Prescribing Guidelines for Nicotine Dependence

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Partners For Kids Background

This document was developed by Nationwide Children's Hospital in conjunction with Partners For Kids using evidence-informed clinical guidelines, and expert opinion where evidence is lacking. It is designed to help primary care practitioners provide timely and effective treatment for children with nicotine use disorders. This document should not be considered a substitute for sound clinical judgment and clinicians are encouraged to seek additional information if questions arise. If therapeutic response is inadequate, refer to or consult with specialty behavioral health.

Additional resources can be found at the Behavioral Health Treatment Insights and Provider Support (BH-TIPS) line. The BH-TIPS line allows community providers to consult with a Nationwide Children's Hospital psychiatrist via a virtual appointment. Further details and appointment scheduling can be found at the links below:

NationwideChildrens.org/BHTIPS

BHOfficeHours@NationwideChildrens.org

Project ECHO (Extension for Community Healthcare Outcomes) is another resource that providers may enroll in. The Behavioral Health Primary Care ECHO series supports primary care providers in the assessment and management of behavioral health concerns for their patients. Sessions include short didactic presentations on commonly seen conditions in primary care, including depression, anxiety, ADHD, trauma, gender issues, substance use and eating disorders, followed with behavioral health and pharmacological guidance through interactive, case-based learning.

Register for Project ECHO here. https://www.NationwideChildrens.org/for-medical-professionals/education-and-training/echo/series/behavioral-health

For questions regarding enrollment in ECHO, please send an email to the address below:

BHPrimaryCareECHO@NationwideChildrens.org

Overview of Nicotine Dependence

- Nearly all tobacco use begins in childhood and adolescence. The majority of adults who have ever tried a cigarette reported trying their first by the age of 18.[1]
- Vapes and E-cigarettes are the most commonly used tobacco products among adolescents. It is important to specifically ask about "vaping" because patients who vape may not consider it to be the same thing as smoking.[2]
- Tobacco usage is changing constantly due to emerging regulations set forth by the U.S. Food and Drug Administration (FDA). As providers, it is important to be aware of those changes to communicate with patients about the devices they use to smoke/vape and adapt current tools to help aid in cessation treatment.
- All youth who use tobacco should be given resources to behavioral cessation support.[3]
- Currently, the FDA has not approved any agents for smoking cessation in patients under 18. However, pediatricians should consider off-label nicotine replacement therapy (NRT) for those younger than 18 who are moderately to severely dependent on nicotine.[3]
- For current statistics of nicotine use among youths and adolescents, reference the National Youth Tobacco Survey found here: https://www.cdc.gov/mmwr/volumes/71/ss/ss7105a1.htm?s_cid=ss7105a1_w

Assessment of Nicotine Dependence

- Several assessment tools exist to help clinicians determine the level of nicotine dependence in youths and adolescents.
- If a patient uses e-cigarettes or vapes, a more complete history of vaping patterns and vaping devices can assist in determining their level of nicotine dependence.
- Clinical judgement may need to be used to determine how dependent a pediatric patient is on nicotine and the best course of treatment.
- While no concrete conversion of vape puffs to cigarettes exists, some resources say that 10 puffs of a vape or e-cigarette is about equal to one cigarette.[12] This conversion can be helpful in determining dosing regimens for NRT.

Established Assessment Tools**

IF THE PATIENT USES CIGARETTES:

- The Modified Fagerstrom Tolerance Questionnaire
  - Seven questions used to assess the dependence of nicotine among adolescents.
  - Total scores are determined by summing the score given to each of the seven questions. Cut-offs for determining dependence are:
    - 0-2 = no dependence
    - 3-5 = moderate dependence
    - 6-9 = substantial dependence
- The Hooked on Nicotine Checklist for Cigarettes
  - A 10 question scale to identify loss of autonomy over the use of vapes or e-cigarettes. Scoring is completed by tallying the number of yes responses, from 0-10. Any score greater than zero indicates the presence of nicotine dependence with higher values indicating increasing dependence.
- The Cigarette Dependence Scale (CDS-5)
  - A five question assessment that measures cigarette dependence among adolescents and adults. Scores are determined by adding the score of each individual question together. A higher score indicates increasing dependence on nicotine.
- Penn State Cigarette Dependence Index[13]
  - A 10 question assessment developed to measure nicotine dependence. Each question is answered and given a score. The total scores are added up and the final number determines the amount of dependence. Cut-offs for determining dependence are:
    - 0-3 = not dependent
    - 4-8 = low dependence
    - 9-12 = medium dependence
    - 13 or more = high dependence

