

ALCOHOL CONCERN

Factsheet: Health impacts of alcohol

Health impacts of alcohol

Alcohol is implicated in up to 40,000 deaths per year in England and Wales, and is directly responsible for 5,000 (1 – DOH, 2001). A recent World Health Organisation report identifies alcohol as the third highest risk to health in developed countries (2 – WHO, 2002). This report aims to explore the relationship between excess drinking and health, and examine the various illnesses to which alcohol can contribute.

Consumption

Despite widespread knowledge of the impact of alcohol on health, per capita consumption has risen steadily since 1992. High numbers of people are drinking above recommended limits and there have been significant increases in the proportion of people drinking at this level within certain sectors of society. The last decade has seen a particularly marked increase in the number of women and children drinking to excess.

In 2000:

- 39% of men and 23% of women had exceeded the daily benchmarks (3-4 units and 2-3 units respectively) on at least one occasion in the previous week.
- 21% of men and 10% of women had drunk more than double the daily limit in one session (binge drinking) at least once in the last week. Among 16 to 24 year olds, this figure rose to 37% of men and 27% of women.
- 29% of men consumed more than 21 units per week¹ and 17% of women consumed more than 14 units per week. Between 1988 and 2000 the number of women consuming over 14 units increased by 70%. (4 – Walker, et al, 2001)

Other research has found:

- Approximately one in four 16 to 74 year olds are hazardous drinkers (i.e. have experienced immediate problems - such as loss of memory, injuries or failure to do what is expected of them - after a night's drinking). Among 16 to 24 year olds, this figure rises to 42%. (5 – National Statistics, 2000)
- 11 to 15 year olds who drink alcohol consumed nearly twice as much in 2001 (9.8 units a week) as they did in 1990 (5.3 units a week). (6 – DOH, 2002)

The effects of increases in consumption on the health of the nation are beginning to show. Since the early 1970s there has been an 8-fold increase in deaths from chronic liver disease amongst men aged 35 to 44, and a 7-fold increase among women of the same age group. The Chief Medical Officer's report for 2001 offers this warning:

“Cirrhosis takes time to develop, alcohol damage to the liver builds up over many years until the liver starts to malfunction or fail. This is why this trend is so worrying. It suggests that patterns of increased drinking starting at earlier ages are beginning to have serious public health implications” (7 - CMO, 2001)

Burden on the NHS

The cost of treating the chronic and acute effects of alcohol misuse is already placing a huge burden on an overloaded health service.

- Alcohol has been estimated to cost the NHS up to £3 billion per year on hospital services (8 – Royal College of Physicians, 2001)
- One in four acute male admissions is alcohol-related.

¹ The Government report *Sensible Drinking* (3 – DOH, 1995) changed the guidelines for sensible drinking from a weekly to a daily measure of consumption. The General Household Survey continues to measure levels of weekly consumption in order to track changes in drinking patterns.

- Over 28,000 hospital admissions are due to alcohol dependence or the toxic effects of alcohol. (9 – Luke C., 1998)
- One in six people attending accident and emergency departments for treatment has alcohol-related injuries or problems, rising to 8 out of 10 at peak times. (10 – HEA, 1998)
- A recent study found 21% of psychiatric admissions over a six-month period to be alcohol-related. (7 - CMO, 2001)

Health

It has long been clear that excess drinking puts long-term health at significant risk and that the risk of harm increases in line with consumption. The chronic health effects of alcohol can affect numerous organs in the body (see Fig. 1). These include:

- Liver cirrhosis
- Cancer
- Strokes
- Pancreatitis
- Gastritis
- High blood pressure (hypertension)
- Fertility Problems
- Impotence
- Neurological disorders
- Mental Health problems

The impact of alcohol is not limited to chronic health effects; research has indicated that about 25% of overall alcohol-related mortality is due to accidents (3 – DOH, 1995). The prevalence of binge drinking, particularly among young people, has meant that the acute effects of alcohol are very noticeable in the community, and people are becoming increasingly aware of these problems.

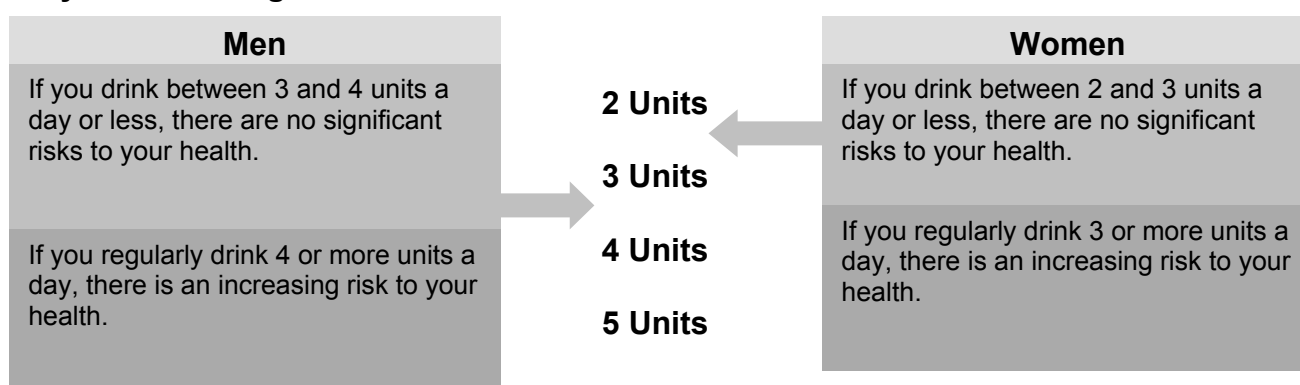
Alcohol misuse is implicated in:

- 40% of violent crimes (11 – Kershaw, C. et al, 2000)
- 39% of deaths in fires (12 – Royal Society for the Prevention of Accidents, 1998)
- 15% of drownings (13 – Tether, P., 1986)
- 1 in 6 road traffic deaths (14 – DETR, 2002)

(See Alcohol Concern Factsheet 9: Alcohol and Accidents)

Guidelines for responsible drinking

Daily benchmark guide



Daily or weekly limits?

