



Alcohol and Cancer Risks

A Guide for Health Professionals

SHAAP

SCOTTISH HEALTH ACTION ON ALCOHOL PROBLEMS
www.shaap.org.uk

Introduction

Alcohol and cancer risks

Drinking alcohol is an established risk factor for several malignancies, and it is a potentially modifiable risk factor for cancer. This guide updates previous guidance from SHAAP to summarise for health professionals the links between alcohol consumption and cancers, so that they can use opportunities in their work to intervene to reduce the risks. The previous guidance was produced following an expert workshop which was convened by SHAAP in 2011. This version, updated in 2019, relies on data from Information Services Division Scotland (ISD) and Scottish Public Health Observatory (ScotPHO) collaboration amongst other sources. It is important to note that ScotPHO has revised their method for calculating alcohol attributable fractions (AAFs), resulting in more accurate estimations.²² This has resulted in increased AAFs for cancers, reflected in this report. Due to this revised method, the figures in this report cannot be compared to previous editions.

The role of health professionals

Raising the issue of alcohol consumption with patients can be difficult. However, evidence from many sources suggests that patients are accepting of tactful or empathetic inquiry about aspects of their lifestyle which may have an impact on their health. Health professionals are well placed to raise the level of awareness with their patients and clients as part of a comprehensive review of their health and lifestyle.

Most patients and clients welcome guidance and support to help them find the motivation to improve their health and wellbeing. Reducing alcohol consumption is often only one of a number of changes that could be made to improve quality of life, but it is one that is achievable.

Health professionals can help reduce alcohol-related cancer risks by:

- Informing patients and clients about the risks of cancer from drinking alcohol.
- Providing guidance and support to help patients and clients reduce the amount of alcohol they drink.

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Executive summary

The impact of alcohol consumption in Scotland and the loss to health and life it entails has been well documented. Approximately 6.5% of deaths in Scotland in 2015 were attributable to alcohol consumption. More than one in four (28%) of these alcohol-attributable deaths were due to cancer.²

According to the 2016 UK Chief Medical Officers' low risk drinking guidelines, in relation to cancer risk there is no safe level of alcohol consumption. The risks associated with cancer start from any level of regular drinking and rise with the amounts of alcohol being drunk.⁵

This brochure provides a summary of patterns of alcohol use in Scotland by age, gender and area deprivation.⁸

The proportion of adults in Scotland drinking above the recommended levels fell from 34% in 2003 to 26% in 2017.

- The proportion of non-drinkers is increasing, from 11% of adults in 2003 to 17% in 2017.
- Men in Scotland are twice as likely as women to drink above the recommended level of alcohol.
- The proportion of adults exceeding the low-risk guidelines is highest in the 16-24, 45-54 and 55-64 age brackets. It is lowest for those aged 75 or older.
- The largest share of people drinking at a hazardous or harmful rate is in the least deprived quintile. However people who do drink above the recommended levels in the most deprived areas drink at higher levels than those who exceed the guidelines in the least deprived areas.
- The highest levels of alcohol-related hospital admissions and alcohol-specific deaths are in the most deprived areas.

This brochure also provides statistics regarding alcohol-attributable deaths to cancer in Scotland. There is strong epidemiological evidence to suggest that alcohol increases your risk of developing the following types of cancer:¹⁶

- Cancer of the lip, oral cavity and pharynx
- Cancer of the larynx
- Cancer of the oesophagus
- Cancer of the breast
- Cancer of the colon and rectum
- Cancer of the liver.

There is also a relationship between alcohol and cancer of the stomach, though this relationship is different from that of the cancers mentioned above.¹⁶ This will be expanded upon in the stomach cancer section of this publication. Additionally, there is some evidence that alcohol is associated with several other cancers in addition to these, such as pancreatic cancer, lung cancer and melanoma.^{16,3}

The brochure concludes with an outline of the different avenues for treatment and prevention of harmful or hazardous alcohol use, and provides recommendations on how best to mitigate the risk of alcohol-attributable cancer and support those with alcohol-related problems.

UK Chief Medical Officers' low risk drinking guidelines

The UK Chief Medical Officers' alcohol guidelines for both men and women aim to offer advice on drinking alcohol in order to keep health risks to a low level. Drinking alcohol increases the risk of developing a range of cancers, and these risks start from any level of regular drinking and then rise with the amounts of alcohol being drunk. For both men and women, the UK Chief Medical Officers advise the following:⁵

Weekly drinking guidelines

- You are safest not to drink regularly more than 14 units per week, to keep health risks from drinking alcohol to a low level.
- If you do drink as much as 14 units per week, it is best to spread this evenly over 3 days or more.
- If you have one or two heavy drinking sessions, you increase your risks of death from long-term illnesses and from accidents and injuries.
- The risk of developing a range of illnesses (including cancer) increases with any amount you drink on a regular basis.
- If you wish to cut down the amount you are drinking, a good way to help achieve this is to have several drink-free days each week.

Single occasion drinking episodes guidelines

The Chief Medical Officers advise men and women who wish to keep their short term health risks from a single drinking occasion to a low level, that they can reduce these risks by:

- Limiting the total amount of alcohol you drink on any occasion.
- Drinking more slowly, drinking with food, and alternating with water.
- Avoiding risky places and activities, making sure you have people you know around you, and ensuring you can get home safely.

The sorts of things that are more likely to happen if you don't judge the risks from how you drink correctly can include: accidents resulting in injury (causing death in some cases), misjudging risky situations, and losing self-control. These risks can arise for people drinking within the weekly guidelines for regular drinking, if they drink too much or too quickly on a single occasion; and for people who drink at higher levels, whether regularly or infrequently.

Some groups of people are likely to be affected more by alcohol and should be more careful of their level of drinking on any one occasion:

- Young adults
- Older people
- Those with low body weight
- Those with other health problems
- Those on medicines or other drugs.