IF THE PATIENT USES E-CIGARETTES OR VAPING DEVICES:

- Penn State Electronic Cigarette Dependence Index[13]
    - The most comprehensive questionnaire to assess electronic cigarette and vaping dependence. If your patient vapes, it is recommended to assess their dependence using this tool. For scoring see "Penn State Cigarette Dependence Index" on page 3.
- E-Cigarette Dependence Scale
    - A four question scale to assess nicotine dependence in adolescents. The level of dependence is determined by scoring each question on a scale of 0-4 and then averaging the answers. A higher number indicates a higher level of dependence.
- The Hooked on Nicotine Checklist for Vaping and E-Cigarettes
    - See "The Hooked on Nicotine Checklist for Cigarettes" on page 3.

Treating Nicotine Dependence

BEHAVIORAL THERAPY AND SUPPORTS

- Behavioral supports offer both virtual and in-person options, including telephone quit-lines, text-message support, web-based interventions, smartphone apps, and in-person counseling. A list of resources are available at: https://www.aap.org/en/patient-care/tobacco-control-and-prevention/youth-tobacco-cessation/behavioral-cessation-supports-for-youth/.
- The Truth Initiative has created "This is Quitting," a free and anonymous text messaging program to help young people quit vaping specifically. Patients who are interested can text 'DITCHVAPE' to 88709. Parents or guardians of youth who vape can text 'QUIT' to (847) 278-9715. https://truthinitiative.org/thisisquitting
- The Ohio Quitline is a resource developed with adolescents in mind. It contains resources and stories from teens that may boost their confidence in quitting. The site can be found here: https://oh.mylifemyquit.org/index

