


Pharmacological Approach To Smoking Cessation




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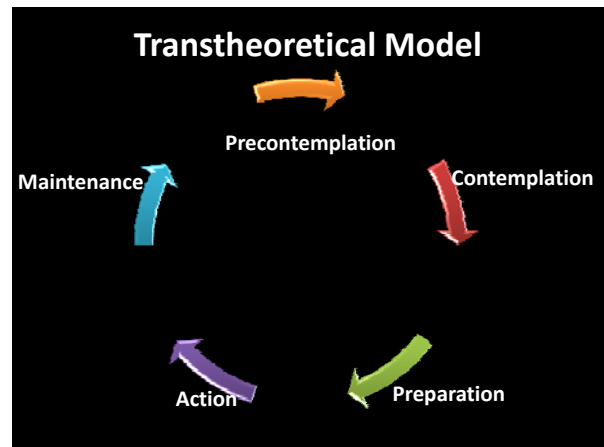
Objectives

- Identify stages of the transtheoretical model for smoking cessation
- Apply the “5A’s” model for treating tobacco use and dependence
- Review non-pharmacological interventions for smoking cessation
- Discuss first-line medications that increase long-term smoking abstinence rates

Cigarette Smoking



- Leading cause of preventable morbidity and premature mortality in the United States
- In 2006, 20.6% of adults (ages 18+) were current smokers
- Responsible for 1/5 deaths
- Smoking attributed deaths
 1. Lung cancer
 2. Coronary heart disease
 3. Chronic obstructive pulmonary disease & other airway obstruction



The 5A’s Model For Treating Tobacco Use and Dependence

<p>ASK</p> <ul style="list-style-type: none"> •Identify & document tobacco use status of patient at every visit <p>ADVISE to quit</p> <ul style="list-style-type: none"> •Clear, strong, and personalized manner urge tobacco user to quit <p>ASSESS</p> <ul style="list-style-type: none"> •Current tobacco user? •Ex-tobacco user? 	<p>ASSIST</p> <ul style="list-style-type: none"> •Patient willing to make quit attempt <ul style="list-style-type: none"> ▪Offer medications and provide counseling •Patients unwilling to quit <ul style="list-style-type: none"> ▪Provide motivational interventions •Recent quitter: <ul style="list-style-type: none"> ▪Provide relapse prevention <p>ARRANGE</p> <ul style="list-style-type: none"> •Follow up
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Non-Pharmacological Interventions

Counseling & Behavioral Therapies

- Practical counseling
- Social support as part of treatment
- Social support outside of treatment

Should be used with patients attempting smoking cessation

- Aversion therapy
- Acupuncture therapy
- Hypnotherapy
- Cold turkey approach



Pharmacological Interventions

First-line medications

- Nicotine Replacement
 - Nicotine Patch
 - Nicotine Gum
 - Nicotine Inhaler
 - Nicotine Lozenges
 - Nicotine Nasal Spray
- Bupropion SR (Zyban®)
- Varenicline (Chantix®)

Second-line medications

- Clonidine
- Nortriptyline



Pharmacology of Nicotine

Ganglionic cholinergic receptor agonist

- Central & peripheral nervous system stimulation
- Respiratory stimulation
- Peripheral vasoconstriction
- Increase blood pressure, heart rate, & cardiac output
- Increase oxygen consumption

Pharmacological effects are dependent on dose

- Low doses or cigarette smoking
 - Increase alertness and cognitive functioning
- Higher doses- stimulate reward center in the limbic system

Nicotine Patch (Nicoderm CQ®)

Product	Light Smoker	Heavy Smoker
Nicoderm CQ® or Generic	≤ 10 cigarettes/ day 14mg X 4 weeks then 7mg X 4 weeks	> 10 cigarettes/ day 21mg x 4 weeks then 14mg x 2- 4 weeks then 7mg x 2-4 weeks

- Start of each day replace patch on hairless location
- Duration of use: 8-12 weeks
- Side effects: local skin irritation or insomnia
- Available: OTC or prescription



Nicotine Gum (Nicorette®)

If Patient Smokes	Recommended Strength
< 25 cigarettes/day	2mg
≥ 25 cigarettes/day	4mg

Dosage Schedule		
Weeks 1 to 6	Weeks 7 to 9	Week 10 to 12
One piece every 1 to 2 hours	One piece every 2 to 4 hours	One piece every 4 to 8 hours
DO NOT USE MORE THAN 24 PIECES PER DAY		

- Nine pieces per day to improve chance of smoking cessation
- Do not eat or drink 15 minutes before or during use
- Duration of use: 12 weeks
- Side effects: mouth soreness, jaw muscle aches, & dyspepsia
- Available: OTC



Patient Counseling on Nicotine Gum



Rapid chewing may cause rapid release of nicotine

- Lightheadedness
- Nausea/Vomiting
- Irritation of throat & mouth
- Hiccups
- Indigestion

Nicotine Lozenges (Commit®)



