



Working for a tobacco-free Scotland

# ASH Scotland Tobacco use, HIV and hepatitis C May 2011

## Key points:

- people who are HIV positive are significantly more likely to smoke than HIV negative individuals<sup>1</sup>
- higher smoking rates in people who are HIV positive mean a higher burden of tobacco-related disease and mortality
- HIV positive smokers are at a higher risk than HIV negative smokers of developing chronic health problems including heart attacks and strokes, cancers, respiratory diseases, and degenerative brain disorders
- exposure to other people's tobacco smoke is also a health hazard
- smoking further impairs the health of people with HIV, late-stage HIV and hepatitis C so cessation should be a key part of health care provision
- smoking can interfere with the way in which some HIV and hepatitis C medications are processed by the liver.

**This briefing is for people living with HIV or hepatitis C who smoke or are exposed to second-hand smoke, and those who support them.**

## Human immunodeficiency virus (HIV)

HIV infection gradually destroys the immune system thereby reducing resistance to infections and cancers. At first someone living with HIV may show no symptoms of HIV infection because their immune system is still responsive. Eventually though, most people with HIV will need help from anti-HIV drugs to assist their compromised immune systems to keep the HIV infection under control. The antiretroviral drugs used to treat HIV infection reduce the level of the virus in the blood by limiting its capacity to reproduce but they are not a cure.

## Acquired immune deficiency syndrome (AIDS)

It is becoming more usual to talk of late-stage or advanced HIV infection rather than AIDS. Late-stage HIV infection is an umbrella term which describes the point when an immune system is overwhelmed because of the damage caused by HIV and becomes increasingly susceptible to one or more specific cancers, pneumonia or other conditions. However, with combination antiretroviral therapy HIV infection is now less of a terminal condition and more a medically manageable chronic disease. People with HIV are living longer and smoking-related problems can interfere with long-term quality of life and have a negative impact on immune systems which are already impaired.

## **Hepatitis C**

Hepatitis means 'inflammation of the liver'. Once hepatitis C gets into the bloodstream it can affect and damage the liver. It can also affect the digestive system, the lymphatic system, the immune system and the brain. There are six types of hepatitis C virus called genotypes and they are numbered 1 to 6. Almost all people in the UK who have hepatitis C have genotype 1, genotype 2, or genotype 3. Different types respond differently to treatment and it is possible to be infected with more than one type of hepatitis C at the same time.

### **People in Scotland living with HIV**

During 2010, NHS Scotland laboratories reported positive HIV-antibody test results for 360 individuals not previously recorded as HIV-positive in Scotland. The cumulative number of HIV positive individuals ever reported in Scotland is now 6,613, of whom 4,774 (72%) are male and 1,839 (28%) are female. At least 1783 (27%) are known to have died. Allowing for known and presumed migration of cases, it is estimated that there are currently 3,803 persons living in Scotland who have been diagnosed HIV positive<sup>2</sup>. The Health Protection Agency reports that 77,400 people were living with HIV in the UK in 2007 and more than a quarter were unaware of their infection<sup>3</sup>.

According to AVERT (Averting HIV and AIDS)<sup>4</sup> a major component of the rapid increase in HIV diagnoses (in the UK) over the past 15 years has been heterosexually acquired infection. Heterosexual sex accounted for 54% of HIV diagnoses in 2009 and sex between men accounted for 42%, compared to 1995 when 30% were a result of heterosexual sex and 58% of new HIV diagnoses resulted from sex between men.

### **People in Scotland living with hepatitis C**

Hepatitis C: in Scotland during July to September 2010, 577 new cases of hepatitis C virus (HCV) antibody positivity were diagnosed. This figure compares with 463 and 542 for the third quarter of 2008 and 2009 respectively. The cumulative number of HCV diagnoses is now 28,880, of whom 14% are known to have died<sup>5</sup>. It is estimated that the number of undiagnosed hepatitis C antibody-positive cases in Scotland still exceeds the number of diagnosed cases.

### **Health risks of tobacco and exposure to second-hand smoke**

In Scotland, 23% of all male deaths, 25% of all female deaths, 90% of lung cancer deaths in men aged over 35 years and 89% of lung cancer deaths in women aged over 35 can be directly attributed to tobacco use<sup>6</sup>. Twenty-two years of life are lost on average among men and women in middle age (35-69) from smoking<sup>7</sup>.

Second-hand smoke (SHS or passive smoking) is smoke from other people's tobacco and breathing it in brings non-smokers many of the same health risks as active smoking. Inhaling second-hand smoke can cause cancer in non-

smokers and many of the cancer-causing chemicals are present in higher concentrations than in the smoke inhaled by the smoker themselves<sup>8</sup>. Just thirty minutes of exposure to second-hand smoke can cause heart damage similar to that of habitual smokers; research<sup>9</sup> indicates that non-smokers' heart arteries show a reduced ability to dilate, diminishing the ability of the heart to get blood. In addition, the same half hour of second-hand smoke exposure activates blood platelets, which can initiate the process of atherosclerosis (blockage of the heart's arteries) that leads to heart attacks. These effects may explain other research showing that non-smokers regularly exposed to SHS suffer death or disease rates 30% higher than those of unexposed non-smokers<sup>10</sup>.

