
Lesson Plan #1- Fluoride

Course: Dental Hygiene Theory 130

Topic: Fluoride

Audience: Adult Learners (First Year Dental Hygiene Students)

Time: 110 minutes

Materials: Computer, Projector, PowerPoint, Textbook

Instructional Objectives:

Upon completion of the lecture the student should be able to:

1. Describe the mechanisms of action of fluoride in the prevention of dental caries.
2. Explain the role of community water fluoridation on the decline of dental caries incidence in a community.
3. Recommend appropriate over the counter (OTC) and professionally applied fluoride therapies based on each patient's caries risk assessment.
4. Compare use of fluoride home products (OTC and prescription).
5. Incorporate fluoride into individualized prevention plans for patients of various ages and risk levels.

References:

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TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
5 minutes	I. ANTICIPATORY SET <u>A. Introduction</u> Despite the advancement in dental science and the knowledge we have in dental caries prevention, dental caries is still a major concern within dentistry. 23 percentage of children in the US have at least 1 cavity before the age of 5. Dental caries among adults is even higher. With the cost of dental insurance and access to care, the question today is how are we to prevent dental caries, or even slow down the onset? With people keeping their teeth longer, patients also pose a risk of developing debilitating gingival recession. The recession is debilitating because of the pain associated with temperature and acid related sensitivity. Despite these problems being somewhat minor in the grand scheme of health care, they are a big deal. As a dental provider, it will be your job to discuss with patient's how they can incorporate fluoride into their routine to prevent caries and dental hypersensitivity. <u>B. Gain Attention/Motivate</u> Have you ever bit into a spoonful of creamy ice cream and suddenly your tooth was screaming and your tongue right the area to try and warm it up? That is hypersensitivity. As you treat your patients throughout the next 4 semesters, you will see teeth that are bombed out, have root decay and severe demineralization. Would you know how to treat these patients and what fluoride products to recommend to them? <u>C. Activate Prior Knowledge</u> I am sure you all remember that one time you were given a fluoride treatment at the dental office or ate toothpaste at home and your mom had a fit. Later, you vomited it all up. Do you know why you were given that fluoride treatment? To prevent cavities. Did you know that fluoride can do more than just prevent cavities? <u>D. Establish Rationale</u> After today's lesson, you will know how fluoride is taken up by the tooth and the body. You will understand the difference between all the different	Slide #1: Fluoride Title Q: How many of you believe cavities are still a problem in America? A: Answers will vary. Slide #2: Data on Child and senior dental caries Note: In CA, 38% of children by age 5 will have 5 or more cavities. Slide #3: NC State dental stats Slide #4: Picture of ice cream and person holding their face

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	fluorides on the market today. As a dental professional you will discuss with your patients the various products used that contain fluoride, and how to use them. <u>E. Present Instructional Objectives</u> After today's lecture, you should be able to: 1. Describe the mechanisms of action of fluoride in the prevention of dental caries. 2. Explain the role of community water fluoridation on the decline of dental caries incidence in a community. 3. Recommend appropriate over the counter (OTC) and professionally applied fluoride therapies based on each patient's caries risk assessment. 4. Compare use of fluoride home products (OTC and prescription). 5. Incorporate fluoride into individualized prevention plans for patients of various ages and risk levels.	Slide #5: Objectives

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	I. Fluoride Mechanisms of Action A. Fluoride Metabolism 1. Definition: a mineral that occurs naturally and is released by rocks into soil, water, and air. Can be used to reduce tooth decay. 2. Sources of fluoride - Drinking water - Prescribed dietary supplements - Foods, in small amounts - Food and drinks made at home using fluoridated tap water	Slide #6: Metabolism Note: Definition taken from CDC Website Q: What sources of fluoride do you think you use in your own life? A: Answers will vary
2 minutes	B. Absorption 1. Gastrointestinal tract - Fluoride is rapidly absorbed as HF through passive diffusion in stomach. - Rate and amount absorbed varies on solubility of the fluoride and stomach acidity. - About 60 minutes - If not fully absorbed in stomach, small intestine will absorb remainder of F. - Less absorption when fluoride taken with milk and food. 2. Blood Stream - Plasma carries the fluoride to parts of the body - Kidneys process the fluoride for elimination - Max blood plasma levels within 30 minutes of intake - Plasma levels of fluoride vary 3. Distribution and Retention - Goes to all tissue and organs - Especially mineralized tissues 99% of fluoride is in mineralized tissue - Crystal lattice of teeth and bones - Amount stored depends on - Intake - Time of exposure - Age - Stage of development - F accumulates in bone and levels change due to - Resorption - Remodeling - F in mature tooth enamel altered by - Cavitated dental caries	Slide #7: Distribution and Retention
2 minutes		

