Course: Dental Hygiene Therapies/Practice

Topic: Desensitization

Audience: First-Year, Second Semester Dental Hygiene Students

Time: 1 hour and 15 minutes

Materials: Computer, PowerPoint

Instructional Objectives:
Upon completion of the lecture, the student should be able to:

1. Define dentinal hypersensitivity.
2. Describe the potential causes of dentinal hypersensitivity.
3. Discuss treatment interventions for dentinal hypersensitivity.
4. List different in-office desensitization procedures.
5. Recommend desensitization treatment alternatives to patients to increase compliance.

References:

Boyd, L. D., Mallonee, L. F., Wyche, C. J. (2023). Chapter 41/Dentinal hypersensitivity. In *Wilkins' Clinical Practice of the Dental Hygienist* (14th ed., pp. 771-786). essay, Jones and Bartlett Learning.

Dam, V. V., Nguyen, T. H., Trinh, H. A., Dung, D. T., & Hai, T. D. (2022). Advances in the management of dentin hypersensitivity: An updated review. *The Open Dentistry Journal*, *16*(1), 1–6. https://doi.org/10.2174/18742106-v16-e2201130

Dionysopoulos, D., Gerasimidou, O., & Beltes, C. (2023). Dentin hypersensitivity: Etiology, diagnosis and contemporary therapeutic approaches—a review in literature. *Applied Sciences*, *13*(21), 1–20. https://doi.org/https://doi.org/10.3390/app132111632

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Liu, X.-X., Tenenbaum, H. C., Wilder, R. S., Quock, R., Hewlett, E. R., & Ren, Y.-F. (2020). Pathogenesis, diagnosis and management of dentin hypersensitivity: An evidence-based overview for dental practitioners. *BMC Oral Health*, *20*(1), 1–10. https://doi.org/10.1186/s12903-020-01199-z

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
5 minutes	**I. Anticipatory Set** A. Introduction "Dentin hypersensitivity is a persistent clinical problem that poses a significant challenge for clinicians and affects patients' quality of life. Patients often inquire about dentin hypersensitivity in routine dental examinations." - Dam et al., 2022 Dentinal hypersensitivity is not thought of as a periodontal condition and is not even considered a pathologic condition due to "sensitive" dentin looking and acting like "nonsensitive" dentin. Dentinal hypersensitivity can often occur after nonsurgical therapy, making it important for dental hygienists to learn and comprehend causes and treatment options as well as have an awareness of dentinal hypersensitivity. B. Gain Attention/Motivate Who has experienced tooth sensitivity? How can you use your experience to help your patients who may have a similar issue? C. Activate Prior Knowledge By a raise of hands, have any of you had a patient yet who complained of sensitivity? By a raise of hands, how many of have had a treatment done to help with your own sensitivity? D. Establish Rationale By attending today's lecture, you are showing enthusiasm about learning information regarding desensitization, which will provide you with the essential information to identify and explain dentinal hypersensitivity to applicable patients while also recommending treatment options. E. Present Instructional Objectives After today's lecture, you should be able to: 1. Define dentinal hypersensitivity. 2. Describe the potential causes of dentinal hypersensitivity. 3. Discuss treatment interventions for dentinal hypersensitivity.	**Slide #1:** Desensitization Title **Note:** Quotation derived from Dam et al., 2022 **Q:** What are your first thoughts about dentinal hypersensitivity? **A:** Answers may vary. **Note**: Information pulled from Gehrig & Shin, 2024 **Slide #2:** Dental pain image **Slide #3:** Objectives

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	4. List different in-office desensitization procedures. 5. Recommend desensitization treatment alternatives to patients to increase compliance.	

