A Practical Approach to Assist the Adolescent E-Cigarette User

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LEARNING OBJECTIVES

• Provide an evidence-based and practical approach to the individual adolescent e-cigarette tobacco user
• Suggest a paradigm to address adolescent tobacco use
• Offer one treatment approach to specific adolescent and young adult tobacco use clinical scenarios

Changes in Practice

• As a result of attending this session, I encourage you to incorporate an organized clinical approach to screening adolescents for tobacco use and practically approach the individual tobacco user to formulate a unique evidence informed cessation plan or refer for further treatment

Disclosure

• I have no relevant financial relationships with the manufacturers of any commercial product or provider of commercial services discussed in this CME activity
• I do not intend to discuss an unapproved or investigative use of a commercial product/device in my presentation

What is a Practical Approach?

• Meet the Adolescent where they are:
  – Ready to Quit?
  – Risk Reduction?
  – Move closer to ready to quit?
• Obtain an appropriate history
• Validated adolescent tobacco use screening tools
• Consider if medication is warranted
• Intervention
• Arrange follow up

What is a Practical Approach?

• Performed in an ambulatory or other setting
• Can be incorporated into your current patient flow and system of care
• Uniform Process that is reproducible each visit
• If beyond your scope, you know where and when to refer for further treatment
What is Nicotine?

- Drug
- Stimulant
- Highly Addictive
- Causes changes in brain chemistry
- Found in tobacco products

Nicotine is a Harmful Chemical

- Nicotine is neurotoxic and has demonstrable negative effects on the developing brain
- In adolescent animals causes cell death, altered neurochemistry in cortex and hippocampus, interferes with learning, increases anxiety, increases opioid consumption and sensitizes the adult brain to nicotine which furthers use
- In humans, nicotine exposure in adolescence is associated with increased nicotine use, learning problems, risk behaviors, marijuana use, anxiety, depression

Means of Nicotine Delivery Shifted

- We have moved from combustible tobacco products such as cigarettes as the preferred means of nicotine delivery for adolescents to an electronic form of nicotine delivery as the primary choice for new smokers
- The earlier the exposure to nicotine, the worse the effects on the brain the more likely to develop addiction
- Higher nicotine in electronic nicotine delivery systems combined with easier to smoke and flavorful products have led to more and younger smokers and a shorter pathway to nicotine addiction for adolescents and young adults

Electronic Nicotine Delivery Systems

What Are E-Cigarettes?

- Battery
- Atomizer/coil
- Absorbent material/cotton: Nicotine, Propylene glycol, Vegetable glycerin, Flavorings

Flavors

- Various flavors such as fruit, candy, and tobacco.
Has Covid-19 impacted e-cig use?

- 56% of e-cig users changed their patterns during pandemic
  - 32% Quit
  - 35% Reduced amount of nicotine used
  - 18% Increased use
  - 8% increased cannabis use
  - 7% switched to other tobacco products

The paradigm of combustible tobacco use cessation: Adolescents are not Adults

- Adolescent smokers:
  - Are more likely to be non-daily smokers
  - Have more variable smoking patterns
  - Smoke fewer cigarettes per day
  - Smoke less intensively/inhale less
  - Are less often classified as “dependent”/lower cotinine levels
  - May provide less accurate self-report

- Adolescents have little success with adult approaches.

Adult vs. Adolescent Tobacco Users

- Adults use tobacco in order to maintain a steady state of nicotine (NRT helps)
- Adolescents use tobacco for non-addictive reasons at first:
  - Bored (NRT does not help)
  - Stress (NRT does not help)
  - Distress (NRT does not help)
  - Social (NRT does not help)

Adult Treatments are “safe” and NOT effective for adolescents

- Because Adolescents do NOT smoke like adults and so do not have adult nicotine dependence

- KEY POINT:
  It is not the chronological AGE of the patient that determines treatment, it is the Dependence on Nicotine

Should we treat e-cigs like cigs?

- Electronic Nicotine Delivery Systems (ENDS) provide more nicotine in a more pleasurable way than combustible tobacco
- Nicotine levels are higher and nicotine toxicity is now much more common in younger adolescents than they were with combustible tobacco before ENDS
The paradigm of Adolescent electronic cigarette use

- Adolescent smokers:
  - Now begin smoking earlier
  - Tolerate more nicotine more quickly with ENDS (e-cigs)
  - Inhale more often and smoke more intensively more quickly
  - Become “dependent” more quickly
  - Become “Adult-type” smokers while still adolescents
  - Need help with accurate self-report

- Adolescents may have more success with adult approaches.

