Marshall University 2022 West Virginia Oral Health Summit

Treating Nicotine Addiction

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Director of West Virginia University, School of Dentistry's Certified Tobacco Treatment Training Program



Objectives:

- Relate tobacco use to its negative oral health effects
- Review nicotine addiction and withdrawal symptoms
- Establish nicotine dependence levels utilizing Fagerstrom for smoking and smokeless & Penn State's E-cigarette nicotine dependence assessments
- Recognize nicotine content in various tobacco products
- Identify the goal of tobacco treatment pharmacotherapy
- Apply 7 FDA approved pharmacotherapy to nicotine dependence level



Detrimental Oral Health Effects

Oral Effects of Tobacco Use:

- Oral and Pharyngeal Cancers
 - Oral squamous cell carcinoma
- Increased Periodontitis Risk
- Increase of red complex bacteria in biofilm
- Delayed wound healing
- Failure of periodontal therapy
- Failure of dental implants
- Xerostomia
- Dental caries/gingival recession
- Teeth abrasion/attrition
- Stain/Calculus
- Halitosis/Coated tongue
- Impaired taste
- Nicotine stomatitis



Smokeless Tobacco User









Detrimental Effects on Periodontium

- Smokers are three to six times more likely to develop periodontitis.
- Smokeless users have two times the prevalence of periodontitis.
- Decreased polymorphonuclear neutrophil (PMNs) phagocytic capacity, negative affect of both B and T lymphocyte's response to periodontal pathogens and decreased vascularity of gingival tissues.
 - Increase abundance of pathogenic bacterial species (red complex bacterium)
 - Increase in pocket depths (attachment loss progresses at a faster rate)
 - Increase in bone loss and tooth loss
 - Periodontal therapy less effective



Tomar, SL Asma S. Smoking attributable periodontitis in the United States. Findings from NHANES III. National Health and Nutrition Examination Survey. J Periodontol. 2000:71:(5)743-751.

Biologic Bases for Periodontal Changes

	TISSUE	
Changes with Use	Biologic Bases for Changes	Tissue Changes with Abstinence
Paler tissue color	Increased vasoconstriction	Increased blood flow
Decreased bleeding	Oxygen depletion	Initially more bleeding and erythema
Thickened fibrotic consistency; minimal erythema relative to extent of disease	 Compromised immune response Fewer and impaired polymorphonuclear neutrophils Reduced immunoglobulin G antibody 	Healthier consistency and anatomy
Gingival recession around anterior sextants	Increased collagenase production	
Greater probing depths, bone and attachment loss, furcation invasion	Reduction of bone mineral; impaired fibroblast function	Stabilization of attachment levels
Refractory status: continued use	Impaired wound healing	





2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions PERIODONTITIS: GRADING

	Disease Progression/ Characteristics	Grade Modifiers
Grade A	 No additional bone or attachment loss over past 5 years Low levels of tissue destruction 	 Nonsmoker No history of diabetes
Grade B	 Evidence of <i>less than 2 mm</i> additional bone or attachment loss over a 5-year period Tissue destruction in line with expectations 	 Smoking <i>less than</i> 10 cigarettes a day and/or An HbA1c of <i>less than</i> 7% in patients with diabetes
Grade C	 Evidence of 2 mm or more of bone or attachment loss over a 5-year period Tissue destruction exceeds expectations 	 Smoking 10 or more cigarettes a day and/or An HbA1c of 7% or greater in patients with diabetes



Table from Tonetti, Greenwell, Kornman. J Periodontol 2018;89 (Suppl 1): S159-S172.