Related long-term complications of HIV and hepatitis C may be aggravated by exposure to noxious agents including tobacco smoke.

### **Health impact of tobacco use in HIV and hepatitis C**

A 2011 study<sup>11</sup> did not find an association between smoking cigarettes and HIV disease progression as measured by CD4 cell count\* and viral load†. Nevertheless, smoking is an important modifiable lifestyle factor for anyone whose health is already comprised.

Cigarettes themselves could be the direct source of exposure to a wide array of bacteria harmful to human health among smokers and other people exposed to second-hand smoke<sup>12</sup>. Smoking significantly increases the likelihood and rate of developing oral thrush and bacterial pneumonia in smokers with living with HIV<sup>13</sup>. The bacteria that causes mycobacterium avium complex (MAC), a life-threatening infection affecting as many as 40% of people with HIV not only was recovered from the tobacco, cigarette paper and filters of four major brands of cigarettes but even survived the smoking process<sup>14</sup>.

### **Respiratory disorders**

An Italian study<sup>15</sup> suggests that the most common consequence of smoking and HIV is not heart attacks or lung cancer but chronic obstructive pulmonary disease (COPD), a spectrum of respiratory disorders that can start off with persistent 'smoker's cough' but end as emphysema, a frequently lethal degeneration of lung tissue. There appears to be a strong link between HIV infection and increased susceptibility to COPD and other airway diseases<sup>16</sup>. Additional potential COPD risk factors for people with HIV may include inhaled and intravenous substance abuse, low socioeconomic status and malnutrition.

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\* A measurement of the number of CD4 cells in one cubic millimetre of blood. As a type of white blood cell, the CD4 cell helps fight infections in the body. Therefore, the CD4 cell count is an essential measure of the health of a person's immune system.  
From: [www.aidsbeacon.com/resources/glossary-resources/2009/08/03/glossary/](http://www.aidsbeacon.com/resources/glossary-resources/2009/08/03/glossary/) [Accessed 19.04.11]

† The amount of HIV virus present in the blood stream, measured as the number of HIV copies in one milliliter of blood. From: [www.aidsbeacon.com/resources/glossary-resources/2009/08/03/glossary/](http://www.aidsbeacon.com/resources/glossary-resources/2009/08/03/glossary/) [Accessed 19.04.11]

### **Cardiovascular disorders**

Some protease inhibitors (PIs) used to treat HIV can raise blood lipid (fat) levels so smoking compounds an already increased risk of heart disease<sup>17</sup>. Use of antiretroviral therapy has decreased overall mortality associated with HIV but despite this cardiovascular disease accounts for a growing proportion of deaths; the relative risk of heart attack in HIV positive people compared to HIV negative people is increased approximately 1.7-1.8 fold and may increase further with advancing age<sup>18</sup>. Both active smoking and exposure to second-hand smoke are associated with hardening of the arteries<sup>19</sup>.

### **Cancers**

The development of lung cancer among HIV-infected women appears to be very strongly correlated with smoking<sup>20</sup>. For both men and women HIV infection is significantly associated with lung cancer, increasing the risk by nearly twofold, although this is overshadowed by smoking, which raises the risk by almost tenfold<sup>21</sup>.

Anal and cervical cancer are observed significantly more frequently among people living with HIV who smoke compared with those who do not<sup>22</sup>, possibly because smoking increases human papilloma virus (HPV) replication and because HIV positive smokers have significantly higher levels of the cancer-causing variants of HPV (HPV16 and HPV18)<sup>23</sup>.

People with HIV also have a higher risk of developing liver cancer than uninfected people<sup>24</sup>. This may be related to more frequent co-infection with hepatitis C. A systematic review<sup>25</sup> indicated that there is evidence of a synergistic effect between smoking and hepatitis B virus and hepatitis C virus infection on the risk of developing hepatocellular carcinoma. It is therefore recommended that those with a chronic infection of hepatitis B and hepatitis C avoid smoking. Additionally, smoking can interfere with the way in which the liver processes medications and can worsen the effects of hepatitis.

The Mortality 2000 study<sup>26</sup> in France examined the causes of death in HIV-infected adults at a national level in the year 2000; findings indicated that cigarette smoking was reported in almost 75% of cancer-related deaths. This suggests that smoking cessation and prevention of non-HIV malignancies (especially lung cancer) is vital in the care of those who are HIV positive.