As well as the risk of accident and injury, drinking alcohol regularly is linked to long term risks such as heart disease, cancer, liver disease, and epilepsy.⁵

Alcohol consumption and cancer risk

How alcohol causes cancer

Strong evidence has emerged of plausible mechanisms that may explain why alcohol increases the risk of developing cancer. These mechanisms are as follows:

Increased absorption of carcinogens

Alcohol can affect the cells between the mouth and throat, which may make it easier for other carcinogens to be absorbed.⁹

Acetaldehyde

When alcohol is consumed, it is partially converted to acetaldehyde in the body. This happens mainly in the liver, but also in other cells and in bacteria in the gut and mouth. Acetaldehyde can cause cancer by damaging DNA and stopping our cells from repairing this damage.⁹

Hormone changes

Alcohol can increase the levels of oestrogen, insulin and other hormones. Hormones act as messengers in the body, giving our cells instructions - including when to grow and divide.⁹

Alcohol and tobacco together

Epidemiological research shows that people who use both alcohol and tobacco have a 30 times increased risk of developing cancers of the lip, oral cavity, pharynx, larynx, and oesophagus than people who use either alcohol or tobacco alone. This is because:¹³

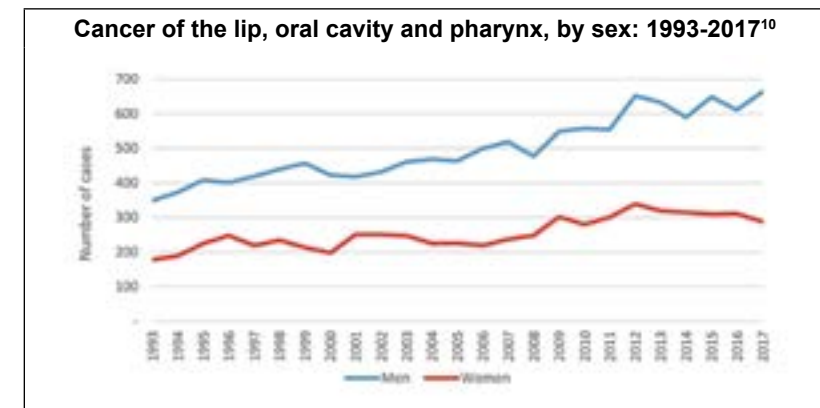
- Alcohol affects the skin of the mouth allowing tobacco toxins to pass through more easily.
- Tobacco smoke contains formaldehyde, a poisonous chemical similar to acetaldehyde produced by the breakdown of alcohol.
- These two chemicals together can overwhelm the body's defence mechanisms.¹³

Alcohol-attributable cancer in Scotland

With regard to the data presented in this section, the following tables show the number of new cancer cases reported by Information Services Division (ISD) by year for men and women. ISD also publishes age-adjusted cancer incidence rates. For the cancers included in this briefing, the overall trend over the last 25 years is the same for both the number and the rate of new cases, with the exception of male colorectal cancer which is noted in that section. For further information readers can refer to ISD's cancer statistics at <https://www.isdscotland.org/Health-Topics/Cancer/Cancer-Statistics/>.

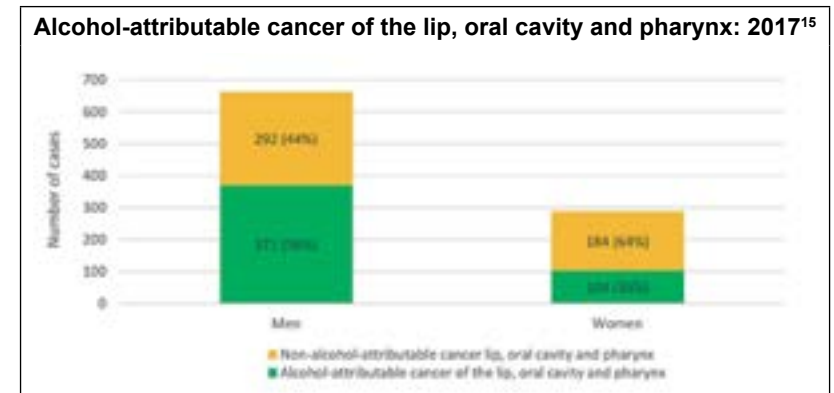
Cancer of the lip, oral cavity and pharynx

In 2017, there were 663 new cases of cancer of the lip, oral cavity and pharynx in men and 288 in women in Scotland. This is a 90% and 62% increase, respectively, since 1993. The incidence of these cancers is 2.3 times greater in men than in women.¹⁰



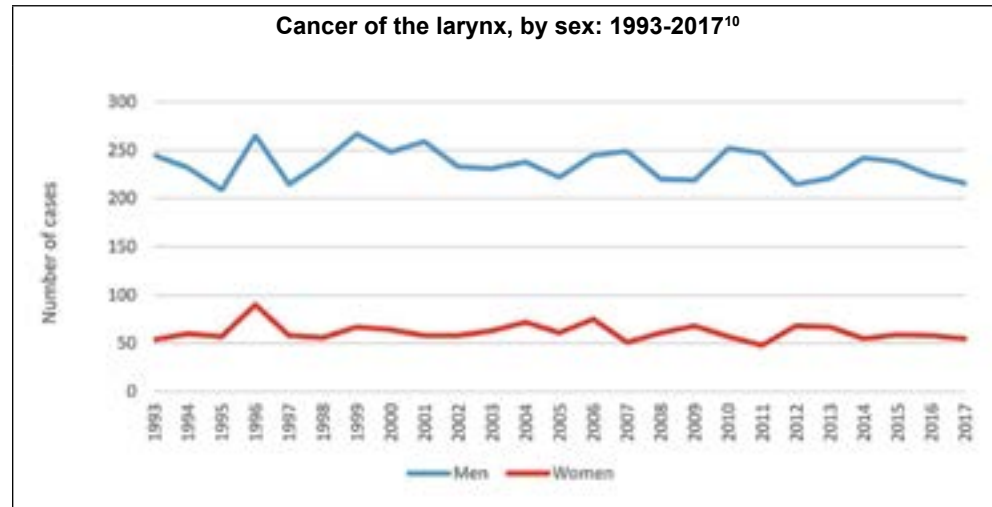
It is estimated that for men, 56% of cases of cancers of the lip, oral cavity and pharynx can be attributed to alcohol consumption. For women, it is 36%.²

The incidence of cancer of the lip, oral cavity and pharynx increases with increasing levels of deprivation. This is associated with other lifestyle effects correlated with deprivation, particularly smoking.¹⁰