What Makes Tobacco so Addictive?

nicotine





Nicotinic Acetylcholine Receptor

Dopamine = Euphoria/Reward



Nicotine binds predominantly to nicotinic acetylcholine (nACh) receptors in the CNS; the primary is the α4β2 nicotinic receptor in the Ventral Tegmental Area (VTA) After nicotine binds to the α4β2 nicotinic receptor in the VTA, it results in a release of dopamine in the Nucleus Accumbuns (nAcc) which is linked to reward



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Effects of Chemical Released by Brain With Exposure to Nicotine

Chemical	Effect
Dopamine	Pleasure
Serotonin	Mood modulation
Beta-endorphin	Anxiety reduction
Acetylcholine	Cognitive enhancement (i.e., perks one up if tired)
Vasopressin	Short-term memory enhancement
Norepinephrine	Appetite suppression



Nicotine Actions

⊙7–10 seconds for inhaled nicotine to reach brain (Faster than IV)

- Induces stimulation and pleasure
- Reduces stress/anxiety
- Improves concentration, task performance
- Increases heart rate
- OPrevents withdrawal symptoms





Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Withdrawal Symptoms: Last a few weeks and then resolve

SYMPTOMS	MECHANISM FOR COPING	
Cravings	Last 3-5 minutes – wait them out! Distraction Techniques: doodling, reading inspirational poems, chew gum Avoid triggers: people, places or things associated with habit	
Irritability/Anger/Anxiety Depression	Professional counselingSupport groupsExerciseSelf-reward for abstinence	
Insomnia/Headache	Relaxation exercises Going to bed later Avoid caffeine Aerobic activity (but not within 2 hours of bedtime)	
Hunger/Weight gain	Aerobic activity Healthy eating Drinking water Chewing sugar free gum Support groups	



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Duration of Withdrawal

Symptoms within a few hours after the last cigarette. Symptoms peak within the first few days of smoking cessation and usually subside within a few weeks. For some, symptoms may persist for months. For some, the ritual of smoking the cigarette may last longer than the physiological dependence. Behavioral therapies can help.

https://www.drugabuse.gov/publications/research-reports/tobacco/nicotine-addictive



Nicotine Effect- Youth Brain

- The last area of the brain to mature is the prefrontal cortex:
 - approximately age 24
 - executive decisions and attention performance not fully developed
- Nicotine may derange the normal course of brain maturation with lasting consequences for cognitive ability, mental health and personality.
- Nicotine in adolescents may point to an enhance sensitivity of the adolescent brain to addictive properties.



Yuan M, Cross SJ, Loughlin SE, Leslie FM. Nicotine and the adolescent brain. J Physiol. 2015;593(16):3397–3412. doi:10.1113/JP270492

Ask, Advise, Assess, Assist, Arrange

 Assess the individuals nicotine dependence level develop an effective treatment plan



Assessing Nicotine Dependence Level

Tobacco treatment pharmacotherapy type and dose is based on the individual's nicotine dependence level:

- Fagerström Test For Nicotine Dependence
- Fagerström Nicotine Dependence Scale Smokeless Tobacco
- Penn State Electronic Cigarette Dependence Index



Fagerström Test (FTND for Smokers) 6 Questions

Question	Answer Option & Point allotte	ed
1.How soon after wake up do you smoke your first cigarette?	Within 5 minutes With in 6-30 minutes Within 31-60 minutes After 60 minutes	3 2 1 0
2. Do you fine it difficult to refrain from smoking in places where it is forbidden, e.g., in church, at the library, at the movies, etc.?	Yes No	1 0
3. Which cigarette would you hate most to give up?	The first one in the morning All others	1 0
4. How many cigarettes do you smoke?	31 or more 21-30 11-20 10 or less	3 2 1 0
5. Do you smoke more frequently during the first hours after waking than during the rest of the day?	Yes No	1 0
6. Do you smoke if you are so ill that you are in bed most of the day?	Yes No TOTAL POINTS:/10	1 0

Total points	Nicotine Dependence Level	
8-10	Very High	
6-7	High	
5	Medium	
3-4	Low	
0-2	Very Low	



Fagerström Nicotine Dependence Scale Smokeless Tobacco(FTND-ST) 6 Questions

Question	Answer option & points allotted
1. How soon after you wake up do you place your first dip?	Within 5 min 3 6-30 min 2 31-60 min 1 After 60 min 0
2. How often do you intentionally swallow tobacco juice?	Always2Sometimes1Never0
3. Which chew would you hate to give up most?	First one in the morning 1 All others 0
4. How may cans/pouches per week do you use?	More than 3 2 2-3 1 1 0
5. Do you chew more frequently during the first hours after awakening than during the rest of the day?	Yes 1 No 0
6. Do you chew if you are so ill that you are in bed most of the day?	Yes 1 No 0 Total Points:/10