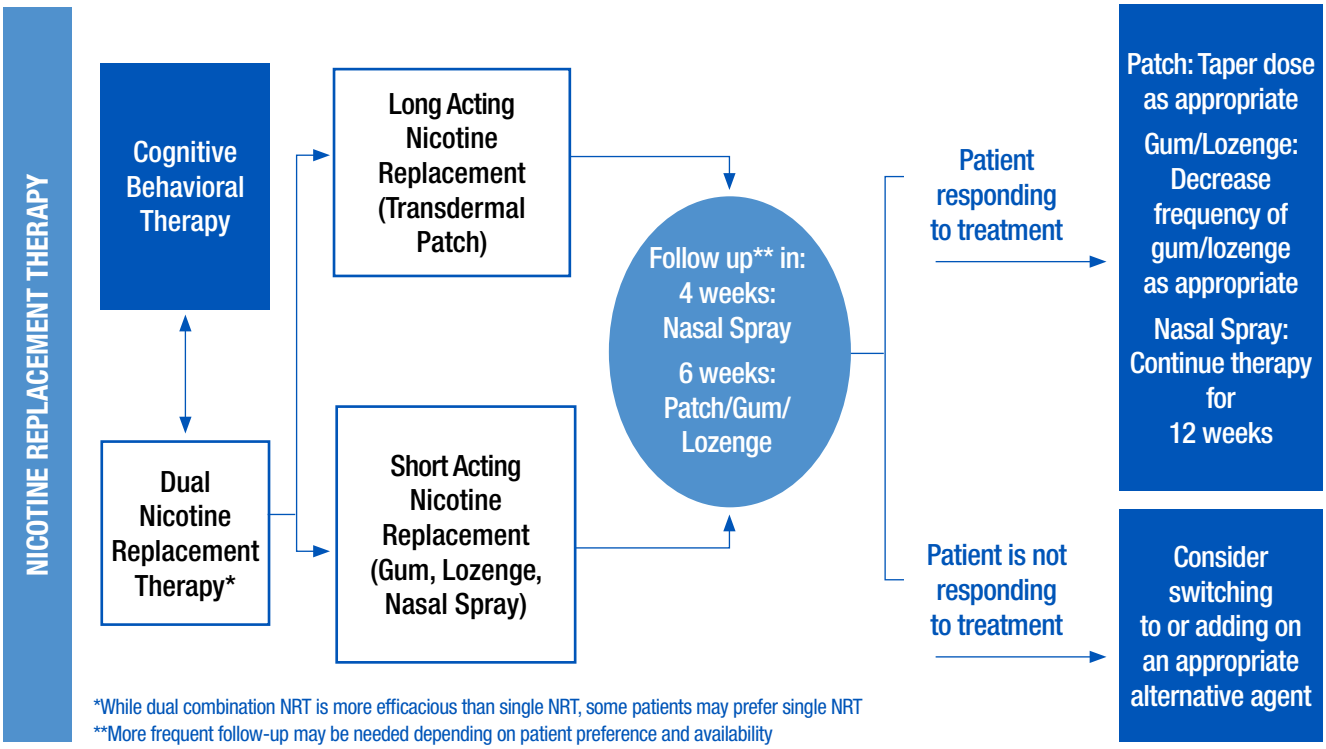
MEDICATION THERAPY

- Behavioral support for smoking cessation should always be offered in conjunction with medications.
- There are three FDA approved medications for treatment of nicotine dependence in adults – NRT, varenicline and bupropion. The FDA has not approved any nicotine cessation therapy for patients under the age of 18.
- Varenicline or combination NRT are considered first line options in adults.
- Off-label use of combination NRT is the first line treatment for children and adolescents who are moderately to severely dependent on nicotine.
- Follow-up recommendations in the flowchart on page 5 are based on available dosing guidelines. Based on patient preference and availability, checking in by phone or telehealth every one to two weeks can be beneficial in assessing patient adherence, possible side effects and response to treatment. Adequate responses to treatment may be indicated by decreased nicotine use from baseline or complete abstinence from non-pharmacologic nicotine products.

Medications for the Treatment of Nicotine Dependence

NICOTINE REPLACEMENT THERAPY (NRT)

- NRT is an FDA approved first line treatment option for nicotine cessation in adults. There is limited data to show efficacy of these products in pediatric patients, but it is considered to be a safe option in this population. Consider off-label use of NRT in pediatric patients who are moderately to severely dependent on nicotine.
- Adult patients can purchase nicotine transdermal patches, gum and lozenges over the counter, but all nicotine replacement products are prescription only for pediatric patients under 18.
- Even if a product is available over-the-counter (OTC), it is recommended to send a prescription for the product first. Managed Care Medicaid plans generally cover NRT products as well as varenicline and bupropion.
- As dosing guidelines refer to cigarette use, clinical judgement is needed when deciding initial dosing of NRT products in a patient who is vaping or using e-cigarettes.
- NRT use is recommended for 12 weeks after smoking cessation. However, NRT use for as long as an individual needs it is also acceptable because using NRT is safer than smoking cigarettes.[7]
- The nicotine patch provides continuous delivery of nicotine over a 24 hour period.
- Short-acting nicotine replacement therapy provides repeated exposure to nicotine throughout the day to control cravings.
- Combination NRT using a long- and short-acting product is more efficacious than any single agent alone. Although, single nicotine replacement therapy can be used if preferred by the patient.
- Patients may follow the taper schedule for nicotine patches if they prefer, or they may use one strength consistently throughout treatment.[8]
- Nicotine can increase heart rate and blood pressure. Use caution in patients with cardiovascular problems. Patients who smoke/vape are exposed to higher doses of nicotine than are routinely present in NRT, so benefits and risks must be weighed.
- Nicotine clearance is decreased in patients with moderate to severe renal and/or hepatic impairment. Monitor for side effects and decrease dose if necessary.
- Monitor for signs and symptoms that would indicate a patient is receiving too much nicotine including nausea, vomiting, dizziness, diarrhea, weakness and rapid heartbeat. **Patients should be advised to stop or significantly decrease the use of all other nicotine sources in order to prevent the symptoms above.**



