NCCN Guidelines Version 1.2015 Panel Members
Smoking Cessation

*Peter G. Shields, MD/Chair †
The Ohio State University Comprehensive Cancer Center - James Cancer Hospital and Solove Research Institute

*Roy S. Herbst, MD, PhD/Vice Chair †
Yale Cancer Center/Smilow Cancer Hospital

*James Davis, MD/Subcommittee Lead ‡
Duke Cancer Institute

*Brian Tiep, MD/Subcommittee Lead Ξ
City of Hope Comprehensive Cancer Center

Douglas Arenberg, MD, MS Ξ
University of Michigan Comprehensive Cancer Center

Neal L. Benowitz, MD ‡ Ξ
UCSF Helen Diller Family Comprehensive Cancer Center

Laura Bierut, MD Ξ
Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine

*Julie Bylund Luckart, APRN, AOCN, FNP #
Huntsman Cancer Institute at the University of Utah

*Paul Cinciripini, PhD θ
The University of Texas MD Anderson Cancer Center

Bradley Collins, PhD θ
Fox Chase Cancer Center

Sean David, MD, SM, DPhil Ξ θ
Stanford Cancer Institute

*Brian Hitsman, PhD θ
Robert H. Lurie Comprehensive Cancer Center of Northwestern University

Andrew Hyland, PhD θ
Roswell Park Cancer Institute

*Margaret Lang, MSN #
The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

*Scott Leischow, PhD θ
Mayo Clinic Cancer Center

*Elyse R. Park, PhD, MPH θ
Massachusetts General Hospital Cancer Center

W. Thomas Purcell, MD, MBA †
University of Colorado Cancer Center

Andrea Silber, MD †
Yale Cancer Center/Smilow Cancer Hospital

Sharon Spencer, MD §
University of Alabama at Birmingham Comprehensive Cancer Center

*Tawee Tanvetyanon, MD †
Moffitt Cancer Center

Hilary Tindle, MD, MPH ¶
Vanderbilt-Ingram Cancer Center

Reginald Tucker-Seeley, MA, ScM, ScD θ
Dana-Farber/Brigham and Women’s Cancer Center

James Urbanic, MD §
UC San Diego

Moores Cancer Center

Benny Weksler, MD, MBA¶¶
St. Jude Children’s Research Hospital/
The University of Tennessee Health Science Center

C. Will Wikle, NP, RN #
Memorial Sloan Kettering Cancer Center

Douglas E. Wood, MD ¶¶
Fred Hutchinson Cancer Research Center/Seattle Cancer Care Alliance

NCCN
Jennifer Burns
Jillian Scavone, PhD

NCCN Guidelines Panel Disclosures

ι Internal medicine
ι Medical oncology
ι Surgery/Surgical oncology
ι Radiotherapy/Radiation oncology
ι Nursing
ι Psychiatry/Psychology/Behavioral science
ι Pulmonary medicine
ι Pharmacology/Pharmacogenetics
ι Writing Committee Member
NCCN Guidelines Version 1.2015- Table of Contents
Smoking Cessation

General Principles of the Smoking Cessation Guidelines (Intro)
Evaluation and Assessment of Patient Smoking (SC-1)
  • Current Smokers (SC-2)
  • Former Smokers and Recent Quitters (SC-3)
General Approach to Smoking Cessation During Cancer Treatment (SC-4)
Smoking-Associated Risks for Patients with Cancer (SC-A)
Patient/Provider Smoking Cessation Resources (SC-B)
Principles of Smoking Cessation Pharmacotherapy (SC-C)
Principles of Behavior Therapy (SC-D)

Clinical Trials: NCCN believes that the best management for any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
To find clinical trials online at NCCN Member Institutions, click here: nccn.org/clinical_trials/physician.html.