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
5 minutes	ii. Erosion iii. Mechanical abrasion f. Fluoride (F) exits body via: i. Mostly by kidneys- urine ii. Sweat glands iii. feces g. Small amount of F transfer in breast milk. C. Fluoride and Tooth Development 1. Fluoride is: a. Essential nutrient for teeth and bones b. Other essential minerals are P, Ca, and others. i. Found in water and food 2. Pre-eruptive: Mineralization Stage a. Deposition of fluoride i. Blue dots depict fluoride in all parts of the teeth ii. Hydroxyapatite to fluorapatite. iii. Less soluble than apatite 1. Aka: less likely to dissolve in saliva. b. Refer to chapter 47 for in utero teeth formation i. Permanent 1st molars begin mineralization at birth c. Excess fluoride can: i. Dental fluorosis- hypo mineralization 1. Excess amounts of systemic fluoride a. During development ii. Enamel is highly receptive to free F ions iii. Ameloblasts can be inhibited 1. Defective enamel matrix 2. uneven crystalline structure 3. mottled appearance d. Fluorosis looks like: i. Appears in varying degrees 1. White flecks 2. Striations 3. Pitted – can be stained 3. Pre-eruptive Stage: Maturation Stage a. Fluoride uptake continues on surface of enamel i. Tooth take F from the surrounding tissue 4. Post eruptive	Note: Environment changes the amount of fluoride constantly. Note: not enough Fluoride (F) in breastmilk to be considered significant Slide #8- What is F? Note: We will talk about Calcium and Phosphorous further in the lesson. Slide #9 Pre-eruptive Q: What type of fluoride is used when taken up during development? During post-eruption? A: systemic, topical
1 minute		

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	a. Concentration of F ion on the outside layer of enamel varies b/c: i. Fluoride sources: 1. Prevent demineralization 2. Encourage remineralization 3. Prevent caries ii. Sources include: 1. Water 2. Toothpastes 3. Mouth rinses 4. Other b. Caries prevention: i. Continuous daily presence c. First years of eruption i. Most rapid uptake of F d. Repeated intake of fluoride i. Topically only 1. Drinking water 2. Toothpaste- do not rinse off	Slide #10 Post eruptive Q: Why would fluoride vary? A: Different levels of fluoride exposure.
2 minutes	D. Tooth Surface Fluoride 1. Enamel a. greatest concentration of F b. Uptake: i. varies on levels of F and length of exposure ii. hypomineralized enamel great concentration that sound enamel. iii. outer surface has highest concentration of F. less at inner surface 2. Dentin a. highest concentration of F at pulpal surface i. F exchanges take place. b. levels MAY be greater than enamel c. New dentin absorbs F rapidly 3. Cementum a. recession causes cementum to be exposed to F. b. F available from saliva, external sources i. water ii. toothpaste iii. mouthrinses.	Note: repeated exposure is key to fluoride benefit Slide #11 Tooth Surface F Q: Why is the fluoride level highest at the pulp? A: Closest to the bloodstream.
2 minutes	E. Demineralization 1. tooth minerals are dissolved into solution a. Carious lesions b. Hypermineralized lesions- white spots F. Remineralization 1. Fluoride in Biofilm	Slide #12 Fluoride up take after eruption Slide #13 Demineralization and Remineralization

