Smoking Cessation in the Thoracic Surgery Patient

Hilary W. Crittenden, MSN, RN, FNP-C, CTTS
Division of Thoracic Surgery
Duke University Health System
Durham, North Carolina
Disclosures:

I have no conflicts of interest and no disclosures.
Objectives

• Describe the correlation between smoking and post-operative complications in the thoracic surgery patient
• Discuss the benefits of pre-operative smoking cessation counseling in the thoracic surgical oncology clinic setting
• Review the current FDA-approved medications for smoking cessation and their guidelines for use
Case study: 75 yo Philip Morris

- Biopsy-proven NSCLC
- >50 pack years
- No desire to quit when we first meet
Smoking after a lung cancer diagnosis:

• Continued tobacco use compromises the effectiveness and increases the complication rates of three primary cancer treatments: surgery, chemotherapy and radiotherapy.

• In patients undergoing surgery, continued cigarette smoking is associated with slower wound healing, higher surgical site infection rates and prolonged hospitalization.
Smoking after a lung cancer diagnosis

• Components of tobacco smoke significantly impact clearance and delivery of many cytotoxic agents, resulting in their decreased efficacy and higher toxicity.

• Compared to former smokers and patients who stopped smoking before starting treatment, current smokers have lower response rates to radiation therapy and acerbated radiation side effects, such as oral mucositis, weight loss and fatigue.

Smoking after a lung cancer diagnosis

• Smoking after a cancer diagnosis results in higher risk of developing secondary cancers, poorer general health and increased all cause mortality.

• Overall, patients who continue to smoke after cancer diagnosis almost double their risk of dying, compared to those who quit.

Jassem, J: Smoking after diagnosis of cancer. IASLC presentation 10/2017
Smoking and increased risk of post-operative complications
Post-operative pulmonary complications

Risk factors include:
• Age
• Pulmonary function
• Cardiovascular comorbidities
• Smoking status
• Chronic obstructive pulmonary disease
Preoperative smoking associated with increased risk of post-op:

- General morbidity
- Wound complications
- General infections
- Pulmonary complications
- Neurological complications
- Admissions to the intensive care unit

Operating on Patients Who Smoke: A Survey of Thoracic Surgeons in the United States

Katy A. Marino, MD, Melissa A. Little, PhD, MPH, Zoran Bursac, PhD, MPH, Jennifer L. Sullivan, MD, Robert Klesges, PhD, MS, and Benny Weksler, MBA, MD

Department of Surgery, Division of Thoracic Surgery, and Department of Preventive Medicine, Center for Population Sciences, University of Tennessee Health Science Center, Memphis, Tennessee

Background. Although preoperative smoking is associated with increased postoperative complications in patients who undergo major thoracic surgical procedures, there are no national guidelines that address the patient’s preoperative tobacco use. This study examined the typical preoperative management of thoracic surgical patients who are smokers.

Methods. The link to an anonymous survey was emailed to cardiothoracic surgeons in the United States. The survey included questions regarding the likelihood of a surgeon to offer surgery and strategies used to assist

strategy offered to smokers was pharmacologic intervention (77%, 122 of 158). Nearly half of the surgeons (47%, 74 of 156) would not perform certain operations in a patient who was a current smoker, but only 14% (10 of 74) tested patients preoperatively for smoking. Thoracic surgeons (odds ratio 2.1, p = 0.0379) and surgeons in academic practice (odds ratio 1.9, p = 0.057) were more likely to deny certain surgeries to current smokers. Two thirds of the surgeons (66%, 48 of 74) thought that the ideal wait time from smoking cessation to surgery was 2 to 4 weeks.
Smoking and timing of cessation on postoperative pulmonary complications after curative-intent lung cancer surgery

Journal of Cardiothoracic Surgery 2017 12:52
Published on: 19 June 2017
And yet, studies show that……

50-83% of cancer patients continue to smoke after diagnosis

Duffy et al, Community Oncology 2012
Quitting before thoracic surgery

• When is the best time?
• Is there risk in quitting too close to surgery?