NCCN Categories of Evidence and Consensus: All recommendations are category 2A unless otherwise specified.
See NCCN Categories of Evidence and Consensus.
GENERAL PRINCIPLES OF THE SMOKING CESSATION GUIDELINES

These guidelines are focused on smoking cessation recommendations for patients with cancer. There are health benefits to smoking cessation even after a cancer diagnosis, regardless of stage or prognosis, namely improvement in cancer treatment outcomes, disease recurrence, and secondary cancers. It is never too late for patients with cancer to stop smoking cigarettes. Smoking and nicotine addiction is a chronic relapsing disorder. Patients may slip or relapse, which is expected and can be managed. Smokers with cancer often demonstrate high-level nicotine dependence. The NCCN Panel recommends that treatment plans for all smokers with cancer include the following:

1. Evidence-based pharmacotherapy,
2. Behavior therapy (counseling), and
3. Close follow-up with retreatment as needed.

Clinical Recommendations:

• Pharmacologic therapy is effective and recommended.
  ‣ The two most effective pharmacotherapy agents are combination nicotine replacement therapy (NRT) and varenicline. Therapies can be combined as needed.

• Combining pharmacologic therapy and counseling is the most effective and leads to the best results for smoking cessation.
  ‣ High-intensity behavior therapy with multiple counseling sessions is most effective, but at least a minimum of brief counseling is highly recommended.

• Smoking status should be documented in the patient health record. Patient health records should be updated at regular intervals to indicate changes in smoking status, quit attempts made, and interventions utilized.

• Smoking relapse and brief slips are common. Providers should discuss this and provide guidance and support to encourage continued smoking cessation attempts. Smoking slips are not necessarily an indication to try an alternative method. It may take more than one quit attempt with the same therapy to achieve long term cessation.
EVALUATION AND ASSESSMENT OF PATIENT SMOKING\textsuperscript{a}

INITIAL EVALUATION\textsuperscript{b}  

STATUS

Assess current cigarette smoking status of all patients with cancer:\textsuperscript{b,c,d}

- Have you ever smoked cigarettes?
- Do you currently smoke cigarettes or have you smoked in the last 30 days?

Current smoker and/or those who have smoked within the last 30 days  \rightarrow \text{See Assessment of Current Smokers (SC-2)}

Former smoker or recently quit (>30 days since patient last smoked)  \rightarrow \text{See Assessment of Former Smokers (SC-3)}

Never smoked or long-term former smoker  \rightarrow \text{Encourage patient to remain smoke-free}

\textsuperscript{a}For the purposes of this guideline, “smoking” refers to cigarette use.

\textsuperscript{b}Initial evaluation and assessment of patient smoking may be completed by any member of the health care team, including physicians, nurses, medical assistants, health educators, or other dedicated staff.

\textsuperscript{c}Smoking status should be documented in the patient health record and assessment should be repeated at every visit (less often for patients with remote smoking histories).

\textsuperscript{d}Smoking cessation should be offered to all smokers with cancer regardless of cancer prognosis. See Smoking-Associated Risks for Patients With Cancer (SC-A).
CURRENT SMOKERS (Smoked Within Last 30 Days)

EVALUATION AND ASSESSMENT

**EVALUATION**

- Assess nicotine dependency and document in patient health record:
  - How much do you smoke per day?
  - How soon do you smoke after you wake up in the morning?
  - Do you use any other type(s) of tobacco/nicotine products and if so, how much? (eg, pipes, cigars, snuff, and/or e-cigarettes)
- Document history of quit attempts in patient health record:
  - What is the longest period you have gone without smoking?
  - When was your last quit attempt?
  - Did you use anything to help you quit in the past? If so, what?
    ◊ Unaided
    ◊ Medications\(^f\) (eg, varenicline, bupropion, NRT)
    ◊ Support group
    ◊ Behavior therapy
    ◊ Quitlines, websites, smart phone applications, or other media
    ◊ E-cigarettes\(^g\)
    ◊ Other
  - Why were previous quit attempts unsuccessful? (eg, side effects, cost, continued cravings, did not work)

**MANAGEMENT**

- Establish personalized quit plan based on:
  - Patient nicotine dependency and prior quit attempts\(^h\)
  - Smoking cessation therapy options (see SC-4)
- Set quit date, preferably within 2 weeks.
- Advise patients to set quit date 2 or more weeks prior to planned surgery as continued smoking increases risk of complications.
- Discuss risk of relapse.\(^i\)

\(^e\)Physicians and members of the health care team should discuss potential risks and benefits of quitting with each patient. Readiness to quit is to be determined by both physician and patient.