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	a. Fluoride reservoirs i. contains minerals need for remineralization ii. forming a layer on the surface attracts Ca and P ions iii. high levels of F can hinder bacterial growth and metabolism b. up to 5-50 ppm F c. review sources of F.	Q: What foods may cause demineralization? A: acidic/ sour
2 minutes	2. Summary of Fluoride action a. Topical exposure i. repeatedly b. Topical effects i. inhibit demineralization ii. increase remineralization of incipient caries iii. inhibit bacterial activity 1. black ENOLASE- a. enzyme to block metabolism of carbs	
	II. Fluoridation in the Community A. Definition: the adjustment of the natural fluoride ion content in the municipal water supply to ideal concentration that produces caries prevention and limit enamel fluorosis. 1. Established to be a. efficient b. effective c. reliable d. inexpensive 2. one of the most significant health measures of 20th century 3. Fluoride statistics (2014) a. 66.3% of US population received F b. 74.4 % of US Pop. Municipal F enriched water	Slide #14 Transition slide Slide #15 Fluoride in the Community Q: Do you think NC fluoridates the water? A: Yes Note: 90% of NC population is serviced by fluoridated water.
2 minutes	B. History of Fluoridation 1. Dr. Frederick McKay a. studied fluorosis- cause of brown stains b. Colorado Springs, CO i. significantly less dental caries ii. associated it to the drinking water iii. test were inconclusive 2. H.V. Churchill a. 1931 b. Chemist c. pinpointed fluorine i. related to McKay's observations 3. Dr. H. Trendley Dean	

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	a. Epidemiologist b. US Public Health Service c. concluded that fluorine level of 1 ppm is optimal i. moderate climates d. over 2 ppm i. clinically objectionable 4. From these studies a. because people in communities with fluoride were healthy i. adding fluoride to water was developed. C. 1945 Fluoridation 1. First communities began fluoridation 2. Research with baseline information began 3. Control groups a. Aurora, IL i. natural fluoride levels of 1.2 ppm b. Rockford, IL i. fluoride free city. c. other cities were also studied i. Research influenced fluoride on oral health. D. Water Supply Adjustment 1. Fluoride level a. 2015 adjust to 0.7 i. due to other sources of available fluoride 2. Chemicals Used a. American Water Works Association standards b. naturally occurring and mined in various parts of the world i. fluorspar ii. cryolite iii. apatite c. Criteria of acceptable fluoride i. Solubility to permit regular use in a water plant ii. Inexpensive iii. readily available to prevent interruptions in maintaining proper Fluoride level d. types of Fluorides used: i. NaF (solid) ii. sodium silicofluoride (solid) iii. hydrofluorosilic acid (liquid) E. Effects of Fluoridation 1. Fluoridated water a. systemic source of fluoride i. developing teeth	Note: 13% of Western NC residents serviced by fluoride Q: How many of you drink bottled water A: answers will vary Slide #16 The water supply
1 minute		
3 minutes		

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	b. topical source of fluoride i. erupted teeth 2. Appearance of teeth a. regular fluoride exposure (optimum level) i. white ii. shining iii. opaque iv. without blemishes b. slightly higher levels of F i. small white flecks ii. will blend into tooth color iii. majority of fluorosis 1. mild 2. esthetically not concerning	Slide #17 Effects of Fluoridation Note: Same family, living in different fluoridation areas at similar ages, different decay rates.
1 minute	3. Dental Caries in Permanent teeth a. max benefit when continuously use fluoridated water from birth b. reduction by 27% c. same with areas with naturally fluoridated water. d. anterior teeth see more benefit i. contacted by drinking water more often e. caries rate is slowed as well	Slide #18 Effects of Fluoridation (Con't)
2 minutes	4. Root caries a. root caries are reduced in people who have lifelong fluoridation i. by 50% 5. Dental Caries: Primary teeth a. reduced by 40% i. with fluoridation from birth b. decay scores are down in areas with fluoridation i. Wake County scores 6. Tooth Loss a. with increased tooth decay= increased tooth loss 7. Periodontal health a. indirect benefit from fluoride i. carious lesion favors biofilm retention ii. With decreased decay, less biofilm, less periodontal disease	Q: Can fluoridation be used by all age levels? How? A: Yes, answers will vary
1 minute	F. Partial Defluoridation 1. Water excess natural fluoride a. does not meet USPHS requirements 2. Several hundred communities in the US a. examples: i. South Dakota 1. 7 to 1.5 ppm	Note: once again, 13% of kinders have untreated decay in Wake County.