The Government report *Sensible Drinking* (3 – DOH, 1995) changed the guidelines for sensible drinking from a weekly to a daily measure of consumption, reflecting the concern that: “*weekly consumption can have little relation to single drinking episodes and may indeed mask short term episodes which... often correlate strongly with both medical and social harm*”.

The 1995 sensible drinking guidelines are principally intended to draw people's attention to limits for daily drinking by identifying a safe level for moderate regular drinking, and help people decide how much to 'drink on a single occasion' and avoid drunkenness. If the daily limits are exceeded, the Department of Health recommend that alcohol be avoided for at least 48 hours in order to give the body time to recover.

It is important to note that the change of emphasis from weekly to daily levels does not increase the recommended upper limit for weekly consumption. The daily guidelines should be followed with the inclusion of at least one drink-free day per week. The Royal College of Physicians continue to recommend weekly limits of 14 units for women and 21 units for men.

What is a unit?

One unit is equivalent to 8g or 10ml (1cl) of pure alcohol. The number of units in an alcoholic drink can be calculated by applying the formula *Volume (ml) x ABV divided by 1000*. As a rough guide:



One 175ml glass of 12% wine

=

2 UNITS



One pint of normal strength lager (3–3.5%)

=

2 UNITS



One 275ml bottle of alcopop (5.5%)

=

1.5 UNITS



A single (25ml) measure of spirits (40%)

=

1 UNIT

Short-term health effects – the hangover

Excessive alcohol consumption can lead to dehydration, low blood sugar and poisoning – a 'hangover'. Dehydration occurs because alcohol is a diuretic (i.e. it stimulates urination). Alcohol also stimulates the production of insulin, which in turn reduces blood sugar levels. Low blood sugar produces feelings of drowsiness, weakness, trembling, faintness and hunger. All alcoholic drinks contain 'congeners' – found in greater quantities in darker drinks such as brandy and red wine. Congeners are impurities that contribute to the poisoning effect of alcohol. In addition, the acid present in alcoholic drinks can cause stomach upsets.

Alcohol's passage through the body

When alcohol is swallowed it travels to the stomach and small intestine (or gut) and is absorbed through the wall of the gut into the bloodstream.

The amount of alcohol in the blood and the rate of absorption depend on the amount and type of alcohol consumed, the speed of drinking, the amount of food in the stomach and a variety of other factors. The immediate effects of drinking depend upon the amount of alcohol in the bloodstream – the blood alcohol concentration or BAC. BAC varies according to a person's sex, weight, body composition and speed of drinking. Women tend to have a slightly higher BAC than men after drinking the same amount because they have less body fluid to dilute the alcohol.

A small amount of alcohol (less than 10 per cent) is eliminated from the body in urine, breath and sweat. The rest is oxidised – i.e. like food it combines with oxygen in the blood to release heat, energy or calories. However, although alcohol has some nutritional value, it is of poor quality because it lacks vitamins, proteins and other nutrients. Also, unlike food, alcohol is metabolised almost exclusively by the liver. The liver's vital role in the metabolism of alcohol means that it is one of the first parts of the body to suffer the harmful effects of heavy drinking.

Figure 2
How alcohol enters the body:

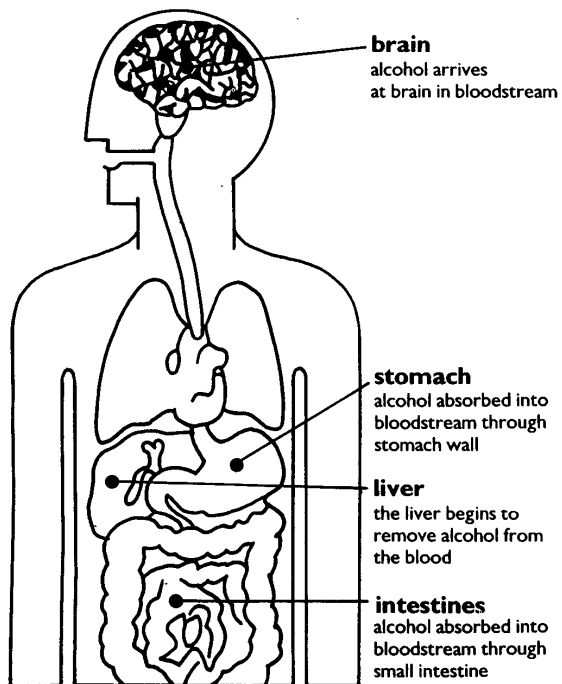
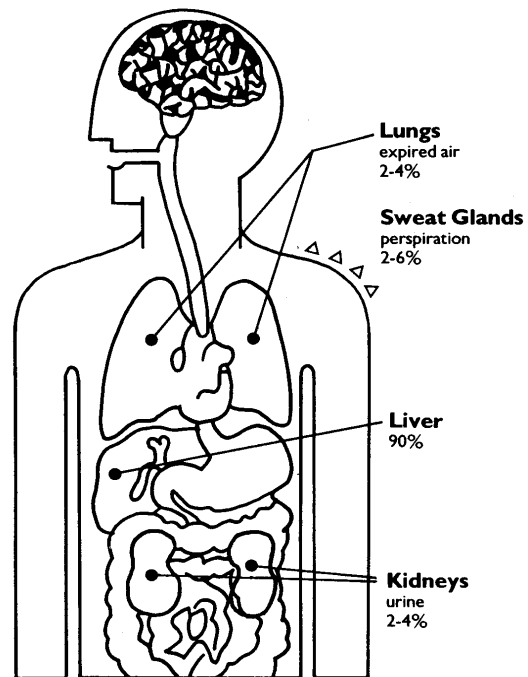


Figure 3
How alcohol leaves the body:



The rate at which alcohol (ethanol) is metabolised varies from person to person according to body weight and to the enzyme (dehydrogenase) in the liver. However, as a general rule, each unit (8 g) of alcohol takes at least one hour to be eliminated from the body.

Alcohol has a depressant effect on the central nervous system. This means that 'messages' take longer to travel along the nerves in the brain. The result is a dulling and slowing of the brain's responses – reaction, thought and co-ordination suffer. The effects vary in severity according to the BAC.