Individual Approach in the Office

- Appropriate Tobacco History
- Identify intermittent (Adolescent type) or Chronic (Adult type) of tobacco user
- Evidence of Nicotine Addiction via Validated Surveys for Adolescents
  - Hooked on Nicotine Checklist (HONC)
  - Modified Fagerstrom Tolerance Questionnaire
- Counseling / Brief Intervention
- Consideration of Medication Assisted Treatment

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Appropriate Tobacco History

- 7 day or 30-day history
- Cigarettes per day is the usual unit of measure
- Each cigarette is approximately 1mg nicotine
- Cigarettes per day (cpd)=mg nicotine per day
- Many adolescents do not use tobacco every day
- If using e-cigs, must convert to cigarettes per day or know mg of nicotine used

How do I convert e-cigarettes to cigarettes per day?

Anatomy of a Pod-Based System

These cartridges/pods do contain NICOTINE!
**Tobacco Use History**

- History of Use
- Type of tobacco and amount per day (cpd or mg nicotine)
- 7- or 30-day smoking pattern
  - Retrospectively via time-line follow-back
  - Prospectively with a daily smoking diary

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**Adolescent Daily Smoking Pattern**

**Daily Smoking Pattern: #57**
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- **Counseling**
- **Consideration of Medication Assisted Treatment**

### Hooked on Nicotine Checklist (HONC)

10 yes or no questions; each yes is one point. Any yes is a positive loss of autonomy over smoking, with proposed increased loss of autonomy over nicotine shown with each positive answer.

1. Have you ever tried to quit, but couldn’t?  
2. Do you smoke now because it is really hard to quit?  
3. Have you ever felt like you were addicted to tobacco?  
4. Do you ever have strong cravings to smoke?  
5. Have you ever felt like you really needed a cigarette?  
6. Is it hard to keep from smoking a place where you are not supposed to?  
7. Did you find it hard to concentrate because you couldn’t smoke?  
8. Did you feel more irritable because you couldn’t smoke?  
9. Did you feel a strong need or urge to smoke?  
10. Did you feel nervous, restless or anxious because you couldn’t smoke?


**NO COST To Use**

http://fmchapps.umassmed.edu/honc


### Modified Fagerstrom Tolerance Questionnaire mFTQ

- **mFTQ** is a Tolerance Questionnaire validated in adolescents and identifies physiologic dependence
- **7 questions; scored 0-9**
- **6 or above is highly dependent and may benefit from NRT +/- bupropion**
- **3-5 is moderately dependent**
- **No cost**

**References:**


### CAUTION

- **Hooked On Nicotine Checklist looks at autonomy**
- **Loss of control over behavior does not necessarily mean there is physiologic tolerance to the product**
- **HONC alone is NOT sufficient to identify those who might benefit from medication such as Nicotine Replacement Therapy**

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**Note:** The above content is extracted from a medical document discussing individual approaches to solving issues related to tobacco use and nicotine addiction. The content includes the use of tools like the Hooked on Nicotine Checklist (HONC) and the Modified Fagerstrom Tolerance Questionnaire (mFTQ) for assessing nicotine dependence. The document also emphasizes the importance of appropriate tobacco history and identifies two types of tobacco users: Intermittent (Adolescent type) and Chronic (Adult type). It highlights the significance of evidence of nicotine addiction through validated surveys and provides guidance on counseling and consideration of medication-assisted treatment.
Individual Approach in the Office

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Meta-analysis (2008): Effectiveness of and estimated abstinence rates for counseling interventions with adolescent smokers (n = 7 studies)

- Usual Care
  - OR 1.0
  - Abstinence Rate 6.7%
- Counseling
  - OR 1.8 (1.1-3.0)
  - Abstinence Rate 11.6% (7.5-17.5)

What Works With Teens?

- Adolescent-specific counseling
- Instruction in coping strategies
- School or community based
- Teen involvement
- Adolescent friendly environment

Treatment of the Adolescent Type Smoker

- Adjunctive supports
  - Text QUIT to 47648
  - 1-800 QUIT NOW
  - Mobile phone app TIQ (This is Quitting)
  - https://teen.smokefree.gov
- Choose Quit date and Prepare Environment with support of family if possible

Smoking Cessation Interventions in Youth Evidence Base

RECOMMENDED INTERVENTIONS

- Brief Counseling (in person, individual, group)
- Education
- Cognitive Behavioral Therapy
- Phone or distance counseling
- School-Based Programs
- Quit Lines via phone or text

Motivational Interviewing

- Office-based intervention to move along stage of change:
  - Pre-contemplational
  - Contemplational
  - Preparation
  - Action
  - Maintenance
  - Relapse
Smoking Cessation Interventions in Youth Evidence Base