Myers et al, JAMA Internal Medicine, 2011
• There is decrease in risk of post-op pulmonary complications with increasing time since cessation.
• At least four weeks is desired
• Abstinence of >10 weeks showed complication rates similar to those in patients who had never smoked.
• ALL patients should be advised to stop smoking before undergoing lung surgery.

- The perioperative period offers a genuine opportunity for smoking cessation.

- Preoperative smoking cessation should be routinely recommended independently of the timing of the intervention, even though the benefits increase in proportion with the length of cessation.

We can make a difference!

• Smokers listen to their health care providers.

• Even brief advice increase the chances that your patient will try to quit and be successful.

• One quarter of adult smokers said their health care provider never advised them to quit.

Hughes, J.R. Journal of General Internal Medicine, 2003
Perhaps more than anyone, WE have a teachable moment....... 

...greatest success is achieved among cancer patients who are offered cessation treatments immediately after their diagnosis. The longer the lapse between diagnosis and initiation of a cessation program the lower likelihood of success......

Duffy et al, Community Oncology, 2012
So how do we do this?
Behavioral therapy:

- Health provider advice and counseling
- Tailored self-help materials
- Telephone counseling
- Smoking cessation clinics
Make it specific to YOUR lung cancer patient

The immediate benefits:

• Improved oxygenation
• Lowered blood pressure
• Improved smell/taste = appetite
• Improved circulation and breathing
• Increased energy
• Improved immune response

Sanderson Cox et al, Journal of Clinical Oncology, 2002
Cataldo et al, Oncology, 2010
The long term benefits:

• Decreased risk of recurrent or secondary tumor
• Increased survival time
• Decreased post-operative complications
• Improved response to chemotherapy and radiation therapy
• Improved quality of life

Sanderson Cox et al, Journal of Clinical Oncology, 2002
Cataldo et al, Oncology, 2010
1-800-Quit-Now

Quit-lines:
• Effective and evidence-based
• Produce higher quit rates than with counseling alone
• Rates even higher when combined with meds
• Cost-effective when compared to other common disease prevention interventions
• Available in all 50 states

USPSTF 2015 Update on Tobacco Cessation in Adults: Behavioral and Pharmacotherapy Interventions
Centers for Disease Control and Prevention Fact Sheet: Quitline FAQs for Health Care Providers, updated 12/2017
Back to our patient……..

• Review link between smoking and lung cancer
• Explain benefits of quitting before surgery
• Advise patient to quit now
• Surgery scheduled in three weeks
In addition to counseling...
Pharmacotherapy

FDA approved medications for tobacco dependence:

- Nicotine replacement therapy
  - long and short acting
- Bupropion
- Varenicline

USPSTF Treating Tobacco Use and Dependence: Clinical practice Guidelines update 2015
UpToDate Pharmacotherapy for smoking cessation in adults: Summary and Recommendations
Nicotine Replacement

Long acting:
• Patch

Short acting:
• Gum
• Lozenge
• Inhaler — prescription required
• Nasal spray — prescription required
## Nicotine patch: dosing

<table>
<thead>
<tr>
<th>Smoking Rate</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10 cpd</td>
<td>7-14 mg/d</td>
</tr>
<tr>
<td>10-20 cpd</td>
<td>14-21 mg/d</td>
</tr>
<tr>
<td>21-40 cpd</td>
<td>21-42 mg/d</td>
</tr>
<tr>
<td>&gt;40 cpd</td>
<td>42+ mg/d</td>
</tr>
</tbody>
</table>
Nicotine patch: dosing schedule

• Use the starting dose for 4-6 weeks
• Taper in 7-14 mg steps every 2-6 weeks
• Length of therapy varies based on patient response
• Withdrawal symptoms while tapering are usually mild if they exist at all
• Stay in contact with your patients to assess their response and assist with taper
Nicotine patch: duration of use

