Tobacco Dependence Treatment in Surgical Patients

David O. Warner, M.D.
Learning Objectives

• Describe the benefits of abstinence from cigarette smoking to surgical outcomes
• Debunk putative barriers to providing tobacco use interventions to surgical patients
• Describe effective strategies to help surgical patients quit
Another day in the pre-op clinic.....

• You evaluate a 65-year old 3 days prior to elective hip replacement
• He has smoked for 50 years and has moderate COPD
• He has tried to quit smoking several times before without success
What should you do about your patient’s smoking?

A. Don’t discuss it as it will upset him
B. Advise him to continue smoking because quitting now will increase his risk of pulmonary complications
C. Advise him that he stop smoking for as long as possible before and after surgery and get him help to do so
D. Postpone the case until he quits smoking
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Why Intervene in the Surgical Patient?

- Smoking Cessation Improves Surgical Outcomes
- Surgery May Promote Smoking Cessation
Cigarette Smoking Increases Perioperative Complications

- Cardiovascular Complications
- Respiratory Complications
- Wound-related Complications
Preoperative smoking and postoperative complications
(Meta-analysis of 107 studies)

• Increase in general morbidity
  • RR 1.52 95% CI: 1.33 – 1.74

• Wound complications
  • RR 2.15, 95% CI: 1.87-2.49

• Pulmonary complications
  • RR 1.73 95% CI: 1.35 – 2.23

• Admission to intensive care
  • RR 1.60 95% CI: 1.14 – 2.25

Cardiovascular Effects of Smoking

• Promotion of atherosclerosis
• Acute effects detrimental to the heart
  ◆ Produces a hypercoagulable state
  ◆ Causes catecholamine release
  ◆ Reduces the capacity of the blood to carry oxygen
• Role of nicotine, CO, and other components of cigarette smoke
Short-term Cardiovascular Benefits of Smoking Cessation

• Nicotine
  - half life of ~1 hour
  - decreases in heart rate and systolic blood pressure within 12 hours

• Carbon monoxide
  - half life of ~4 hours
  - carboxyhemoglobin level near normal at 12 hours

• Net effect is an improvement in exercise capacity within 12 hours of cessation
Respiratory Effects of Smoking

• Primary risk factor for chronic obstructive pulmonary disease
• Decreased mucociliary transport
• Airway hyperreactivity
• Impaired pulmonary immune function
Effects of Smoking on Wound and Bone Healing

- Decreased tissue perfusion, leading to decreased tissue oxygenation
- Impairment of neutrophil function
- Possible effects on fibroblast and osteoblast function
Smoking Cessation Reduces Wound Infections

<table>
<thead>
<tr>
<th></th>
<th>Infection</th>
<th>Dehiscence</th>
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<tbody>
<tr>
<td>Continued Smokers</td>
<td>30%</td>
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</tr>
<tr>
<td>Abstinent Smokers</td>
<td>5%</td>
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- 48 smokers, 30 never-smokers
- Standardized wounds
- Smokers randomized to continued smoking or abstinence

Smoking Cessation Reduces Postoperative Complications

- 120 Orthopedic patient randomized to tobacco intervention or control, 6-8 weeks prior to surgery
- ~80% of intervention patients were able to quit or reduce smoking

Moller, Lancet 359:114, 2002
Postoperative Abstinence Reduces Complications

- 105 patients post fracture surgery randomized to tobacco intervention (including follow-up) or control (advice only)
- 50% and 17% of intervention and control patients abstinent at 2 weeks

Nåsell et al, J Bone Joint Surge 92:1335, 2010
Smoking Cessation Reduces Postoperative Complications

- American College of Surgeons National Surgical Quality Improvement Program (NQISP) database
- 607,558 adult patients undergoing major surgery 2008-2009
  - 125,192 (20.6%) current smokers
  - 78,763 (13.%) past (>1 year quit) smokers
- Examined whether results could be explained by smoking-related comorbidities

<table>
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<th>Event Type</th>
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<th>Model 2: Smoking-related Dx Adjusted OR*</th>
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Musallam et al, JAMA Surg, Online June 19, 2013
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*Effects on mortality seen with <10 pack-years exposure*

Musallam et al, JAMA Surg, Online June 19, 2013
Surgical costs of smokers

- Adjusted costs after discharge higher in both current and former smokers
- Associated with more ED visits, more hospitalizations, longer length-of-stay

Estimated to add ~$17B to annual US healthcare costs

Why Intervene in the Surgical Patient?