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	ii. Texas 1. 8 to 1.8 ppm b. reduction of fluorosis G. School Fluoridation 1. Bring benefits of fluoridation to rural areas a. Add water to the school's water supply b. Fluoride over 1 ppm added to school water i. because of intermittent use c. example: Elk Lake, PA i. 39% reduction in decay d. example: Seagrove, NC i. 47.5% reduction 2. School fluoridation has been phased out in several states a. operation/ maintenance problematic	Slide #19 Public health fluoridation
1 minute	H. Discontinued Fluoridation 1. Stoppage of fluoridation programs can have significant effects. a. example: Antigo, Wi. i. fluoridated from 1949-1960 ii. 1960-1966- number of caries free children decreased by 67% iii. fluoridation reinstated	Q: Why do you think W NC is not as fluoridated as other areas of NC? A: answers will vary
3 minutes	III. Fluoride Supplementation A. Food 1. certain foods contain fluoride a. Meat b. Eggs c. Vegetables d. cereals e. tea- more f. fish- more 2. not enough for decay prevention 3. foods cooked in fluoridated water retain the fluoride	Note: During my DH education in CA, as students we went into the low socio eco schools (SB 111) to give OHI and fluoride tablets. Slide #20 Fluoride supplementation Slide #21 Fluoride in Foods
1 minute	B. Fluoridated salt 1. not used in US 2. available and used in a. Germany b. France c. Switzerland d. 30-80% marketed salt is fluoridated 3. reduced dental decay 4. not enough evidence of its overall effectiveness 5. supply 1/3 to 1/2 amount of daily ingested fluoride (1ppm) 6. WHO recommends as alternative a. underprivileged groups	Note: Fluoride salts are not used in the US because of the water fluoridation program.

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
5 minutes	C. Halo/Diffusion Effect 1. food and beverage processed in areas where fluoridated water is distributed 2. Processed food and beverage then consumed in nonfluorinated area. a. provides some protection D. Bottled water 1. does not contain optimal fluoride amounts 2. use refillable water bottle from fluoridated water supply a. if possible E. Water Filters 1. reverse osmosis and water distillation a. removes fluoride b. water softeners do not 2. Carbon filter a. removal varies 3. Carbon filters with alumina a. removes fluoride 4. Consumers need to check their water filters a. what does the filter remove F. Infant formula 1. major source of fluoride a. 0.11 to .57 b. water supply determines total fluoride intake 2. breastmilk alone a. may contain 0.02 3. ADA recommends using fluoridated water supply a. aware of risk of mild enamel fluorosis of primary teeth G. Dietary Fluoride Supplements 1. Facts a. introduced in 1940's b. compensates for fluoride deficient drinking water c. dosage chart revised in 2010 i. children aged 6 months- 16 years d. clinical recommendation from ADA i. at high risk ii. no water fluoridation in area 2. Assess possible needs a. Review patient's history i. are they getting fluoride elsewhere? 1. vitamin-fluoride tabs b. Determine fluoridation levels in drinking water i. Below 0.6 ppm? c. Have a list if fluoridated communities in area	Note: as mentioned above, foods cooked in fluoridated water retain the mineral. Who cooks with bottled water? Ask patients if they cook with tap water. Q: Even though you have only seen a couple patients so far this semester, how many of you have asked your patients if they drink tap water? A: answers will vary Slide #22 Fluoride Supplements
1 minute		
3 minutes		

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
2 minutes	d. Check levels in the well water, private well e. determine child's risk of dental decay before considering supplementation i. high ii. moderately high f. Reassess the caries risk at intervals i. status can change 3. Available forms of supplements a. NaF i. Tablets/ Lozenges 1. chewed thoroughly 2. swished around oral cavity 3. forced between teeth 4. swallowed 5. Best taken at bedtime a. avoid drinking, eating, or rinsing for max uptake ii. Drops 1. liquid concentrate 2. specify number of drops per does 3. used for children aged 6 m to 3 y.o. 4. used for those who cannot chew or have swallowing problems H. Prescription Guidelines 1. No more than 264 mg NaF dispensed per household 2. Take with juice or water a. avoid dairy b. Ca hinders absorption of F 3. Keep out of reach of children 4. Keep: a. in original container b. away from heat and direct light c. away from damp places i. kitchen or bathroom 5. Missed dose a. take as soon as remembered b. if near skip dose time, take at regular time 6. Benefits and Limitations a. Prenatal use i. not recommended ii. weak evidence to support use during pregnancy b. Daily use for school age children i. with 1 mg tablet ii. over 6 y.o.	Note: Fluoride tab instructions- chew, swallow. No food or drink for 15 minutes after. Best to be down right before bed. Continue with Slide #22 Q: Why is fluoride supplementation not advised for pregnant women?