Total points	Nicotine Dependence Level	
5 or more	Significant dependence	
4 or less	Low to moderate dependence	



Penn State Electronic Cigarette Dependence Index - 10 Questions

Question	Answer option & Points allotted		Question		Answer option & Points allotted		
1. How many times per day do you usually use your electronic cigarette? (assume one "time" consists of around 15 puffs, or lasts around 10 minutes)	30 or more times/day 20-29 15-19	0 or more times/day 5 0-29 4 5-19 3 0-14 2 -9 1 -4 times/day 0	7. Over the past week how strong have your urges to use an electronic cigarette been?			Extremely Strong/ Very stro Strong/Moderate Slight/None	ong 2 1 0
10-14 5-9 0-4 ti	10-14 5-9 0-4 times/day		8. Is it hard to k places where yo	eep from using the ou are not supposed	electronic cigarette in l to?	Yes No	1 0
2. On the days that you can use your electronic cigarette freely, how soon after you wake up do you first use your electronic cigarette?	Less than 5 minutes 6-15 minutes 16-30 minutes 31-60 minutes	ess than 5 minutes5-15 minutes46-30 minutes31-60 minutes21-120 minutes110re than 121 minutes010re than 121 minutes1	9. When you have not used an electronic cigarette for a while (or when you tried to stop using one): Did you feel more irritable because you couldn't use an electronic cigarette?			Yes No	1 0
	61-120 minutes More than 121 minutes		10. Did you feel nervous, restless, or anxious because you couldn't use an electronic cigarette?			Yes No TOTAL POINTS/20	1 0
3. Do you sometimes awaken at night to use your electronic cigarette?	Yes No	1 0					
4. If yes, how many nights per week do you typically awaken to do so?	4 or more nights	2		Total points	Nicotine Dependenc	e Level	
	0-1 night	0		13 +	High dependence		
5. Do you use an electronic cigarette now because it is really hard to quit?	Yes No	1 0		9-12	Medium dependenc	e	
6. Do you ever have strong cravings to use the electronic cigarette?	Yes No	1 0		4-8	Low dependence		
Questions Continued on Next Slide				0-3	Not dependent		



Jonathan Foulds et al., Development of a Questionnaire for Assessing Dependence on Electronic Cigarettes Among a Large Sample of Ex-Smoking E-Cigarette Users, 17 Nicotine Tob. Res. 186-92 (2015).

Ask, Advise, Assess, Assist, Arrange

- In order to "Assist" we must know the nicotine dependence level and the amount of nicotine in tobacco products!
 - Prescribe pharmacotherapy and counseling



Nicotine Dose from a Cigarette

1 cigarette ≈ 1-1.5 mg of nicotine absorbed systemically 1 pack has 20 cigarettes ≈ 20mg nicotine





Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Nicotine dose from one tin/can of smokeless

1 can smokeless tobacco (Copenhagen®/Grizzly®) ≈nicotine in 4 packs cigarettes ≈ 80mgs



An alkaline pH facilitates absorption of snuff and chewing tobacco through the oral mucosa



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Types of Cigars

Cigar definition: cylinder of tobacco rolled in tobacco leaves for smoking: Large cigar: 1/2 oz. = 1 pack of cigarettes and takes 1-2 hours to smoke Cigarillo: contain about 3 grams of tobacco (very high nicotine content) Little cigar: contain about the same tobacco as a cigarette

Cigar smokers have increase risk for aortic aneurysm, lung cancer, heart disease, oral cancer, and laryngeal cancer.

Total consumption of cigars in US has increased since 1993.