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
2 minutes	**I. Dentinal Hypersensitivity** A. Definition: 1. Dentinal hypersensitivity: a. Pain elicited by a stimulus and alleviated upon its removal b. Pain arises from exposed dentin structures c. Absence of other dental conditions	**Slide #4:** Dentinal hypersensitivity definition **Note:** Definition from Gehrig & Shin, 2024 **Q**: What could a possible stimulus be? **A**: Answers may vary, cold water, hot coffee, ice cream, etc. **Note:** Pain is short, sharp, and does not linger
2 minutes	**II. Statistics** A. Relatively common issue in clinical practice B. Prevalence reports range from 3-98% 1. Range may be related to methods of diagnosis and population differences 2. Prevalence higher among periodontal patients C. Patients most affected in the 20–50-year age range 1. Peak between 30-40 days D. Canines and premolars most affected 1. Buccal surface, cervical area most affected	**Slide #5:** Statistics of dentinal hypersensitivity **Note:** Information pulled from Dam et al., 2022 & Gehrig & Shin, 2024 **Q**: Why do you think that dentinal hypersensitivity is more common among patients with periodontal disease? **A**: Answers may vary, canines and premolars take exceptional forces when bruxing, up to 300 pounds of pressure, chewing and swallowing exert less than 25 pounds, cervical area weakest point/where enamel is thinnest
2 minutes	**III. Anatomy Review** A. Dentin 1. Covered by enamel on crown, cementum on root 2. Composed of narrow, fluid filled tubules a. Branch from pulp to dentinoenamel or dentinocementum junction 3. Ends closest to the pulp are innervated with nerve fiber endings from the pulp chamber 4. Sensitive areas are composed of wider tubercle openings a. Openings are referred to as “lumen”	**Slide #6:** Anatomy review of dentin **Note:** Detailed image of dentin
1 minute	B. Pulp and nerves 1. Pulp	**Slide #7:** Anatomy review of the pulp and nerves

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	a. Highly innervated with nerve cell fiber endings 2. Odontoblasts a. Located adjacent to the pulp b. Odontoblastic processes extend minorly into dentinal tubules (AKA Tomes Fibers) 3. Nerve a. Nerve fiber endings wrap around the odontoblastic processes in the dentinal tubule	**Note**: Detailed image of the pulp and nerves **Note**: Not every dentinal tubule will contain nerve fiber endings
1 minute	**IV. Hydrodynamic Theory** A. Definition: 1. Stimulus to the outside of the dentin layer causes movement of fluid within the dentinal tubules 2. The movement of fluid creates pressure on the nerve endings and transmits the pain to the pulpal nerves 3. Hypersensitive teeth have more widened dentinal tubules than non-sensitive teeth	**Slide #8:** Hydrodynamic theory definition **Note:** Definition from Gehrig & Shin, 2024
2 minutes	**V. Categories of Hypersensitivity** A. Tactile 1. Contact with solid material B. Thermal 1. Temperature change 2. Hot and/or cold (most common) C. Osmotic 1. Change in pressure within dentinal tubules through a selective membrane D. Evaporative 1. Dehydration of fluids E. Chemical 1. Acid or acidic products in the oral cavity a. Acidic foods or beverages b. Acids produced by bacteria after exposure to carbohydrates c. Gastroesophageal reflux	**Slide #9:** Causes of hypersensitivity **Q**: What are some popular beverages you can think of that wreak havoc on the oral environment? **A:** Answers may vary, soda, energy drinks, acidic beverages

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	VI. Etiology	**Slide #10:** Etiology of hypersensitivity
2 minutes	A. Recession 1. Loss of gingival tissue resulting in exposure of the root surface 2. Causes of recession: a. Aggressive oral care habits - medium of hard bristle toothbrush 3. Metal oral piercings 4. Genetic or anatomical factors 5. Orthodontic treatment 6. Surgical procedures 7. Restorative procedures that abrade gingival tissue	**Slide #11:** Recession **Note:** Image of recession **Note:** Just because recession is present, does not mean that there will be sensitivity in that area.
1 minute	B. Loss or damage to tooth structure 1. Can be multifactorial 2. Enamel and cementum do not always meet a. Occurs in about 5-10% of teeth 3. Damage can be mechanical or chemical in nature	**Slide #12:** Loss or damage to tooth structure **Note**: Image of lost tooth structure
1 minute	C. Abfraction 1. Mechanical tooth loss at the gingival margin 2. Caused by flexing of the tooth at the weakest point 3. Results in weakened tooth structure	**Slide #13:** Abfraction and erosion **Note:** Images of abfraction and erosion **Note**: Tell students think of an abfraction as taking an axe to a tree & getting a wedge cut out.
2 minutes	D. Erosion 1. Loss of tooth structure due to acid exposure in the oral cavity a. Results in immediate drops in pH levels 2. pH should come back to neutral in a few minutes 3. Repeated or prolonged acid exposure can have severe consequences a. Holding/swishing foods or beverages in your mouth, snacking or drinking throughout the day 4. Gastric acid erosion is more likely seen on linguals of teeth	**Q**: Looking at tooth #12 in the abfraction picture, what are your concerns with this tooth? **A**: Answers may vary, but students should answer and provide why, could be dentinal hypersensitivity, tooth breakage, caries **Note:** Energy drinks can contribute greatly to erosion. High in sugars, with a low pH, and carbonated