- Dosage: based on time to first cigarette
- Weeks 1 to 6: 1 lozenge every 1 to 2 hours
- Weeks 7 to 9: 1 lozenge every 2 to 4 hours
- Weeks 10 to 12: 1 lozenge every 4 to 8 hours
- At least 9 lozenges daily during first 6 weeks
- Not to exceed 20 lozenges per day
- Do not eat or drink 15 minutes before or during use
- Available: OTC

Nicotine Inhaler (Nicotrol Inhaler®)

	Duration	Recommended Cartridges/day
Initial Treatment	Up to 12 weeks	6-12
Gradual Reduction	6-12 weeks after initial treatment	No tapering strategy has been shown to be superior

- May satisfy hand-to-mouth ritual
- Six cartridges per day at least for the first 3 to 6 weeks of treatment
- Maximum of 16 cartridges/day
- Do not eat or drink 15 minutes before or during use
- Side Effects: Local irritation of mouth & throat
- Available: Prescription



Nicotine Nasal Spray (Nicotrol NS®)

Recommended Dose Per Hour	Maximum Dose Per Hour	Maximum Dose Per Day
1-2	5	40

- Each actuation: 0.5mg of nicotine
- One dose is 1mg of nicotine (2sprays, one in each nostril)
- Minimum 8 doses per day to improve chance of smoking cessation
- Duration of treatment: 3 months
- Patient should be instructed not to sniff, swallow or inhale through the nose as spray is being administered
- Spray should be administered with head tilted back



Nicotine Replacement Therapy

Caution in cardiovascular patients

- Recent (within 2 weeks) post-myocardial infarction
- Serious arrhythmias
- Serious or worsening of angina pectoris

Side effects

- Nausea and light headedness

Monitoring

- Heart rate & blood pressure should be monitored periodically during NRT



Bupropion SR (Zyban®)

Mechanism of Action:

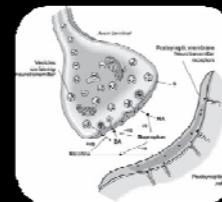
- Inhibits neuronal reuptake and potentiates norepinephrine & dopamine
- Dopamine associated with rewarding effects of addictive substances
- Norepinephrine decrease withdrawal symptoms

Dosage:

- 150mg/ day for 3 days then
- 150mg twice daily

Duration: 7 to 12 weeks

Start one week prior to quit date



Bupropion SR (Zyban®)

Contraindications

- Seizure disorder
- Bulimia or anorexia disorder
- Monoamine oxidase inhibitor within the previous 14 days
- Other medications containing bupropion

Side effects

- Anxiety, disturbed concentration, & insomnia

Precaution

- Neuropsychiatric symptoms and suicidal ideation, with or without pre-existing psychiatric disease
- Suicidal ideations and behavior or worsening depression



Varenicline (Chantix®)

Mechanism of Action

- Partial $\alpha_4\beta_2$ neuronal nicotinic acetylcholine receptor agonist
 - Agonist: Produces low to moderate levels of dopamine
 - Antagonist: blocks the binding and positive reinforcement effects of smoked nicotine

Dosing

- Days 1 to 3: 0.5mg daily
- Days 4 to 7: 0.5mg twice daily
- Maintenance (> day 8): 1mg twice daily
- Renal dosing adjustments
 - CrCl <30ml/min: 0.5mg daily to maximum dose of twice daily
 - Hemodialysis: 0.5mg daily
- Start one week prior to quit date



Varenicline (Chantix®)

Duration of use: 12 weeks

- If patient successfully quits smoking during the 12 weeks, may continue for another 12 weeks to help maintain success

Side effects

- Nausea, insomnia, abnormal, vivid, or strange dreams

Precautions

- Serious neuropsychiatric events reported such as depression, suicidal ideation, suicide attempt & completed suicide
- All patients should be observed for neuropsychiatric symptoms
- Discontinue if symptoms develop



Food and Drug Administration Alert

July 1, 2009

FDA requires manufactures of bupropion & varenicline to add new boxed warnings & develop Medication Guides

- Risk of developing serious neuropsychiatric symptoms
 - Changes in behavior, hostility, agitation, depressed moods, suicidal ideations and behavior

Based on continued post-marketing adverse event reports

- Suicidal ideation & behavior in patient with no history of psychiatric disease



Pharmacological Interventions

Non-responders to first line therapies

- Continue same agent for longer duration
- Switch to a different first-line agent
- Consider combination of two agents
 - Nicotine patch + self administered form of NRT
 - Bupropion SR + NRT

Second-Line Agents

- Clonidine or Nortriptyline
- Not FDA indicated for smoking cessation



Conclusion

- All patients should be screened for tobacco use at most visits
- Smoking cessation treatment should include
 - Counseling techniques and multiple treatment sessions
 - Pharmacological approach
 - First-line therapies have proven long term abstinence rates



Questions

- **T/F:** Bupropion SR and varenicline are the non-nicotine first-line medications proven to reliably increase long-term smoking cessation
TRUE
- **T/F:** Before selecting bupropion SR for smoking cessation one must take into consideration concomitant use of MAO-I's (monoamine oxidase inhibitors) and history of seizures
TRUE
- **T/F:** Varenicline does not require renal dose adjustments or psychiatric monitoring in patient with pre-existing neuropsychiatric symptoms
FALSE

References

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