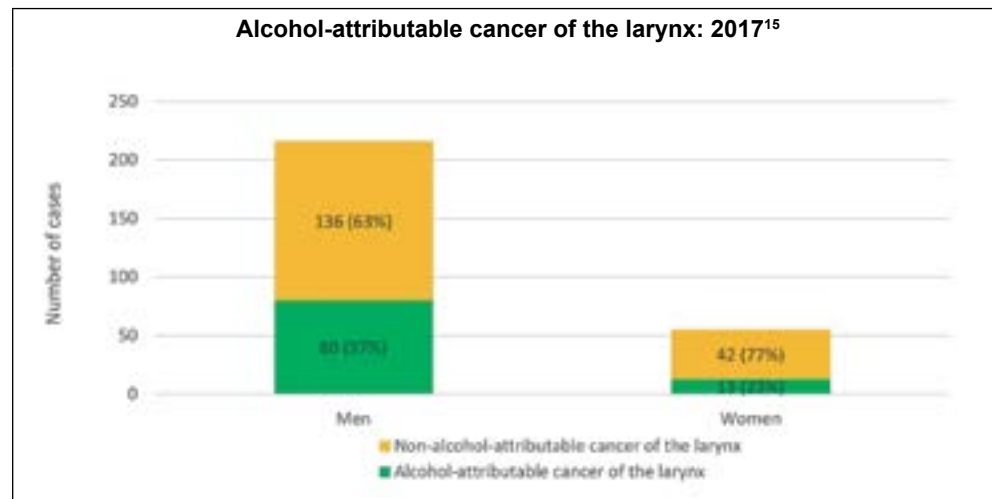


Cancer of the larynx

In 2017, there were 216 new cases of cancer of the larynx in men in Scotland, a 12% decrease since 1993. For women there were 55 new cases, a 2% decrease.¹⁰



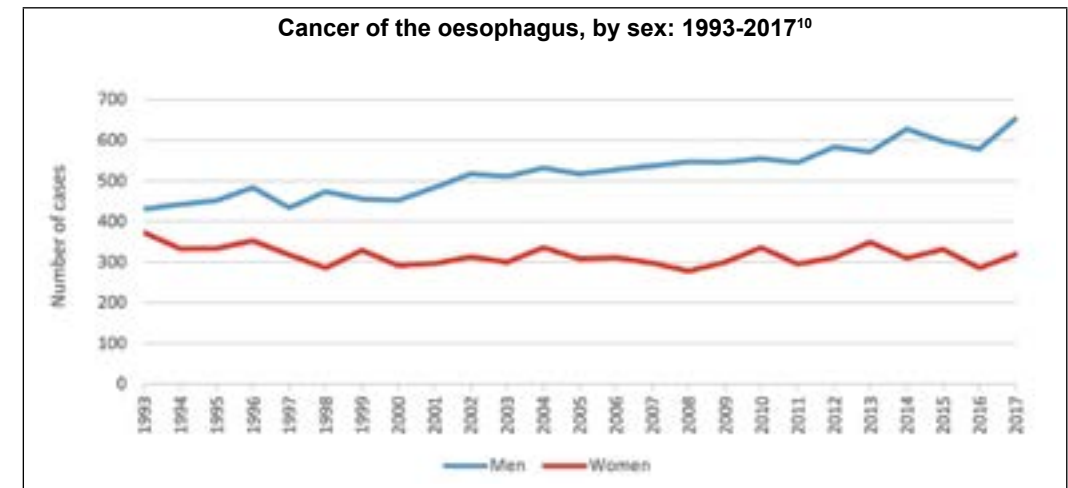
It is estimated that 37% of laryngeal cancer cases in men can be attributable to alcohol use, compared to 23% of cases for women.² Incidence of laryngeal cancer is highest within disadvantaged communities¹⁰ and is associated with the additional effects of other lifestyle factors such as smoking. In contrast to areas of social and economic affluence, the incidence of tobacco use within the most deprived communities has not shown a significant decrease over the past 30 years.⁸



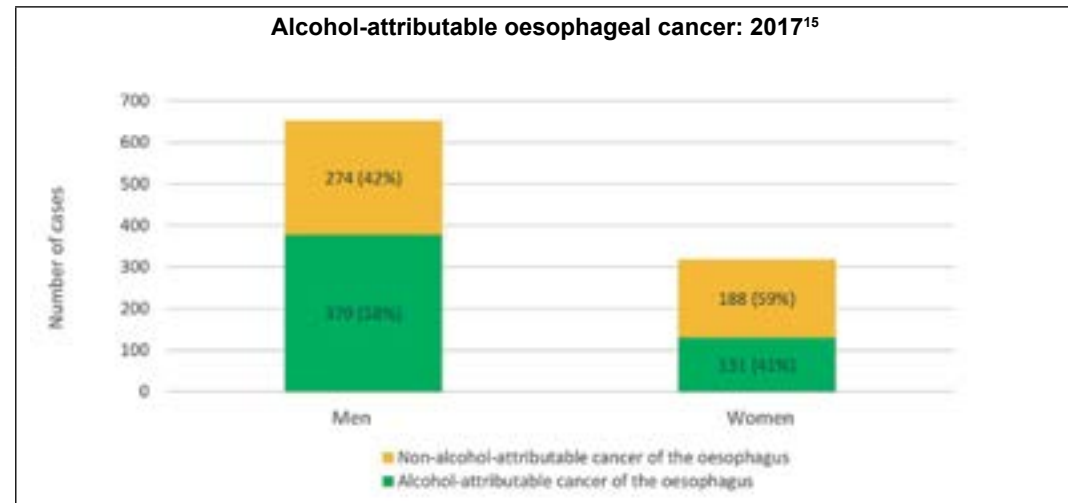
Cancer of the oesophagus

Alcohol consumption at any level is associated with an increased risk of oesophageal cancer. The risks, compared with no alcohol consumption, range from 1.3-fold higher for light* drinking to nearly 5-fold higher for heavy* drinking.³

In 2017, there were 653 new cases of oesophageal cancer in men in Scotland and 319 in women, representing a 52% increase in men and a 14% decrease for women since 1993.¹⁰



It is estimated that 58% of new cases of oesophageal cancer in men can be attributable to alcohol use, compared to 41% of cases for women.²



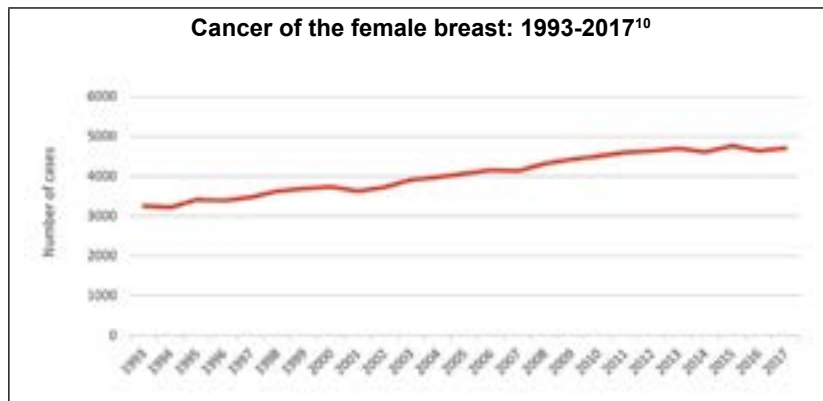
*Bagnardi et al.³ use the terms 'light', 'moderate' and 'heavy' to categorize alcohol consumption. Light drinking: Equal to or less than 1.56 units per day; Moderate drinking: Equal to or less than 6.25 grams of ethanol per day; Heavy drinking: More than 6.25 grams of ethanol per day. (Bagnardi et al use grams of ethanol to measure alcohol intake: For sake of ease these have been converted to UK units. 1 unit = 8 grams of ethanol).

