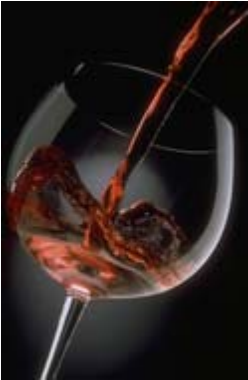


# Inside story: the body

---

**Want to know more about what happens when you:**

**Drink alcohol?**



This resource booklet tells you all you need to know!

**Be creative – make a PowerPoint presentation**

Use the information (including the gory photographs) to construct a profile of '*somebody*' who abuses alcohol. Choose your own '*somebody*' from the pictures on slide one, or scan in a photo of your own.

Choose information from this booklet.

Create new slides in the PowerPoint presentation.

Type in the information you have chosen or found out from other places.

Change the order of the slides to create your own presentation.

**Why not prepare a presentation for:**

- **Your friends**
- **Members of your family**

Find out **unusual scientific facts** about alcohol!

Look at some **gory photos**- never seen before in schools!

**Discover** what alcohol does to '*somebody*' – your body!

## Drugs are chemicals that affect how the body functions

Solvents are useful chemicals which some people abuse. Alcohol and nicotine (tobacco) are both legal drugs that are responsible for huge numbers of deaths and illness all over the world – and heavy drinking is often associated with heavy smoking. Here we delve into the cells, tissues and organs of 'somebody' to find out how what effect these chemicals have. The effects differ in many ways, mainly because the chemicals enter the body by different routes.

The information is organised in the following way.

### Alcohol

1. Brain, nervous system and behaviour (page 2)
2. A gene for alcohol abuse (page 5)
3. Reproduction and sexual function (page 5)
4. Heart disease (smoking and alcohol) (page 7)
5. The liver (page 8)
6. The gut and pancreas (page 11)
7. Nutrition (page 12)
8. Diabetes (page 12)
9. Oriental flush (page 13)
10. Five stages of drunkenness (page 13)
11. Interesting facts on alcohol (page 14)
12. Accidents (page 15)
13. For further information on-line (page 15)

---

### 1. Brain, the nervous system and behaviour

Yes, they are all linked! Have you noticed how people behave differently when they have had some alcohol? Here are some common behaviours- can you think of any others? What has 'somebody' got up to?

#### Behaviour 'somebody' has got up to when drunk:

Thrown up in the back of a taxi.

Climbed onto the roof of a bus shelter - to get a better view of the stars.

Decided that the waste bin would look better on his head.

Decided to walk home, even though it's seven miles away.

Fallen asleep in a bus shelter.

Attempted to 'phone Madonna.

Any others you could suggest?

There is a scientific explanation for all of these!  
From the science outlined below can you offer an explanation for each of them?

Also check out the stories on the OTT section of 'Wrecked' at  
<http://www.wrecked.co.uk>:

You will not believe it! You could maybe adapt one of these for 'somebody'.

### **How can science explain these weird, out of character acts?**

Cell membranes control what substances move in and out of cells. Alcohol acts directly on nerve cell membranes interfering with the movement of substances into and out of the brain. This affects **all** brain functions.

The effect of alcohol on the brain is **inhibitory**, leading to relaxation and sedation (slowing down).

Several parts of the brain are affected e.g. those parts responsible for movement, memory, reasoning and respiration.

The brain gets used to alcohol so if 'somebody' who is dependent on alcohol stops drinking, they will experience withdrawal symptoms: emotional discomfort, anxiety, trembling and sleeplessness (insomnia).

### **Why does alcohol have a relaxing effect?**

Although the relaxing effect of alcohol is well known, until recently nobody could explain exactly why this effect happens.

Alcohol causes brain cell membranes to release potassium out of the cells. This reduces the activity of brain cells, and results in a slow-down in brain function. This makes 'somebody' feel relaxed.

The nervous system can be affected by alcohol at the following three levels: when drunk, with prolonged alcohol abuse, and withdrawal of alcohol after abuse.

### **When 'somebody' is drunk:**

#### **Loss of memory** (*What have I done?*)

While they are drunk, most people will have some loss of memory. During this time they will be behaving relatively normally (apart from behaviour associated with being drunk). The loss of memory can be for several hours to several days.

#### **'Fugue' behaviour** (*Where am I? I'm miles from home.*)

'Somebody' could travel long distances and not know how or why they got there. Could the alcohol be affecting deep parts of the brain?

How a drunk person behaves is linked to Blood Alcohol Concentration (BAC). The amount of alcohol in the blood is directly linked to 'somebody's' weight and whether they are male or female.

**Blood Alcohol Content of 0.1 – 0.24** No loss of co-ordination, slight euphoria (feeling happy) and loss of shyness. Depressant effects are not apparent.

**Blood Alcohol Content of 0.24** - Feeling relaxed, less inhibited, sensation of warmth. Some minor loss of reasoning and memory. Less careful.

**Blood Alcohol Content of 0.48** - Slight loss of balance, speech, vision, reaction time and hearing. Judgement and self-control are reduced, and caution, reason and memory are impaired. Speech is slurred.

**Blood Alcohol Content of 0.8** - The BAC limit for drivers in the UK and Ireland. Anxious, restlessness, nausea (feeling sick). '*Somebody*' looks drunk, cannot control movements and has a general lack of physical control. '*Somebody*' has blurred vision and major loss of balance. The feel good factor is going and they are restless.

**Blood Alcohol Content of 1.5** - '*Somebody*' is now close to losing consciousness. Needs assistance in walking and has total mental confusion. Feels sick and has probably vomited several times. Incontinence is common.

