PG07(A)BP Guideline on pre-anaesthesia consultation and patient preparation Background Paper 2023

Short title: Pre-anaesthesia consultation BP

1. Purpose of review

PG07(A) Guideline on pre-anaesthesia consultation and patient preparation (formerly PS07 Recommendations for pre-anaesthesia consultation and patient preparation) was last reviewed in 2014. The most recent review has incorporated the following events:

1.1 Acknowledgement of scientific evidence of the benefits of timely preoperative assessment and preoperative management of issues for the purposes of optimisation.

1.2 Fellow input regarding updating of the fasting appendix.

2. Background and discussion

2.1 Update

2.1.1 In the previous version of PG07(A), an important distinction was made between an "assessment" and a "consultation". One of the definitions of "consultation" from the Macmillan Dictionary is:

"a meeting with an expert or a professional person to get advice or to discuss a problem, especially a meeting with a doctor".

This was thought to cover the intent of the document and differentiate the pre-anaesthesia consultation from a pre-admission assessment, which may be carried out by another medical practitioner (who may be a trainee from another specialty), a nurse practitioner or administrative staff.

2.1.2 The paediatric patient

There are specific age dependent considerations with respect to the pre-anaesthesia assessment and preparation of the paediatric patient. The location, nature and timing of the medical assessment will need to consider the developmental stage, the level of awareness and understanding of the procedure as well as the anxiety level of the patient and the family. The consultation may vary from full informed consent with a child (although ability to sign consent will be determined by jurisdictional requirements), to consultation independent of the child due to age, understanding or anxiety levels. The assessment should build rapport and minimise anxiety in a manner which provides developmentally appropriate understanding of the anaesthetic process (refer to *PG29(A) Guideline for the provision of anaesthesia care to children*).

2.2 Fasting guideline

The accompanying fasting appendix is intended to be indicative for the purpose of providing guidance to minimise aspiration risk and adverse events whilst also improving physiological outcomes and patient comfort.

This guidance can serve as an aid at the local level, to the development of policies, audits of practice, and delivery of education to staff, patients and family. An emphasis is placed on avoidance of excessive time deprived of oral clear liquids.

Since 2005 there has been a progressive shift in the traditional conservative nature of oral intake regimens towards more liberal regimens, for both children and adults, however, it may still be a challenge to deliver this in practice.

Recommendations for fasting durations in the accompanying guideline are based on the best current available evidence and are consistent with international guidelines published by national societies in Europe, the United Kingdom, North America and Australasia.

A literature and database search were employed until July 2023 to include consensus statements, observational studies, prospective trials, audits of varying practice and peer discussions at perioperative meetings.

2.2.1 In 2017, concerns were raised regarding the currency of the then ANZCA fasting guidelines (contained in *PG15(POM) Guideline for the perioperative care of patients selected for day stay procedures*) including whether ASA 3 and 4 patients were more at risk, and the possibility of prolonged fasting resulting in potential deleterious effects on patients. Traditionally, excessive fasting had not been associated with harm.

2.2.2 In 2023 the American Society of Anesthesiologists (ASA) and in 2018 the European Society of Anaesthesiology and Intensive Care (ESAIC) produced updated fasting guidelines[1,2] based on consensus and emerging evidence, moving on from their earlier iterations. The emphasis is now balanced towards the need to avoid prolonged fasting, and indeed to encourage intake of clear liquids prior to anaesthesia.

2.2.3 Specific mention has been made of “chewing gum”. Such patients were previously regarded as unfasted and their procedures either deferred or cancelled. It has subsequently been recognised that chewing gum does not increase gastric volume nor have any significant effect on gastric pH. Consequently, this no longer constitutes an indication for delaying or cancelling their procedure. However, it is essential to remove chewing gum and boiled sweets prior to induction, to avoid them being inhaled or ingested.