Cancer of the female breast

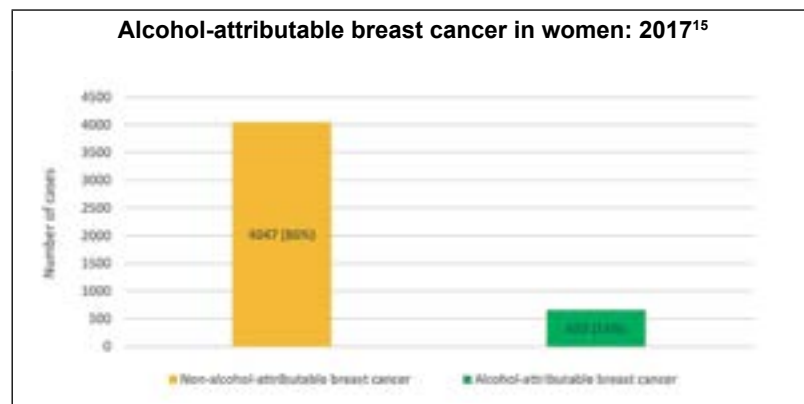
Breast cancer is the most common form of cancer in women. Epidemiological studies have consistently found an increased risk of breast cancer with increasing alcohol intake. Evidence indicates that light* drinkers have slightly increased (1.04-fold higher) risks of breast cancer, compared to non-drinkers. The risk increase is greater in moderate* drinkers (1.23-fold higher) and heavy* drinkers (1.6-fold higher).³

Women should be aware of the accumulated risk of consuming alcohol over the course of their lifetime. There is evidence to suggest that drinking in adolescence and early adulthood increases breast cancer risk as well as drinking post-menopause.¹⁶ For premenopausal women, there is a breast cancer risk increase of 5% with 10g of ethanol per day. For post-menopausal women there is a 9% risk increase with 10g of ethanol per day²⁰ (10 grams of ethanol is 1.25 units of alcohol). There is a relationship between deprivation and breast cancer: Incidence decreases with levels of deprivation, however mortality increases. This seems to be explained by lower survival rates for women in deprived areas.¹⁹

In 2017, there were 4,706 new cases of breast cancer in Scotland, a 45% increase since 1993.¹⁰



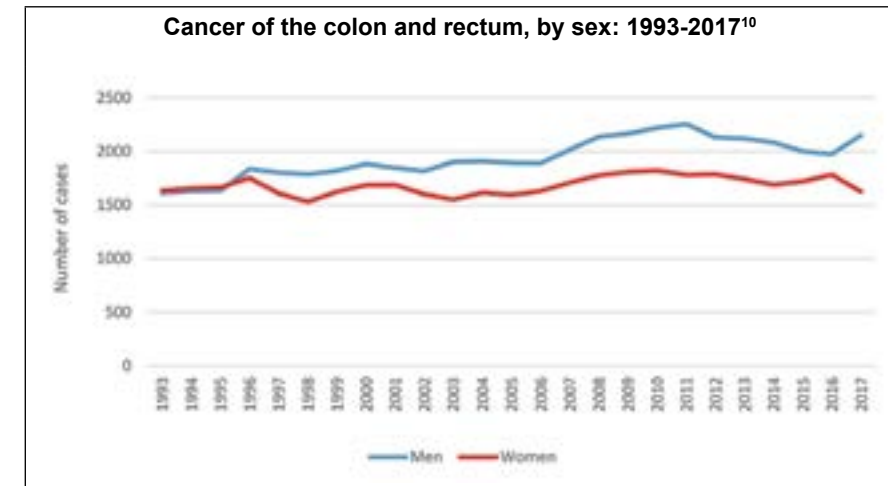
It is estimated that 14% of cases of breast cancer were attributable to drinking alcohol.²



*See definition of light, moderate and heavy on page 9.

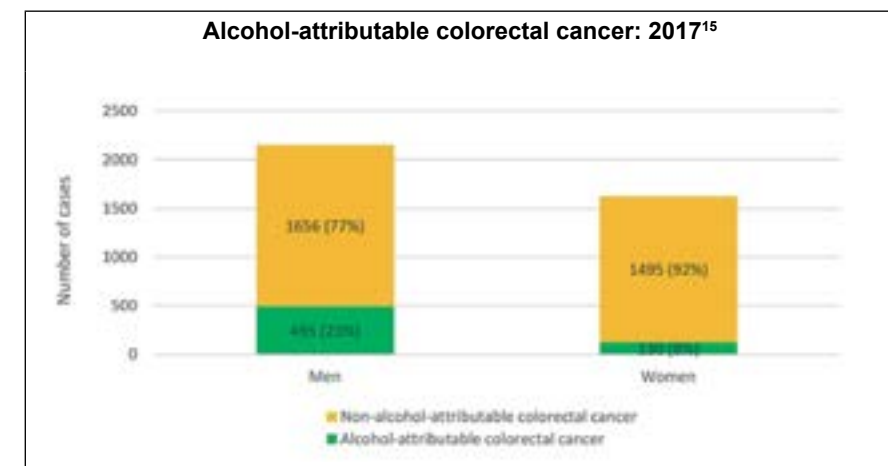
Cancer of the colon and rectum

In 2017, there were 2,151 new cases of cancer of the colon and rectum in men and 1,625 in women in Scotland.¹⁰ In terms of the number of cases, there has been an increase of 33% for men and a 1% decrease for women since 1993. However for men, the age-standardized rate of colorectal cancer has fallen from 106 to 91 per 100,000 person-years at risk during the same time frame.¹⁰