• At least 3 months
• Longer is better
Combination NRT:

• Preferred over long acting or immediate release alone
• Nicotine replacement patches: steady state absorption
• Gum, lozenges, inhalers: use for cravings
• Longer duration (>8-10 weeks) of therapy may lead to improved smoking cessation rates

Cahill et al, JAMA, 2014
Immediate-release NRT:

Nicotine gum, lozenge, and inhaler
- Absorbed through the buccal mucosa
- Affected by pH (avoid soft drinks)
- Technique is important with gum/lozenges
- Peak absorption in 15-20 minutes
- No prescription necessary for gum and lozenges

USPSTF Treating Tobacco Use and Dependence: Clinical practice Guidelines update 2015
UpToDate Pharmacotherapy for smoking cessation in adults: Summary and Recommendations
Immediate-release NRT:

Nicotine inhaler:

• Requires a prescription
• Smokers instructed to puff on the inhaler - "don't inhale into the lungs"
• Recommended use is six to 16 cartridges a day for six to 12 weeks
Immediate-release NRT

Nicotine nasal spray:
• Requires a prescription
• Absorbed through nasal mucosa
• Recommended use is one spray each nostril 1-2 times per hour for ~3-6 months
• Side effects include nasal, sinus and throat irritation, watery eyes, sneezing, and coughing

USPSTF Treating Tobacco Use and Dependence: Clinical practice Guidelines update 2015
UpToDate Pharmacotherapy for smoking cessation in adults: Summary and Recommendations
Bupropion

• Also known as Wellbutrin and Zyban, extended release form is bupropion is approved for smoking cessation
• Compared to placebo, bupropion increased the likelihood of smoking cessation.
• OK to take with SSRI's (often encountered)

UpToDate Pharmacotherapy for smoking cessation in adults: Summary and Recommendations
Bupropion: dosing

• Set target quit date one week from start of medication
• Start with 150 mg daily for 3 days and increase to 150 mg b.i.d. with at least 8 hours between doses
• Evening dose before 6 pm to avoid insomnia
• Treat for at least 8-12 weeks
• Severe liver disease requires dose adjustment
Bupropion: side effects

• Headache
• Insomnia
• Dry mouth
• Anxiety/agitation
• Decreased seizure threshold
Varenicline

• Targets the nicotinic acetylcholine receptor in a unique fashion
• As an agonist it stimulates the receptor to decrease cravings and withdrawal symptoms
• As an antagonist, it blocks the receptor to decrease the reinforcement associated with smoking
Varenicline: dosing

• Smokers are instructed to quit one week after starting varenicline to achieve stable blood levels.

• Prescribe a **starter pack**: 0.5 mg once daily for three days, then 0.5 mg twice daily for four days, followed by 1 mg twice daily for the remainder one month.

• Prescribe an additional two months of maintenance dosing (1 mg b.i.d) for a 12 week course.
Varenicline: dosing (continued)

• Patients who have successfully quit at 12 weeks can be continued on varenicline for an additional 12 weeks.
• Excreted by the kidney; requires dose reduction in smokers with moderate renal insufficiency.
Varenicline: side effects

- Nausea
- Insomnia
- Abnormal or "vivid" dreams
- Headache
- Other GI effects
Varenicline: warning

WARNING: SERIOUS PSYCHIATRIC EVENTS
See full prescribing information for complete warning.