Cigar Nicotine Content

- Large Cigar: approximately 1 pack of cigarettes and takes 1-2 hours to smoke
- Cigarillo: contain a 3 grams of tobacco (high nicotine content)
- Little Cigar: 1 gram





One hour on a Hookah = I pack cigarettes



https://www.cdc.gov/tobacco/data_statistics/fact_sheets/tobacco_industry/hookahs/index.htm



E-Cig Aerosol Composition

Benzo(ghi)perylene Chlorobenzene Cadmium Propylene glycol • Acetone ٠ Silicon Crotonaldehyde Glycerin Acrolein Flavorings (many) Propionaldehyde • Lithium Silver • Benzaldehyde Nicotine Lead Nickel NNN Valeric acid Magnesium ۲ Tin • **NNK** Hexanal Manganese Sodium NAB Fluorine • Potassium • All of these have been found NAT Titanium • Ethylbenzene Zinc in e-cig aerosol Zirconium Benzene Chromium Acenapthene • Calcium **Xylene** • Boron ٠ Toluene Fluoranthene Iron • Copper • Benz(a)anthracene Sulfur Acetaldehyde Selenium Vanadium Formaldehyde Chrysene Arsenic Cobalt Retene Naphthalene • Nitrosamines, Styrene Benzo(a)pyrene Rubidium Benzo(b)fluoranthene Indeno(1,2,3-Polycyclic aromatic cd)pyrene Compounds in yellow are from hydrocarbons FDA 2012, Harmful and **Potentially Harmful Substances**



- Established List



Emerging Designs





WestVirginiaUniversity.

How Much is That?



Cigs in a Pod

https://med.stanford.edu/tobaccopreventiontoolkit.html

tobaccopreventiontoolkit.stanford.edu



Goal of Tobacco Treatment Pharmacotherapy

Goal: Control withdrawal symptoms and reduce the rewarding effects of tobacco

- Tobacco Dependence is a chronic, relapsing, life-threatening disease
 - Continue/prescribe pharmacotherapy for the tobacco dependent patient as they would for other chronic conditions. (hypertension, diabetes, asthma)
- Initial pharmacotherapy dose dependent on the severity of tobacco addiction, the individual's ability to tolerate withdrawal and willingness to use pharmacotherapy.
 - Medication dose can be gradually stepped down
 - Medication dose should be increased, intensified or additional medication added (combination therapy) if not controlled



Pharmacotherapy and Counseling



Pharmacotherapy for smokers doubles cessation rates if patient is motivated, and should be used for all tobacco using clients.

- Only about 30% of smokers use medication
- Only about 5% use behavioral intervention



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7 FIRST LINE FDA APPROVED PHARMACOTHERAPY FOR SMOKING CESSATION

- 1. Nicotine Patch (OTC) (Approximately 6-8 hours)
- 2. Nicotine Gum (OTC) (Approximately 15 30 minutes)
- 3. Nicotine Lozenge (OTC) (Approximately 15 30 minutes)
- 4. Nicotine Nasal Spray (Rx) (Approximately 5 -- 10 minutes)
- 5. Nicotine Oral Inhaler (Rx) (Approximately 15 30 minutes)
- 6. Bupropion SR (Rx) Norepinephrine/Dopamine Reuptake Inhibitor
- 7. Varenicline (Rx) Nicotinic Receptor Agonist



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Tobacco Treatment Medication Prescribing Chart**

These highlights do not include all information needed for safe and effective use. See full prescribing information.