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
1 minute	E. Abrasion 1. Wear of enamel, dentin, or cementum due to mechanical habits 2. Can be exacerbated by acid erosion	**Slide #14:** Abrasion and attrition **Note:** Image of plain attrition versus combined with erosion, which is common in patients with sleep apnea
1 minute	F. Attrition 1. Wear of the enamel at the incisal or occlusal surface of the tooth 2. Commonly the result of bruxism 3. Exacerbated by acid erosion	
1 minute	G. Other factors 1. Instrumentation 2. Overuse of abrasive agents 3. Bleaching	**Slide #15:** Other factors associated with sensitivity **Note:** Improper bleaching techniques can cause gingival irritation. When bleach sits on the gums, it can cause ulcerations. This should not be confused with dental sensitivity.
	VII. Differential Diagnosis	**Slide #16:** Differential diagnosis
	A. Ruling out other causes of pain to determine cause and treatment plan B. Should use interviewing techniques and diagnostic tests	**Q:** What questions should we ask the patient? **A:** Answers may vary, but students should answer and provide why.
2 minutes	1. Interviewing the patient a. Use open ended questions i. Questions should cover the teeth affected, onset of the pain, perception of pain, and impact of pain b. Remember that some questions, especially describing the pain may be difficult for patients	**Slide #17:** Interviewing the patient **Note:** Interviewing the patient will increase the amount of information you collect and help guide you through your differential diagnosis **Q:** Why is using open-ended questions important when asking patients to describe their situation? **A:** Answers may vary, but students should answer and provide why.
1 minute	2. Assessment a. Visualize – inspect the tooth and surrounding area b. Palpate – inspect the soft tissue around the tooth c. Explore – use the Shepard's hook to feel the exposed area	**Slide #18:** Assessment **Slide #19:** Assessment continued

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	d. Check occlusion – use occlusal paper to check for heavy occlusal forces e. Periapical radiograph i. Check for periapical pathology f. Test percussion response g. Check for mobility h. Illuminate i. Thermal testing i. Blowing air ii. Endo ice	**Note**: While we need a prescription for rads from the DDS, and should not take rads without cause, they are very useful tools in your differential diagnosis to rule out serious underlying factors.
2 minutes	3. Differentiating dentinal sensitivity from other tooth pain a. Abscess i. Potential swelling, severe pain, possible tooth mobility, possible drainage ii. Radiographic, visual, and palpation exams b. Caries i. Radiograph to help diagnose ii. Sweet sensitivity in addition to cold/hot iii. Pulpal caries can cause severe pain when chewing c. Fractured Tooth i. Thermal sensitivity AND pain on pressure d. Occlusal Trauma i. Recent restorations placed that are ”hitting high” ii. Malocclusion resulting in mobility of teeth e. Pulpitis i. Severe, throbbing pain ii. Responds to thermal, electric pulp tests, and percussion f. Sinus Infections i. Non-descript tooth pain – commonly in maxillary posterior teeth ii. Radiographic examination to rule out infection	**Slide #20**: Differentiating dentinal sensitivity from other tooth pain **Q**: How do these types of sensitivity differ from dentinal hypersensitivity? **A**: Answers may vary, longer lasting pain, swelling, etc. **Note**: Fractures can be very difficult to diagnose unless they are large. They typically have the same ‘sharp, shooting’ pain that goes away when the stimulus is removed, as described with dentinal hypersensitivity. The biting sensitivity is the key differentiator between fractures and dentinal hypersensitivity. **Slide #21**: Differentiating dentinal sensitivity from other tooth pain continued **Note**: Notice the relationship of the floor of the sinus and those maxillary roots