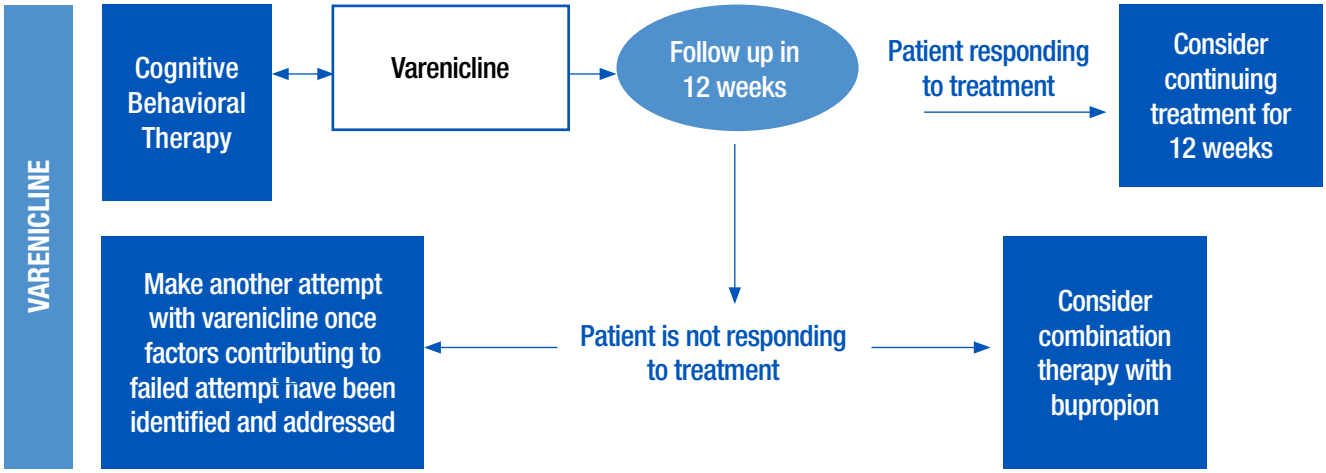
Drug	Initial Dosing	Tapering Recommendation	Strengths Available	Clinical Pearls	Side Effects & Precautions
Long-Acting Nicotine Replacement[3]					
Transdermal Nicotine Patch	**Patient smokes >10 cigarettes/ day:** 21 mg/day	**Step 1:** 21 mg/day for 6 weeks **Step 2:** 14 mg/day for 2 weeks **Step 3:** 7mg/day for 2 weeks	7mg/24 hrs; 14 mg/24 hrs; 21 mg/24 hrs	The patch should be worn continuously for 24 hours at a time Do not cut patches Place patch on clean, dry, healthy skin on back, belly, or upper arm. Rotate sites with each application Remove patch prior to MRI	Vivid dreams or sleep disturbances – remove patch at bedtime if this occurs Skin irritation
	Patient smokes ≤10 cigarettes/ day: 14 mg/day	**Step 2:** 14 mg/day for 6 weeks **Step 3:** 7 mg/day for 2 weeks			