	Nicot	ine Repla	cement Tl	herapies (I	NRT)*			
Medication	Transdermal Nicotine Patch (Long- acting NRT)	Nicotine Polacrilex gum (Short-acting NRT)	Nicotine Lozenge (Short-acting NRT)	Nicotine Nasal Spray (Short- acting NRT)	Nicotine Inhaler (Short- acting NRT)	Bupropion (SR or XL) (Zyban, Wellbutrin)	Varenicline (Chantix, Champix)	
Suggested Regimen	<= 10 cig/d, start with 14mg/qd x 6 wks or longer >10 cig/d, start with 21mg/qd x 6 wks or longer If needed smokers <= 10 cig/d feel comfortable prescribing 21mg/qd	1st cig >30 mins after awakening, 2 mg/hr 1st cig =<30 mins after awakening, 4 mg/hr If needed for smokers <= 10 cig/d, feel comfortable prescribing 4mg gum	1st cig >30 mins after awakening, 2 mg/hr 1st cig =<30 mins after awakening, 4 mg/hr If needed for smokers <= 10 cig/d, feel comfortable prescribing 4mg lozenges	1-2 sprays per nostril/hr, PRN. Increase to 5 sprays per nostril per hr (max 80 sprays total) x 3 mos	4 puffs/min x 20-30 mins per cartridge PRN	Days 1-3: 150mg po qam then Day 4 to 12 weeks (or end of treatment): 150mg SR bid or 300mg XL po qam	Start >= 1 week before target quit date 0.5mg po qam x 3days then 0.5mg po bid x 4days then 1 mg po bid x 11 weeks to 6 months Target quit date can be delayed or extended if needed.	
Precautions	Pregnancy Class starting with hij dentures (gum) (nasal spray) Re	s D Uncontrolled H ghest does patch Es Na++ restricted di active airways dise	Pregnancy Class C Uncontrolled HTN Severe cirrhosis/ abnormal LFTs-dos- adjustment required Mild-mod hepatic & mod- sever renal impairment- consider dose adjustment	Pregnancy Class C Seizure disorder CrCL <30 or dialysis-dose adjustment required May increase risk of CV events in pts c/ CVD				
Potential Contrain- dications	MI w/I 2 wks Se	erious cardiac arth	MAO inhibitor in past 14 days Seizure disorder or risk, bulimia/ anorexia Abrupt iscontinuation of EtOH or sedatives Serious head trauma	Known hx of serious hypersensitivity or skin reactions to varenicline				
Potential Adverse Effects	Be advised mos NRTs Possible tachycardia (pa are also tobacco irritation, tearin	t patients receive t symptoms of too n tch) Skin irritation withdrawal symp 1g, sneezing (nasal	Insomnia, dry mouth, headaches, pruritis, pharyngitis, tachycardia, seizures, neuropsychiatric effects & suicide risk (Black-boxed warnings removed Der 16 2016)	Nausea, insomnia, abnormal dreams, constipation, neuropsychiatric effects, seizures, suicide risk and cardiovascular events (Black- boxed warnings removed Dec 16, 2016)				

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*In 2013, the FDA did not identify any safety risks associated with longer-term NRT products. Tailor treatment to patient's needs. ** Virtually every FDA medication can be combined with every other in various permutations and combinations. *** Champix is a trade name used outside the USA. Alternatively, patients can use varenicline to reduce cigs per day ad lib or to delay their target quit day for 35 days until they feel comfortable quitting.

https://foundation.chestnet.org/wpcontent/uploads/2021/06/Tobacco_Dependence_ Treatment_Toolkit_CHEST_Foundation.pdf

West Virginia University, School of Dentistry's Certified Tobacco Treatment Training Program

Tobacco Treatment Algorithm Consideration Based on Nicotine Dependence Level

- Fagerstrom Test for Nicotine Dependence
- Fagerstrom Nicotine Dependence Scale Smokeless Tobacco
- Penn State Electronic Cigarette Dependence Index