Health effects of alcohol

Alcohol misuse can affect almost every part of the body (see fig 1). Alcohol can impact on the following organs:

1. The liver
2. The digestive system (stomach, oesophagus and pancreas)
3. The heart and circulatory system
4. The bones, skin and muscles
5. The brain and nervous system

Other effects include:

6. Mental health problems
7. Sexual problems
8. Infectious diseases
9. Malnutrition
10. Cancer
11. Development of the foetus in pregnant women

1. The liver

Excessive alcohol consumption is the major cause of liver disease in Western industrialised countries (15 - Heather *et al*, 2001) and alcohol-related liver disease is responsible for 80% of liver admissions in hospitals in the UK (16 - BLT, 2002).

The liver is responsible for metabolising alcohol. If the liver has to break down too much alcohol, its other functions are adversely affected and the organ can become damaged. There are three stages of damage: fatty liver, alcoholic hepatitis and alcoholic cirrhosis.

Fatty Liver

Although symptoms of damage may not be apparent at this stage, fatty liver can be detected by liver function tests. Fatty liver may not progress to more severe damage, and can be reversed by the cessation of drinking. However it is an indicator that more permanent damage may occur in the future. Fatty liver is very common amongst heavy drinkers, but is also found in those drinking just above the recommended limits.

Alcoholic Hepatitis

About a third of people with fatty liver will develop alcoholic hepatitis. It is not clear why some people develop this condition while others who consume the same amount of alcohol do not. The onset of alcoholic hepatitis may be sudden and the symptoms severe. In other cases, the onset of the disease may be more gradual and the initial symptoms less severe. The onset of alcoholic hepatitis may be indicated by: loss of appetite, vomiting, severe abdominal pain and jaundice.

Abstinence and a good diet may lead to full recovery in mild to moderate cases. Very severe cases can be fatal, and alcoholic hepatitis has a general mortality of 15-20% (15 - Heather et al, 2001).

Alcoholic Cirrhosis

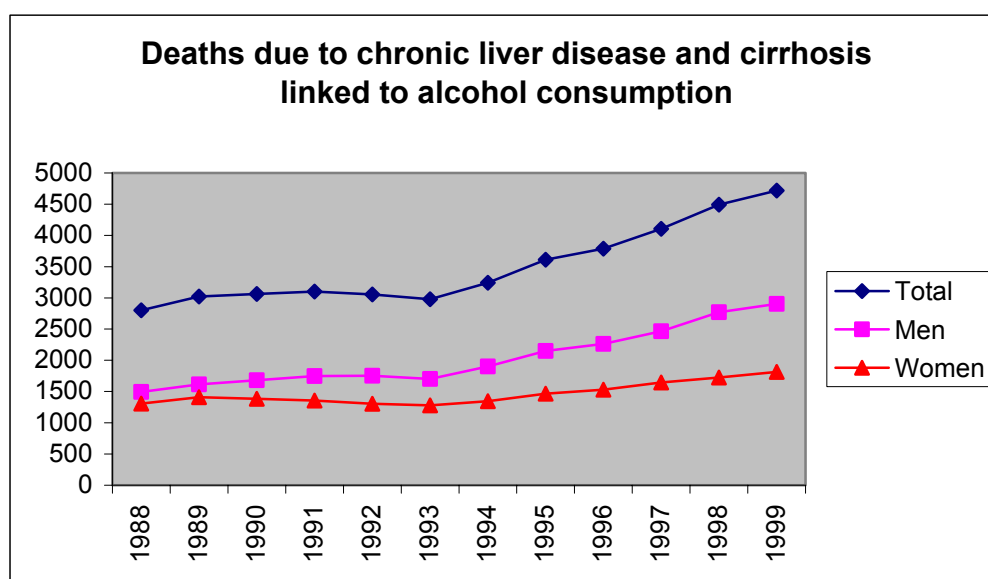
Approximately 20% of patients showing alcoholic hepatitis show additional cirrhosis. Cirrhosis is the result of continuous liver damage. Normally when the liver is damaged it can regenerate itself. In cirrhosis the process of healing fails and scar tissue develops, preventing the liver from carrying out its normal functions.

Cirrhosis is found in about 20% of heavy drinkers (15 - Heather et al, 2001). Again it is not clear why some drinkers are more susceptible to cirrhosis than others, although most experts agree that women are at higher risk than men after a shorter period of heavy drinking and at lower levels of consumption.

In some instances cirrhosis has no obvious symptoms, but can usually be detected by examination or in laboratory tests. Where symptoms are visible, they usually include: general ill health, flatulence, lack of appetite, sallow skin, jaundice, itching, anaemia, loss of weight, vomiting of blood, lower back pain and ascites (abdominal swelling due to accumulation of fluid). There may also be subtle mental changes leading to profound confusion and coma.

There is no cure for cirrhosis but sufferers who manage to stop drinking completely have a far better chance of survival. Those who continue to drink will go on to develop complete liver failure and a further 10% of sufferers go on to develop liver cancer, fatal in about six months. In 1999, over 4,700 people died from alcohol-related liver disease (17- Office of National Statistics, 2000) and 19,200 people were admitted to hospital with liver disease where alcohol was either a primary or secondary cause (1 - DOH, 2001).

Fig 4:



(1 - DOH, 2001)

Liver transplants

Between 1996 and 2000, alcohol was the highest cause of liver transplant in the UK and Ireland, accounting for 13% of all liver transplants (18 – *BLT, website*). The long-term prognosis for liver transplant is good so long as abstinence is total. Those that have managed a long period of abstinence prior to transplantation have a better prognosis. The transplanted liver is more vulnerable to alcohol-related injury than the indigenous liver and cirrhosis can occur in a much shorter time period.

2. The digestive system (stomach, oesophagus and pancreas)

The damaging effects of heavy alcohol consumption are not limited to the liver; a high alcohol intake can also have negative effects on the rest of the digestive system.

Stomach

Gastritis is the inflammation of the stomach lining. There are two forms of gastritis - acute and chronic - both of which are common amongst heavy drinkers. *Acute gastritis* may be characterised by nausea, cramps, fever and vomiting (which may include blood where there is also ulceration). *Chronic gastritis* persists over a prolonged period and may have no obvious symptoms. Where they occur, symptoms of chronic gastritis may include: abdominal pain, heartburn, loss of appetite, loss of weight, nausea and vomiting.