2.2.4 It is accepted there may be variation about the use of such ‘fluids’ as ice blocks and jelly especially in endoscopic settings. Advice on oral intake relies on the state of matter at standard temperature and pressure prior to ingestion, rather than its final state, volume and gastric absorption rate demonstrated by imaging studies. To this end, for simplicity, safety and to avoid ambiguity, at this stage the ingestion of jelly and all brands of ice blocks are not encouraged in a routine list of clear liquids prior to surgery in adults and children, given that there are many alternative liquids including just water that have more established risk-benefit profiles.

2.2.5 With emerging evidence there is a need to ensure that any recommendations remain contemporary. As an appendix these recommendations can be updated/amended as necessary without requiring a revision of the entire document. For example, currently there is interest in many international centres employing a ‘Sip Til Send’ or ‘Sip Til Leave Home’ protocol. There is also increasing use of point of care testing in the form of gastric ultrasound. While there appears to be increasing uptake of SipTilSend, which may be reasonable in a variety of settings, the thresholds have not been met for consensus statements to encourage routine reductions less than 2 hours for ingestion of clear liquids or routine reliance on point of care ultrasound. As volume of prospective data and reliability

of evidence increases for a combination of practices, consideration will be given to applicability to this practice guideline.

2.2.6 Patient, procedural and pharmacological factors contributing to delayed gastric emptying in individual situations should guide the optimal time for cessation of intake of solids and liquids, as well as selection of anaesthesia technique. Although clear liquids have a rapid gastric transit time, there are conditions that require special consideration, caution or variation. These include emergency abdominal surgery, patients with restricted input for therapeutic purposes, prior bariatric surgery (involving altering the volume or shape of the stomach), previous lower oesophageal surgery, achalasia, taking medications used for diabetes management and weight loss which slow absorption of gastric contents (eg glucagon-like peptide-1 receptor agonists) and recent intake of high dose opioids.

Women in active labour may have their intake requirements decided on a case-by-case basis, with consensus from their multi-disciplinary carers in anaesthesia, obstetrics and midwifery.

2.2.7 A review of recent evidence has demonstrated that in children, there is no evidence of increased aspiration or regurgitation with more liberal fasting regimens.

2.2.8 Studies have compared clear liquids containing simple (eg. glucose) versus complex (eg. maltodextrin) carbohydrates and clear liquids with or without proteins. There is evidence that simple carbohydrates may increase gastric emptying and further work is recommended to explore this in specific circumstances, with caution in patients with diabetes mellitus. There is little evidence to actively exclude carbonated clear liquids from intake.

2.2.9 Interruptions to enteral nutrition in intensive care patients result in significant calorie deficits that are associated with increased complications. In a patient with a secured and protected airway enteral feeding should continue prior to surgery or other interventional procedures unless the procedures are intra-abdominal, intra-thoracic or involve airway management or there are other specific requirements. In these situations, enteral feeds should be ceased for 6 hours with some institutions recommending 4 hours.

2.3 Breastfeeding and anaesthesia

Following publication of “Guideline on anaesthesia and sedation in breastfeeding women 2020” [3] by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) ANZCA considered whether it should be endorsed. After assessment in accordance with *CP25(G) Policy on endorsement of externally developed guidelines*, endorsement was rejected.

Instead, it was decided to address the issue by developing an advisory document to be incorporated as a separate Appendix into *PG07(A) Guideline on pre-anaesthesia consultation and patient preparation*. The aim being to support anaesthetists in both the Australian and New Zealand context to provide contemporary pre-anaesthesia information and peri-operative care to patients intending to breastfeed following their procedure.

In Australia the Therapeutic Guidelines – Pregnancy and Breastfeeding provide evidence-based recommendations regarding the use of medications during breastfeeding (Table 1).[4] In New Zealand, Medsafe provides product information for individual medications. [5] The United States-based Drugs and Lactation Database provides drug-specific recommendations based on drug properties, even when lactation-specific pharmacokinetic evidence is lacking. [6]