Nicotine	Tobacco Treatment/Pharmacotherapy Dosage recommended for a 3	Combination Therapy when withdrawal
Dependence	month period, but highly nicotine dependent individuals may require	symptoms prevent abstinence
Level	an extension of the pharmacotherapy time period.	
Very Low	Counseling & treatment plan addressing tobacco use triggers	
	May not need NRT, recommended if withdrawal symptoms prevent	
	abstinence:	
	 Nicotine Lozenge: 2mg, *extend use time monthly 	
	 Nicotine Gum: 2mg, *extend use time monthly 	
	 Nicotine Patch: 7mg 4-6 weeks 	
Low	Counseling & treatment plan addressing tobacco use triggers	 Nicotine Patch 14mg, step down dose
	NRT options:	every 4-6 weeks with either a 2mg
	 Nicotine Patch: 14mg, step down dose every 4-6 weeks 	Nicotine Lozenge or Gum, *extend use
	 Nicotine Lozenge: 2mg, *extend use time monthly 	time monthly
	 Nicotine Gum: 2mg, *extend use time monthly 	
	 Nicotine Inhaler: 6-16 cartridges a day,*extend use time monthly 	
Moderate	Counseling & treatment plan addressing tobacco use triggers	 Varenicline dose along with option of
	 Varenicline Day 1-3: 0.5 mg 1 X day/Days 4-7: 2 X day/ Days 8 to 	combining use with a Nicotine Patch 21
	end of treatment: 1mg 2 X day	mg, step down dose 4-6 weeks
	NRT options:	NRT Combination:
	 Nicotine Patch: 21 mg, step down dose every 4-6 weeks 	 Nicotine Patch 21 mg with either a
	 Nicotine Lozenge: 4mg, *extend use time monthly 	2mg Nicotine Lozenge or Gum, step
	 Nicotine Gum: 4mg, *extend use time monthly 	down patch dose and *extend use time
	 Nicotine Inhaler: 6-16 cartridges a day,*extend use time monthly 	for lozenge or gum every 4-6 weeks
High	Counseling & treatment plan addressing tobacco use triggers	 Varenicline dose along with option of
	 Varenicline Days 1-3: 0.5 mg 1 X day/Days 4-7: 2 X day/ Days 8 to 	combining use with a 21 mg nicotine
	end of treatment: 1mg 2 X day; if continued nicotine withdrawal,	patch, step down every 4-6 weeks
	add combination therapy option	NRT Combination:
	NRT options:	 Nicotine patch 21 mg with either a 4
	 Nicotine Patch: 21 mg, step down dose every 4-6 weeks 	mg Nicotine lozenge or gum, step
	 Nicotine Lozenge: 4mg, *extend use time monthly 	down patch dose & extend use time for
	 Nicotine Gum: 4mg, *extend use time monthly 	lozenge or gum every 4-6 weeks
	Nicotine Inhaler: 6-16 cartridges per day, *extend use time monthly	
Very High	Counseling & treatment plan addressing tobacco use triggers	Varenicline dose along with option of
	 Varenicline (Day 1-3: 0.5 mg 1 X day/Days 4-7: 2 X day/ Day 8 to 	combining use with a 21 mg nicotine
	end of treatment: 1mg 2 X day; if continued nicotine withdrawal,	patch, step down dose every 4-6 weeks
	add combination therapy option	Varenicline dose along with Bupropion
		SR Days 1-3 150 mg 1 X day/ Days 4-7
		150 mgs 2 X day
		 Varenicline dose along with option of
		combining NRT combination of long
		acting nicotine patch(es) with 4 mg
		nicotine lozenge or gum, step NRT dose
		and use time down every 4-6 weeks

NRT = Nicotine Replacement Therapy

Rational for 2mg vs 4mg NRT: 2mg lozenge or gum if desire to smoke > 30 minutes upon waking; 4mg lozenge or gum if desire to smoke < 30 minutes of waking.



*Extend Use Time: Initially-use every 1 to 2 hours then around 4 weeks assess to extend use to every 2-4 hours. Continue to expand use time until no longer needed.

Monotherapy abstinence rates

Table 6.26. Meta-analysis (2008): Effectiveness and abstinence rates for various medications and medication combinations compared to placebo at 6-months postquit (n = 83 studies)^a

Medication	Number of arms	Estimated odds ratio (95% C.I.)	Estimated abstinence rate (95% C.I.)				
Placebo	80	1.0	13.8				
Monotherapies							
Varenicline (2 mg/day)	5	3.1 (2.5–3.8)	33.2 (28.9–37.8)				
Nicotine Nasal Spray	4	2.3 (1.7–3.0)	26.7 (21.5–32.7)				
High-Dose Nicotine Patch (> 25 mg) (These included both stan- dard or long-term duration)	4	2.3 (1.7–3.0)	26.5 (21.3–32.5)				
Long-Term Nicotine Gum (> 14 weeks)	6	2.2 (1.5–3.2)	26.1 (19.7–33.6)				
Varenicline (1 mg/day)	3	2.1 (1.5–3.0)	25.4 (19.6–32.2)				
Nicotine Inhaler	6	2.1 (1.5–2.9)	24.8 (19.1–31.6)				
Clonidine	3	2.1 (1.2–3.7)	25.0 (15.7–37.3)				
Bupropion SR	26	2.0 (1.8–2.2)	24.2 (22.2–26.4)				
Nicotine Patch (6–14 weeks)	32	1.9 (1.7–2.2)	23.4 (21.3–25.8)				
Long-Term Nicotine Patch (> 14 weeks)	10	1.9 (1.7–2.3)	23.7 (21.0–26.6)				
Nortriptyline	5	1.8 (1.3–2.6)	22.5 (16.8–29.4)				
Nicotine Gum (6–14 weeks)	15	1.5 (1.2–1.7)	19.0 (16.5–21.9)				