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
5 minutes	1. 24% decrease of caries in permanent teeth IV. Topical Fluoride Applications A. Professional topical fluoride applications 1. General overview a. essential part of preventative program i. all ages b. Primary sources i. Fluoridated water ii. Fluoride toothpastes c. additional topical fluorides i. elevated risk for caries ii. professionally applied iii. self-applied 2. Historical Perspectives a. used since 1940's b. Dr. Bibby i. NaF study c. Studies by Dr. Knutson 3. Indications a. caries risk assessment b. CAMBRA 4. Compounds a. 2.0% NaF gel i. neutral sodium fluoride ii. 9050 ppm iii. gel delivered in trays iv. clinical trials based on 4-5 applications/week v. quarterly/ semiannual applications common b. 2.0% foam i. limited clinical evidence c. 1.23% APF (acidulated phosphate) gel i. 12,300 ppm ii. 4 minute tray application iii. 3.5 pH- enhance uptake iv. 3-6 months v. 6 y.o. and older vi. stores well vii. contraindicated for composite fillings 1. microfilled composites are not as sensitive to APF viii. 18%-41% caries prevention d. 1.23% APF foam i. limited clinical evidence e. 5% NaF varnish	A: creates fluorosis in the developing teeth of the fetus. Slide #23 Topical Fluoride Note: NaF most commonly used. Q: why about APF makes it contraindicated for composite fillings? A: acid pits the filling material

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	i. 1960's ii. prolonged contact time iii. safe. iv. Effective v. Good patient acceptance vi. decrease decay 43% 1. permanent teeth vii. decrease decay 37% 1. primary teeth viii. 3-4 months for at risk ix. Effective with: 1. reversing certain lesions 2. ortho white spots 3. dentin hypersensitivity x. can be used on children under 6 y.o. xi. many different formulations	Note: most common at one time b/c it was easy. Note: Varnish used more widely now.
4 minutes	f. 38% silver diamine fluoride (SDF) i. Japan used for 80 years ii. no adverse issues iii. 24.4%-28.8% silver 1. antimicrobial iv. 5.0-5.9% fluoride 1. promotes demineralization v. 8% ammonia 1. stabilizing agent vi. pH 8-10 vii. dentinal hypersensitivity 1. FDA approval 2015 viii. used off label 1. caries arrest and prevention 2. high risk patients ix. 2017- AAPD guidelines x. individual state practice acts g. Calcium Phosphates i. Calcium Phosphate nanocompounds ii. Enamel remineralization iii. Dentinal tubule occlusion iv. Types: a. HA- synthetic hydroxyapatite b. ACP- amorphous calcium phosphate	Slide #24 Silver Diamine Fluoride
2 minutes	h. Arginine i. Pro-Argin technology ii. Chairside sensitivity relief iii. No fluoride	Slide #25 Q: Are there products that are fluoride free that help with tooth decay and sensitivity? A: Yes- Calcium phosphates and arginine
1 minute		