Moderate* to heavy* alcohol consumption is associated with 1.2- to 1.5-fold increased risks of cancers of the colon and rectum compared with no alcohol consumption.³ Colorectal cancers are the third most common cancer in men and women.¹¹ There is a relationship between colorectal cancer and deprivation: Incidence and mortality in men increases with levels of deprivation. Women show a similar pattern, though with a less pronounced association.¹⁸

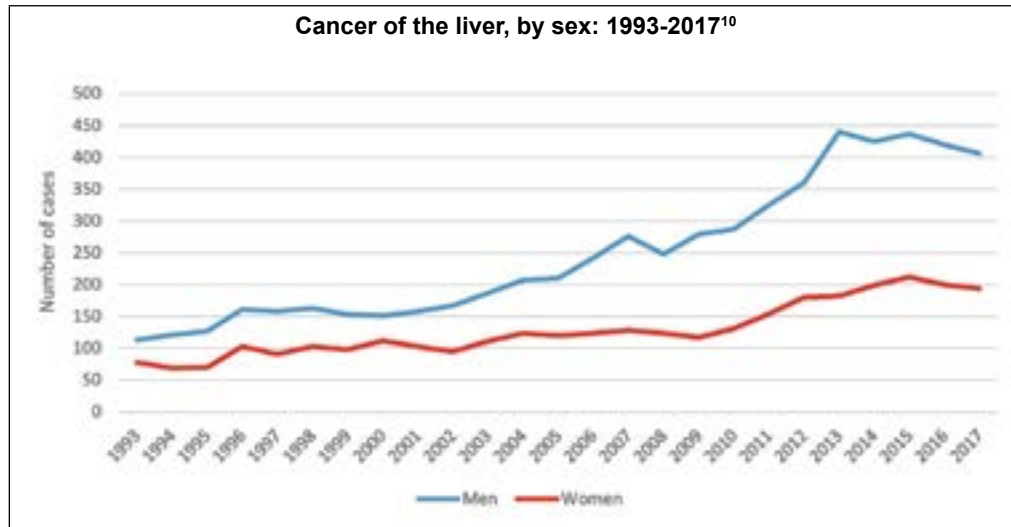
It is estimated that 23% of colorectal cancer cases in men can be attributed to drinking alcohol. For women, it is 8%.



*See definition of light, moderate and heavy on page 9.

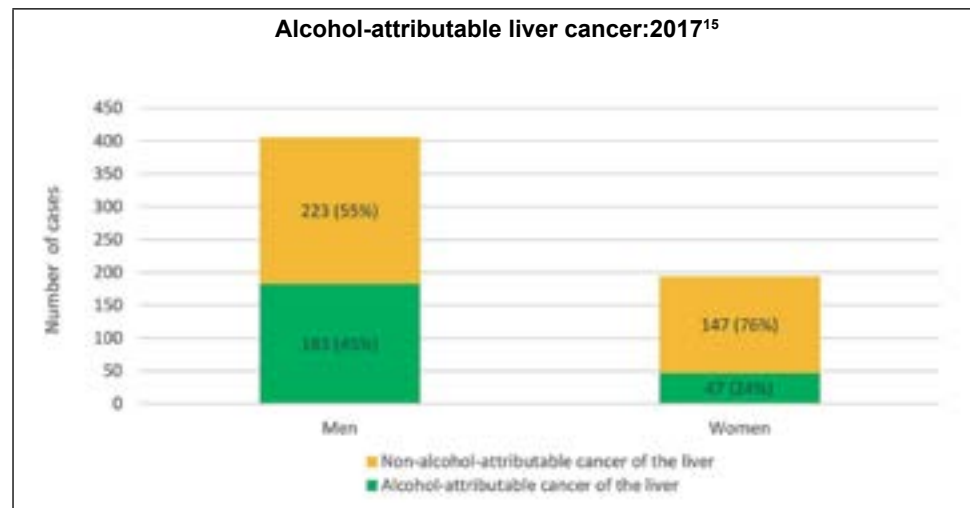
Cancer of the liver

In 2017, there were 406 new cases of liver cancer in men and 194 in women in Scotland. This represents a 259% increase in cases for men and a 149% increase for women since 1993.¹⁰



Heavy alcohol consumption is associated with approximately 2-fold increased risks of two types of liver cancer (hepatocellular carcinoma and intrahepatic cholangiocarcinoma).³

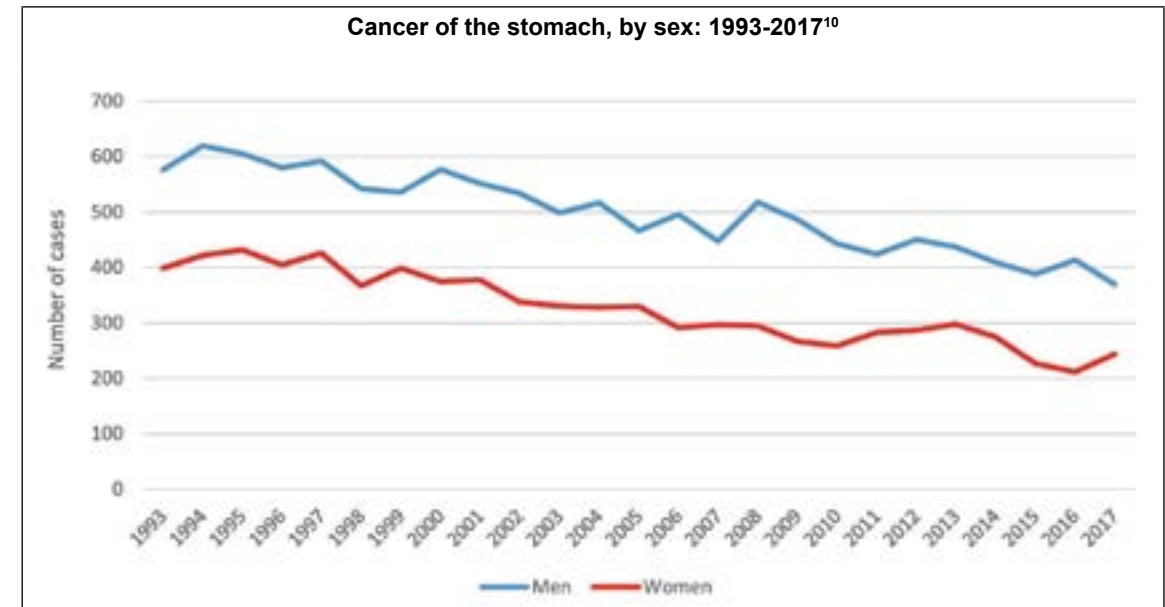
It is estimated that 45% of liver cancer cases reported in men can be attributed to alcohol use. For women, it is 24%.²



