The Clinical Case for providing stop smoking support to Ophthalmology 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.

How does smoking affect the eye?[1,2]

- Noxious particles present in tobacco smoke act as irritants to the conjunctiva.
- Various components of cigarette smoke are vasoactive and can lead to acute constriction of the ciliary arteries, reduction in choroidal blood flow and ischemic optic neuropathy.
- Nicotine and carbon monoxide accelerate atherosclerosis and interfere with lipid homeostasis, increasing platelet aggregation and inducing blood clotting. If these processes affect the ophthalmic branch of the carotid vasculature, this may also cause ocular ischemic episodes.
- Tobacco smoke contains free radicals that reduce the presence of protective antioxidants and can cause oxidative damage to the retina.
- Heavy metals such as cadmium, lead and copper found in tobacco smoke can accumulate in the lens.

What is the relationship between smoking and eye diseases?

Research has shown that, compared to those who have never smoked, smokers have an increased risk of developing:

- Dry and exudative age related macular degeneration (2 to 3.5 times increase in risk), and the risk has been demonstrated to be dose-dependent.[2–10]
- Graves ophthalmology,[11,12–15] and disease severity is positively associated with the number of cigarettes smoked per day.[12,13]
- Age-related cataracts. Smoking is particularly associated with cortical and nuclear cataracts.[1,16,17]
- Anterior ischemic optic neuropathy.[1,18,19]
- There is some evidence that smoking may increase the risk of primary open-angle glaucoma[20] and mixed evidence regarding the involvement of smoking in diabetic retinopathy.[1]

What are the health benefits of stopping smoking for patients with eye diseases?

Successfully stopping smoking will not only benefit a patient's long term health by reducing the risk of developing other disease,[21] abstinence from smoking may help a patient recover quicker by eliminating the acute effects of smoking on the body and stopping smoking has also been associated with improved ophthalmic outcomes.

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.[22] **(24 – 48 hours)**
- Formation of carboxyhaemoglobin leading to a reduction in oxygen delivery to the tissues.[23] **(8 – 24 hours)**
- Formation of carboxymyoglobin leading to a reduction in oxygen storage in the muscles.[24] **(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.[25,26]
- Hypersecretion of mucus, narrowing of the small airways, decrease in ciliary function and change in mucus rheology leading to a decrease in mucociliary transport.[25,26] **(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.[25,26] **(1 week – 2 months)**
- Induction of hepatic enzymes which increases drug metabolism through both pharmacokinetic and pharmacodynamic mechanisms.[27] **(6 – 8 weeks)**

Health benefits associated with stopping smoking for patients with eye diseases

Stopping smoking has been associated with a:

- Reduction in the risk of surgical cataract extraction, taking 10 to 20 years for the risk to reduce to that of non-smokers.[28,29,30]
- Decrease in progression of age related macular degeneration (AMD).[5,31] It takes about 20 years after stopping smoking for the risk of AMD incidence to reduce to that of non-smokers.[32]
- Reduction of risk of anterior ischemic optic neuropathy to that seen in non-smokers.[19]
- Improved response to treatment for Graves' Ophthalmology.[33]

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.[34] Offering VBA is the single most cost effective and clinically proven preventative action a healthcare professional can take[35] and it is important to keep giving advice at every opportunity, as smokers may take several attempts to stop smoking successfully.[36] In addition, by referring a patient to a local stop smoking service, they are four times more likely to stop smoking.[37]

Research shows that 95% of patients expect to be asked about smoking and a short intervention can make all the difference.[38,39] 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 ophthalmology outcomes. Studies were found by searching MEDLINE and EMBASE using combined exploded subject headings of 'ophthalmology', 'eye', 'eye diseases' and 'tobacco use cessation' from 01/1990 – 06/2011 and by searching the Report of the US surgeon general on the health benefits of smoking cessation.[35]

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