### **Neurocognitive disorders**

HIV positive people are more likely to develop brain degenerative illness than HIV negative people and smoking increases this risk even further<sup>27 28</sup>.

### **Musculoskeletal disorders**

Smoking leads to skeletal fragility and, when injury occurs, it also interferes with wound and bone healing<sup>29 30</sup>. Smoking is also a risk factor for the development of rheumatoid arthritis, disc degeneration, back pain and pain in general. People who are HIV positive have an increased risk of osteoporosis<sup>31 32</sup>, and people with both HIV and hepatitis C may have higher rates of osteoporosis than people with HIV alone<sup>33</sup>.

## Raising the issue within a broader health framework

As smoking contributes to additional health problems and increased death rates in those who are HIV positive and/or have hepatitis C, brief advice and referral to stop-smoking support services should be considered a core part of health care provision<sup>34</sup>. Despite overwhelming evidence that, as in the non-infected population, smoking is a major modifiable lifestyle factor for people with HIV and/or hepatitis C there is little evidence about effective interventions. A 2010 study recommended that researchers and practitioners in the HIV field should increase their collaborations with tobacco control researchers and practitioners, who have experience in population-specific cessation programs<sup>35</sup>.

## Medications which support smoking cessation

Zyban (bupropion, an antidepressant and smoking cessation aid) should not be prescribed with the class of anti HIV drugs known as protease inhibitors (PIs)<sup>36</sup>. According to the gay men's health charity GMFA<sup>37</sup>, 'there is a small theoretical risk of an interaction between Zyban which might result in elevated levels of the PI Ritonavir in the blood. It is also possible that the PIs Nelfinavir, Saquinavir and Amprenavir might react similarly. An increase in the level of the PI would do no damage to the HIV treatment's effectiveness, but might make the PI's side effects more severe'. There are no known contraindications between Champix (varenicline, a nicotinic receptor partial antagonist prescribed for smoking cessation) and any HIV medications<sup>38</sup>.

## Support to stop smoking

Many pharmacies/local chemists are able to provide quit smoking advice and support. Where appropriate, the pharmacist can identify the most suitable form of nicotine replacement therapy (NRT) and some pharmacies run NHS-funded stop smoking services. NRT is available on NHS prescription in Scotland.

People who smoke have a much better chance of giving up smoking if they get support to do so, There are lots of different ways to find support: :

- through the local doctor's surgery
- phone free to Smokeline on **0800 84 84 84** (9am to 9pm, seven days a week). Smokeline advisers provide free advice and information for anyone who wants to stop smoking, or who wants to help someone to quit. Smokeline also provides information about the free stop smoking services provided by every health board in Scotland
- request stop smoking leaflets, a magazine and a DVD from Smokeline either by calling the helpline, or by texting 'QUIT' to 83434
- visit [www.canstopsmoking.com](http://www.canstopsmoking.com) and enter a postcode to find the nearest stop smoking service or use web chat support (9am to 9pm) at [www.canstopsmoking.com/WebChat.htm](http://www.canstopsmoking.com/WebChat.htm)

## Further information and support

### **HIV Scotland:** [www.hivscotland.com](http://www.hivscotland.com)

HIV Scotland is a national voluntary agency that seeks to improve the health and wellbeing of people living with HIV, and to prevent the spread of HIV.

Telephone: 0131 558 3713, e-mail: [info@hivscotland.com](mailto:info@hivscotland.com)

### **Hepatitis Scotland:** [www.hepatitisscotland.org.uk](http://www.hepatitisscotland.org.uk)

Hepatitis Scotland is a national voluntary organisation that seeks to help improve responses to viral hepatitis prevention, treatment and support through training, capacity building and patient involvement services.

Telephone: 0141 225 0419, e-mail: [enquiries@hepatitisscotland.org.uk](mailto:enquiries@hepatitisscotland.org.uk)

### **Waverley Care:** [www.waverleycare.org](http://www.waverleycare.org)

Waverley Care offers services that allow people diagnosed with HIV or hepatitis C to be cared for and supported throughout their illness.

Telephone: 0131 558 1425, e-mail: [info@waverleycare.org](mailto:info@waverleycare.org)

### **Terrence Higgins Trust:** [www.tht.org.uk](http://www.tht.org.uk)

Terrence Higgins Trust Scotland is a leading HIV and sexual health charity which provides a range of services across Scotland.

Telephone: 0808 802 1221, e-mail: [info.scotland@tht.org.uk](mailto:info.scotland@tht.org.uk)

### **Gay Men's Health:** [www.gmh.org.uk/](http://www.gmh.org.uk/)

Gay Men's Health involves and empowers gay and bisexual men to promote the health and well-being of all men who have sex with men, including those living with or affected by HIV.

Telephone: 0131 558 9444 (Edinburgh), 0141 552 0112 (Glasgow), e-mail: [info@gmh.org.uk](mailto:info@gmh.org.uk)

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