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	g. Galvanic Pain h. Stabbing pain on contact with dissimilar metals i. PDL Inflammation i. Pain on chewing – responds to percussion tests	
2 minutes	4. Natural desensitization a. Sclerosis of dentin i. Minerals deposited within tubules (Results from traumatic stimuli) b. Creates a thick, highly mineralized layer of peri/intratubular dentin c. Mechanism of Action - Decreased lumen size d. Secondary dentin i. Accumulates over time on the floor and roof of the pulp ii. Leads to a smaller pulp chamber with less nerve endings	**Slide #22:** Natural desensitization **Q**: Why are people who are older having less sensitivity? **A**: Secondary dentin accumulates over time leading to smaller pulp chamber with less nerve endings.
	e. Smear layer i. Made up of organic and inorganic debris ii. Mechanism of action - Occludes dental tubules to block stimulus iii. Builds up from scaling and root debridement, abrasive toothpaste particles, drilling, attrition, and abrasion iv. Can be disrupted by mechanical effects and acid exposure f. Calculus i. Provides protective layer over exposed dentin ii. Dentinal tubules can be exposed following calculus removal	**Slide #23**: Natural desensitization continued **Note:** We can recommend topical or local anesthetics to help during a procedure like SRP.
2 minutes	**VIII. Treatment Interventions** A. Biofilm removal 1. Biofilm presence increases size of dentinal tubules up to 3X 2. Potential for increased sensitivity	**Slide #24**: Treatment interventions **Note:** Goals are to relieve pain and eliminate or reduce contributing factors

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	3. Biofilm control results in 20% reduction in lumen size 4. Amount of biofilm does not equal amount of sensitivity	**Slide #25**: Biofilm removal **Note:** Biofilm presence long-term can cause demineralization of enamel and inflammation of gingival tissues which cause sensitivity and discomfort
1 minute	B. Toothbrushing status 1. Electric vs Manual 2. Toothbrushing technique j. Modified Stillman's for recession 3. Bristle status & pressure	**Slide #26**: Toothbrushing status **Q**: What are some recommendations we could make to help reduce pressure while brushing? **A**: Answers may vary, Switch to electric with pressure sensor, brush with non-dominant hand, modify brushing technique, use soft brush head, educate about not "scrubbing", ask what the bristles look like when the brush should be changed (every 3-4 mos)
1 minute	C. Traumatic occlusion 1. Assessment of bruxism a. Question the patient b. Teeth should only occlude when eating and swallowing 2. Potential treatment: a. Occlusal adjustments b. Orthodontic treatment b. Occlusal Guard	**Slide #27**: Traumatic occlusion **Note:** The best treatment for traumatic malocclusion is orthodontic treatment to align the teeth into a position they can better withstand the forces of. Occlusal guards are a nice alternative if orthodontics is too expensive or not desired by the patient. Without correction the problem is likely to persist. **Note:** At rest, there should be 2-3mm of space between the maxillary and mandibular arches. Teeth should only touch lightly when chewing or swallowing.

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
1 minute	D. Diet modifications 1. Evaluation of diet history is important 2. Determining if erosion due to diet is a factor in sensitivity 3. Acidic foods include: a. Citrus juices, fruit, carbonated drinks, wine, cider, energy drinks coffee, etc. 4. Erosion is permanent enamel loss	**Slide #28**: Diet modifications **Note**: Images of acidic foods and beverages **Q**: What could we ask our patients to evaluate their diet history? **A**: Answers may vary; "What do you usually eat on a daily basis?"
1 minute	E. Desensitizing agents-potassium salts 1. Move through/along the dentinal tubules a. Block the action of interdental nerve fibers 2. Increase the threshold for stimulus reaction a. Essentially depolarizing the nerve 3. Examples: Potassium citrate, potassium nitrate, potassium chloride, potassium oxalate	**Slide #29**: Desensitizing agents-potassium salts **Note**: Images of desensitizing agents examples
1 minute	F. Fluoride 1. Sodium fluoride & stannous fluoride 2. Occludes tubules through smear layer formation 3. Resistant to acidic foods and beverages 4. Said to reduce sensitivity in 2 weeks	**Slide #30**: Fluoride
1 minute	G. Oxalates & glutareldehydes 1. Oxalates a. Occlude open tubules b. Decrease tubule opening 2. Glutareldehydes a. Coagulation of proteins and amino acids within the tubule	**Slide #31**: Oxalates & glutareldehydes **Note**: Both work to make the opening of the tubule smaller

