



Appendix 3 - Guideline on smoking as related to the perioperative period

Short title: Perioperative smoking

1. Purpose

The purpose of this guideline is to advocate for smoking cessation and advise on measures to be considered, as well as optimisation of timing in the perioperative context.

2. Scope

This appendix is intended to apply to cigarette smoking and electronic cigarette use.

The following information has been compiled for use by anaesthetists, perioperative medicine specialists, and specialist pain medicine physicians. However, it is likely to be of benefit to the community.

3. Background

Tobacco use is a major global health problem and the single greatest preventable cause of death and disease in Australia and New Zealand¹. Smokers are at increased risk of perioperative respiratory, cardiac and wound-related complications, and quitting smoking may reduce the risk of complications².

The use of electronic cigarettes (hereafter known as e-cigarettes), the act of which is known as vaping, has increased markedly in recent years. Many tobacco smokers have used the devices to help quit. However, there has been a worldwide surge in the use of e-cigarettes by non-smokers.

ANZCA is committed to its health advocacy role and recognises that the perioperative period represents a “teachable moment” when many smokers quit or attempt to quit smoking, sometimes permanently^{3,4}. The opportunity for clinicians to actively participate in this phase should be seized, and patients should be informed about the adverse health effects of vaping, the current regulatory approaches and be instructed on the means available to quit smoking prior to their surgery.

The benefits of quitting smoking include:

- Quitting for one day results in lower carboxyhaemoglobin and nicotine levels that could be expected to improve tissue oxygen delivery⁵.
- Quitting for as little as three weeks has been shown to improve wound healing⁶.
- Quitting for six to eight weeks results in sputum volumes that are not increased compared to non-smokers⁷ and improved pulmonary function⁸.
- Immune function is significantly recovered by 6 months after quitting smoking⁹.

4. Issues

4.1 The health/disease/illness burden of tobacco

This is large in Australia and New Zealand, accounting for approximately 11.1% of all deaths in Australia and 13.9% in New Zealand¹.

The spontaneous quit rate in the general population of tobacco smokers is estimated to be about 2 per cent per annum¹⁰ but there is increased quitting activity (successful and relapsing) before forthcoming surgery^{3,11}. In the absence of interventions to support quitting, longer term abstinence after surgery is low, although successful permanent quitting does occur¹².

There is a growing body of evidence on the harmful health effects of vaping, including exposure to carcinogens, lung injury and poisoning¹³. E-cigarettes are harmful to non-smokers, but given the overwhelming harms of tobacco use in smokers, the risk/benefit balance for those unable to quit through other means may favour vaping.

4.2 Smoking worsens surgical outcomes.

Compared to non-smokers, there is a significant increase in general morbidity, wound complications, pulmonary complications and intensive-care admissions¹⁴. Postoperative surgical site infection is particularly associated with smoking on the day of surgery compared to smokers who abstain on the day of surgery¹⁵. Parental smoking makes perioperative respiratory adverse events more likely¹⁶. There is insufficient human data on e-cigarette use and postoperative outcomes.

Tobacco smoking is significantly more harmful to the respiratory system than vaping, which also has a much lower impact on the cardiovascular system; however, it is not free of harmful effects. Such effects include oxidative stress, endothelial dysfunction, angiogenesis and inflammation, which may contribute to cardiovascular and thrombotic risk. Evidence is emerging to suggest vaping may contribute to delayed wound healing¹⁷.

Smoking cessation for at least 4-weeks before surgery has consistently shown improved surgical outcomes^{12,18}. Longer quit times have the most significant reduction in complication rates, and there is little evidence that short quit times significantly improve outcomes. However, there is no convincing evidence that quitting shortly before surgery is harmful¹⁹, and public health benefits may follow by encouraging smokers to quit at any time before surgery.

5. Assisting patients to quit before surgery

5.1 Advise to quit smoking

Physician advice to quit smoking significantly improves cessation outcomes¹⁰, and this may be particularly effective before surgery^{4,11}

5.2 Consider interventions

Hospital based interventions that include cessation pharmacotherapy and/or behavioural supports (such as telephone Quitline) can significantly increase quitting and reduce complications, particularly when applied for sustained periods before surgery²⁰.

The Smoking Cessation Taskforce of the American Society of Anesthesiologists developed a simple three-point cessation strategy (A-A-R=Ask, Advise, Refer) that may be used in everyday practice and align with Australian/New Zealand smoking cessation guidelines²¹.

A=Ask. Patients should always be asked about their smoking status. Even when the answer is already known, asking is suggested as this reinforces the message to the patient that tobacco use is a significant issue.

A=Advise. Most smokers are aware of the risks that are printed on packets regarding cardio-respiratory disease and cancer, yet data show that few have an awareness of the specific perioperative risks that smoking poses^{3,4}. By understanding the benefits of quitting before surgery, the likelihood of behavioural change prior to surgery may be increased.

R=Refer. Awareness of locally available smoking cessation support and referral of patients is likely to significantly improve quit rates. General practitioners, pharmacists, quit counsellors at local community health centres, and telephone Quitlines are recommended referral points. Compared to providing self-help material alone, multi-session counselling delivered via telephone Quitlines increased smoking abstinence at 12 months by a significant 25-50 per cent²². Online referrals are options for Quitlines in Australia and New Zealand.

Australia: <https://www.quit.org.au/referral-form/>

New Zealand: <https://quit.org.nz/info-resources/quitline-referral-form-apr-2016.docx?la=en>

5.3 Cessation support

This can be achieved by pharmacological or non-pharmacological means, or a combination. Approved cessation pharmacotherapies in Australia/New Zealand include nicotine replacement therapy, the nicotine partial agonist varenicline (Champix), and bupropion (Zyban).

5.3.1 Of the pharmacotherapy options, nicotine replacement therapy has the greatest evidence in perioperative settings and is generally the easiest to initiate. Combination nicotine replacement (slow-release patches plus additional immediate-release forms in case of cravings) has the greatest efficacy and is recommended in Australia/New Zealand for smokers with moderate to high nicotine dependency⁽⁶⁾. There is considerable evidence for the safety of nicotine replacement therapy in the perioperative period, including wound healing²³, particularly when the alternative is continued smoking.

5.3.2 The role of e-cigarettes as cessation aids before surgery has been investigated, but there is insufficient evidence to currently recommend it². Trials in non-surgical settings have shown the effectiveness of electronic cigarettes for tobacco cessation. However at the conclusion of such trials, ongoing nicotine use via vaping has been a frequent finding rather than the cessation of inhalational self-medication²⁴.

Practitioners are strongly encouraged to use every opportunity to address the subject of smoking and vaping, with its inherent multiplicity of risks, encourage cessation preoperatively, and assist patients to quit.

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⁽⁶⁾ Figure 1 in the accompanying [PG07\(A\) Background Paper](#) shows a prescribing guide based on national guidelines.

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