\(^f\)Document type and dose of medications used during previous quit attempts.

\(^g\)There is currently insufficient evidence to support the use of electronic nicotine delivery systems (e-cigarettes) in smoking cessation for patients with cancer.

\(^h\)Adjustments to therapy length, intensity, and surveillance may be considered, as clinically indicated, for patients with high nicotine dependency and/or prior unsuccessful quit attempts.

\(^i\)Providers should discuss risk of relapse and smoking slips and provide guidance and support to encourage continued smoking cessation attempts.

\(^k\)Making an immediate quit attempt is preferred but smoking reduction may be considered with a goal of cessation. Setting a future quit date is preferred (ie. 1-3 mo).

\(^j\)See Principles of Smoking Cessation Pharmacotherapy (SC-C)

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**Clinical Trials:** NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
### FORMER SMOKERS AND RECENT QUITTERS (>30 Days Since Last Smoked)
#### EVALUATION AND ASSESSMENT

<table>
<thead>
<tr>
<th>EVALUATION</th>
<th>STATUS</th>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High risk for relapse</td>
<td>• For patients concerned about ability to maintain abstinence, suggest pharmacotherapy (ie, short-acting NRT) and behavior therapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Review smoking-associated risks and benefits of remaining abstinent from smoking (See SC-A)</td>
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<td></td>
<td></td>
<td>• Brief counseling for relapse risk factors and preventing relapse</td>
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<td></td>
<td></td>
<td>• Offer patient support resources (See SC-B)</td>
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<tr>
<td></td>
<td></td>
<td>• Refer for behavior support</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Document management and counseling plans in patient health record.</td>
</tr>
<tr>
<td></td>
<td>Low risk for relapse</td>
<td>• Reinforce success and importance of remaining abstinent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reevaluate risk of relapse at each visit</td>
</tr>
</tbody>
</table>

**If relapse:**
- See Assessment of Current Smokers (SC-2)
- Refer for smoking cessation pharmacotherapy and counseling (See SC-4)

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<table>
<thead>
<tr>
<th>Providers should discuss risk of relapse and smoking slips and provide guidance and support to encourage continued smoking cessation attempts.</th>
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**SC-3**
GENERAL APPROACH TO SMOKING CESSTION DURING CANCER TREATMENT

FIRST-LINE THERAPY

Pharmacotherapy

+ Behavior Therapy

• Combination NRT (12 wk) + individual/group therapy (4 or more sessions)

or

• Varenicline (12 wk) + individual/group therapy (4 or more sessions)

Follow-up

• Follow-up in person or by phone within 2 weeks to assess efficacy and toxicity of pharmacotherapy.

• May be done during individual/group therapy

• Assess risk for relapse of recent quitters and consider adjustments to dose and/or type of pharmacotherapy.

• Encourage continued therapy and provide support for brief slips; adjusting therapy may or may not be needed.

• Additional/close follow-up during remaining therapy.

Surveillance

Assess smoking status in person or by phone at 12 weeks, and at the end of pharmacotherapy if longer than 12 weeks.