Both forms of alcoholic gastritis can be cleared up quickly by avoiding alcohol. If it is left untreated, however, gastritis can be fatal. In 1999, 9 people died from alcoholic gastritis (17 - *ONS, 2000*). It is also worth noting that an inflamed stomach lining cannot absorb food or medicines effectively (see 6. Malnutrition, below).

The other major problem associated with the stomach is that of *stomach ulcers*. Alcohol can aggravate an existing ulcer and inhibit the healing process. Some researchers have indicated that the stimulation of gastric juices caused by alcohol may contribute to initial onset of an ulcer.

Oesophagus (gullet)

Excessive alcohol consumption can cause *reflux*, a process whereby digestive juices from the stomach are forced up into the oesophagus. As the oesophagus lacks the protective lining of the stomach, reflux causes a burning sensation, often referred to as *heartburn*. Reflux can cause *oesophagitis* (an inflammation of the lining of the oesophagus) and lead to ulceration at the junction of the stomach and oesophagus. Violent retching can cause tearing and bleeding.

Cirrhosis can cause scar tissue to block the flow of blood into the liver. This increases the pressure in the portal vein (portal hypertension) and causes veins in the oesophagus to become swollen and distended. These varicose veins are known as *oesophageal varices*. Ruptured varices bleed profusely and can be fatal.

Pancreas

The pancreas is responsible for the production of the enzymes required for digestion and of insulin - which is needed to control blood sugar levels. *Pancreatitis* is the inflammation of the pancreas. Alcohol is responsible for approximately 80% of *acute pancreatitis* cases and about half of *chronic pancreatitis* cases. Around 400 people die each year from alcohol-related pancreatitis. (17 - *ONS, 2000*).

Acute pancreatitis is accompanied by attacks of extreme pain and vomiting, often triggered by a bout of heavy drinking. Heavy drinking young males are the predominant victims of acute pancreatitis. Between 3 and 8% of alcoholics suffer from acute pancreatitis, with nearly 10% of cases proving fatal (15 - *Heather et al, 2001*). Even if the condition is successfully treated, survivors may still suffer severe pain.

Long-term heavy drinkers are most susceptible to *chronic pancreatitis*. The symptoms of chronic pancreatitis are similar to those that accompany the acute form. The prognosis, however, is worse. The ten-year survival rate for chronic pancreatitis is less than 50%, and about half of patients with chronic pancreatitis also develop diabetes (17 - *ONS, 2000*).

3. The heart and circulatory system

Recent research suggests that those drinking about one unit a day have a lower risk of heart attack, chronic heart trouble and sudden coronary death than those heavier drinkers or who do not drink at all. This, however, only applies to those already at risk of heart disease, i.e. men over 40 and women past the menopause. Drinking more than one to two units a day does not offer extra protection – on the contrary, this may raise blood pressure and cause extra health problems.

Hypertension

High blood pressure - or hypertension - makes a person more susceptible to heart disease and strokes. At least 5-7% of diagnosed cases of hypertension are due to heavy drinking - its commonest cause after obesity. Binge drinking has been linked to significantly raised blood pressure. Men who regularly drink four or more units a day are also likely to have blood pressure high enough to cause concern. The latest research indicates that the incidence of hypertension more or less doubles in people who drink over six units a day (15 - Heather *et al*, 2001). Blood pressure falls quickly once drinking is reduced and in some cases a difference has been noticed within a week of abstinence.

Sudden Death

Binge drinking, especially by people who are not used to drinking, can cause irregular heartbeats, palpitations, and, in rare cases, sudden death. This is often known as "holiday heart" syndrome.

Alcoholic cardiomyopathy

This is a chronic disease of the heart muscle found in people who have been regularly drinking 10 or more units a day for 10 or more years. For this reason it is sometimes called "cirrhosis of the heart". Symptoms include shortness of breath, swelling of the ankles and blueness of the extremities. In 1999, 137 people died from alcoholic cardiomyopathy (17 - ONS, 2000).

Stroke

Regularly drinking more than three units a day increases the risk of one of haemorrhagic stroke – one of the more uncommon types of stroke. While it is still unclear whether moderate drinking offers some protection against the more common ischaemic stroke, it is certain that raised blood pressure increases the risk of both types.

4. The bones, muscles and skin

Although less well known than many of the conditions already described, problems that affect the bones, muscles and skin can have significant effects on the quality of life of many alcohol-dependent people.

Bones

Heavy drinking contributes to *osteoporosis*. This makes bones thin, soft and liable to collapse, especially in the lower spine, pelvis and thigh. Osteoporosis affects both women and, increasingly, middle aged and young men. People in their twenties who drink in excess of the recommended benchmarks are at particularly high risk of developing osteoporosis in later life. Recent research suggests that around 50% of alcohol misusers have either osteoporosis or *osteopenia* (reduced bone mass) (15 - Heather *et al*, 2001).

There is some evidence that drinking around five units a week can, to some extent, protect post-menopausal women against osteoporosis. Some studies show that bone density in heavy drinkers may improve with abstinence.

Gout is a painful swelling of joints, especially in the fingers or toes, which can be exacerbated by heavy drinking. It is very difficult to treat but evidence suggests it may be reversed by abstinence from alcohol for at least two years (15 - Heather *et al*, 2001).

Muscles

Alcohol-induced muscle disease is the most prevalent skeletal muscle disorder in the western hemisphere (15 - Heather *et al*, 2001). It takes two main forms.

Muscle degeneration causes weakness in the thighs and upper arms, and attacks of muscular pain. This is common in people with peripheral neuropathy.

Alcoholic myopathy is an acute form of muscle weakness with pain that can occur after a bout of heavy drinking. It is estimated that between one and two thirds of chronic alcohol misusers may suffer from the condition. It can affect any muscle and because of this there is believed to be a link between alcoholic myopathy and alcoholic cardiomyopathy. There is also an *acute* form of alcoholic myopathy, which occurs much less frequently (in less than 5% of those dependent on alcohol). The consequences, however, can be very serious, with an associated risk of acute renal failure.

