Clinician Tool:
Tobacco Cessation for Patients with Cardiovascular Disease

Purpose:

- This tool complements the *2018 ACC Expert Consensus Decision Pathway on Tobacco Cessation Treatment*, which provides clinicians with the framework and guidance in delivering effective smoking cessation therapy for adult patients with cardiovascular disease (CVD) in a clinical practice setting.
- Clinicians can use this tool once they've decided to combine pharmacotherapy with behavioral interventions, to review recommended 1st, 2nd, and 3rd line interventions for outpatients with stable CVD and for inpatients with acute coronary syndrome. It provides specific information on medications, dosing, administration, side effects, and advantages/disadvantages of each therapy.

Overview:

- The FDA has approved 5 nicotine replacement therapy (NRT) products as well as bupropion and varenicline for smoking cessation.
- Meta-analyses and a recent large randomized controlled trial indicate that each of these medications is more effective than placebo in promoting smoking cessation for 6 months or more and that each is safe for use in patients with CVD.
- Tobacco use, especially cigarette smoking, is a major risk factor for CVD associated morbidity and mortality. The reversible relationship between cigarette smoking and CVD provides a strong rationale for health care providers—especially the cardiovascular care team—to take action in clinical practice to change this modifiable risk factor.
- Current evidence strongly supports combining pharmacotherapy with behavioral/psychosocial interventions as the most effective way to help smokers sustain abstinence. Pharmacological therapies help smokers adjust to the absence of nicotine following cessation of smoking by lessening the symptoms of nicotine withdrawal. Behavioral and psychosocial treatments are based upon principles of behavioral and cognitive psychology that attempt to bolster a smoker's self-control over their smoking.
- Effective treatment of tobacco dependence is best achieved and managed by a team approach (physicians, nurses, pharmacists, psychologists, certified tobacco treatment specialists, and health department quit services). All clinical decisions should be governed by clinical judgment and influenced by discussions with the patient to incorporate his or her treatment preferences.

Reference:

Barua RS, Rigotti NA, Benowitz NL, Cummings KM, Jazayeri M, Morris PB, Ratchford EV, Sarna L, Stecker EC, Wiggins BS. 2018 ACC Expert Consensus Decision Pathway on Tobacco Cessation Treatment. *J Am Coll Cardiol* 2018 Dec 5 [E-pub ahead of print]; *https://doi.org/10.1016/j.jacc.2018.10.027*

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Recommended Pharmacotherapy		
	OUTPATIENT WITH STABLE CVD	**INPATIENT WITH ACS**
1st Line Therapy	Varenicline OR combination NRT*	*In-hospital to relieve nicotine withdrawal:* Nicotine patch OR combination NRT* *At discharge:* Combination NRT OR varenicline†
2nd Line Therapy	Bupropion OR single NRT product	*At discharge:* Single NRT product
3rd Line Therapy	Nortriptyline‡	Bupropion§
If single agent is insufficient to achieve abstinence	Combine categories of FDA-approved drugs: • Varenicline + NRT (single agent) • Varenicline + bupropion • Bupropion + NRT (single agent)	(n/a)
Cardiovascular Risks of Smoking	• Adversely affects all phases of the atherothrombotic disease process, culminating in acute cardiovascular events. • Increases the risk of coronary heart disease, stroke, PAD, and abdominal aortic aneurysm. • Associated with increased risk of heart failure, as well as atrial and ventricular arrhythmias. • Among those with coronary heart disease, continued smoking after revascularization is associated with adverse clinical outcomes, particularly stent thrombosis. • A low level of tobacco smoke exposure including secondhand exposure is associated with a disproportionately large excess in cardiovascular risk.	
Cardiovascular Benefits of Smoking Cessation	• Reduces subsequent cardiovascular events and mortality. • Virtually all smokers, regardless of duration or intensity of smoking, comorbidities, or age, benefit from smoking cessation, even if cessation occurs after the development of clinical cardiovascular disease. • Tobacco cessation programs are cost-effective, and their value compares favorably with the management of other cardiovascular risk factors.	

Abbreviations:

ACS = acute coronary syndrome, CVD = cardiovascular disease, NRT = nicotine replacement therapy

*Combination NRT comprises a nicotine patch plus the patient's choice of nicotine gum or lozenge or inhaler or spray.

† Some committee members planning to use varenicline would start it in hospital; others would not start until discharge. Regardless, continue nicotine patch or short-acting form for 1 week to manage nicotine withdrawal symptoms during up-titration of varenicline dose.

‡ Nortriptyline is not FDA-approved for smoking cessation indication and there are few data on use in patients with CVD.

§ Bupropion is listed as 3rd line because of no evidence of efficacy when started during hospitalization for ACS or acute MI. However, there are no special safety concerns for bupropion in this setting.