Most opioid medications pass into breast milk with the potential to cause respiratory depression and sedation in infants. There is conflicting information regarding use of specific opioid medications during breastfeeding, particularly codeine and tramadol, which have active metabolites and are subject to pharmacogenetic variations in metabolism. In 2017 The Food and Drug Administration (FDA, United States) recommended against the use of tramadol during breastfeeding. The Therapeutic Guidelines (Australia) consider tramadol compatible with short-term use during breastfeeding. The Society for Paediatric Anaesthesia in New Zealand and Australia (SPANZA)[7] and the ANZCA Obstetric Anaesthesia Special Interest Group[8] **support the continued careful use of tramadol while breastfeeding.** Therapeutic Guidelines and accompanying product information recommend against the use of codeine during breastfeeding.[4,5]

At the time of writing, there was considerable community debate around the language used to describe breastfeeding. The words “breastfeeding” and “breast milk” have been used to reflect the correct anatomical terminology. It is understood that some may disagree with the terminology used.

2.4 Smoking

Tobacco is a major global health problem, with 8.5 million deaths from the world’s 1.1 billion smokers in 2019 alone[1]. Globally, at least 310 million people undergo major surgery each year (approximately 1 in 25 people), with rates of major morbidity estimated to be 15%[2]. Smokers are at increased risk of perioperative respiratory, cardiac and wound-related complications and quitting smoking may reduce these risks[3]. Evidence suggests that the perioperative period is a “teachable moment” when many smokers quit or attempt to quit smoking, sometimes permanently[4,5]. Increasingly, patients present for surgery who use a variety of different electronic cigarette (e-cigarette) devices that contain a multitude of different vaping liquids[6].

2.4.1 Review of issues considered

2.4.1.1 The burden of tobacco in Australia and New Zealand.

Each year, approximately 19,000 deaths are attributable to tobacco in Australia, representing 11.1% of all deaths[7]. In New Zealand, tobacco is attributable to 13.9% of all deaths and a total of 4,790 deaths annually[7]. In both countries, tobacco use has declined over the past decade, but e-cigarette use is increasingly common, particularly in New Zealand, where 8.3% of the adult population were daily users in 2021/22[8].

A 2019 report on the cost of smoking to the Australian economy estimated $19.2 billion in net tangible costs[9]. Smokers are likely to be over-represented on operating lists for vascular, cardiac and cancer surgery. Estimates vary, but conservatively, half of all smokers will eventually die as a result of their smoking unless they quit[10]. Smokers lose at least one decade of life expectancy compared with those who have never smoked[11]. Cessation before the age of 40 years reduces the risk of death associated with continued smoking by about 90 per cent[11].

2.4.1.2 Prevalence of quitting before surgery.

The underlying successful quit rate in the general population of smokers is estimated to be as low as 2 per cent per annum[12]. Although quit attempts occur commonly with 31 per cent of Australian smokers making at least one per year[13], tobacco addiction is characterised by high rates of relapse[14].

Little is known about quitting before surgery in Australia and New Zealand but this likely varies according to patient (age, amount smoked etc.) and surgical factors (major/minor/cancer-related etc.), as well as the availability of preoperative cessation

support[15]. It is unclear to what extent smokers see surgery as an opportunity to permanently quit for better health, versus simply interrupting their smoking during the perioperative period in accordance with clinician advice to obtain shorter-term benefits such as reduced wound complications.

In the United States, having surgery doubles the spontaneous quit rate in older adults (aged >50 years) compared to those not having surgery and approximately 8 per cent of all quitting is related to surgery[5].

2.4.1.3 Prevalence and effect of physician advice to quit before surgery.

Current evidence indicates advice to quit is inconsistently given. At one New South Wales preoperative clinic 39 per cent of smoking patients had received quit advice from an anaesthetist[16]. Myles et al reported surgeons advised quitting in only 6.5 per cent of cases in a sample of 200 ambulatory surgical patients at a Melbourne tertiary hospital, slightly more frequent than general practitioners (3 per cent)[17]. Webb et al reported that less than 10 per cent of patients who smoked recalled advice from an anaesthetist to quit when surveyed on the day of surgery with rates of surgical quit advice at 22.6 per cent and general practitioner advice at 16.5 per cent[4]. When quit advice from clinicians occurred, the chance of patients stopping smoking before surgery was doubled[4]. Such findings are consistent with evidence from other patient settings that brief quit advice from clinicians is moderately effective in increasing cessation[12].