Skin

In a 1985 study of 100 alcohol dependents, dermatological abnormalities were observed in over 80% of subjects (15 - Heather et al, 2001). While not serious illnesses in themselves, skin disorders can provide visual clues to help identify problem drinkers.

Heavy drinking is one of many factors that can contribute to *psoriasis*, especially in men. 40% of patients attending dermatology clinics with psoriasis have been classified as alcohol misusers (15 - Heather et al, 2001). Psoriasis can take a different form in heavy drinkers: very inflamed and resistant to treatment until alcohol consumption is reduced.

Problem drinking can also play a part in the development of *discoïd eczema*.

Problem drinkers may also experience *rosacea*. This is an acne-like skin disease which contributes to the flushed appearance of many dependent drinkers.

Since alcohol affects the immune system, low-grade infections such as bacterial, viral or fungal conditions can be found on the skin of around 50% of alcohol misusers (15 - Heather et al, 2001).

5. The brain and nervous system

Alcohol is a central nervous system depressant. The immediate effects of alcohol consumption can include slurred speech, loss of self-control and blackouts. Over a long period of time, however, problem drinkers and heavy social drinkers may develop various types of brain damage. Recent studies have shown that there can be reversible brain shrinkage due to drinking, with users showing intellectual impairments compared to a control group. Indications would appear to show that the level of impairment is proportional to the amount of alcohol consumed, with those drinking more suffering more impairment (15 - Heather et al, 2001).

In 1998/1999, there were 28,700 NHS hospital admissions with a primary diagnosis of "mental or behavioural problems due to alcohol". In the same period, there were 78,900 admissions in which mental and behavioural problems due to alcohol were mentioned, with this being recognised as the primary diagnosis in 32,500 of these admissions (1 - DOH, 2001).

Wernicke's encephalopathy

Wernicke's encephalopathy is a brain disorder caused by a lack of thiamine (vitamin B1). Lack of thiamine is a common condition amongst heavy drinkers due to poor diet and/or frequent vomiting, both of which deplete vitamin stores. The onset of Wernicke's can be quite sudden, in some cases within hours, and needs emergency hospital treatment. The condition can be treated by large doses of thiamine by intravenous or intramuscular injection.

The symptoms can be easy to miss and in some cases are mistaken for simple drunkenness. They include:

- Confusion about the time or place
- Drowsiness
- Poor balance
- Double vision (this is a key indicator)
- Abnormal eye movement or paralysis of eye muscles

It has been reported that 20% of people who develop Wernicke's encephalopathy die as a result of the condition and that 80% of survivors go on to develop Korsakoff's psychosis. Autopsies often reveal undiagnosed cases of the condition (19 - Thompson, 1997).

Korsakoff's psychosis

If Wernicke's encephalopathy is left untreated, Korsakoff's psychosis can develop. It is signified by profound memory loss, affecting both the ability to recall events and to form new memories. Korsakoff patients often fill out their memory gaps with elaborate fantasies, a process known as confabulation. This state may be treatable by prolonged thiamine treatment and abstention from alcohol, but improvement is seen in only about a third of cases. Korsakoff's psychosis can develop without Wernicke's encephalopathy.

Wernicke's encephalopathy and Korsakoff's psychosis are related but separate disorders. Post-mortem studies suggest that Wernicke-Korsakoff syndrome occurs in about 2% of the general population and 12.5% of dependent drinkers (20 - Cook, 1997).

Alcoholic dementia

Patients clinically defined as alcohol dependent may also suffer more generalised brain damage. Even when general intelligence appears intact, brain scans can show loss of brain tissue and mental tests may reveal specific abnormalities in abstract reasoning, learning new skills and coping with complex visuo-spatial problems. These changes often improve with abstinence. Although known as alcoholic dementia this condition has no link to progressive diseases such as Alzheimer's disease.

Cerebellar degeneration

Damage to the part of the brain responsible for co-ordinating body movements may accompany other damage to the nervous system. This damage may manifest itself as unsteadiness when walking and may improve with abstinence.

Peripheral neuritis or neuropathy

Peripheral neuritis is a disorder of the nervous system. Symptoms include weakness, tingling, muscle pains, numbness and a sensation often described as "burning feet". While the cause is not clear, it is probably linked to a shortage of B vitamins. Slow recovery is possible with abstinence, vitamin supplements and a good general diet.

6. Mental health problems

Heavy drinking is closely linked with mental illness (psychiatric morbidity). Both mental illness and alcohol problems carry a powerful social stigma, and in more severe cases carry a potential risk of violence or suicide, a high relapse rate and can lead to serious personal and social problems. The relationship between alcohol and mental health is complex. However, research has shown that heavy drinking can contribute to anxiety and depression, accelerate or uncover a predisposition to a psychiatric disorder, and psychosis. In addition, excessive drinking has been linked to 65% of suicides (21 – *DOH, 1993*) (See Alcohol Concern factsheet 17: Alcohol and Mental Health)

7. Sexual problems

Studies have shown that alcohol is a contributory factor in the risk-taking behaviour that can lead to the contraction of sexually transmitted infections, such as HIV, gonorrhoea and syphilis (see 'Infectious diseases'). Research suggests alcohol increases desire but decreases physiological stimulation in both sexes. Prolonged heavy drinking may cause longer lasting sexual changes.

Men

Temporary impotence - or "brewers' droop" - after a bout of drinking is the most common problem experienced by men. Long-term heavy drinkers may experience: loss of libido and potency, shrinking of the testes, reduction in the size of the penis, reduced sperm formation, loss of pubic and body hair, and, as a complication of cirrhosis, enlargement of the breasts.

Women

Long-term heavy alcohol misuse may result in the failure to ovulate and general menstrual problems, the shrinking of the breasts and sexual organs, and body fat being redistributed into a male pattern.

8. Infectious diseases

Alcohol affects the immune system. The susceptibility of alcohol misusers to a wide variety of infections has recently been recognised as an important public health problem (15 - *Heather et al, 2001*).