Abstinence rate without pharmacotherapy = 3-6%

https://bphc.hrsa.gov/buckets/treatingtobacco.pdf



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Combination Therapy for Smokers

Combines a long-acting formula which produces a relatively constant level of nicotine with a short acting formula for acute dose titration as needed for nicotine withdrawal symptoms.

Recommended for patients with previously unsuccessful quit attempts and/or high nicotine dependency:

Nicotine Patch + other NRT (Lozenge, Gum, Nasal Spray, Oral Inhaler, Additional Patch)

Varenicline (Chantix[®]) + Bupropion SR (Zyban[®])

Varenicline (Chantix[®]) + Short acting NRT



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Combination Therapy Abstinence Rates

1	1			-
Combination therapies				
Patch (long-term; > 14 weeks) + ad lib NRT (gum or spray)	3	3.6 (2.5–5.2)	36.5 (28.6–45.3)	
Patch + Bupropion SR	3	2.5 (1.9–3.4)	28.9 (23.5–35.1)	Ì
Patch + Nortriptyline	2	2.3 (1.3–4.2)	27.3 (17.2–40.4)	
Patch + Inhaler	2	2.2 (1.3– 3.6)	25.8 (17.4–36.5)	
Patch + Second generation antidepressants (paroxetine, venlafaxine)	3	2.0 (1.2–3.4)	24.3 (16.1–35.0)	
Medications not shown to be effective				
Selective Serotonin Re-uptake Inhibitors (SSRIs)	3	1.0 (0.7–1.4)	13.7 (10.2–18.0)	
Naltrexone	2	0.5 (0.2–1.2)	7.3 (3.1–16.2)	Ī

^a Go to www.surgeongeneral.gov/tobacco/gdlnrefs.htm for the articles used in this meta-analysis.



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Smokeless Tobacco Off-Label Pharmacotherapy





Limited Smokeless Tobacco (ST) Studies Support

A systematic review provides evidence from 34 randomized controlled trials enrolling more than 16,000 smokeless tobacco (ST) users, testing pharmacological and behavioral interventions to treat ST use.

Meta-analysis study supports:

- Varenicline
- Nicotine Lozenge
- Behavioral Counseling



Varenicline For Smokeless Tobacco Users

Two trials of Varenicline with 507 participants (<u>Fagerstrom 2010</u>; <u>Ebbert 2011</u>) increased tobacco abstinence rates at six months compared to placebo (RR 1.34, 95% CI 1.08 to 1.68).

Two studies in Scandanavian and U.S. populations demonstrated that Varenicline increases long term ST abstinence rates by 34% compared to placebo among ST users.



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2997603/

Nicotine Lozenge - Smokeless Tobacco Cessation

- Pooled results showed the nicotine lozenge increased tobacco abstinence rates (five trials, 1529 participants, RR 1.36, 95% CI 1.17 to 1.59)
 - However, three of the nicotine lozenge trials did not use a placebo control (<u>Ebbert</u> <u>2013b</u>; <u>Severson 2015</u>; <u>Danaher 2015b</u>) and in a post hoc sensitivity analysis the result was sensitive to the removal of these three trials.



Behavioral Support

- Telephone Support
- Oral examination and telephone support
 - Use of substitute tobacco product
- The effect size of behavioral interventions for increasing ST abstinence rates is weakened by the limited methodological quality of some of these trials, including loss to follow-up and potential baseline differences between the groups.