2.4.1.4 Evidence that smoking worsens surgical outcomes.

A recent meta-analysis found that smoking was associated with (within 30-days of surgery): General morbidity increased 52%, wound complications increased 215%, pulmonary complications increased 73%, admission to intensive care unit increased 60% and even neurological complications increased 38%[18]. Smoking on the day of surgery is particularly associated with almost double the incidence of surgical site infections, compared to similar smokers who abstained on the day of surgery[19].

Second-hand smoke exposure in children increases the risk of perioperative respiratory adverse events such as laryngospasm[20]. Risks vary with exposure, as Western Australian children exposed to both parents smoking had over double the risk of those from non-smoking households; compared to maternal only smoking (risks increased by 87%) and paternal only smoking (risks increased by 19%)[21]. In adults, second-hand smoke exposure resulted in 51% more postoperative morbidity compared to non-exposed adults[22].

From the limited available data on wound healing, vaping is not safer than tobacco smoking[23]. Nicotine-containing vapes are peripheral vasoconstrictors, decreasing skin blood flow. Anaesthesia in e-cigarette users with acute vaping-related lung injury is characterised by increased airway reactivity, hypoxia, higher oxygen requirements and the possibility of ongoing mechanical ventilatory support[24].

2.4.1.5 Evidence that smoking cessation before surgery improves surgical outcomes.

Data on improved outcomes from quitting smoking comes from both experimental and clinical settings[25]. In continued smokers, the experimental wound infection rate was 12 per cent compared to 2 per cent in never-smokers, while the infection rate of recent quitters was comparable with never-smokers[25].

A meta-analysis of randomised trials of preoperative smoking cessation interventions found that interventions such as nicotine replacement therapy (NRT) and counselling more than

halved the complication rate, while wound complications were almost 70% lower[26]. The greatest complication reductions were achieved in those trials that resulted in more cessation overall, and these generally were more intensive interventions (multiple counselling sessions plus NRT).

2.4.2 When to quit? Brief smoking cessation

Studies have consistently found that longer abstinence periods exceeding 4 weeks are consistently associated with better postsurgical outcomes[3]. Improved function occurs over time:

2.4.2.1 Quitting for one day will lower carboxyhaemoglobin and nicotine levels and could be expected to improve tissue oxygen delivery[27]. Higher expired carbon monoxide levels are significant predictors of ST depression in patients during general anaesthesia, even in the absence of ischaemic heart disease[28]. Smokers who smoke on the day of surgery are significantly more likely to have infections than even those abstaining for a few days[19].

2.4.1.2 Quitting for as little as three weeks was shown to improve wound healing[29]

2.4.1.3 After quitting for six to eight weeks sputum volumes are not increased compared to non-smokers[30] and pulmonary function is improved[31]

2.4.1.4 Immune function is significantly recovered by six months after quitting[32]

Concerns that stopping smoking within 8 weeks prior to surgery increases postoperative pulmonary complications (PPC)[33-35] have been discredited by more recent data[36,37] and ought not to be a reason to advise continued smoking[38]. The mechanism for increased PPCs was speculated to be that recent quitters experience mucous hyper-secretion at exactly the same time they lose the cough promoting effects of cigarettes[33,39]. While longer quitting is best, smokers with only a short time available to quit before surgery should not be dissuaded to do so[40].

2.4.3 Assisting patients to quit before surgery

The preoperative period is an important opportunity to increase smoking cessation, given the reduction of adverse surgical outcomes and the increased willingness of many smokers to improve their health before surgery. Although the majority of ex-smokers achieve abstinence without treatment[41], interventions by healthcare providers and health services increase quitting attempts and quitting success[38]. The number of new ex-smokers in any given year is the number of quit attempts multiplied by the quit success rate, so increasing the number of quit attempts as well as utilising tools to improve the success rate make important contributions to health.

