

# MPTCQ Hot Topic – Smoking Cessation

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## Pharmacokinetics of Nicotine

- Absorbed via the lungs (cigarettes) and reaches the brain in 7-8 sec
- Absorption of nicotine depends on puff volume, depth of inhalation, rate of puffing, and intensity of puffing. We can only determine how much nicotine a patient is getting from blood levels. Light cigarettes do not mean less nicotine extraction.
- Clears from the brain quickly. T<sub>1/2</sub> averages 2 hours (range 1-4 hours).
- Nicotine crosses the placental barrier

Effects of Nicotine	Nicotine Withdrawal
Increased blood pressure and heart rate Vasoconstriction Increased metabolic rate and appetite suppression Increased attention Relaxation, anxiolytic Mood improvement Analgesia	Decreased heart rate Insomnia Increased appetite, wt gain Difficulty concentrating Anxiety Depressed mood Restlessness Irritability, frustration, or anger

## Effective Treatment Strategies

- Routine, brief interventions with all patients
  - Ask about tobacco use at every visit
  - Advise to quit. Provide basic information about quitting strategies
  - Assess willingness to quit
  - Assist in quit attempt (e.g. help patient obtain pharmacotherapy, refer to more intensive treatment, etc.)
  - Arrange follow-up
- More intensive behavioral counseling
- Pharmacological support

## Three Phases of Quitting Tobacco

1. Preparation
  - Educate on the health effects of smoking
  - Educate on treatment options
  - Educate about relapse
  - Review the patient's smoking history, triggers, and history of quitting
  - Assess willingness to change
  - Review reasons to quit
  - Build confidence in their ability to quit
  - Set a quit date and make a plan!
2. Quitting
  - Provide pharmacotherapy if desired by patient. Pharmacotherapy usually at least doubles the chances of success.
  - Discuss support systems

- Discuss triggers and alternatives
  - Remind patient that urges are time-limited. They are stronger and more frequent upon initially quitting, but diminish in intensity with time.
  - Discuss coping strategies for cravings (4Ds: Delay, Drink water, Deep breathe, Distract)
  - Review plan
  - Work on behavioral changes
  - Discuss how to handle relapse
  - Make a follow-up plan
3. Maintenance (Relapse prevention)
- Celebrate success
  - Discuss what's working and what's not working
  - Remind patient of the health benefits
  - Review slip vs relapse
  - Discuss high risk situations and coping mechanisms

## **Other Methods of Quitting**

1. Tapering
  - Reduce smoking by about 25% per week
  - Caution not to compensate by smoking harder/longer/deeper and not to relight.
  - Data suggests this method is as effective as quitting cold turkey
2. Hypnosis: Not enough research to support this
3. Acupuncture: Not enough research to support this
4. E-cigarettes: Not enough research to support this

## Smoking Cessation First-line Medications

Medication	Dose	Patient education	Side Effects	Precautions
<b>Nicotine Patch (Nicoderm CQ)</b> OTC	Use 1 patch every day.  <u>&gt;10 cigarettes/day:</u> 21 mg patch daily x4-6 weeks, 14 mg patch daily x2 weeks, then 7 mg patch daily x2 weeks.  <u>≤/ = 10 cigarettes/day:</u> 14 mg patch daily x6 weeks, then 7 mg patch daily x2 weeks.	Apply new patch every AM to a non-hairy area between waist and neck. Rotate sites to avoid skin irritation. May remove patch at night if experiencing sleep disturbance, but this may increase AM cravings. May use OTC hydrocortisone cream for skin irritation.	Skin irritation (50%), sleep disturbance, headache	Pregnancy, Acute Coronary Syndrome (likely safe), uncontrolled cardiac arrhythmias, severe or worsening angina
<b>Nicotine Gum (Nicorette)</b> OTC	2-4 mg po Q1-2h x6 weeks, then Q2-4h x3 weeks, then q4-8h x3 weeks. (Max 24 pieces/day).  2 mg dose for <25 cig/day and 4 mg dose for ≥/ =25 cig/day.	Chew each piece slowly. Park between cheek and gum when peppery or tingling sensation appears (~15–30 chews). Resume chewing when taste or tingle fades. Repeat steps until most of the nicotine is gone (taste or tingle does not return; generally 30 min). Avoid food and drink 15 min before and during use.	Mouth/jaw soreness, dyspepsia, hiccups	Pregnancy, CVD (likely safe), uncontrolled cardiac arrhythmias, severe or worsening angina
<b>Nicotine Lozenge (Commit Lozenge)</b> OTC	1 lozenge Q 1-2h x6 wks, Q2-4 h x weeks 7-9, and Q4-8 h x weeks 10-12.  4 mg if 1 <sup>st</sup> cigarette <30 min after waking. 2 mg if 1 <sup>st</sup> cig is >30 min after waking. Max 20 lozenges/day.	Suck on lozenge until it dissolves. Do not chew or swallow it. Avoid eating or drinking anything for 15 min before or during use.	Nausea, hiccups, cough, heartburn, headache, flatulence, insomnia	Pregnancy, CVD (likely safe), uncontrolled cardiac arrhythmias, severe or worsening angina
<b>Nicotine Nasal Spray (Nicotrol NS)</b> Rx	Use 1 spray in each nostril 1-2 times/hr prn cravings. Max 5 doses/hr or 40 doses/day.	Do not inhale, sniff, or swallow while spraying into nostrils. Tilt head back slightly while administering. For best results, use at least 8 sprays/day initially.	Nasal or throat irritation, rhinitis, sneezing, cough, headache	Pregnancy, CVD (likely safe), uncontrolled cardiac arrhythmias, severe or worsening angina
<b>Nicotine Inhaler (Nicotrol inhaler)</b> Rx	10 mg cartridge delivers 4 mg nicotine vapor in about 80 puffs over 20 minutes.  Puff on 1 cartridge for 20 min prn cravings. Use 6-16 cartridges/day initially.	Initially use at least 6 cartridges/day. Puff or inhale to back of throat, but do not inhale deeply into lungs (like a cigarette). Best results with continuous puffing for 20 min. Nicotine in cartridge is depleted after 20 min of active puffing. Open cartridge retains potency for 24 hours.	Mouth or throat irritation, cough, hiccups, rhinitis, unpleasant taste	Pregnancy, CVD (likely safe), uncontrolled cardiac arrhythmias, severe or worsening angina, Bronchospastic disease