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
	iv. Proprietary formulation	Note: Similar to bone composition Slide# 26 Arginine
2 minutes	B. Clinical Procedures: Professional Topical Fluoride 1. Assessment a. prevention of dental caries i. identify risk factors 1. ortho 2. restorations 3. xerostomia 4. other b. Remineralization of remineralized areas c. Desensitization 2. Preparation of the teeth for topical application a. general prep for tray and varnish applications i. application after routine dental hygiene visit ii. remove calculus and stain iii. select appropriate polishing agent iv. apply fluoride agent	Note: Only Colgate has this formulation. For the fluoride-free crowd. Slide #27 Professional Topical F Procedures
1 minute	3. Patient and/or Parent Counseling a. purpose b. benefits c. limitations d. part of a prevention program	Q: What could be other risk factor for tooth decay? A: smoking e-cigs, recreational drug; answers will vary
2 minutes	4. tray technique a. apply at least 30 minutes before eating b. choose correct tray size c. Thixotropic d. following manufacturers directions e. Dry teeth f. insert tray g. monitor patient h. timer i. completion j. post op instructions	Slide #28 Tray Fluoride Note: Foam tray skill eval Q: What is the meaning of thixotropic A: Becoming flowable overtime and then return to original state.
2 minutes	5. Varnish Technique a. Unit dosed 5% NaF i. check the unit dosages b. dry teeth i. varnish sets in presence of saliva c. paint varnish on teeth d. describe to patient what they will feel. e. post op instructions	Slide #29 Note: Varnish Skill Eval
5 minutes	C. Silver Diamine Fluoride 1. Indications	

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
3 minutes	a. Extreme risk b. treatment challenged c. access to care 2. Advantages a. noninvasive b. cariostatic c. reduces sensitivity 3. Contraindications a. allergy to silver b. pregnancy c. breastfeeding d. gingivitis 4. Potential limitations/ risks a. does not eliminate future restorations b. 2 separate applications for max effect c. staining d. taste 5. Application a. dose b. protective barriers c. isolate area d. dry area e. apply SDF f. rinse D. Self -Applied Fluorides 1. Examples a. dentifrices b. mouthrinses c. gels 2. Concentrations a. OTC b. Prescription 3. Application a. toothbrush b. rinsing c. tray	Slide #30 SDF Procedures Note: SFD Skill eval
1 minute	4. Indications a. assessment/ needs i. decay ii. xerostomia iii. radiation exposure iv. root surface hypersensitivity v. demineralization b. fluoride product 5. Methods	Slide #31 Self applied Fluoride Q: What assessments are needed to make fluoride recommendations?

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
5 minutes	a. Tray i. gels used 1. 1.1% NaF; 5000 ppm 2. 1.1% APF; 5000 ppm ii. custom/ disposable iii. precautions iv. patient instructions b. Rinsing i. practicality ii. swish time iii. post rinse instructions iv. limitations 1. age 2. alcohol content 3. compliance v. products 1. OTC a. 0.05% NaF 2. Rx. a. 0.20% NaF 3. Safety features c. Toothbrushing i. toothpaste 1. 1960 ADA a. 0.4 % SNF2 2. indications 3. Procedural instructions a. Child b. Adults 4. Products a. NaF 0.24%; 1100 ppm b. Sodium monofluorophosphate 0.76%; 1000 ppm c. SnF2 0.45%; 1000 ppm ii. brush on gel 1. indications 2. 1.1% NaF; Rx 3. 1.1 % APF; Rx 4. 0.4% SnF2; OTC 5. Procedure iii. proxy brushing	A: Hx, Oral exam, visual exam Slide #33 At home fluoride trays Note: Custom/ bleaching trays are usually used over the disposable trays. Slide #34 Fluoride rinses Slide #35 Fluoride rinses (con't) Slide #36 Fluoride Toothpaste Q: When would you use SNF2? And NaF? A: Usually stannous is used for gum disease and uptake is good, but stains teeth. NaF is usually used because of staining.
1 minute	6. Benefits a. mouthrinsing	