Additional Therapy and/or Follow-Up

Smoke-free

Additional follow-up in person or by phone at 6 and 12 months

Relapse

Second-line therapy

• Varenicline + combination NRT

or

• Bupropion + combination NRT

• Continue individual/group therapy

Additional follow-up at 6 and 12 months

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k See Principles of Smoking Cessation Pharmacotherapy (SC-C).
m See Principles of Behavior Therapy (SC-D).
n Efficacy data are lacking for the use of e-cigarettes and alternative therapies (eg, hypnosis, acupuncture, nutritional supplements). Patients should be encouraged to use evidence-based cessation methods to avoid delay in achieving smoking abstinence. See SC-C (2 of 2).
o The use of marijuana, or other substances associated with smoking relapse, is discouraged for those attempting to quit smoking.

p Therapy may be extended to promote continued cessation (ie, 6 mo–1 yr) while attempting to avoid extended therapy if possible.

q Combination NRT is defined as the use of nicotine patch + short-acting NRT (gum/lozenge/inhaler/nasal spray).

r Nausea is a common side effect of varenicline and may need to be managed for patients with cancer, especially during chemotherapy.

s If prescribing varenicline or bupropion, document patient’s history of mental illness or suicidal ideation.
The 2014 Surgeon General's Report\(^1\) stated that:

- Sufficient evidence exists to support a causal relationship between smoking and adverse health outcomes, increased all-cause mortality and cancer-specific mortality, and increased risk for secondary primary cancers.
- Existing evidence is suggestive of a link between smoking and increased risk of cancer recurrence, poor treatment response, and increased treatment-related toxicity.

Providers should:

- Inform patients of the potential benefits of smoking cessation, including improved survival, treatment outcomes, and health-related quality of life, as well as decreased treatment-related toxicity, drug side effects, and surgical complications.
- Educate patients on the specific risks of smoking during treatment for their particular cancer.
- Encourage smoking cessation as far in advance as possible before initiating cancer treatment.
- Consider patient smoking status, prior to initiating treatment, when making decisions regarding treatment selection, dosage, and timing of initiation.

### Treatment-Specific Risks (see Discussion for additional information)

- Smoking can impact the metabolism of chemotherapy and targeted therapy.
  - Smoking effects on cytochrome P450 enzymes may include altered drug clearance time and plasma concentration, potentially impacting the efficacy of certain drugs for patients who smoke. Providers should consider whether patients are at risk for altered drug metabolism due to smoking and determine if medication or dose adjustments may be required. Drugs whose metabolisms are known to be affected include erlotinib and irinotecan.\(^2-4\)
- Smoking increases risk of radiation therapy (RT)-associated treatment complications during RT and may decrease treatment response.\(^5-7\)
  - Compared with nonsmokers, patients who smoke may experience decreased health-related quality of life after cancer surgery (eg, dyspnea, fatigue, pain).\(^8-10\)
  - Smoking may impair wound healing following surgery for cancer.\(^11,12\)
  - Increased infection rates, pulmonary complications, and longer postoperative hospital stays are more commonly observed in patients who smoke.\(^13\)
  - Postoperative mortality rates are higher among patients who smoke.\(^14\)

### Potential Nicotine Effects on Cancer and Cardiovascular Risks (see Discussion for additional information)

- Blood nicotine levels from NRT, including combination NRT, are significantly less than from smoking cigarettes. Therefore, providers and smokers should not be dissuaded from using NRT to foster quitting and long-term cessation. The use of combination NRT as one type of pharmacotherapy is recommended.
- There is insufficient evidence that NRT causes cancer in humans.\(^15-19\)
- While myocardial infarction has rarely been reported in NRT users, there is insufficient evidence that NRT increases the risk of myocardial infarction or cardiovascular disease.