<b>Bupropion SR (Zyban)</b> Rx	150 mg po daily x days 1-3. 150 mg po BID after that.	Stop smoking after 1-2 weeks of treatment. Separate doses by at least 8 hours. Take PM dose early in the evening if possible to minimize sleep disturbance. Duration of therapy is 7-12 weeks, but may extend up to 6 mo.	Insomnia, dry mouth, anxiety, increased BP, seizures (0.1%)	Pregnancy, Liver impairment, CVD (likely safe), Seizure disorder (contraindication), Current or prior anorexia or bulimia (contraindication), Contraindicated with use of MAO-inhibitor in the past 14 days, Caution with other drugs that may increase risk of seizures, Avoid in patients at risk of seizures d/t alcohol or sedative withdrawal, caution with uncontrolled HTN
<b>Varenicline (Chantix)</b> Rx	0.5 mg po daily x days 1-3. 0.5 mg po BID x days 4-7. 1 mg po BID on days 8+.	Start varenicline 1 week prior to quit date. Take with a full glass of water after eating. Take for 12 weeks. May continue for another 12 weeks if needed.	Nausea (usually temporary), vomiting, constipation, insomnia (usually temporary), abnormal dreams	Pregnancy, Renal impairment (CrCl <30 ml/min: max 0.5 mg BID. HD: max 0.5 mg daily). CVD (may be associated with slight increase in CV events, but not statistically significant).

## Efficacy

### First-line medications vs Placebo (6 mo f/u) from meta-analysis (PHS Guideline 2008)

Medication	No. Studies	OR	95% CI
Nic. Patch (6-14 wks)	32	1.9	1.7-2.2
Nic. Gum (6-14 wks)	15	1.5	1.2-1.7
Nic. Inhaler	6	2.1	1.5-2.9
Nic. Spray	4	2.3	1.7-3.0
Bupropion	26	2.0	1.8-2.2
Varenicline (2mg/day)	5	3.1	2.5-3.8

## Special Populations

1. CVD
  - Nicotine patch is proven safe in stable CVD. Short-acting NRT is likely to be safe in stable CVD
  - Nicotine patch is also likely to be safe in ACS. In most medical centers, CCU patients who smoke are routinely given the patch.
  - Remember that it is lower nicotine levels than smoking
  - CO and the 400+ other toxins in tobacco products are the real threat. They irritate the vessel lining and lead to plaque development.
2. COPD
  - Avoid Nicotine NS in asthma patients
  - Avoid bupropion in patients on home oxygen d/t increased risk of hypoxia related seizures
  - NRT and varenicline are considered safe and effective
  - Review benefits of smoking cessation with all COPD patients (less airway inflammation, increased responsiveness to bronchodilators, decreased hospitalizations, slows progression of COPD)
3. Diabetes
  - Anticipate that glucose will change. Need to monitor glucose.
  - Nicotine increases insulin resistance.
4. Pregnancy
  - Non-pharmacological approaches should be exhausted first.
  - Bupropion or NRT are considered less harmful to the fetus than continuing smoking
  - No studies using varenicline in pregnancy.
5. Lactation
  - NRT is preferred. Negligible absorption of nicotine into the breastmilk. Could use short-acting NRT right after breastfeeding
  - Bupropion can be considered. It accumulates in the breastmilk, but dose delivered to infant is small.
  - Avoid varenicline. No data.
6. Adolescents
  - NRT has been shown to be safe to use in adolescents, but studies have not shown efficacy.
  - Consider degree of dependence and body weight when selecting dose.
  - Approved for use in adolescents in the UK. Use of NRT in children ages 12-18 is acceptable.
7. Psychiatric Disorders
  - 40-50% of patients with depression and anxiety smoke and 70-90% of patients with schizophrenia smoke.
  - Don't assume that they don't want to quit. Always ask.
  - Patients with psychiatric disorders are often more dependent on nicotine. May need higher doses and longer duration of therapy.
  - Starting bupropion prior to NRT and quit date, may help with cravings and depressive symptoms in patients with depression. Monitor for serotonin syndrome in patients already on SSRIs.
  - Combination of bupropion + NRT is superior to NRT alone.
  - For patients with anxiety, caution with bupropion as this may increase anxiety symptoms. Consider NRT patch for these patients to avoid fluctuations in nicotine levels.
  - In 2009 the FDA issued a BB warning for varenicline and bupropion due to case reports of changes in mood, serious neuropsychiatric symptoms, and increased suicidal ideations.
  - In 2016 that BB warning was removed after the EAGLES study concluded that there was NO increase in neuropsychiatric symptoms.