H.I.V

Recent studies have suggested a link between the rate of alcohol consumption and the progression of the H.I.V. virus. Such theories are currently a subject of discussion, but a 1998 study showed that a heavy alcohol user is generally someone who progresses rapidly to AIDS after seroconversion (the development of antibodies in response to infection) (15 - *Heather et al, 2001*).

Tuberculosis

While definite figures are hard to obtain due to the multitude of factors affecting the spread of tuberculosis, it still seems apparent from studies of groups of dependent drinkers followed for many years, that groups of alcohol dependent drinkers have a prevalence of tuberculosis 15-200 times that of control groups (15 - *Heather et al, 2001*).

Pneumonia

The link between alcohol and pneumonia has been recognised for centuries. Alcohol induces an increased susceptibility to, amongst other types, the more severe pneumococcal pneumonia. It would appear that alcohol dependency increases the chances of acquiring pneumonia while simultaneously decreasing the chances of recovery.

9. Malnutrition

Alcohol contains calories and as such may contribute to obesity. Despite this, however, alcohol is of no nutritional benefit and heavy drinkers may be at risk of malnutrition. This may be due to a loss of appetite caused by nausea or illness or because all available money has been spent on alcohol. Poor nutrition is linked to the development of:

- Peripheral neuropathy
- Wernicke-Korsakoff Syndrome
- Cirrhosis
- Decreased ability to fight infection

10. Cancer

It is estimated that alcohol alone is responsible for about 3% of all causes of cancer (*15 - Heather et al, 2001*).

Cancers of the mouth, larynx (voice box), pharynx and oesophagus

People who drink more than five units a day have an increased risk of developing these cancers. Even people drinking less than this (2.5 – 5 units a day) may face a slightly increased risk. It is estimated that between 25 and 50% of cancers of the head and neck are due to alcohol. As smoking can also contribute to these cancers, people who both smoke and drink run a much greater risk of developing cancer in any of these parts of the body. Recent studies have found that 80-90% of cancers in these areas could be avoided by abstaining from smoking and drinking (*15 - Heather et al, 2001*).

Other cancers

Heavy drinking is associated with cancer of the liver (as already discussed) and possibly with cancers of the stomach, colon and rectum.

Breast cancer

Several studies have suggested a link between alcohol and breast cancer. A recent review of international research in this area found that a woman's relative risk of breast cancer increased by 6% for each additional unit consumed per day (*22 - Cancer Research UK, 2002*). More research is needed to investigate the relationship between alcohol consumption and the development of this disease.

11. Development of the foetus in pregnant women

During pregnancy alcohol from the mother's bloodstream crosses the placenta and is taken up by the developing baby. The foetus is most sensitive to alcohol during the earliest stages of pregnancy, when the complex organs and nervous system are being formed. The Department of Health advises women who are pregnant or who are trying to get pregnant to drink no more than 1 - 2 units of alcohol per week. In the USA, the Surgeon General has been more cautious and has recommended that women do not drink at all during pregnancy or when they are intending to get pregnant.

Low birth weight

Research indicates that consumption of more than 10-15 units a week will result in a higher chance of giving birth to an underweight baby.

Miscarriage

Research in this area is as yet inconclusive. While it is certain that drinking while pregnant can cause miscarriage, the level at which drinking becomes a danger is disputed. Some studies conclude that the risk of miscarriage is increased in women drinking 1-2 units a day, while others report that the risks are only increased at higher levels of consumption.

Foetal alcohol syndrome / foetal alcohol spectrum disorder

Foetal alcohol syndrome (FAS) is the name given to a group of difficulties seen in the babies of very heavy drinking mothers, **usually with identifiable drinking problems**. Symptoms include: growth deficiencies,

central nervous system defects, lowered IQ and facial malformations. There is greater uncertainty about the impact of smaller or less frequent alcohol exposure, **although research suggests that no level of drinking is risk-free in pregnancy** (23 ACMD, 2003). The term foetal alcohol spectrum disorder (FASD) has recently been introduced as not all of the above symptoms are present in all cases and they can vary in their severity. Cases of FASD can range from relatively minor to very severe, with FAS at the severe end of the spectrum (Plant, 2004).

Alcohol-related health problems - risk factors

Although the ill effects of excessive alcohol consumption can be felt irrespective of age, gender and social group, differences in body composition and patterns of drinking can increase susceptibility of certain groups to different alcohol-related problems. Genetic factors are also thought to have some impact on an individual's risk of developing organ damage, e.g. liver disease, although this is an area which is in need of more extensive research.

Age – young people

The severe intoxication caused by excess drinking is more dangerous for children and adolescents than for adults. Children experience coma at lower blood alcohol levels and can develop hypoglycaemia (low blood sugar), hypothermia and breathing difficulties.

The consequences of young people's drinking are more likely to be related to intoxication than long-term health risks. In a recent study, 76% of 15-16 year olds reported having been drunk at least once. It is estimated that 13% of 15-16 year olds had been involved in an accident or had been injured as a result of drinking (23 – Hibell, 2000). In addition, both suicide and unprotected sex can be linked to the impulsivity and risk-taking behaviour associated with high levels of alcohol consumption.

The long-term impact of regular drinking in teenagers is not known. However, prolonged heavy drinking potentially puts young people at the risk of dependency and associated health effects.

Age – older people

Physiological changes such as an increase in body fat and a decrease in both body water content and lean body mass (muscle) mean that older people experience higher blood alcohol levels with lower levels of alcohol consumption. The loss of cognitive and motor skills associated with old age put older people at higher risk of falls and accidents (a significant cause of mortality and ill health in this age group).

High levels of alcohol consumption can increase the incidence of stroke, hypertension, incontinence, chronic heart disease and insomnia. Alcohol is also linked to mental health problems. Alcohol is implicated in one in three elderly suicides, and alcohol-related brain damage found in 10% of elderly people presenting with dementia (24 – Hislop *et al*, 1995). Alcohol can also contribute to self-neglect which may lead to poor nutrition, poor hygiene and hypothermia.

Gender

Gender differences in the physical make-up affects the way the body processes alcohol.