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
3 minutes	H. Calcium phosphate technology 1. Amorphous calcium phosphate (ACP) a. Blocks tubules with calcium and phosphate precipitate b. Enhances fluoride delivery c. Remineralization of eroded/abraded hard tissue 2. Calcium sodium phosphosilicate (CSP) a. Contains sodium, silica, calcium, and phosphorous b. Bioactive glass particles releases calcium and phosphate that crystallizes into protective hydroxyapatite layer 3. Casein phosphopeptide (CPP)-ACP a. Milk-derived protein b. Stabilizes ACP c. Useful during acidic food/beverage presence 4. Tricalcium phosphate (TCP) a. Developed to combine a calcium material that coexists with fluoride b. Aims to provide greater effectiveness that fluoride alone	**Slide #32**: Calcium phosphate technology **Q:** Who can tell me how remineralization is helpful for sensitivity? **A:** Remineralization lessens sensitivity by occluding tubules **Note**: Can be used for caries prevention through remineralization of tooth structures and the remineralization lessens sensitivity by occluding tubules **Slide #33**: Calcium phosphate technology continued **Note:** It is important to be aware of patient allergies, especially when milk is involved.
1 minute	I. Argnine 1. Amino acid present in saliva 2. Occludes dentinal tubules 3. Remains after acid exposure 4. Prophy paste: a. Can be used prior to dental treatment 5. Over the counter: a. Anywhere Anytime by Colgate	**Slide #34**:Arginine **Note**: Prophy paste used prior to dental treatment allows for more patient comfort throughout the appointment.
2 minutes	J. Topical agents – dentifrices 1. Over the counter a. Available in 5% potassium nitrate, sodium fluoride, or stannous fluoride 2. Prescription	**Slide #35**: Topical agents - dentifrices **Note:** Dentifrice for sensitivity can be used as spot treatment in area of

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	a. Highly concentrated fluoride (5,000 ppm) b. Combined with abrasive to reduce extrinsic staining c. Clinpro & PreviDent	concern. **Note**: Topical dentifrices require regular, daily use. Patients who use them sporadically will likely not see results with decreasing their sensitivity levels.
1 minute	K. Gels 1. Highly concentrated fluoride (5,000 ppm) 2. Good for generalized or localized sensitivity 3. No abrasive agents for biofilm removal or extrinsic stain control 4. Require use of custom fluoride or bleaching trays 5. Good option for patients with a history of radiation treatments for head and neck cancer	**Slide #36**: Gels
	IX. In-Office Procedures	**Slide #37**: In-office procedures
2 minutes	A. Fluoride agents 1. Varnish a. 5% sodium fluoride varnish provides prolonged exposure to tooth surface b. Tooth serves as a reservoir and releases fluoride ions in response to changes in oral acidity levels c. Occludes dentinal tubules	**Slide #38**: Fluoride agents **Note**: It is important to educate your patients on the importance of only doing these with a dental professional and not self-applying at home.
2 minutes	B. Silver diamine fluoride (SDF) 1. Directed for use as a desensitizing agent a. Used off label for arresting caries 2. Silver functions as an antimicrobial agent 3. 38% fluoride 4. Mechanism of action: a. Protein layer formation b. Partially occludes dentinal tubules 5. Considerations: a. Turns carious lesions black	**Slide #39**: Sliver diamine fluoride (SDF) **Q**: With desensitizing and caries arresting properties, what patients may benefit from its use? **A**: Elderly population who have trouble getting to the dentist or with adequate home care, patients with memory disorders, young children with dental anxiety, teeth that are exfoliating soon. **Note**: SDF black stains can be covered with tooth-colored restorations.
2 minutes	C. 5% Glutaraldehyde and oxalates	**Slide #40**: 5%