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1st Line Medications and Dosing for Tobacco Cessation Treatment[a]						
Drug (Available Doses)	**How Sold** (U.S.)	**Dosing Instructions**[b]	**Administration**	**Common Side Effects**	**Advantages**	**Disadvantages**
Nicotine patch *- 21 mg* *- 14 mg* *- 7 mg*	OTC or Rx	*Starting Dose:* 21 mg for ≥10 cigarettes/day. 14 mg for <10 cigarettes/day. After 6 weeks, option to taper to lower doses for 2-6 weeks. Use ≥3 months. After 6 weeks, continue original dose or taper to lower doses.	Apply a new patch each morning to dry skin. Rotate application site to avoid skin irritation. May start patch before or on quit date. Keep using even if a slip occurs. If insomnia/disturbing dreams, remove patch at bedtime.	Skin irritation Trouble sleeping Vivid dreams (patch can be removed at bedtime to manage insomnia or vivid dreams)	Easiest nicotine product to use. Provides a steady nicotine level. Combination NRT: Can add prn gum, lozenge, inhaler, or nasal spray to patch to cover situational cravings.	User cannot alter dose if cravings occur during the day.
Nicotine lozenge *- 4 mg* *- 2 mg*	OTC or Rx	If 1st cigarette is ≤30 min of waking: 4 mg. If 1st cigarette is >30 min of waking: 2 mg. Use ≥3 months.	Place between gum and cheek, let it melt slowly. Use 1 piece every 1-2 hours (Max: 20/day).	Mouth irritation Hiccups Heartburn Nausea	User controls nicotine dose. Oral substitute for cigarettes. May be added to patch to cover situational cravings. Easier to use than gum for those with dental work or dentures.	No food or drink for 15 minutes prior to use and during use.
Nicotine gum *- 4 mg* *- 2 mg*	OTC or Rx	If 1st cigarette is ≤30 min of waking: 4 mg. If 1st cigarette is >30 min of waking: 2 mg. Use ≥3 months.	Chew briefly until mouth tingles, then 'park' gum inside cheek until tingle fades. Repeat chew-and-park each time tingle fades. Discard gum after 30 minutes of use. Use ~1 piece per hour (Max: 24/day).	Mouth irritation Jaw soreness Heartburn Hiccups Nausea	User controls nicotine dose. Oral substitute for cigarettes. May be added to patch to cover situational cravings.	Not chewed in same way as regular gum; requires careful instruction. Can damage dental work and be difficult to use with dentures. No food or drink for 15 minutes prior to use and during use.

Abbreviations:

OTC = over the counter (no prescription required), Rx = prescription required, NRT = nicotine replacement therapy

[a] All are FDA-approved as smoking cessation aids and listed as a 1st line medication by US Clinical Practice Guidelines (Fiore, 2008)

[b] Recommended duration of use for medications is at least 3 months but extending dose to 6 months is frequently done to prevent relapse to tobacco use. Patch dosing differs slightly from FDA labeling.

Reference:

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Nicotine inhaler *- 10 mg cartridge*	Rx only	10 mg/cartridge. Each cartridge has ~ 80 puffs. Use ≥3 months.	Puff into mouth/throat until cravings subside; do not inhale into lungs. Change cartridge when nicotine taste disappears. Use 1 cartridge every 1-2 hours (Max: 16/day).	Mouth and throat irritation Coughing if inhaled too deeply	User controls nicotine dose. Mimics hand-to-mouth ritual of smoking cigarettes. May be added to patch to cover situational cravings.	Frequent puffing required.
Nicotine nasal spray *- 10 mg/ml (10 ml bottle)*	Rx only	10 mg/ml. 0.5 mg per spray. Each bottle has ~200 sprays. Use ≥3 months.	Use 1 spray to each nostril. Use spray every 1-2 hours (Max: 80/day).	Nasal and throat irritation Rhinitis Sneezing Coughing Tearing	User controls nicotine dose. Most rapid delivery of nicotine among all NRT products. May be added to patch to cover situational cravings.	Has the most side effects of all NRT products. Some users cannot tolerate local irritation to nasal mucosa.
Varenicline (tablet) *- 0.5 mg - 1.0 mg*	Rx only	Days 1-3: 0.5 mg/day. Days 4-7: 0.5 mg twice/day. Day 8+: 1 mg twice/day. Use 3-6 months.	Start 1-4 weeks before quit date. Take with food and a tall glass of water to minimize nausea.	Nausea Insomnia Vivid dreams Headache	Quit date can be flexible, from 1 week to 3 months after starting drug. Dual action: relieves nicotine withdrawal and blocks reward of smoking. Oral agent (pill).	Because of previous FDA boxed warning (now removed), many patients fear psychiatric adverse events, even though they are no more common than with other cessation medications.
Bupropion sustained release (SR) (tablet) *- 150 mg*	Rx only	150 mg/day for 3 days, then 150 mg twice a day. Use 3-6 months.	Start 1-2 weeks before quit date.	Insomnia Agitation Dry mouth Headache	May lessen post-cessation weight gain while drug is being taken. Oral agent (pill).	Increases seizure risk: not for use if seizure disorder or binge drinking.

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[b] Recommended duration of use for medications is at least 3 months but extending dose to 6 months is frequently done to prevent relapse to tobacco use. Patch dosing differs slightly from FDA labeling.

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