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REFERENCES


### SMOKING CESSATION RESOURCES FOR HEALTHCARE PROVIDERS AND PATIENTS (1 of 2)

<table>
<thead>
<tr>
<th><strong>Quitlines/Online Support/Mobile Apps</strong></th>
<th><strong>American Lung Association</strong></th>
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<tbody>
<tr>
<td></td>
<td>• 1-800-LUNGUSA (1-800-586-4872)</td>
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<tr>
<td></td>
<td>National Network of Tobacco Cessation Quitlines 1-800-QUIT-NOW (1-800-784-8669)</td>
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<tr>
<td></td>
<td>National Cancer Institute (NCI)</td>
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<tr>
<td></td>
<td>• 1-877-448-7848</td>
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<td></td>
<td>• Live Help (Online Chat)- <a href="https://livehelp.cancer.gov/app/chat/chat_launch">https://livehelp.cancer.gov/app/chat/chat_launch</a></td>
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<tr>
<td></td>
<td>Smokefree.gov</td>
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<td>• SmokefreeTXT (Text messaging support)- <a href="http://smokefree.gov/smokefreetxt">http://smokefree.gov/smokefreetxt</a></td>
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<tr>
<td></td>
<td>• Smokefree Apps (for smartphones)- <a href="http://smokefree.gov/apps-quitstart">http://smokefree.gov/apps-quitstart</a></td>
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<td>TRICARE (For military service members and their families)</td>
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<td>• Quitlines: North: 1-866-459-8766; South: 1-877-414-9949; West: 1-888-713-4597</td>
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<td>Quit Tobacco: UCANQUIT2.org</td>
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<td>• Live chat with quit coach: <a href="http://www.ucanquit2.org">http://www.ucanquit2.org</a></td>
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<td>• SmokefreeMIL text message support: <a href="http://www.ucanquit2.org/en/HowToQuit/SmokefreeMIL.aspx">http://www.ucanquit2.org/en/HowToQuit/SmokefreeMIL.aspx</a></td>
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<th><strong>General Information Online</strong></th>
<th><strong>American Heart Association</strong></th>
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<td></td>
<td><a href="http://www.heart.org/HEARTORG/GettingHealthy/QuitSmoking/Quit-Smoking_UCM_001085_SubHomePage.jsp">http://www.heart.org/HEARTORG/GettingHealthy/QuitSmoking/Quit-Smoking_UCM_001085_SubHomePage.jsp</a></td>
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<td></td>
<td>American Lung Association</td>
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<td></td>
<td>Centers for Disease Control and Prevention (CDC)</td>
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<td><a href="http://www.cdc.gov/tobacco/quit_smoking/how_to_quit/resources/index.htm">http://www.cdc.gov/tobacco/quit_smoking/how_to_quit/resources/index.htm</a></td>
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<td>NCI</td>
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<td>SmokeFree.gov</td>
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<td><a href="http://smokefree.gov">http://smokefree.gov</a></td>
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<tr>
<th><strong>Smoking Cessation Programs</strong></th>
<th><strong>American Lung Association</strong></th>
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<tbody>
<tr>
<td>Ex: A New Way To Think About Quitting Smoking</td>
<td><a href="http://www.becomeanex.org/">http://www.becomeanex.org/</a></td>
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<tr>
<th><strong>Guides to Quitting</strong></th>
<th><strong>American Cancer Society (ACS)</strong></th>
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<tr>
<td></td>
<td>NCI: &quot;Clearing the Air: Quit Smoking Today&quot;</td>
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## Additional Resources for Health Professionals

<table>
<thead>
<tr>
<th>Resource</th>
<th>Website</th>
</tr>
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<tbody>
<tr>
<td>American Society of Clinical Oncology (ASCO)</td>
<td>Tobacco cessation and control resources: <a href="http://asco.org/practice-research/tobacco-cessation-and-control-resources">http://asco.org/practice-research/tobacco-cessation-and-control-resources</a></td>
</tr>
</tbody>
</table>
| Association for the Treatment of Tobacco Use and Dependence (ATTUD) | • [http://www.attud.org/](http://www.attud.org/)  
• List of ATTUD accredited training programs: [http://attudaccred.org/programs](http://attudaccred.org/programs) |