- Smoking Cessation Improves Surgical Outcomes
- Surgery May Promote Smoking Cessation
Surgery Promotes Smoking Abstinence

• Opportunity to intervene
  ◆ contact with healthcare system
  ◆ forced abstinence if in smoke-free hospitals

• Major medical interventions improve quit rates
  ◆ Occurs even in the absence of tobacco interventions
  ◆ May also improve the effectiveness of tobacco interventions
Smoking Cessation After Surgery

- 5,498 US smokers > 50 yrs, longitudinal survey
- Approximately 1 in 12 quit events in older US smokers associated with these surgical procedures

8-10 million smokers undergo surgery annually in the US

Shi and Warner, Anesthesiology 112:102, 2010
Which of the following is true?

A. Nicotine replacement therapy is dangerous
B. Quitting just before surgery increases pulmonary complications
C. Quitting will increase psychological stress
D. Patients don’t want to hear about their smoking – they have enough to worry about
E. None of the above
Which of the following is true?

A. Nicotine replacement therapy is dangerous
B. Quitting just before surgery increases pulmonary complications
C. Quitting will increase psychological stress
D. Patients don’t want to hear about their smoking – they have enough to worry about
E. None of the above
Nicotine Replacement Therapy and Wound Healing

- 48 smokers randomized to continuous smoking or abstinence, with or without nicotine replacement
- Standardized wounds over a 12 week period

These studies all included nicotine replacement in the intervention arm.
Cough following smoking cessation

- 112 completed at least one assessment; 45 abstinent > 1 week
- Upper 95% CI was < 10% for agreement with any item that changes in cough posed barrier to abstinence

Warner et al, Nic Tob Res. 9: 11, 2007
Meta-analysis of pulmonary complications in recent quitters

Myers et al, Arch Int Med 2011
Stress and Nicotine Withdrawal in Smokers After Surgery

- Subjects recruited from Preoperative Evaluation Center, both cigarette smokers (N=141) and non-smokers (N=150)
- Perceived Stress Score measured up to 1 week postoperatively

Warner et al, Anesthesiology 100:1125, 2004
Smokers expect us to talk about how their smoking affects surgery

• Essentially all smokers are aware of general health hazards
  ♦ Most are not aware of how it might affect their surgery – and want to know!
• They want information and options
• Almost all will not be offended if you discuss their smoking…
• But they do not want a sermon
• “Temporary” abstinence attractive to many

Barriers to Perioperative Smoking Cessation

- Nicotine replacement therapy is dangerous
- Quitting just before surgery increases pulmonary complications
- Quitting will increase stress
- Patients don't want to hear about their smoking - they have enough to worry about
Currently surgical clinicians do not consistently help their patients quit....

- Survey responses from 329 anesthesiologists and 299 general surgeons
- Proportions that “always” performed intervention
- Actual patient perceptions may differ (e.g., ~30% of patients recall being advised)

We can make a difference...

- 2606 smokers undergoing vascular proc. at 10 centers
- Quit rates at 1 year, adjusted for patient factors and proc.
- Rates higher with more invasive procedures
- Rates higher for surgeons who offered help (48% vs. 33%)

The Real Barriers to Intervention

“I don’t know how”

“I don’t have time”

“It’s not my job”
What should surgical clinicians do for smokers who need surgery?

- **ASK** - assess tobacco use at every visit
- **ADVISE** - strongly urge all tobacco users to quit
- **REFER** – To a tobacco quitline or other resources
ASK every patient about tobacco use

• Ask even if you already know the answer
  ✷ Reinforces message that you as a provider think that their tobacco use is significant
ADVISE all smoker to quit

• Why quit for surgery? – Talking points….
   Quit for as long as possible before and after surgery
    • Day of surgery especially important – “fast” from both food and cigarettes
   Benefits of quitting to wound healing, heart and lungs
   Great opportunity to quit for good
    • Many people don’t have cravings
    • Need to be smoke free in the hospital anyway
REFER smokers to quitlines or other resources

• What are quitlines? – talking points
  ✦ Quitlines are free
  ✦ Talk with a specialist, not a recording
  ✦ Free stop smoking medications may be available
  ✦ Can call anytime, even after surgery
  ✦ Can help you stay off cigarettes even if you have already quit

• Can also use proactive fax referral

• 1-800-QUITNOW
“Quitcard”

Be Smoke-Free for Surgery

1-800 QUIT-NOW
(1-800-784-8669)