Forthcoming surgery is a time of increased quitting activity, with one recent study of patients on a waitlist showing 33% of smokers making at least one quit attempt lasting 24-hours or more without any cessation assistance[42]. Even in the absence of quit support, 32% of these attempts led to abstinence for at least 24-hours on the day of surgery. In the presence of an intervention to increase quitting (a telephone offer of nicotine replacement therapy and Quitline referral), attempts increased to 55.5%, of which 38% succeeded in abstinence by surgery[42].

The success of smoking cessation interventions before surgery depends on the duration and intensity of treatment. Those offering 4-weeks or more of weekly preoperative

counselling plus cessation pharmacotherapy demonstrate a ten-fold increase in success rate over low-intensity interventions, involving just one or two counselling sessions with or without pharmacotherapy[26]. Despite this, there is considerable evidence for the effectiveness of physician brief advice in general[12], and national guidelines in Australia and New Zealand give recommendations that all healthcare practices have systems in place to identify smokers, that patients are asked about smoking, that advice to quit be given and cessation help provided[43,44].

Three-step models for very brief smoking cessation support are recommended for health professionals treating smokers in Australia and New Zealand and may be utilised by anaesthetists in the perioperative period. In Australia, the 3-steps are Ask (about smoking), Advise (to quit) and Help (Refer to Quitline and/or prescribe pharmacotherapy)[43]. New Zealand utilises a similar 3-step ABC approach of Ask (about smoking), Brief advice (to quit) and Cessation support with strongly offer referral for behavioural support and pharmacotherapy[44]. The Smoking Cessation Taskforce of the American Society of Anesthesiology developed a similar three-step cessation strategy (A-A-R=Ask, Advise, Refer) that may be used in everyday practice[45]

A=Ask. Audits of smoker identification vary by institution, ranging from 25-86% of smokers being identified as such[46-48].

A=Advise. By understanding the benefits of quitting before surgery, the likelihood of behavioural change prior to surgery may be increased[4]. Brief conversations about smoking increase quitting but the benefit of conversation is higher as the underlying quit rate is increased[12]. Because quit rates tend to be higher before surgery[42], the effect of physician advice may be more powerful[38].

R=Refer. An awareness of locally available smoking cessation support and referral of patients is likely to significantly improve quit rates. In randomised controlled trials of perioperative quit programs, more intensive interventions produced significantly greater abstinence[26]. Online referrals are easy options at 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

2.4.3.1 Cessation pharmacotherapy.

In Australia and New Zealand, approved tobacco cessation medications for NRT include varenicline and sustained-release preparations of bupropion hydrochloride[43,44]. NRT is also approved as a smoking reduction aid; to be used in conjunction with cigarettes for those unable to quit abruptly but are in the process of reducing/quitting. Varenicline is the most effective form of single pharmacotherapy (monotherapy) for smoking cessation[43].

Combination NRT (slow-release patches plus immediate-release forms like mouth sprays or lozenges, in case of cravings) are more effective than NRT monotherapy and about as effective as varenicline for smoking cessation[49]. Relatively simple dosing regimens, availability as over-the-counter medications and an abundance of studies in presurgical populations have increased their popularity in surgical settings. Guidelines for initiation of NRT in Australia and New Zealand are identical, with NRT monotherapy only recommended for smokers with low nicotine-dependency (≤10 cigarettes/day plus not needing cigarettes within 30-minutes of waking from overnight sleep)[43,44]