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**PRINCIPLES OF SMOKING CESSTATION PHARMACOTHERAPY (1 of 2)**

### Pharmacotherapy Options

<table>
<thead>
<tr>
<th>Category</th>
<th>Options</th>
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</table>
| First-Line     | * Combination NRT  
  ‣ Nicotine patch + short-acting NRT (lozenge/gum/inhaler/nasal spray)  
  ‣ Varenicline \(^a\) |
| Second-Line    | * Varenicline + combination NRT  
  * Bupropion + combination NRT |
| Third-Line     | * Varenicline + bupropion ± NRT  
  * Nortriptyline (tricyclic antidepressant)  
  * Clonidine (antihypertensive, alpha-2 adrenergic receptor agonist) |

### Standard Dosing Information

<table>
<thead>
<tr>
<th>Drug</th>
<th>Standard Dose[^b]</th>
<th>Duration</th>
<th>Drug Warnings and Contraindications</th>
</tr>
</thead>
</table>
| Varenicline    | • Initiate dosing 1-2 wk prior to quitting  
  • 0.5 mg orally, once daily on days 1–3  
  • 0.5 mg orally, twice daily on days 4–7  
  • 1 mg orally, twice daily from week 2–12, if tolerated |
|                | 12 weeks[^c]     |          | Providers should monitor for the development or worsening of serious neuropsychiatric issues, including those without a previous history, and discontinue use if these signs occur. See Manufacturer Black Box Warning, and weigh the substantial benefits of immediate smoking cessation versus risks of increased hostility, depression, or suicidal behavior.[^4] |
| Bupropion      | • Initiate dosing 1-2 wk prior to quitting  
  • 150 mg orally, once daily on days 1–3[^d]  
  • 150 mg orally, twice daily (300 mg daily) starting on day 4, if tolerated  
  • Maximum 300 mg per day |
|                | 7–12 weeks[^c]   |          | Providers should monitor for the development or worsening of serious neuropsychiatric issues, including those without a previous history, and discontinue use if these signs occur. See Manufacturer Black Box Warning, and weigh the substantial benefits of immediate smoking cessation versus risks of increased hostility, depression, or suicidal behavior.[^2]  
  • Contraindicated for patients with seizure risks (ie, stroke, brain metastases), those taking MOA inhibitors (increased risk of hypertensive reactions) or tamoxifen, those with closed-angle glaucoma. |
| Combination NRT| • 21 mg patch + short-acting NRT  
  • If 21 mg patch is not effective, consider increasing patch dose to 35 or 42 mg, as clinically indicated |
|                | 12 weeks[^c]     |          | Blood nicotine levels from NRT, including combination NRT, are significantly less than from smoking cigarettes. NRT is well tolerated and nicotine toxicity is rare and transient, even when used with smoking. |

[^a]: Nausea is a common side effect of varenicline and may need to be managed for patients with cancer, especially during chemotherapy.  
[^b]: Dose adjustments may be considered, if clinically indicated.  
[^c]: Therapy may be extended to promote continued cessation (ie, 6 months–1 year) while attempting to avoid longer periods of time if possible.  
[^d]: Dose adjustment for hepatic or renal insufficiency.  

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Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Side Effects of Smoking Cessation Medications:
In most circumstances the side effects related to all first-line smoking cessation medications are minimal and are considered an acceptable risk compared to smoking. Serious side effects are extremely rare. Providers should refer to manufacturer inserts for exhaustive lists of potential side effects and warnings.\(^1,^2\)

Use of E-Cigarettes and Complementary/Alternative Medicine:
- There is currently insufficient evidence to support the use of e-cigarettes in smoking cessation, because efficacy data are lacking for the use of e-cigarettes and alternative therapies (e.g., hypnosis, acupuncture, nutritional supplements) alone or in combination with standard smoking cessation methods. Therefore, the use of specific alternative therapies is not recommended.
- Patients should be encouraged to use evidence-based cessation methods to avoid delay in achieving smoking abstinence. Prior unsuccessful quit attempts with conventional therapies do not justify the use of unproven alternative cessation methods. Relapse and smoking slips are common, so repeated attempts are frequently needed.
- When considering alternative therapies, providers should counsel patients on potential interactions with evidence-based cessation methods and/or cancer treatments.