Gender differences include the following:

- Women's bodies have a lower water content and contain 10% more fat than men's; this means women's blood alcohol concentration is higher even at lower levels of consumption.
- The average woman (58kg) weighs considerably less than the average man (70kg), and therefore has less tissue to absorb alcohol.
- Women appear to have lower levels of the enzyme alcohol dehydrogenase (AHD) in their stomachs; this means that alcohol stays in the system longer before being metabolised, leading to longer lasting effects.

However, it is important to remember that, despite a 70% rise in women drinking above 14 units per week between 1988 and 2000 (from 10% to 17%), men continue to drink at much higher levels – with 29% of men exceeding the weekly benchmark of 21 units (4 – Walker, *et al*, 2001). In 2000, 65% of those who died from chronic liver disease were men (8 - CMO, 2001) and, in 1999, 80% of those who died from alcoholic cardiomyopathy (a type of heart disease) were men.

Findings also suggest that men, particularly young men, are more vulnerable to acute alcohol-related harms as they drink more than women and have a greater tendency to engage in risk-taking behaviour. For example, 62% of alcohol-related home accidents in 1998 involved men (See Alcohol Concern factsheet: Alcohol and Men).

Men's vulnerability to both the acute and chronic effects of alcohol is demonstrated by hospital admission figures: men account for over 100,000 of recorded admissions for alcohol-related diagnoses per annum, approximately double that of women.

Socio-economic status²

On average, men³ in the lowest social group (class V) consume less alcohol than those in the highest social group (class I). However, the prevalence of dependence increases with lower social class, so the proportion of men identified as problem drinkers is found to be highest in social class V (11%) and lowest in social class I (6%) (25 – *Alcohol Concern, 1999*). Men in the unskilled manual group aged between 25 and 39 have been found to be ten times more likely to die from alcohol-related causes than those in the professional group (26 – *Larry Harrison, 1999*). The reasons for this are unclear - and there is a need for further research – but differences in patterns of drinking (rather than levels of consumption), diet, housing, health care and the ease with which personal problems can be managed have all been implicated.

Conclusion

Excess drinking has been shown to have a significant impact on the development of organ damage and disease. However, only with further investigation into the nature of this relationship can we begin accurately to calculate alcohol's true impact on the health of the nation.

In the recent Alcohol Concern report *100% Proof*, Dr John Kemm argues that data on alcohol-related death and disease are unreliable due to a failure adequately to define the criteria for attributing a death or disease to alcohol. The lack of accurate information on alcohol-related mortality and morbidity makes it difficult to establish the nature of the relationship between level and pattern of consumption and particular pathologies. He recommends that further study of alcohol-related diseases is needed to clarify the relative risk of disease at varying levels of consumption (27 – *Kemm, 2002*).

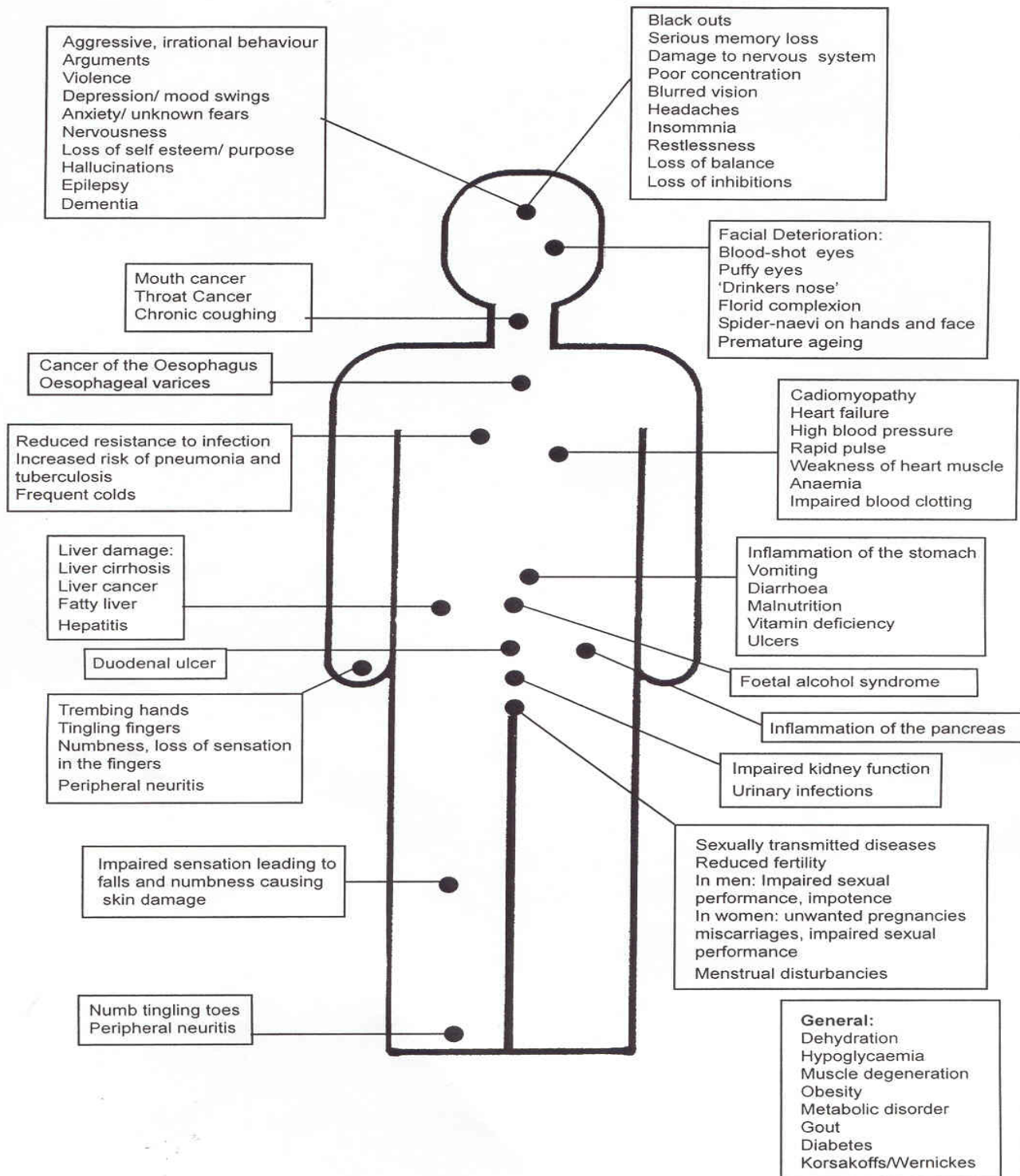
Without a more in-depth clinical understanding of the various disease mechanisms linked to alcohol-related health damage, it becomes difficult to establish and isolate the “*genetic, environmental and constitutional factors... including diet, obesity and tobacco use*” (28 – *Ritson, 2002*) that may also play an important part in susceptibility to alcohol-related harm.