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
2 minutes	i. 10 years or more of exposure ii. 8-10 ppm iii. stiff painful joints iv. not in US b. dental fluorosis i. ingestions of naturally occurring F ii. birth – 16/18 y.o. iii. no systemic symptoms iv. mild fluorosis 8. Calculate amounts of fluoride a. $\%F \times \text{molecular ratio} = \%F \times 10 = \text{mg F/mL}$ X quantity used in treatment= total F ingested by the patient i. Molecular weight ratio C. Documentation 1. Caries risk level 2. Current use of toothpaste 3. exposure to fluoridated water 4. professional F application details a. type b. concentration c. mode of delivery d. post op instructions 5. patient applied F products a. type i. Rx or OTC b. concentration c. mode of delivery d. post op instructions	Slide #41 Fluorosis Slide #42 Calculating fluoride amounts Note: I have never had to calculate fluoride in private practice, but you should be aware of how to do it just in case. Slide #43 Chart Documentation
3 minutes	D. Factors to teach the Patient 1. Personal use of Fluorides a. purposes b. action c. expected benefits d. specific instructions 2. Need for parental supervision a. toothpaste b. Keep out of reach 3. Determine need for F supplementation a. caries risk b. fluoridated water c. possible water analysis 4. Total Preventive Program a. different fluorides working in tandem b. Regular dental visits. 5. Fluoridation	Slide #44 Teaching the patient Q: In clinic, what are you filling out that aids in risk assessment? A: CAMBRA questionnaire. Note: Clinic note taken from the textbook

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
1 minute	a. community water b. Bottled water c. filters Summary	

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
2 minutes	I hope that you have a better understanding of fluoride and the role it has in practicing dental hygiene. You can now explain to your patient the metabolism of fluoride and how the mineral repairs teeth, know why patients need fluoride therapy, whether it be for decay or tooth hypersensitivity. You know why fluoride in community water is an important public health measures to those who have no access to dental care. You have the knowledge to recommend OTC and professional fluoride therapies. After this lesson you as the oral care provider can determine which fluoride home products to incorporate into a fluoride program, and you can incorporate fluoride therapies into your oral hygiene instruction.	Slide #45 Summary Note: Thank you to Ms. Moore for allowing me to teach this afternoon and thank you (pointing to the audience) for your attention. Q: From the lesson about fluoride, do you feel more confident in explaining fluoride to a patient? A: answers will vary, but hopefully a Yes!

TIME	LESSON CONTENT	NOTES-MEDIA-Q/A
7 minutes	CRITICAL THINKING ACTIVITY: CASE: Mrs. Windsor is a 74-year-old retired RN. She is at the dental office for her routine dental hygiene visit and exam with x-rays. She is taking Xyrtec for her seasonal allergies, levothyroxine for thyroid disease and amlodipine for her high blood pressure. During her assessment, you discover mild to moderate sticky plaque at the cervical third of all her teeth and mild to moderate xerostomia. She also presents with two new carious lesions between 13 and 14, where she is trapping food. You ask Mrs. Windsor if she notices her mouth being dry. She confesses to sucking on hard candy at night, so she doesn't dry out. What fluoride plan would you develop to help Mrs. Windsor out and why?	Slide #46 Case study transition Slide #47 Case study question

Test Items

Objective #1: Describe the mechanisms of action of fluoride in the prevention of dental caries.

Test Item #1: What type of fluoride is taken up during the tooth development stages?

- A. Mineral
- B. Systemic
- C. Topical

Objective #2: Explain the role of community water fluoridation on the decline of dental caries incidence in a community.

Test Item #2: Which of the following is **NOT** a role of community fluoridation programs?

- A. Fluoride supplementation
- B. Prevent osteoporosis
- C. Prevent periodontal disease
- D. Reduce Tooth decay

Objective #3: Recommend appropriate over the counter (OTC) and professionally applied fluoride therapies based on each patient's caries risk assessment.

Test Item #3: Before recommending a fluoride, what needs to be performed prior to fluoride prescribing?

- A. Cancer screening
- B. Caries check
- C. Needs assessment
- D. Periodontal probing

Objective #4: Compare use of fluoride home products (OTC and prescription).

Test Item #4: In 2-3 sentences, compare the uses of over the counter (OTC) and prescription fluoride products.

Objective #5: Incorporate fluoride into individualized prevention plans for patients of various ages and risk levels.

Test Item #5: In 3-4 sentences, indicate a commitment to discuss the role of fluoride in a patient's caries prevention program.

Correct Answer Key:

1. B
2. B
3. C

4. Answer must include 1) the differences in amount of fluoride, 2) uses and doses of toothpaste, rinses, and gels, and 3) the doctor must prescribe the prescription fluorides.
5. Assessment of the patient includes caries risk, fluoridated water use, xerostomia levels. After assessment, the clinician will be able to suggest a fluoride program designed specifically for the individual patient.