

The Clinical Case for Smoking Cessation before SURGERY

What is this initiative aiming to achieve?

The aim of this initiative is to provide clinical support for temporary abstinence with a view to prompting a permanent quit supported by a referral to local NHS Stop Smoking Services. To gain maximum benefit, a quit attempt needs to begin at least 8 weeks before surgery and lead to permanent quitting. However, temporary abstinence beginning immediately around the time of surgery and lasting until a patient has recovered may still have worthwhile benefits.

Why intervene in secondary care?

Hospitalisation offers an opportune time to encourage patients to stop smoking for four main reasons.

- Firstly, this time is often a “teachable moment” where patients are more receptive to intervention and are more motivated to quit.
- Secondly, the hospital’s no smoking environment creates an external force to support abstinence.
- Thirdly, patients are ideally placed to be given information about treatment options, support through withdrawal and signposted to specialist services.
- Fourthly, abstaining from smoking at this time can lead to significant health benefits.

What is the relationship between smoking and post-operative outcomes?

Compared to non-smoking patients, patients who smoke perioperatively have been shown to experience more problems. Smoking has been associated with local wound complications, pulmonary and cardiac complications, an increased need for postoperative intensive care and longer periods of hospitalisation. Specifically, poorer outcomes have been associated with gastrointestinal, hernia, orthopaedic, cancer, cardiovascular, day care and plastic surgery.¹ Smoking has also been implicated in a need for increased anaesthetic dosage and increased experience of postoperative pain.^{2;3}

What are the health benefits of quitting for patients undergoing surgery?

Successful quitting will not only benefit a patient’s long term health by reducing the risk of disease development⁴ but there is evidence that quitting smoking before surgery may have more immediate benefits by reducing the risk of post operative complications⁵ and that even brief abstinence may be beneficial to this aim.⁶ Perioperative smoking cessation is beneficial, as it will eliminate some of the acute effects of smoking on the body; however, the earlier a smoker quits the better.⁶

Main acute effects of smoking on the body (estimated time of recovery, if known)

- Increase in sympathetic tone leading to increase in blood pressure, heart rate and peripheral vasoconstriction leading to an increased demand for oxygen and cardiac function⁷
(24-48 hrs)
- Formation of carboxyhaemoglobin leading to reduction in oxygen delivery to the tissues⁸
(8-24 hrs)
- Formation of carboxymyoglobin leading to reduction in oxygen storage in the muscles⁹
(8-24hrs)
- Increase in red cell production which leads to increase in blood viscosity, a decrease tissue perfusion and decrease in oxygen delivery to the tissues³
- Hypersecretion of mucus, narrowing of the small airways, decrease in ciliary function and change in mucus rheology leading to a decrease in mucociliary transport³
(12-72 hours)
- Changes in functioning of a range of immune cells (pro- and anti-inflammatory cytokines, white blood cells, immunoglobulins) which lead to decreased immunity³
(1week-2 months)
- Induction of hepatic enzymes which increases drug metabolism through both pharmacokinetic and pharmacodynamic mechanisms¹⁰
(6-8 weeks)

Post-operative health benefits associated with smoking abstinence

- Reduced risk of pulmonary complications such as respiratory failure, need for postoperative respiratory therapy or admission to intensive care.⁶
- Acute smoking has been associated with increased ST depression during anesthesia.¹¹
- Decreased risk of graft failure.¹²
- Decreased wound related complications such as dehiscence and infection.¹³
- Increased rate of bone healing.^{14;15}
- Reduced length of admission.¹⁶
- Permanent smoking cessation reduces the risk of heart disease, stroke, cancer and premature death.⁴

The 3A's

How to approach smoking cessation with patients

Smoking cessation interventions have been proven effective for hospitalised patients in general¹⁷ and specifically for surgical patients.^{18;19} Smoking cessation interventions increase the rate of long term quitting if they include regular behavioural support and pharmacotherapy that is continued at least 1 month after discharge.

NICE guidance has recommended that smoking cessation interventions should be offered to surgical patients, and health professionals are encouraged to access training, deliver brief advice, offer pharmacologic al support and refer patients to local specialist services.

The DH guidance, "Smoking Cessation in Secondary Care",²⁰ is designed to be practical for busy healthcare professionals and outlines a care pathway for supporting smoking cessation that can be adopted for surgical patients. In essence, the care pathway incorporates a very brief intervention using the 3A's:

ASK and record smoking status

ADVISE the patient of the personal health benefits of quitting

ACT on the patient response

- prescribe NRT for patients in withdrawal
- monitor withdrawal and adjust pharmacotherapy accordingly
- refer to local NHS Stop Smoking Service

How was this information sheet put together?

This information is a summary of the current scientific evidence on the association between cigarette smoking and surgical outcomes. Studies were found by searching MEDLINE and EMBASE using combined exploded subject headings of "specialties, surgical", "general surgery" and "tobacco use cessation" from 01/1990 – 10/2009 and by searching the Report of the US surgeon general on the health benefits of smoking cessation.²¹ Evidence has been included in this summary from cohort studies, randomised controlled trials and reviews only.

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