The public health implications of increasing levels of alcohol consumption, particularly among young people, are significant – even if they are not fully understood. Dr Kemm makes the relationship between public health and the need for further research explicit: “*In order to plan services and make policy decisions we need to understand the frequency and nature of alcohol related harm*”.

² Socio-economic classification:

Class I – professional
Class II – intermediate
Class III_n – skilled non-manual
Class III_m – skilled manual
Class IV – partly skilled
Class V – unskilled manual

³ In women there do not appear to be any links between socio-economic status and problem drinking or dependence. Also, the data collected do not provide as accurate a picture of women's socio-economic status as this information is derived from the occupation of the head of the household.



References

- 1) Department of Health (2001) *Statistical bulletin: statistics on alcohol – England, 1978 onwards*. HMSO, London
- 2) World Health Organisation (2002) *The world health report 2002: reducing risks, promoting healthy life*. World Health Organisation.
- 3) Department of Health (1995) *Sensible drinking. The report of an inter-departmental working group*. Department of Health
- 4) Walker A., et al, (2001) *Living in Britain: results from the 2000 General Household Survey*. The Stationery Office, London
- 5) National Statistics (2000) *Psychiatric Morbidity among adults, 2000*. <http://www.statistics.gov.uk>
- 6) Department of Health (2002) *Smoking, drinking and drug use among young people in 2001: preliminary results*. <http://www.doh.gov.uk/public/sddsurvey01.htm>
- 7) Chief Medical Officer of the Department of Health (2001). *Annual report 2001*. Department of Health, London
- 8) Working Party of the Royal College of Physicians (2001) *Alcohol – can the NHS afford it? Recommendations for a coherent alcohol strategy for hospitals*. Royal College of Physicians, London
- 9) Luke, C. (1998) *Accident and Emergency*. In: *Alcohol Alert*, 1998:3
- 10) Health Education Authority (1998) *Perceptions of alcohol-related attendances at A&E departments in England: a national survey*. In: *Alcohol and Alcoholism*, Vol. 33, no. 4, pp354-361
- 11) Kershaw, C. et al. (2000) *The 2000 British crime survey, England and Wales*. Home Office Research, Development and Statistics Directorate, London
- 12) Royal Society for the Prevention of Accidents (1998) *Drownings in the UK*. Royal Society for the Prevention of Accidents, Birmingham
- 13) Tether, P. and Harrison, L. (1986) *Alcohol-related fires and drownings*. In: *British Journal of Addiction*, vol. 81, no. 3, pp425-431
- 14) Department for Transport, Local Government and the Regions (2002). *Road accidents Great Britain 2001: the casualty report*. The Stationery Office, London
- 15) Heather, N. et al. (2001). *International handbook of alcohol dependence and problems*. Wiley, Chichester
- 16) British Liver Trust (2002) *Bulletin 5*. British Liver Trust, London
- 17) Office for National Statistics (2000) *Mortality statistics: cause, England and Wales, 1999*. The Stationery Office, London
- 18) British Liver Trust (2002), *Liver transplantation*. <http://www.britishlivertrust.org>
- 19) Thompson, A. and Cook, C. (1997) *Parenteral thiamine and Wernicke's Encephalopathy: the balance of risks and perception of concern*. In: *Alcohol and Alcoholism*, vol.32, no.3, pp207-209
- 20) Cook, C. and Thompson, A. (1997) *B-Complex vitamins in the prophylaxis and treatment of Wernicke-Korsakoff syndrome*. In: *British Journal of Hospital Medicine*, vol.57, no.9, pp461-465
- 21) Department of Health (1993) *Health of the nation key area handbook: mental health*. HMSO, London
- 22) Cancer Research UK - Collaborative Group on Hormonal Factors in Breast Cancer (2002) *Alcohol, tobacco and breast cancer – collaborative reanalysis of individual data from 53 epidemiological studies, including 58515 women with breast and 95067 women without breast cancer*. In: *British Journal of Cancer*, no.87, pp1234-1245. Press release: <http://www.cancerresearchuk.org/press/pressreleases/34385>
- 23) Advisory Council on the Misuse of Drugs (2003) *Hidden Harm*. (<http://213.121.214.244/ReportsandPublications/NationalStrategy/1054733801/hidden_harm.pdf>)
- 24) Plant, M. (2004) *Parental alcohol misuse: implications for child placements*, In R. Phillips (ed) *Children exposed to parental substance misuse: implications for family placement*, London, BAAF.
- 25) Hibell, B., et al (2000). *The 1999 ESPAD report. Alcohol and other drug use among students in 30 european countries. The European School Survey Project on Alcohol and other drugs*. CAN (Swedish Council for Information on Alcohol and Other Drugs)/Council of Europe, Stockholm
- 26) Hislop, J. et al (1995) *Urban hypothermia in the West of Scotland*. In: *British Medical Journal*, vol.311, pp725-730
- 27) Alcohol Concern (unpublished - 1997) *Alcohol and inequalities: submission to the Acheson inquiry into health inequalities*.
- 28) Harrison, L. (1999) *Do the rich really die young? Alcohol-related mortality and social class in Great Britain, 1988-94*. In: *Addiction*, vol.94, no.12, pp1871-1880
- 29) Kemm, J (2002) *Looking at alcohol in populations*. In: Jenkins, A. (ed.) (2002) *100% Proof. Research for action on alcohol*. Alcohol Concern, London
- 30) Ritson, B (2002) *Alcohol and physical harm*. In: Jenkins, A. (ed.) (2002) *100% Proof. Research for action on alcohol*. Alcohol Concern, London