**RECOMMENDED INTERVENTIONS IN COMBINATION**
- Mobile phone interventions (text message reminders)
- Self-help, non-interactive audio-visual materials
- Increase price of tobacco
- Mass Media campaigns
- Strong local laws / community mobilization

**RECOMMENDED INTERVENTIONS IN SELECT CASES**
- Nicotine Replacement Therapy (patch, gum, lozenge, primarily) in addicted users 12-18 years of age
- Bupropion alone or in combination with NRT, use with caution

**NOT RECOMMENDED**
- E-cigarettes for youth combustible tobacco users
- Varenicline not approved for minors; possibly more complications in young adults

**Individual Approach in the Office**
- Appropriate Tobacco History
- Identify if intermittent (Adolescent type) or Chronic (Adult type) of tobacco user
- Evidence of Nicotine Addiction via Validated Surveys for Adolescents
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**Smoking Cessation Interventions in Youth Evidence Base**

Nicotine Replacement Therapy and Adolescent Patients: Information for Pediatricians

- Review of NRT
- Types of NRT
- Dosage and Usage Instructions
- Hooked on Nicotine Checklist for Smoking and for Vaping
- 4 item e-cig dependence scale (higher scores = higher level of dependence)
- mFTQ modified Fagerstrom Tolerance Questionnaire

American Academy of Pediatrics Section on Tobacco Control

**Smoking Cessation Interventions in Youth Evidence Base**

- NOT RECOMMENDED
  - E-cigarettes for youth combustible tobacco users
  - Varenicline not approved for minors; possibly more complications in young adults

**Smoking Cessation Interventions in Youth Evidence Base**

- INSUFFICIENT EVIDENCE TO RECOMMEND
  - Other medications: SSRIs, nortriptyline, clonidine
  - Internet and social media interactive interventions
  - Hypnosis, mind-body therapy, acupuncture
**Nicotine Replacement Therapy**

- Safe and effective mainstay for treating ADULTS based on the proven assumption that adults smoke to maintain a steady-state of nicotine. By replacing the harmful tobacco with the less harmful nicotine, the addiction is fed without the detrimental health effects.
- Nicotine Replacement Therapy has NOT been shown to be effective for Adolescents in general, and best used only in properly selected patients under physician care.

**Nicotine Patch**

- FDA approved for Smoking Cessation; 8-10 week program – 6 weeks, 2 weeks, (2 weeks)
- OTC for 18 and older, Rx for <18
- 21mg for >10cpd (10mg/day)
- 14mg for <=10cpd (10mg/day)
- 7mg when tapering;
- Apply 1 patch daily, may use 16 or 24 hours, rotate site

**Nicotine Gum**

- FDA approved for Smoking Cessation
- OTC for 18 and older, Rx for <18
- Used on as needed basis; “Chew and Park”
- 2mg gum for <25cpd or 25mg equivalent
- 4mg for >=25cpd
- One piece every 1-2, then 2-4, then 4-8 hours with max of 24 pieces per day. (6 week, 3 week, 3 week).

**Nicotine Lozenge**

- FDA approved for Smoking Cessation
- OTC for 18 and older
- 2mg if first cigarette > 30min after awakening
- 4mg if first cigarette <30min after awakening
- One every 1-2 hours for 6 weeks, then 2-4 for 3wks, then 4-8 for 3 weeks
- Max 5 lozenges per 6 hours and 20 per day
**Bupropion Sustained Release**

- FDA approved for smoking cessation
- 150mg pill per day for 3 days then 150mg twice a day
- Start 1-2 weeks prior to quit date.
- Contraindicated in seizure disorder, caution with eating disorders: bulimia, anorexia nervosa
- Anti-depressant side effect profile, black box warning

**Bupropion SR and Nicotine Replacement Therapy**

- May be considered for use in adolescents with evidence of nicotine dependence and desire to quit tobacco

**Supervise**

- Use of nicotine as a therapy for teenagers should be under the supervision of a physician. In the absence of nicotine addiction, it is possible that administration of nicotine through nicotine replacement in adolescence may lead to untoward long-term psychopharmacologic effects on behavior and biology.
  
  Adelman WP. Adolesc Med (2006); 17:697-717

**The 6 As**

- ANTICIPATE—Routinely Ask parents and anticipate youth
- ASK—Every adolescent Every Visit
- ADVISE—Strong clear message
- ASSESS—Willingness to quit smoking or vaping
- ASSIST—Provide aid to assist with quit
- ARRANGE—Follow up contact in person or by phone

**Percent Abstinence Over Time for Drugs of Abuse**

- Changes in Practice
  
  As a result of attending this session, I encourage you to incorporate an organized clinical approach to screening adolescents for tobacco use and practically approach the individual tobacco user to formulate a unique evidence informed cessation plan
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