Cancer of the stomach

In 2017, there were 370 cases of stomach cancer in men and 244 cases for women in Scotland. This represents a 36% decrease for men and a 39% decrease for women since 1993.¹⁰

Stomach cancer and alcohol have a different risk relationship than the other cancers outlined in this report. For the other cancers, any level of drinking increases risk. For stomach cancer, there is no conclusive evidence to suggest that there is a relationship between drinking less than 45 grams of ethanol per day (ie: 5.6 units per day) and stomach cancer. The risk of stomach cancer is associated with alcohol intake at above approximately 5.6 units of alcohol per day.¹⁶



Opportunities for interventions

To improve health and wellbeing, there are interventions which aim to increase awareness of the CMO alcohol guidelines and associated risks which alcohol can pose. Within current public health improvement programmes that seek to change lifestyle behaviours associated with health harm, there are opportunities to raise the profile of messages focused on alcohol and cancer risk.

The Chief Medical Officers' low risk drinking guidelines (summarised in full on page 4 of this publication) offer guidance on minimising risk from drinking alcohol. People should not exceed 14 units of alcohol in a week and should spread their drinking over three or more days. Having several alcohol-free days in a week is a good way to start cutting down on alcohol use.⁵

How much is 14 units of alcohol?

One unit is equal to 10ml (or 8g) of pure alcohol. Because alcoholic drinks come in different strengths and sizes, units are a good way of telling how strong a drink is.

The new alcohol unit guidelines are equivalent to six pints of average strength beer (4%) or six 175ml glasses of average strength wine (13%).

For further information on alcohol units:

Count 14 - <https://www.count14.scot/>

Healthy living and alcohol - <https://www.nhsinform.scot/healthy-living/alcohol>

Making a change - <http://www.healthscotland.com/documents/30950.aspx>

Alcohol Brief Interventions

Alcohol Brief Interventions (ABIs) have been identified as an effective strategy for treating people whose alcohol consumption is posing a risk to their health. There are a number of evidence-based brief interventions for a variety of treatment settings that can be used to modify a range of lifestyle habits.

The aim of the intervention is to help individuals moderate their levels of drinking and so reduce their risk of developing more serious alcohol-related problems, such as cancer. National guidance defines an ABI as follows:

“A short, evidence-based, structured conversation about alcohol consumption with a patient/client that seeks in a non-confrontational way to motivate and support the individual to think about and/or plan a change in their drinking behaviour in order to reduce their consumption and/or their risk of harm.”

ABIs are delivered to individuals who are drinking at hazardous and harmful levels. They are identified through screening, part of which involves a structured conversation focused on obtaining an accurate picture of the client's alcohol consumption to assess whether they are suitable for an ABI, whether they should be signposted to another service, or if no action is required.

For further information and support in delivery of ABIs visit:

Alcohol overview

<http://www.healthscotland.scot/health-topics/alcohol/alcohol-overview>

Alcohol Brief Intervention Resources

<http://www.healthscotland.scot/publications/alcohol-brief-intervention-resources>

Local delivery plan standard: Alcohol Brief Interventions

<https://www2.gov.scot/Resource/0052/00520646.pdf>

Alcohol and cancer treatment

Alcohol and chemotherapy

Alcohol may interfere with the way some chemotherapy drugs work. Healthcare professionals providing treatment will be able to give specific advice about whether drinking alcohol is safe with chemotherapy drugs.

Drug interactions

With some drugs it is very important not to drink alcohol as they interact. Procarbazine and lomustine are two such drugs. If taking either of these, consult a health professional about what not to eat or drink during this period.

Chemotherapy side effects

Some chemotherapy drugs can cause nausea or loss of appetite. If able to drink, a small amount of alcohol may help to boost appetite. However excessive drinking is not advisable whatever type of chemotherapy a patient is on.

It is also advised that some patients develop a sore mouth while having chemotherapy and may find that alcohol stings, particularly spirits.¹⁴

Alcohol and breast cancer recovery

According to a 2019 report on breast cancer from the National Institute for Health and Care Excellence, there was some evidence that cancer recurrence is more likely in people who drink more than 3 or 4 alcoholic drinks per week which equates to approximately 5 units of alcohol per week. They therefore recommend that breast cancer patients be advised that they should limit alcohol intake to below 5 units per week.¹⁷

