



**TITLE:** Smoking Cessation Prior to Surgery: Clinical Evidence

**DATE:** 21 July 2014

## **RESEARCH QUESTION**

What is the clinical evidence regarding postoperative outcomes of patients who stop smoking two or more weeks prior to surgery versus current smokers or those who stop smoking less than two weeks prior to surgery?

## **KEY FINDINGS**

Three systematic reviews and two non-randomized studies were identified regarding postoperative outcomes of patients who stop smoking two or more weeks prior to surgery versus current smokers or those who stop smoking less than two weeks prior to surgery.

## **METHODS**

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 7), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. The search was also limited to English language documents published between January 1, 2009 and July 9, 2014. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

## **RESULTS**

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

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Three systematic reviews and two non-randomized studies were identified regarding postoperative outcomes of patients who stop smoking two or more weeks prior to surgery versus current smokers or those who stop smoking less than two weeks prior to surgery. No relevant health technology assessments, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

## OVERALL SUMMARY OF FINDINGS

Three systematic reviews<sup>1-3</sup> and two non-randomized studies<sup>4,5</sup> were identified that evaluated the effects of pre-operative smoking cessation at least two weeks before surgery on postoperative complications.

The results of two systematic reviews<sup>1,2</sup> and one non-randomized study<sup>5</sup> showed that, compared with current smokers, patients who stopped smoking prior to surgery had a lower risk of postoperative complications, including: wound-healing complications,<sup>1</sup> respiratory complications,<sup>1,5</sup> overall complications,<sup>2</sup> and in-hospital death.<sup>5</sup> Longer pre-operative smoking cessation periods reduced the incidence<sup>2</sup> and risk<sup>5</sup> of postoperative complications. Patients who stopped smoking at least three to four weeks prior to surgery had a lower risk of wound-healing complications relative to current smokers.<sup>1</sup> The largest effect in risk reduction of overall<sup>2</sup> and respiratory<sup>1</sup> complications was seen in studies where pre-operative smoking cessation had lasted at least four weeks. The authors of one study<sup>5</sup> could not specify an ideal length of time for pre-operative smoking cessation, but concluded that patients should be advised to stop smoking at any time before surgery.

One systematic review<sup>3</sup> and one non-randomized study<sup>4</sup> found that there was no difference in the postoperative complication rate between current smokers and those who stopped smoking within eight weeks<sup>3</sup> or at any time<sup>4</sup> prior to surgery. The authors concluded that the window of time available for pre-operative smoking cessation should not deter health professionals from encouraging patients to stop smoking<sup>3</sup> or from proceeding with surgery.<sup>4</sup>

## REFERENCES SUMMARIZED

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

1. Wong J, Lam DP, Abrishami A, Chan MT, Chung F. Short-term preoperative smoking cessation and postoperative complications: a systematic review and meta-analysis. *Can J Anaesth*. 2012 Mar;59(3):268-79.  
[PubMed: PM22187226](#)
2. Mills E, Eyawo O, Lockhart I, Kelly S, Wu P, Ebbert JO. Smoking cessation reduces postoperative complications: a systematic review and meta-analysis. *Am J Med*. 2011 Feb;124(2):144-54.  
[PubMed: PM21295194](#)
3. Myers K, Hajek P, Hinds C, McRobbie H. Stopping smoking shortly before surgery and postoperative complications: a systematic review and meta-analysis. *Arch Intern Med*. 2011 Jun 13;171(11):983-9.  
[PubMed: PM21403009](#)

### Randomized Controlled Trials

No literature identified.

### Non-Randomized Studies

4. Groth SS, Whitson BA, Kuskowski MA, Holmstrom AM, Rubins JB, Kelly RF. Impact of preoperative smoking status on postoperative complication rates and pulmonary function test results 1-year following pulmonary resection for non-small cell lung cancer. *Lung Cancer*. 2009 Jun;64(3):352-7.  
[PubMed: PM19019489](#)
5. Mason DP, Subramanian S, Nowicki ER, Grab JD, Murthy SC, Rice TW, et al. Impact of smoking cessation before resection of lung cancer: a Society of Thoracic Surgeons General Thoracic Surgery Database study. *Ann Thorac Surg*. 2009 Aug;88(2):362-70.  
[PubMed: PM19632374](#)

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## APPENDIX – FURTHER INFORMATION:

### Systematic Reviews and Meta-analyses

#### *Unclear or Alternate Timing or Methods of Smoking Cessation*

6. Thomsen T, Villebro N, Moller AM. Interventions for preoperative smoking cessation. *Cochrane Database Syst Rev.* 2014;3:CD002294.  
[PubMed: PM24671929](#)
7. Thomsen T, Villebro N, Moller AM. Interventions for preoperative smoking cessation. *Cochrane Database Syst Rev.* 2010;(7):CD002294.  
[PubMed: PM20614429](#)
8. Thomsen T, Tonnesen H, Moller AM. Effect of preoperative smoking cessation interventions on postoperative complications and smoking cessation. *Br J Surg.* 2009 May;96(5):451-61.  
[PubMed: PM19358172](#)

### Randomized Controlled Trials

#### *Unclear Timing of Smoking Cessation*

9. Thomsen T, Tonnesen H, Okholm M, Kroman N, Maibom A, Sauerberg ML, et al. Brief smoking cessation intervention in relation to breast cancer surgery: a randomized controlled trial. *Nicotine Tob Res.* 2010 Nov;12(11):1118-24.  
[PubMed: PM20855414](#)

### Non-Randomized Studies – Qualitative Studies

10. Balduyck B, Sardari NP, Cogen A, Dockx Y, Lauwers P, Hendriks J, et al. The effect of smoking cessation on quality of life after lung cancer surgery. *Eur J Cardiothorac Surg.* 2011 Dec;40(6):1432-7.  
[PubMed: PM21498082](#)

### Review Articles

11. Truntzer J, Vopat B, Feldstein M, Matityahu A. Smoking cessation and bone healing: optimal cessation timing. *Eur J Orthop Surg Traumatol.* 2014 May 31.  
[PubMed: PM24879610](#)
12. Rinker B. The evils of nicotine: an evidence-based guide to smoking and plastic surgery. *Ann Plast Surg.* 2013 May;70(5):599-605.  
[PubMed: PM23542839](#)
13. de Hoyos A, Southard C, DeCamp MM. Perioperative smoking cessation. *Thorac Surg Clin.* 2012 Feb;22(1):1-12.  
[PubMed: PM22108683](#)

14. Zaman M, Bilal H, Mahmood S, Tang A. Does getting smokers to stop smoking before lung resections reduce their risk? *Interact Cardiovasc Thorac Surg* [Internet]. 2012 Mar [cited 2014 Jul 17];14(3):320-3. Available from:  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3290360>  
[PubMed: PM22159264](#)
15. Gourgiotis S, Aloizos S, Aravosita P, Mystakelli C, Isaia EC, Gakis C, et al. The effects of tobacco smoking on the incidence and risk of intraoperative and postoperative complications in adults. *Surgeon*. 2011 Aug;9(4):225-32.  
[PubMed: PM21672663](#)
16. Shi Y, Warner DO. Brief preoperative smoking abstinence: is there a dilemma? *Anesth Analg*. 2011 Dec;113(6):1348-51.  
[PubMed: PM21965356](#)
17. Cavichio BV, Pompeo DA, Serra Alves de Oliveira Oller GA, Rossi LA. Duration of smoking cessation for the prevention of surgical wound healing complications. *Rev Esc Enferm USP* [Internet]. 2014 [cited 2014 Jul 17]; 48(1): 170-176. Available from:  
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