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	1. 5% Glutaraldehyde a. Applied with microbrush to specific sensitive site b. Isolate tooth as solution can irritate soft tissue c. Works by decreasing lumen size 2. Oxalates a. Burnished into a dried tooth surface b. Provides immediate/short-term relief c. Not intended for long term relief d. Will require adjunctive therapies for long-term sensitivity issues	Glutaraldehyde and oxalates **Note**: These are good options for helping to immediately relieve sensitivity during treatment time. It is important to educate the patient that these are not long-term solutions and other therapies they can use to help control the sensitivity.
2 minutes	D. Unfilled and partially filled resins 1. Covers dental tubules 2. Requires acid etching prior to placement 3. Removes the smear layer and can cause discomfort 4. Tooth surface must be dry for placement 5. Consider local anesthetic to manage discomfort	**Slide #41**: Unfilled and partially filled resins **Q**: Think back to the etiology of hypersensitivity – what condition may a composite resin help treat and why? **A**: Abfractions to help relieve sensitivity by blocking the tubules and restore structure to the tooth.
1 minute	E. Dentin-bonding agents 1. Seals dentinal tubule openings 2. No acid or drying required 3. May protect from erosion for 3-6 months	**Slide #42**: Dentin-bonding agents
1 minute	F. Glass Ionomer Cement & Restorative Materials 1. Can be placed in the presence of moisture 2. Blocks dental tubule opening 3. Releases fluoride to tooth	**Slide #43**: Glass Ionomer Cement & Restorative Materials **Note**: Vanish XT can be placed by RDH; however, it is not meant to last long term like FUJI restorations placed by the DDS. Vanish XT described as extended contact varnish – use a curing light to harden like a sealant

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
1 minute	G. Iontophoresis & soft tissue grafting 1. Iontophoresis a. Low voltage electrical currents b. Drives negatively charged fluoride ions further into the dentinal tubules 2. Soft tissue grafting a. Surgical placement of soft-tissue over a sensitive area. b. Need adequate bone to support graft c. Can be extremely painful d. Expensive & time-consuming	**Slide #44**: Iontophoresis & soft tissue grafting
2 minutes	H. Lasers 1. Nd:YAG obliterates dentinal tubules a. "melting and resolidification" b. Hygienists cannot use Nd:YAG 2. Diode laser a. Mechanism of action not completely understood b. Shown to be more effective than fluoride treatment alone in reducing sensitivity c. Can use sodium fluoride varnish after procedure for increased effects	**Slide #45**: Lasers **Note:** Lasers have become more affordable for offices to purchase. You all will learn how to use diode lasers in your time at ODU. This may be something that you see used in private practice when you enter the field.
2 minutes	**X.** Considerations A. Fractures 1. Difficult to diagnose on rads 2. Potential for crown, endodontic treatment, or extraction B. Tooth whitening 1. Reversible pulpitis 2. Sensitivity may decrease on its own over time 3. Recommend desensitization products in combination with whitening C. Scaling and root debridement 1. Explain potential for sensitivity before starting treatment 2. Local anesthetic, topical anesthetic, or nitrous oxide may	**Slide #46**: Considerations **Q:** With all of these considerations, what is one of the most important things you can do as a provider to help your patient reduce their dentinal hypersensitivity? **A:** Answers will vary, could include having a conversation, asking questions, and educating based on patient goals.

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	help with patient comfort 3. Post-procedure desensitizing and education on home-care	
1 minute	D. Diet 1. Inquire about changes in dietary habits – especially energy drinks 2. Make recommendations for changes or modifications	
2 minutes	**XI.** Recommendations A. One size does not fit all B. Mix products 1. In-office, OTC, and RX C. Stress home care D. Gauge your patient	**Slide #47**: Recommendations **Note**: It is important to remind patients to do their part at home. In-office treatment is not usually enough to solve their sensitivity alone. However, throwing a patient too many recommendations for home care at once may lead to non-compliance. We do not want to overwhelm our patients with products and information. Sometimes starting with a non-invasive in-office treatment and a small home-care regimen works to build patient compliance and achieve results.
3 minutes	**XII.** Documentation A. Identification of sensitive areas B. Oral findings and habits C. Differential diagnosis D. Recommendations E. Patient acceptance and implementation F. Patient compliance and outcomes	**Slide #48**: Documentation **Q**: Why is documentation so important? **A**: Answers will vary., could include – if you didn't document, you didn't do it, assessing results and compliance at next visit, ensuring you can adjust the treatment plan or recommendations in the future.
3 minutes	**SUMMARY** After participating in this lecture, I hope you have gained a better understanding of dentinal hypersensitivity and	**Slide #49**: Summary **Note**: Thank the learners

TIME	LESSON CONTENT	NOTES - MEDIA - Q/A
	the different elements that can cause it to occur. It is my hope that this lecture provided you with useful information to help you identify potential causes of dentinal hypersensitivity. It is important to be able to utilize this knowledge when seeing patients who present with dentinal hypersensitivity. It is important to use this information to aid you in examining your patient and developing a differential diagnosis. It is critical to know that one solution will not work for every patient, and communication is key to creating treatment plans where your patients will be compliant. Ultimately, I hope you feel more confident when it comes to examining your patient and suggesting treatment options based on your patient's needs.	for their attention and participation **Q:** After engaging in this lecture, what seemed most important to you? **A:** Answers will vary. If there is any confusion, provide clarifications.