Drug	Initial Dosing	Tapering Recommendation	Strengths Available	Clinical Pearls	Side Effects & Precautions
Short-Acting Nicotine Replacement[3]					
Nicotine Gum	**Patient smokes within 30 minutes of waking up:** 4 mg	**Weeks 1-6:** 1 piece of gum every 1-2 hours **Weeks 7-9:** 1 piece of gum every 2-4 hours **Weeks 10-12:** 1 piece of gum every 4-8 hours **Max:** 24 pieces/day	2 mg; 4 mg	Chew at least 9 pieces of gum per day during the first 6 weeks Chew slowly until there is a tingling or peppery taste in mouth, then place between cheek and gum until tingling is gone. Repeat chew and park for 20-30 minutes and then discard gum.	Mouth irritation, jaw soreness, heartburn, hiccups, nausea Can damage dental work – avoid use in those with dentures
	Patient does not smoke within 30 minutes of waking up: 2 mg				
Nicotine Lozenge	**Patient smokes within 30 minutes of waking up:** 4 mg	**Weeks 1-6:** 1 lozenge every 1-2 hours **Weeks 7-9:** 1 lozenge every 2-4 hours **Weeks 10-12:** 1 lozenge every 4-8 hours **Max:** 20 lozenges/day	2 mg; 4 mg	Dissolve at least 9 lozenges per day during the first 6 weeks. Do not chew, break, or crush lozenge Move this drug to the other side of the mouth every so often while it dissolves	Mouth irritation, indigestion and heartburn, sore throat Contraindication: Do not use if allergic to soy or soy products
	Patient does not smoke within 30 minutes of waking up: 2 mg				

Drug	Initial Dosing	Tapering Recommendation	Strengths Available	Clinical Pearls	Side Effects & Precautions
Short-Acting Nicotine Replacement[3]					
Nicotine Nasal Spray	1-2 sprays (0.5mg/spray) in each nostril per hour (at least 8 doses per day) for 12 weeks **Max:** 40 sprays per day in each nostril	Discontinue over 4-6 weeks Some patients may not require gradual reduction of dosage and may stop treatment abruptly.	Solution: 10mg/mL 10 mL spray bottle	1 dose is 1 spray in each nostril Common to have hot, peppery feeling in the back of the throat during the first week Prime the nasal spray before first use and if it hasn't been used in a while	Nasal discomfort, throat irritation, cough, rhinitis Not recommended in patients who have chronic nasal disorders Use beyond 6 months is not recommended

VARENICLINE[11]

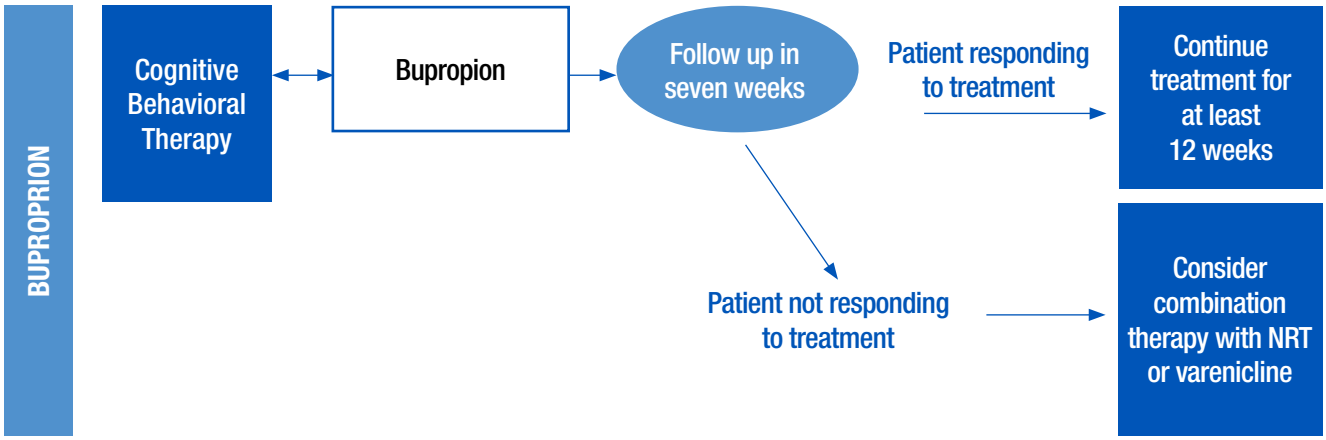
- Varenicline is another FDA approved first line option for the treatment of nicotine dependence in the adult population, however there is insufficient evidence to warrant its use in pediatric patients.
- The goal is to quit smoking by the end of the 12 week treatment period.
- There are many approaches to selecting a quit date while on this medication including fixed quit date (one week after starting treatment), flexible quit date (between days eight and 35 of treatment), and gradual quit date (reduce smoking by 50% over four week periods until abstinence from nicotine is reached).
- Patients who can't tolerate side effects of the medication, may have their maintenance dose lowered permanently.
- If the patient successfully quits smoking at the end of the 12 weeks, may continue therapy for another 12 weeks to prevent relapse. Maintenance therapy may be continued for up to one year depending on individual patient needs.[10]
- Patients who are motivated to quit and don't succeed during therapy, or who relapse after treatment, should be encouraged to make another attempt with varenicline once factors contributing to the failed attempt have been identified and addressed.