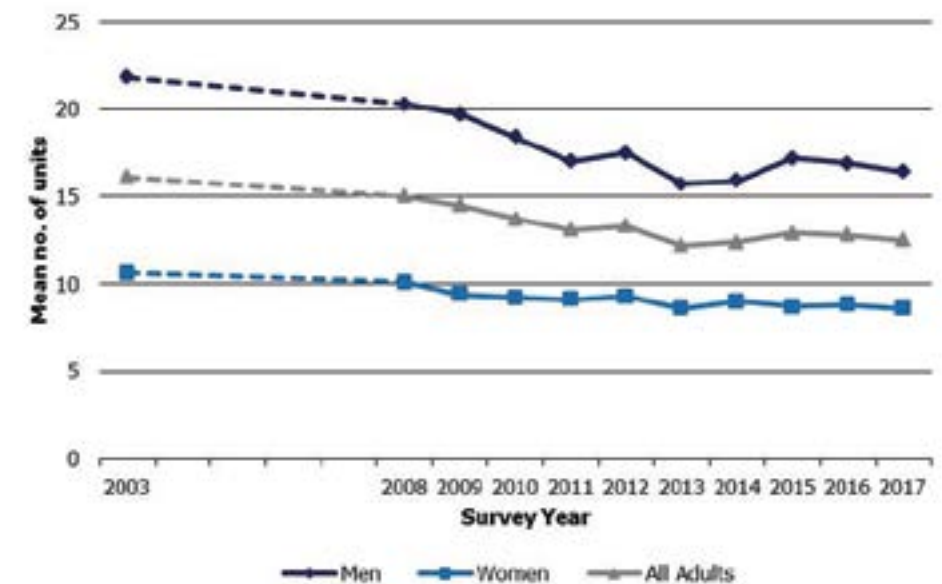
Alcohol consumption in Scotland

Patterns of alcohol consumption: Age and gender

Gender

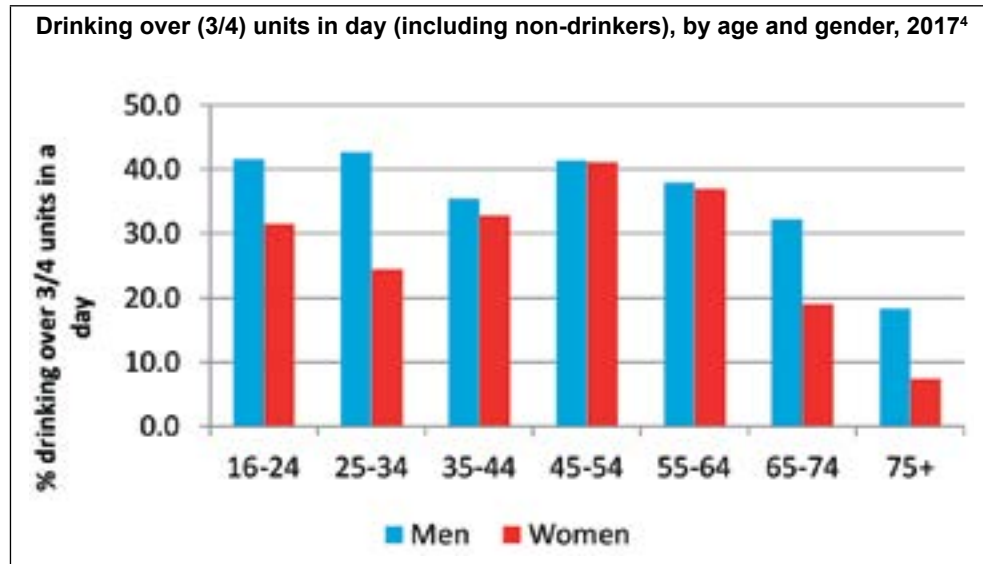
Male drinkers are twice as likely to drink above the recommended maximum of 14 units a week as female drinkers. Overall average weekly alcohol consumption for men in Scotland is 16.4 units while for women, the average is 8.6 units. In 2017, levels of drinking which exceeded the recommended weekly limit were higher for men than for women (33% compared to 16% respectively). The average number of units of alcohol consumed per week by drinkers has decreased since 2003, and has remained at around the current level since 2013. The proportion of men drinking more than four units on their heaviest drinking day declined from 2003 to 2017 (45% to 37%). Similarly, the percentage of women drinking more than three units on their heaviest drinking day declined (37% in 2003 to 29% in 2017).

Mean number of units of alcohol consumed per week among adults since 2003, by sex⁸



Age

For both men and women, the average amount drunk on the heaviest drinking day of the week generally declines with age. Patterns of alcohol consumption tend to change from heavier drinking on one or two occasions per week to drinking less per occasion but more frequently during the week as people age.⁸



Patterns of alcohol consumption: Area deprivation

Average weekly levels of self-reported alcohol consumption tend to be higher in more affluent groups. For men, in 2017, the prevalence of drinking above the guidelines was highest among those living in the least deprived areas (37-38%) and lowest in the most deprived areas (26-31%). Among women, 22% of those in the least deprived quintile drank at hazardous/harmful* levels compared with 12-16% in the other quintiles.⁸

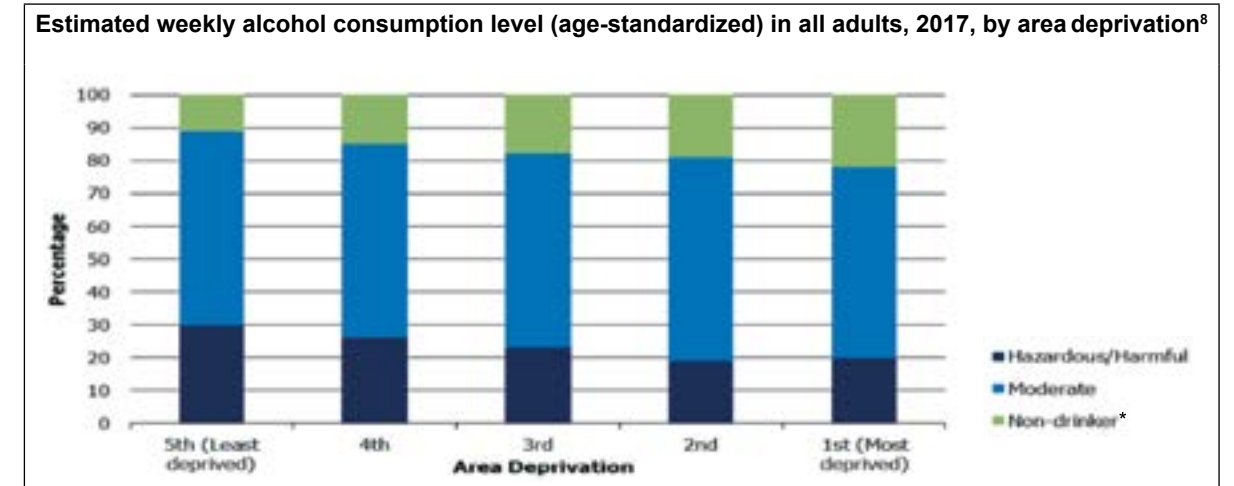
Despite this however, alcohol-related morbidity and mortality are not evenly distributed throughout the population and the burden is greatest among those living in the most deprived areas.⁸ This is demonstrated by the following:²¹

- Levels of binge* drinking are higher in less affluent groups.
- The heaviest drinkers are less likely to be fully represented in surveys.
- Heavy drinkers in less affluent groups tend to consume more than heavy drinkers in other groups.

This means that alcohol-related harm is socially patterned with higher levels of alcohol-related harm in less affluent groups. Inequalities in alcohol-related harm have been falling in Scotland, but they remain wide. According to Health Scotland's 2019 summary:²¹

- Alcohol-related mortality rates for those living in the most deprived areas are six times the rate for those in the least deprived areas.
- The rate of alcohol-related hospital admissions for those living in the most deprived areas is almost nine times the rate for those in the least deprived areas.

The difference in deprivation levels for hospital admissions in a psychiatric setting is even more pronounced: in 2015/16, just over 15 times as many people from the most deprived areas were admitted to hospital for psychiatric problems relating to alcohol.⁸



*The Scottish Health Survey⁸ uses the following definitions: Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous/harmful: more than 14 units; Binge drinking: 8+/6+ units of alcohol on heaviest drinking day in previous week for men and women respectively.

