The Clinical Case for providing stop smoking support to Stroke Patients

Why intervene in secondary care?

1. Hospital patients are more receptive to 'Very Brief Advice' (VBA) and an offer of support to stop smoking, as they are often experiencing a period of heightened motivation
2. Giving VBA to a hospital patient (the '3 A's': Ask, Advise, Act) can also encourage compliance to the smokefree hospital policy, and highlight any need for withdrawal management. Providing Nicotine Replacement Therapy (NRT) to a patient during a period of forced abstinence, will ease nicotine withdrawal symptoms
3. Stopping smoking can lead to significant health benefits, and reduce post-operative complications and improve recovery time

What is the aim of this 'clinical case' document?

The aim of this document is to provide clinical support for hospital staff in terms of supporting patients to stop smoking, even if this is just for a period of forced abstinence whilst in hospital. Being in hospital provides an opportune moment to intervene and provide both brief advice and support to stop smoking; including making a referral on to local stop smoking support. There are many benefits for a patient if they have temporary abstinence from smoking, including a shorter time for recovery and this can often stimulate a full attempt to stop smoking.

What is the relationship between smoking and stroke?

Cigarette smoking has been identified as an independent risk factor for ischemic stroke;[1] both intracerebral hemorrage (ICH) and subarachnoid hemorrhage (SAH) risks are also elevated.[2, 3]

Smoking is associated with disease processes that are predisposed to a stroke:

- the progression of atherosclerosis[4,5,6]
- decreased serum albumin levels that are associated with increased risk of stroke incidence[7]
- increase in fibrinogen concentration, a decrease in fibrinolytic activity, an increase in platelet aggregability, and polycythemia[8]
- increased risk of thrombosis; a major factor in the pathogenesis of smoking-induced cardiovascular events[9]

What are the health benefits of stopping smoking for stroke patients?

Stopping smoking results in a considerable reduction in stroke risk and stroke-related morbidity and mortality.[10,11,12] Successfully stopping smoking will not only benefit a patient's long-term health by reducing the risk of developing other disease,[13] but abstinence from smoking may improve recovery time by eliminating the acute effects of smoking on the body. Stopping smoking has been associated with improved stroke specific outcomes as well as general outcomes (see below).

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

- Increase in sympathetic tone leading to an increase in blood pressure, heart rate and peripheral vasoconstriction leading to an increased demand for oxygen and cardiac function.[14] **(24 – 48 hours)**
- Formation of carboxyhaemoglobin leading to a reduction in oxygen delivery to the tissues.[15,16,17] **(8 – 24 hours)**
- Formation of carboxymyoglobin leading to a reduction in oxygen storage in the muscles.[18,15] **(8 – 24 hours)**
- Increase in red blood cell production, which leads to an increase in blood viscosity, a decrease in tissue perfusion, a decrease in oxygen delivery to the tissues and potentiation of thrombotic process.[19,20]
- Hypersecretion of mucus, narrowing of the small airways, decrease in ciliary function and change in mucus rheology leading to a decrease in mucociliary transport.[19,20] **(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 immunity and are associated with atherosclerosis.[19,20] **(1 week – 2 months)**
- Induction of hepatic enzymes which increases drug metabolism through both pharmacokinetic and pharmacodynamic mechanisms.[21] **(6 – 8 weeks)**

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General health benefits of stopping smoking[1]

- Within 20 minutes blood pressure drops to the level it was before the last cigarette.
- Within 8 hours carbon monoxide levels in the blood return to normal.
- Within 24 hours the chance of a heart attack decreases.
- Within 2 weeks to 3 months circulation improves and lung function increases.
- Within 1 to 9 months lungs regain normal ciliary function, reducing infection risk.
- By 10 years the risk of lung cancer is approximately half of a smoker. The risk of cancers of the mouth, throat, bladder, kidney and pancreas also decrease.

Specific health benefits for stroke patients when stopping smoking[1]

- Within 1 to 2 months smoking-related stroke risk due to hypercoagulability normalises to that of non-smokers
- After 5 years stroke risk is reduced to that of a non-smoker in most cases

Providing 'Very Brief Advice' to hospital patients: the '3 A's'

Providing a stop smoking intervention to a hospital patient is proven to be effective regardless of the reason for admission.[22] The number of stroke patients stopping smoking has improved by lifestyle interventions,[23] and repeated advice to stop smoking has been effective in maintaining abstinence.[17] Offering VBA is the single most cost effective and clinically proven preventative action a healthcare professional can take[24] and it is important to keep giving advice at every opportunity, as smokers may take several attempts to stop smoking successfully.[25] In addition, by referring a patient to a local stop smoking service, they are four times more likely to stop smoking.[26]

Research shows that 95% of patients expect to be asked about smoking and a short intervention can make all the difference.[27,28] The '3 A's' 30 second approach to giving 'very brief advice' are as follows:

ASK and record smoking status

ADVISE the patient of the personal health benefits of stopping smoking

ACT on the patient's response

- prescribe NRT for patients in withdrawal
- monitor withdrawal and adjust pharmacotherapy accordingly
- refer to local 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 stroke. Studies were found by searching MEDLINE and EMBASE using combined exploded subject headings of 'stroke' and 'tobacco use cessation' from 01/1990 – 07/2011 and by searching the Report of the US surgeon general on the health benefits of smoking cessation (USDHHS 1990). Evidence has been included in this summary from cohort studies, randomised controlled trials and reviews only.

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