Utilization of Substitute Smokeless Tobacco (STB)

Pick a flavor similar to current brand and a partner.

Partner: Always keep blend available in STB cans.

- Keep blending rate confidential, listening to and encouraging the chewer.
- Don't be surprised if use more STB than smokeless tobacco.
- Basic blending instructions:
- Week one, blend 10% STB with 90% tobacco.
- Week two, blend 20% STB and 80% tobacco.
- Week three, blend 30% STB and 70% tobacco.
- Increase each week's blend ration another 10% until the chewer is using 100% STB.
- Tip: Allow at least one week between blend changes.



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Nicotine Patch Dose For Smokeless

1 can smokeless tobacco = nicotine in 4 packs cigarettes

Match nicotine patch to nicotine level based on amount utilized per WEEK

DOSING: Apply the patch to a clean, dry, hairless area of skin on the upper chest, upper arm, or hip as directed by the package directions Initial dose maintained for 4-6 weeks Decrease dose in 7-14mg steps every 2 -6 weeks

SMOKELESS

- > 3 cans or pouches per wk = 42 mg/day
- 2-3 cans or pouches/wk = 21 mg/day
- < 2 cans or pouches/wk = 14 mg/day



"Fifty-two subjects were randomized. Compared with placebo, high-dose nicotine patch therapy was associated with significantly higher prolonged tobacco abstinence at end-of-treatment (44% vs. 22%, odds ratio [OR] = 2.7, p = .050) and 3 months (40% vs. 19%, OR = 2.9, p = .047)." Ebbert, Croghan, Schroeder, Hurt Nicotine Tob Res. 2013



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Ebbert JO, Croghan IT, Schroeder DR, Hurt RD. A randomized phase II clinical trial of high-dose nicotine patch therapy for smokeless tobacco users. Nicotine Tob Res. 2013 Dec;15(12):2037-44. doi: 10.1093/ntr/ntt097. Epub 2013 Jul 19. PMID: 23873976; PMCID: PMC3819979

The FDA has concluded:



- No significant safety concerns associated with the concomitant use of nicotine replacement therapy (NRT) products with other nicotine-containing products, including cigarettes.
- No significant safety risks associated with the use of NRT products for longer than the labeled number of weeks of use.
- Current marketed NRT products do not appear to have significant potential for abuse or dependence.



Fiore MC, Jaen CR, Baker TB, et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: U.S. Department Of Health and Human Services. Public Health Service. May 2008

Save the Dates: May 18-20, 2022



WestVirginiaUniversity.

WVU School of Dentistry in cooperation with the Office of Interprofessional Education and Office of Continuing Education

presents:

A Certified Tobacco Treatment Training Program (CTTTP)

West Virginia University School of Dentistry in cooperation with the Health Sciences Center's Office of Interprofessional Education is recognized nationally/internationally as one of twenty-five Tobacco Treatment Training Programs and is certified by the Council of Tobacco Treatment Training Programs (CTTTP). Professionals in the fields of medicine, dentistry, social work, pharmacy, nursing and public health will present evidence-based strategies to enable attendees to effectively assist their patients/clients/ communities with tobacco cessation.

COURSE DESCRIPTION Throughout the Tobacco Treatment Training Program, lectures, role-playing and case presentations will be utilized to discuss pharmacological and counseling interventions with patients interested in tobacco cessation. The case presentations will involve patients with relatively healthy medical conditions to patients having multiple medical problems. Alternative nicotine delivery methods such as the electronic cigarette, smokeless tobacco and more recent products will be discussed.

This three-day course provides continuing education for multiple health care providers:

Physicians: 24.5 hours Nurses: 29.5 contact hours Nurse Pharmacology: 4.8 hours Dentists and Hygienists: 24.5 ADA CERP credits Pharmacists: 24.5 contact hours Social Workers: 24.5 hours Respiratory Therapists: 29.3 hours Licensed Professional Counselors: 24.5 hours Addiction Counselors: 24.5 hours