Drug		Dosing	Clinical Pearls	Side Effects & Precautions
Varenicline[6]	Initial Dose	Days 1-3: 0.5 mg once daily Days 4-7: 0.5 mg twice daily	Patient can pick a fixed quit date, flexible quit date, or a gradual quit date on this medication If patient successfully quits smoking at the end of 12 weeks, may continue for another 12 weeks Nausea is common – take pill with full glass of water and meal	Nausea and vomiting - take medication after eating with a full glass of water Abnormal dreams and sleep disturbances, depression, headache, irritability Use caution in those with renal impairment
	Maintenance Dose	1 mg twice daily for at least 11 weeks		
	Max Daily Dose	2 mg		
	Strengths Available	0.5 mg, 1 mg		

BUPROPION[9]

- Bupropion has several FDA approved indications including smoking cessation in adults.
- Bupropion works by inhibiting the reuptake of dopamine and norepinephrine. It can help in smoking cessation by reducing withdrawal symptoms and the rewarding feeling one might get from smoking.
- Bupropion is available as both SR (twice daily dosing) and XL (once daily dosing) tablets.
- Bupropion SR is indicated for smoking cessation, however, once daily bupropion XL can be utilized if patients cannot adhere to taking the medication twice daily.
- Start with 150 mg once daily for three days and then increase to 150 mg twice daily (if using XL formulation, start with 150 mg once daily and then increase to 300 mg once daily).
- For patients who don't tolerate the full dose of 150 mg twice daily, consider continuing use of 150 mg once daily for duration of treatment.
- Treatment should begin at least one week before the target quit date. Target quit dates are generally in the second week of treatment.
- If patient successfully quits smoking, continue treatment for at least 12 weeks. Maintenance therapy may be continued up to one year depending on the individual patient needs.[10]
- If significant progress has not been made by the seventh week of therapy, success is unlikely. Patient may need to consider combination therapy, or discontinuation of bupropion and use of an alternative agent.



Drug		Dosing	Clinical Pearls	Side Effects & Precautions
Bupropion[5] SR	Initial Dose	150 mg once daily for 3 days	Treatment should start while patient is still smoking in order to allow drug to reach steady-state levels before cessation Patients should be advised to decrease or cease smoking during the second week of treatment If adherence is a concern, patients can use once daily dosing of Bupropion XL	CNS stimulation (insomnia, agitation, anxiety) Tachycardia, sweating, weight loss, nausea, vomiting, constipation, dry mouth Use caution in those with renal and/or hepatic impairment Contraindications: seizure disorder, history of/current disordered eating, or undergoing discontinuation of ethanol or sedatives Boxed Warning: Increased risk of suicidal thoughts and behavior in children, adolescents, and young adults.
	Maintenance Dose	150 mg twice daily		
	Max Daily Dose	300 mg		
	Strengths Available	100 mg, 150 mg, 200 mg		

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Referrals and Consultations

Online: **NationwideChildrens.org/Urology**
Phone: **(614) 722-6200** or **(877) 722-6220** | Fax: **(614) 722-4000**
Physician Direct Connect Line for 24-hour urgent physician consultations:
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