- Serious and potentially life-threatening psychiatric events have been reported in patients taking CHANTIX. (5.1)
- Advise patients and caregivers that the patient should stop taking CHANTIX and contact their healthcare provider immediately if agitation, hostility, depression, aggressive behavior, or thoughts of suicide are new, worse, or persistent, or if the patient is not responding to CHANTIX. (5.1)
- Patients and caregivers should be aware of the risk of suicide during smoking cessation treatment and for up to one year after discontinuing CHANTIX. (5.1)
- When weighing the risks of CHANTIX against benefits of its use, CHANTIX has demonstrated to increase the likelihood of abstaining from smoking for at least one year compared to treatment with placebo. The health benefits of quitting smoking are immediate and substantial. (5.2)
Pharmacological Treatments for Smoking Cessation

Kate Cahill, BA1,2; Sarah Stevens, MSc1; Tim Lancaster, MBBS, FRCGP1,2

[+] Author Affiliations


ABSTRACT

Clinical Question  Among the 3 first-line smoking cessation treatments (nicotine replacement therapy [NRT], bupropion, and varenicline), which is most effective in helping people who smoke achieve and maintain abstinence from smoking for at least 6 months, and what serious adverse events are associated with each?

Bottom Line  Higher rates of smoking cessation were associated with NRT (17.6%) and bupropion (19.1%) compared with placebo (10.6%). Varenicline (27.6%) and combination NRT (31.5%) (eg, patch plus inhaler) were most effective for achieving smoking cessation. None of the therapies was associated with an increased rate of serious adverse events.
And research is ongoing...

Effects of Nicotine Patch vs Varenicline vs Combination Nicotine Replacement Therapy on Smoking Cessation at 26 Weeks
A Randomized Clinical Trial

Timothy B. Baker, PhD; Megan E. Piper, PhD; James H. Stein, MD; Stevens S. Smith, PhD; Daniel M. Bolt, PhD; David L. Fraser, MS; Michael C. Fiore, MD, MPH, MBA

<table>
<thead>
<tr>
<th>CHARLIE TABLE</th>
<th>Relative Risk</th>
<th>Abstinence Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varenicline</td>
<td>RR = 2.43</td>
<td>24%</td>
</tr>
<tr>
<td>Patch + Immediate Release Nicotine</td>
<td>RR = 2.33</td>
<td>23%</td>
</tr>
<tr>
<td>Nicotine Patch</td>
<td>RR = 1.75</td>
<td>18%</td>
</tr>
<tr>
<td>Nicotine Gum</td>
<td>RR = 1.59</td>
<td>16%</td>
</tr>
<tr>
<td>Nicotine Lozenge</td>
<td>RR = 1.59</td>
<td>16%</td>
</tr>
<tr>
<td>Nicotine Inhaler</td>
<td>RR = 1.82</td>
<td>18%</td>
</tr>
<tr>
<td>Nicotine Nasal Spray</td>
<td>RR = 1.93</td>
<td>19%</td>
</tr>
<tr>
<td>Bupropion</td>
<td>RR = 1.71</td>
<td>17%</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>RR = 1.71</td>
<td>17%</td>
</tr>
<tr>
<td>Clonidine</td>
<td>RR = 1.74</td>
<td>17%</td>
</tr>
</tbody>
</table>

Davis, J. Perioperative Smoking Cessation: Evidence Based Perioperative Medicine 2018
A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy


February 14, 2019
Electronic cigarettes for smoking cessation?
What happened to our patient?
Success for Mr. Morris…..

• Doing well on varenicline and nicotine lozenges
• Quit smoking when we saw him initially
• Referred to the Smoking Cessation Clinic: appt to coincide with post-op visit
• Tobacco-free one year later
• Wife quit smoking too!
In summary...

• Cigarette smoking is responsible for >80% of lung cancer deaths and puts our thoracic surgery patients at increased risk for post-op complications

• It is our responsibility to ask *every patient* if they smoke, advise them to quit, and help them achieve lasting tobacco cessation

• We have the unique opportunity to provide help to our patients when they need it most
The real reason dinosaurs became extinct
References


References


16. Centers for Disease Control and Prevention Fact Sheet: Quitline FAQs for Health Care Providers, updated 12/2017

17. UpToDate Pharmacotherapy for smoking cessation in adults: Summary and Recommendations


References


