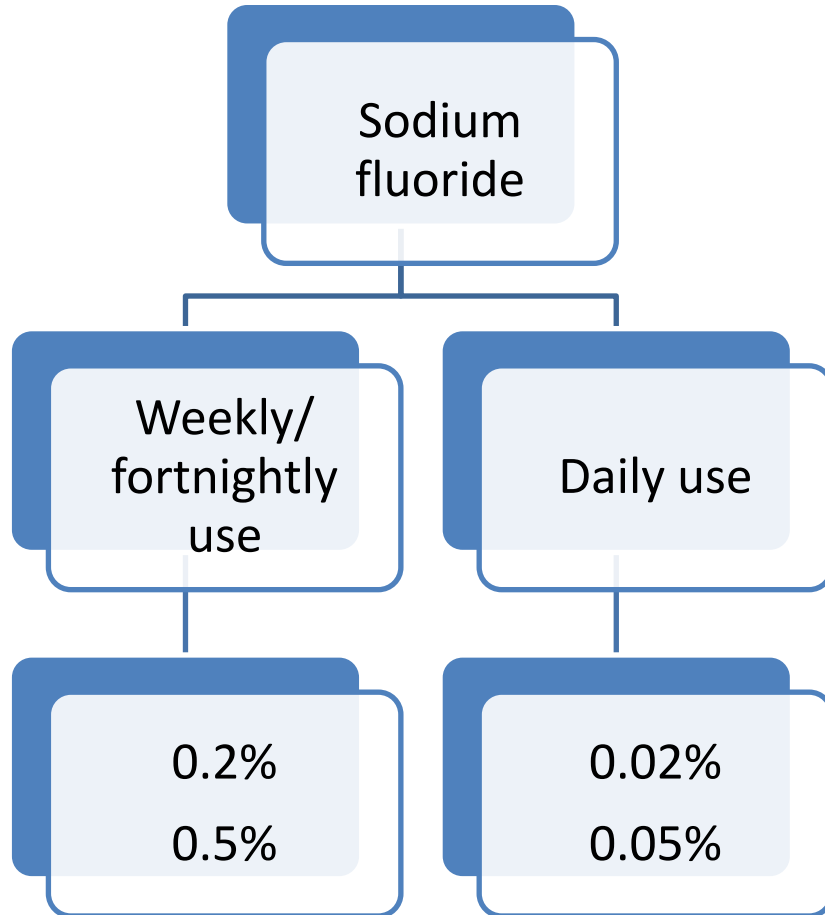
Use of Fluoride dentifrices

- **Less than 4 years** = No toothpaste
- **4-6 years old** = once with F toothpaste + twice without F toothpaste
- **6-10 years old** = twice with F toothpaste + once without F toothpaste
- **>10 years old** = thrice with F toothpaste

Mouthrinses

- First described by Bibby 1946
- In 1975 ADA made them caries preventive agent

Dosage



10 ml
must be
swished
for 60 sec
and
expectorat
ed

Mechanism of Action

- HA becomes FA
 - Antibacterial action
-
- Advantages of Daily rinse
 - missed sessions are less critical

Recommendations

- Cariostatic effects are additive to communal fluoridation
- **In fluoridated areas:**
 - 0.025% weekly
- **In non-fluoridated areas:**
 - 0.05% daily
 - 0.2% fortnightly

References

- Norman O. Harris, Primary Preventive Dentistry - 6th Ed. (2004)
- Burt BA, Eklund SA. Dentistry, dental practice and the community. 6th edition. Missouri (MO): Elsevier Saunders; 2005
- J.J MURRAY – TEXTBOOK ON FLUORIDES
- AMRIT TEWARI – FLUORIDE AND DENTAL CARIES – A COMPENDIUM
- OLE FEJERSKOV – fluorides

Thank You

The text "Thank You" is written in a black, elegant cursive font. The letters are thick and have a slight shadow effect. The word "Thank" is on the left, and "You" is on the right. There are gold stars and dots scattered around the text, particularly above the "You" and below the "Thank".

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