Recommendations

People have the right to make an informed decision about their alcohol use. While the evidence of an association between alcohol and cancer is robust, associations with other cancers beyond what has been discussed in this guide are still undergoing research. New evidence will emerge which will further our understanding of the scope of risks represented by consuming alcohol.

Our recommendations are as follows:

Communication

- Healthcare professionals need to be well-informed and open with patients about the risks that consuming alcohol poses with regards to cancer, as well as how to reduce these.
- Further promotion and awareness of the low risk drinking guidelines and what this means in terms of common drinks in order to increase understanding of units of alcohol and related risks.
- Information regarding the association between cancer and alcohol use needs to be disseminated through other channels alongside messages from healthcare professionals: Educators, support workers, policymakers and the media among others all have a role to play in raising awareness.

Support

- People affected by alcohol problems should be flagged as priority cases for screening for cancers which may be more likely to affect them.
- These individuals and where acceptable, their families, should receive up to date information on the risks posed by alcohol related to cancer.
- Support for those affected by alcohol problems should be free of judgemental attitudes.

Research

- Further research is needed in order to substantiate suggestions that other types of cancer, such as pancreatic cancer, are linked to alcohol usage.
- Further research is needed in order to understand more about how patterns of alcohol usage impact on cancer risks and harms.
- Further research is needed in Scotland about how best to communicate alcohol-related harms to the public and measure levels of awareness and action taken as a result.

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Acknowledgements

This publication has been written with contributions from the following members of the SHAAP team:

Jackie MacDiarmid, Research Officer

Louis Bezants, Consultant

Eric Carlin, Director

Felicity Garvie, Policy Officer

The SHAAP Steering Group

SHAAP would also like to acknowledge, with gratitude, the contributions of the following external people and organisations:

Ian Grant, Principal Researcher, Information Services Division

Annie Anderson, Co-Director of the Scottish Cancer Prevention Network

NHS Health Scotland

The Scottish Government

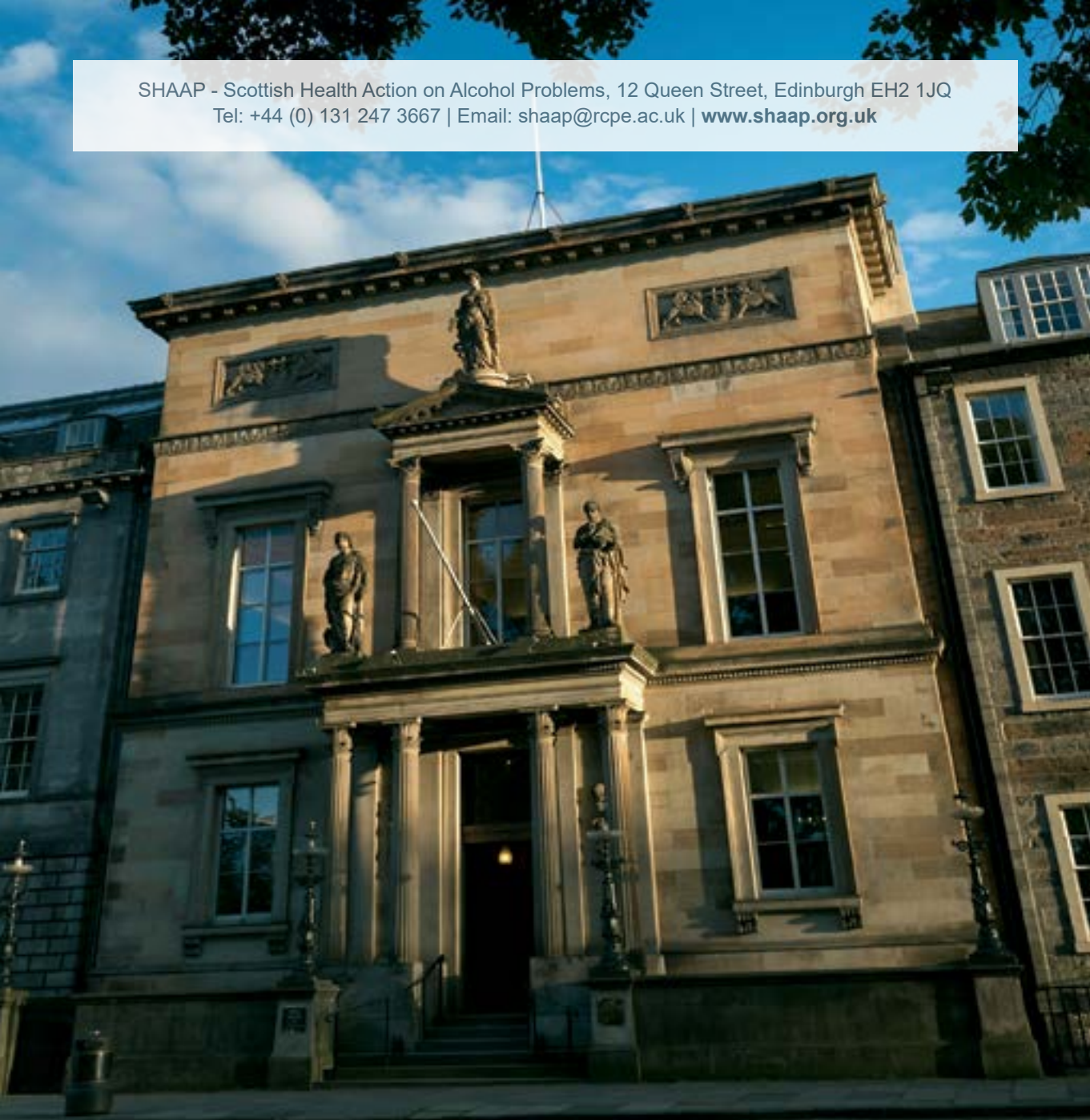
Scottish Health Action on Alcohol Problems (SHAAP)

SHAAP was established in 2006 by the Scottish Medical Royal Colleges and Faculties to raise awareness about alcohol-related problems. SHAAP aims to provide an authoritative medical voice on the impact of alcohol on the health of the people in Scotland and to campaign for action to reduce this harm. This involves:

- Raising awareness of the nature and extent of alcohol-related harm in Scotland;
- Reviewing established and emerging evidence and carrying out new research to identify the most effective interventions to reduce alcohol-related health damage;
- Specifying how effective alcohol strategies and policies can be practically implemented at a Scottish, UK and international level;
- Campaigning for the adoption of effective strategies to reduce the burden of alcohol-related harm in Scotland.

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