PRINCIPLES OF BEHAVIOR THERAPY (1 of 2)

- Pharmacotherapy is most effective when combined with behavior therapy. In addition to the benefits of enhancing motivation and knowledge of the addiction process, behavior therapy assists patients with medication use and strategies since adherence to tobacco treatment medication recommendations is often inadequate. More intensive therapy, with a dose-response effect, is preferred over brief advice; however, brief advice, at minimum, should be delivered.

- Counseling can be in-person and/or by phone, or within a group, and include print or web-based materials. Behavior therapy, tailored somewhat to the patient’s nicotine dependence and previous quit attempts, provides strategies for coping with nicotine withdrawal, identifying smoking triggers, coping with stressful and difficult situations in which smoking is likely, avoiding high-risk situations as well as addressing other patient specific barriers to and facilitators of smoking behavior change.

- Population-level studies of real-world effectiveness of smoking cessation treatment modalities indicate that counseling by a smoking cessation specialist plus medication results in a significant improvement in cessation rates relative to no counseling or medication (OR =3.25; CI, 2.05–5.15). Therefore, OTC medication alone, without some form of counseling may not be better than unaided cessation.

- Intensive therapy is 4 or more behavior intervention sessions (individual or group) that are each at least 10 minutes and usually 30 minutes or more in duration. They are provided by a trained tobacco treatment specialist, with skills training, social support, and motivational interviewing as interventional components.

- Brief advice of about 3 minutes by physicians or other health care providers results in a small but important increase in quit rates.

- Refer to a smoking cessation quitline, in addition to providing brief counseling from a health care provider, if face-to-face or group intervention is not available. (See SC-B)

Motivational counseling for patients unwilling to quit:

- Motivational counseling includes exploring the smoker’s feelings, beliefs, ideas and values in order to identify areas for change towards willingness to quit. Provide reasons, ideas and needs for cessation, with encouragement. It is important to be directive with a smoker, while using an empathic approach to help the smoker understand his/her reasons for smoking and build his/her confidence to quit. The four general principles to follow are: (1) express empathy, (2) develop discrepancy, (3) roll with resistance, and (4) support self-efficacy.

Behavior therapy for smoking cessation:

- Through behavior therapy, smokers are provided with problem solving skills, support and encouragement. The elements include identifying risky situations (e.g., triggers for stress, drinking alcohol, being around other smokers, triggers for urges and other cues) and develop coping skills (avoid risky situations, provide cognitive strategies, short-acting NRT). Follow the same four general principles above. Note that nicotine withdrawal symptoms typically peak within 1-2 weeks after quitting and then subside.

- In smokers with cancer, there is a high incidence of depression, anxiety, and stress, all of which are common causes of relapse. It may be optimal to enroll patients in a behavior therapy program with specific interventions designed to ameliorate these conditions and other cancer-related relapse challenges. This may require referral to specialized smoking cessation programs that have staff trained to treat mental health disorders, or referral to behavior therapists who have expertise in treating co-morbid substance dependence and mental health disorders.

- Specialized treatment centers may consider providing smoking cessation therapy targeted specifically to patients with cancer (eg, individual therapy and group support that focuses on challenges specific to cancer survival and treatment) with access to counselors or group leaders experienced in the treatment of patients with cancer.

References on next page
PRINCIPLES OF BEHAVIOR THERAPY (2 of 2)

REFERENCES


Discussion

NCCN Categories of Evidence and Consensus

**Category 1**: Based upon high-level evidence, there is uniform NCCN consensus that the intervention is appropriate.

**Category 2A**: Based upon lower-level evidence, there is uniform NCCN consensus that the intervention is appropriate.

**Category 2B**: Based upon lower-level evidence, there is NCCN consensus that the intervention is appropriate.

**Category 3**: Based upon any level of evidence, there is major NCCN disagreement that the intervention is appropriate.

All recommendations are category 2A unless otherwise noted.