Figure 1

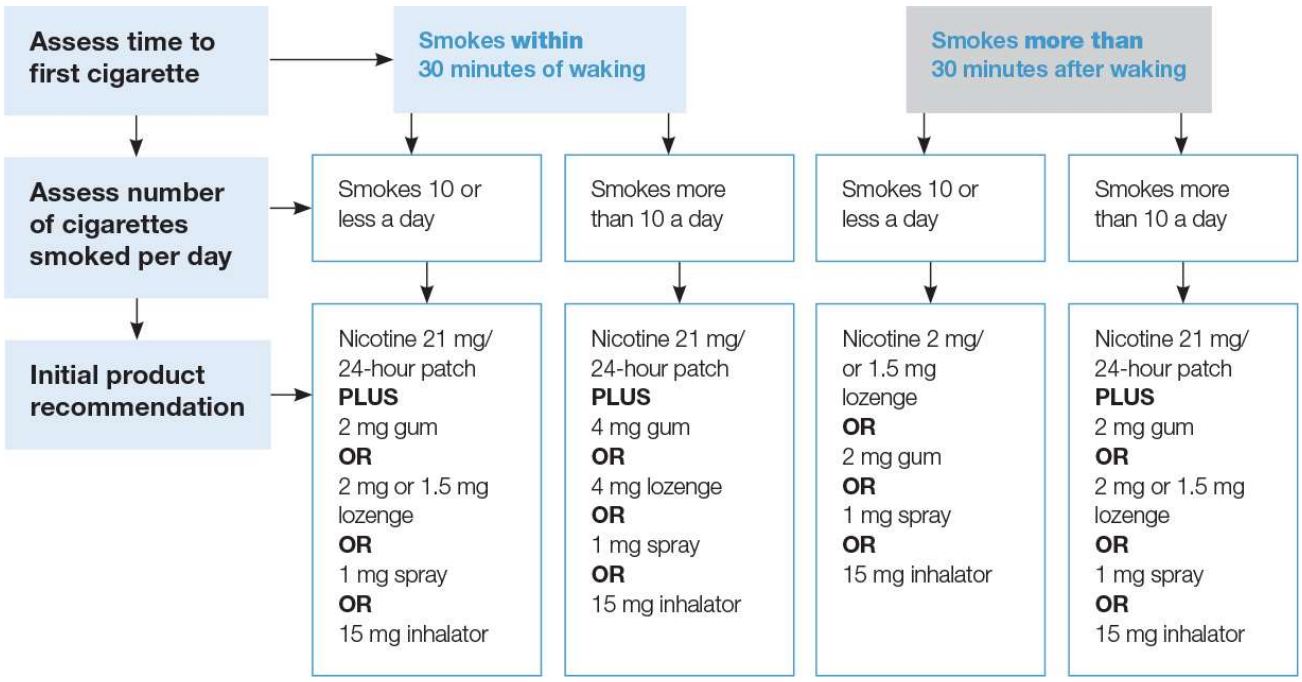

Figure 1 Ministry of Health, New Zealand. Guide to prescribing nicotine replacement therapy (NRT). Wellington: Ministry of Health, 2014 and RACGP Supporting Smoking Cessation: a guide for health professionals. 2nd edition, 2014

2.4.3.2 Evidence for perioperative safety of NRT.

The potential of NRT-induced vasoconstriction and impaired wound healing has been raised as a concern, but there is an abundance of evidence that strongly supports its perioperative use; particularly if the alternative is continued smoking[50,51]. While nicotine is both a vasoconstrictor and a psychoactive molecule that maintains tobacco addiction, impaired wound healing in smokers results from a variety of vasoactive compounds in smoke, as well as impaired inflammatory cellular responses and immune function[25]. A large observational study that included over 25,000 surgical patients having preoperative NRT showed no increase in wound complications or other adverse events[52].

2.4.3.3 Electronic cigarettes for smoking cessation in the perioperative period.

There are insufficient studies in perioperative settings to recommend e-cigarettes as cessation tools[3,38]. Australian smokers scheduled for elective surgery perceived the perioperative use of e-cigarettes as safer than tobacco, and a novel way to quit[53].

In view of limited evidence, the recent update to the Australian smoking cessation guidelines recommended the use of e-cigarettes alongside behavioural support only for patients who had tried and failed to achieve smoking cessation with first-line therapy including behavioural support and TGA-approved pharmacotherapy but were still motivated to quit[43]. Patient counselling should acknowledge the uncertainty surrounding vaping products' safety, quality and efficacy[43]. Currently, no e-cigarette products are registered as therapeutic goods in Australia or New Zealand and they are legal in Australia only by prescription for the purpose of smoking cessation.