Talk to an Expert
Free · Effective · Confidential

For more information, visit
www.asahq.org/stopsmoking

MAYO CLINIC
Increasing quitline utilization by surgical patients

- 300 smokers in preop clinic randomized to quitline facilitation or brief 5As (~3min)
- Included patients not motivated to quit
- 38% of quitline users abstinent at 90 days (vs. 24% of non-users, P=0.16)

Warner et al, Anesthesiology 114:846, 2011
Practical Tobacco Interventions Work

- 168 smokers in preop clinic randomized to intervention or control > 3 wks before surgery
- Brief (<5 min) nurse counseling, brochures, quitline referral, 6 wks of free NRT
- 50% connected with quitline, 40% had multiple sessions
- Decreased PACU discharge time (S), postop complications 6.4% → 2.5% (NS)

**Decision Aid for Surgical Smoking**

**Quit for good.**

Reasons you might choose to quit for good:
- Most people are free from cigarette smoke around the time of surgery.
- Hospitals are smoke-free, which gives you a good start on breaking the habit.
- You are more likely to succeed if you try to quit for surgery compared with quitting at other times.

If you have thought about quitting for good, there is no better time than now that you are having surgery.

**Quit for a bit.**

Reasons you might choose to quit smoking around the time of surgery:
- Stopping smoking around the time of surgery can help you have the best possible results from your surgery and can help you recover faster.
- There are many benefits to quitting smoking.
- Quitting smoking can also help you feel and look better.

**Continue to smoke.**

Reasons you might choose not to quit:
- It can be difficult to quit, even for a short time.
- You may need to smoke to relax and not want to give this up at a time when you may be stressed.
- You may be worried that nicotine withdrawal may be a problem at a time when you are trying to recover from your surgery.
- You have too many other things to worry about at this time.

You may choose not to change your smoking habits at this time, but remember that you cannot smoke while you are in the hospital for your surgery.

**Smoking and Surgery: Your Choices**

You need to make a decision about how to handle smoking around the time of your surgery. Here is information to help you make that decision.

**READ** both sides of these cards

**CONSIDER** which is right for you

**CHOOSE** one

**GIVE** that card to your doctor
Perioperative Smoking Cessation Quality Measure

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<th>Clinical Performance Measure</th>
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**Numerator:**
Patients as defined in the Denominator who are identified as current cigarette smokers **and** who abstained from smoking prior to anesthesia on the day of surgery or procedure. Abstinence may be defined by either patient self-report or an exhaled carbon monoxide level of < 10 ppm.

**Denominator:**
All patients aged 18 years and older who are evaluated in preparation for elective surgical, diagnostic, or pain procedure in settings that include routine screening for smoking status with instruction to abstain from smoking on the day of surgery or procedure.

**Measure:** The percentage of current cigarette smokers who abstain from smoking prior to anesthesia on the day of elective surgery or procedure

- Approved by ASA House of Delegates in Oct. 2014
CMS Reimbursement for Tobacco Interventions

• Who is covered?
  - Patients who use tobacco and have a disease or adverse health effect found by the US Surgeon General to be linked to tobacco use

• HCPCS Codes
  - G0375 Smoking and tobacco-use cessation counseling visit; intermediate, > 3 minutes up to 10 minutes
  - G0376 Smoking and tobacco-use cessation visit; intensive, > 10 minutes
How about children?

- Secondhand smoke (SHS) kills >50,000 Americans annually
- About 20% of children in the US live in a household with a smoker
  - 53% of children aged 3-11 exposed in 2007-8
- Increases risks for allergies, asthma, ear infections, SIDS, and other conditions
  - e.g., estimated to cause ~300,000 cases of bronchitis/pneumonia annually in children < 18 months
- Also increases perioperative risk
Secondhand Smoke and Perioperative Respiratory Complications in Children

- 499 children (1 m/o to 12 y/o), halothane induction
- Complications included coughing, desaturation, laryngospasm, breath holding
- Risk highest for females with less-educated mothers

Skolnick et al, Anesthesiology 88:1144, 1998
Patient education materials to reduce perioperative secondhand smoke exposure

(MC6823)
Bottom Line...

• There are short- and long-term benefits to perioperative abstinence
• Perceived barriers among patients and providers may need to be addressed
• Use the ASA website as a resource

http://www.asahq.org/stopsmoking  Join the listserv!
$8.37\ B \text{ spent by Big Tobacco in 2011 to target Helena, vs...}$

$641\ M \text{ spent by government (from $244\ B \text{ total tobacco revenue}) in 2011 to protect her...}$