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5 minutes	**CRITICAL THINKING ACTIVITY:** **Case Study:** Patient is a 30-year-old female who has been having generalized cold sensitivity for weeks. She has started using Sensodyne Clinical White every night, but reports she can no longer drink her favorite drink, Dr. Pepper, due to her sensitivity. She also reports noticing she may be clenching and grinding during the day. 1. What questions would you ask her about her sensitivity? Answer: When did you first notice the sensitivity? On a scale from 1-10, how sensitive is it? Can you describe the pain for me? 2. How would you assess intraorally before the DDS? Answer: Inspect the tooth and surrounding area, inspect the soft tissue around the tooth, explore using the Shephard's hook to feel the exposed area, and use occlusal paper to check for heavy occlusal forces. 3. What in-office treatment could you recommend for the patient? Answer: Silver diamine fluoride, unfilled or partially filled resins, dentin-bonding agents, glass ionomer cement and restorative materials 4. What home-care recommendations would you make? Answer: Not to brush as hard and use an electric toothbrush to remove biofilm, use an occlusal guard to help with bruxism, utilize a gel for generalized sensitivity, high concentrated fluoride prescription toothpaste	**Slide #50:** Critical thinking activity and case study information/questions **Note:** Give the class about 1 minute to read the case and evaluate the image of gingival recession before questioning.
3 minutes		**Slide #51**: Student questions

Test Items

Objective #1: Define dentinal hypersensitivity.
Test Item #1: All of the following are associated with dentinal hypersensitivity **EXCEPT** one. Which one is the **EXCEPTION**?

A. Absence of other dental conditions
B. Other dental conditions present
C. Pain elicited by a stimulus and alleviated upon removal
D. Pain arises from exposed dentin structures

Objective #2: Describe the potential causes of dentinal hypersensitivity.
Test Item #2: All of the following are potential causes of dentinal hypersensitivity **EXCEPT** one. Which is the **EXCEPTION**?

A. Recession
B. Erosion
C. Instrumentation
D. Underuse of abrasive agents

Objective #3: Discuss treatment interventions for dentinal hypersensitivity.
Test Item #3: Which of the following could be a treatment intervention for dentinal hypersensitivity?

A. Not using fluoride varnish
B. Throwing away an occlusal guard
C. Changing diet
D. Using regular toothpaste instead of highly concentrated prescription fluoride toothpaste

Objective #4: List different in-office desensitization procedures.
Test Item #4: In 2-3 sentences, list in-office desensitization procedures that can help dentinal hypersensitivity.

Objective #5: Recommend desensitization treatment alternatives to patients to increase compliance.
Test Item #5: In 3-4 sentences, explain the need for dental hygienists to know desensitization treatment options when seeing patients.

Correct Answer Key

1. B

2. D

3. C

4. There are various in-office procedures that can be used to help with dentinal hypersensitivity. There are fluoride agents, silver diamine fluoride (SDF), and diode lasers that can be used by dental hygienists. Furthermore, unfilled and partially filled resins, dentin-bonding agents, glass ionomer cement and restorative materials, iontophoresis, and soft tissue grafting can be utilized in a dental practice to help with dentinal hypersensitivity.

5. Dental hygienists should have knowledge of desensitization treatment options and communicate with the dentist when seeing patients to try and find the best fit for specific patients. Depending on the potential cause of dentinal hypersensitivity, the solution could range from using a highly concentrated fluoride toothpaste to soft tissue grafting. It is important to understand that not all treatment options work for everyone, so a custom treatment plan is necessary, especially for patient compliance. Overall, dental hygienists should have an understanding of desensitization treatment options to help patients who may be experiencing sensitivity.