2.4.4 Electronic cigarettes and health consequences

Adverse health consequences of vaping include personal risks such as toxicity to the respiratory and cardiovascular systems, seizures, nicotine poisoning, nicotine addiction, as well as trauma or burns from malfunctioning devices[54]. Youth e-cigarette use points to wider risks to public health including uptake in cigarette smoking and ex-smokers relapsing to combustible tobacco[55], as well as non-smoking young people initiating vaping being 3-times more likely to become regular tobacco users[54].

E-cigarettes contain single-use plastic and lithium batteries that are a source of pollution and fires[54].

E-liquids typically contain ingredients implicated in adverse health outcomes such as Popcorn Lung or bronchiolitis obliterans[56,57].

E-cigarette or Vaping product use Associated Lung Injury (EVALI) has led to hospitalisations and deaths worldwide, mostly amongst younger people[54]. Although most cases arise from e-liquids containing THC and the additive vitamin E acetate, some were associated with nicotine-containing liquids without either constituent[58]. E-cigarette use has been associated with acute eosinophilic pneumonia[59]. There is evidence of a tendency toward airway reactivity and bronchospasm, along with an impaired cough reflex and reduced ciliary function[60]. Minor adverse effects like throat irritation, cough and increased sputum production are prevalent among vapers though more serious bronchial injuries and erythematous airway mucosa have also been seen[60].

The effects of vaping on cardiovascular disease are the subject of ongoing research but evidence suggests an increase in oxidative stress and endothelial dysfunction[61]. Vaping is also associated with lipogenesis, angiogenesis and inflammation, which may elevate the thrombosis risk[62]. Nicotine is responsible for the acute cardiovascular effects of vaping, leading to an increase in blood pressure and heart rate with a shift in the myocardial supply-demand balance[62].

2.4.5 Literature search strategy

Background reading on tobacco science, policy and effects of public health was provided from a number of academic sources[1,14,63] Searches for documents from the Australian Government (Australian Institute of Health and Welfare) and Ministry of Health (New Zealand) on tobacco, health and drug policy yielded further useful documents on tobacco use in each country.

Electronic databases (PubMed and Cochrane) were searched through to April 2023 for relevant English language randomised controlled trials and reviews using search terms including “smoking”, “tobacco”, “vaping”, “e-cig$”, “electronic cig$”, “preop$”, “periop$”, “postop$”, “quit$”, “cessation”, “surgery”, “outcome”, “complication”. Further references were obtained through examination of the bibliographies of relevant reviews and trials.

3. Summary

PG07(A) was revised based on the advice from the document development group. The current revision has considered the pre-anaesthesia consultation in the context of its impact on safety and patient outcomes. The recommendations in the guidelines are based on the application of the general principles in recognition of recent changes in practices and demands, as well as advances in technologies.

Related ANZCA documents

CP24(G) Policy for the development and review of professional documents
PG09(G) Guideline on procedural sedation
PS12(POM) Guideline on smoking as related to the perioperative period
PG15(POM) Guideline for the perioperative care of patients selected for day stay procedures
PS59(A) Position statement on roles in anaesthesia and perioperative care
PS62(G) Position statement on cultural competence and cultural safety

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References – item 2.4 Smoking

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Further reading:

PG07(A) Pre-anaesthesia consultation

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PG07(A) Appendix 1 – Fasting guideline

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PG07(A) Appendix 2 - Effect of anaesthesia on breastfeeding

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Professional documents of the Australian and New Zealand College of Anaesthetists (ANZCA) are intended to apply wherever anaesthesia is administered and perioperative medicine practised within Australia and New Zealand. It is the responsibility of each practitioner to have express regard to the particular circumstances of each case, and the application of these ANZCA documents in each case. It is recognised that there may be exceptional situations (for example, some emergencies) in which the interests of patients override the requirement for compliance with some or all of these ANZCA documents. Each document is prepared in the context of the entire body of the college's professional documents, and should be interpreted in this way.

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