**Blood Alcohol Content of 2.0** - '*Somebody*' is now comatose (unconscious) and may die due to respiratory arrest.

**Note:** The effects of alcohol intoxication are greatly influenced by individual variations among users. Some users may become intoxicated at a much lower Blood Alcohol Concentration (BAC) level than is shown.

You can calculate your blood alcohol concentration with on the Internet. Check out [www.intox.com/wheel/drinkwheel.asp](http://www.intox.com/wheel/drinkwheel.asp)

### **With prolonged alcohol abuse:**

**Reduced intelligence** Prolonged use will severely lower intelligence (even in young people). Brain cells are destroyed. This is due to damage from the toxic affect of alcohol but also because alcohol gets rid of vitamins in the body, e.g. B vitamins that are essential for healthy nerve tissue. Nerve cells cannot be replaced. Once they are damaged that's it!

### **Withdrawal of alcohol after prolonged alcohol abuse:**

(a) Hearing voices? These are called **auditory hallucinations**. This sometimes occurs when withdrawing from alcohol. It starts with buzzing in the ears and becomes voices saying unpleasant things.

(b) Seeing crawling bugs? **Delirium tremens:** 2-5 days after alcohol withdrawal trembling starts, with nightmares usually of animals e.g. crawling insects. It only lasts a few days but because the experience is terrifying '*somebody*' could die by injuring themselves when they are confused.

## 2. Is there a gene for alcohol abuse?

Does *'somebody'* have genes, which make him or her more likely to abuse alcohol? For some diseases, an individual may inherit a single 'faulty' gene from his or her parents which causes the disease. The environment does not affect whether he or she gets the disease.

With alcoholism and drug abuse, the picture is much more complicated. Genes do sometimes affect whether individuals become alcoholics. For example, many alcoholics have one or more parents who are alcoholics. There are however **many** genes at work, not just one. The inheritance of these genes increase the chance of becoming an alcoholic, but the role of environment is also important. *'Somebody's'* environment, such as the influence of friends, stress levels, and how easy it is to get hold of alcohol, may also influence drinking and the development of alcoholism.

It is not clear which genes lead to increased or decreased risk for alcoholism. Of the 70,000 or so human genes, only a few are important. If *'somebody'* has a close relative who is an alcoholic he or she is at increased risk.



**Photo 1** is a chromosome map of all the chromosomes in a human cell. The genes for alcoholism form part of these chromosomes, but we don't know where. This chromosome map is of a female so you will not be able to use it if *'somebody'* is male.

**Remember** - risk is not a destiny. A child of an alcoholic parent will not automatically become an alcoholic. A person with no family history of alcoholism can become alcohol dependent.

---

## 3. Reproduction and sexual function

Being drunk, can lead to unplanned, unprotected sexual intercourse which could lead to pregnancy and/or sexually transmitted disease. For many males alcohol leads to impotence. Long term use of alcohol can lead to the following:

### In Males

- Reduction in the production of the male hormone testosterone
- Shrinking of the testes
- Reduction in the size of the penis
- Reduced or no sperm production
- Loss of sexual hair
- Scrotal wrinkling
- Loss of interest in sex

If cirrhosis of the liver is present then loss of all body hair and enlargement of breasts occur.

### **In Females**

- Reduction in the production of the female hormones
- Infertility
- Menstrual problems-irregular periods, heavy bleeding
- Shrinking of ovaries, breasts and external genitals
- Body fat redistributes into a male pattern
- Loss of interest in sex

Females are generally more affected by alcohol just before their period.

Females taking birth control pills or medicines containing oestrogen may remain drunk longer than those who do not, because the liver has to break down both the alcohol and the oestrogen.

### **Are these symptoms reversible?**

Most of the symptoms will reverse if they are mild. Where severe symptoms are experienced e.g. severe shrinking of penis and testes, then these are usually not reversible.

Does '*somebody*' have any of these symptoms?

### **Foetal Alcohol Syndrome**

If a mother (*'somebody'*) drinks heavily whilst pregnant then her baby will be affected. There is a range of symptoms; some or all of them might be present:

- Slow growth before and after birth
- Small head
- Narrow eye slits
- Defective heart and other organs
- Legs and arms not formed properly
- Mental retardation

There may also be behavioural problems such as poor attention span, extreme nervousness and hyperactivity

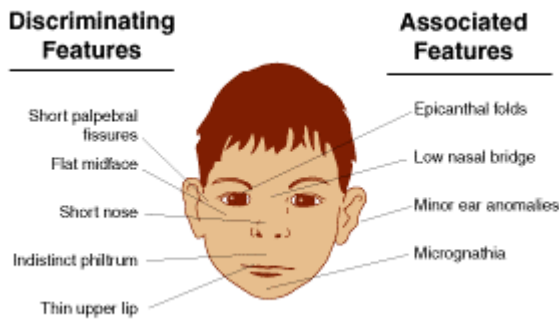
It is known that just **one** drinking binge could be enough to affect the foetus, with the danger time being the first three months of pregnancy.

The alcohol passes undiluted from the mother's bloodstream to the baby's. The baby then excretes it into the amniotic fluid. This makes an alcoholic bath, which gets worse with each drink the mother takes.

Effects of the syndrome are irreversible.

Check out the web-site: <http://www.niaaa.nih.gov> where this diagram is from. You will also find it as Photo 17.

## Foetal Alcohol Syndrome



---

### 4. Heart disease (smoking and alcohol)

Heart disease is the leading cause of death in most industrialised countries. In the UK it accounts for 30% of all male deaths and 20% of female deaths.

Most heart disease is ischaemic heart disease. This means a lack of blood supply to the heart. This sort of heart disease is linked to smoking and drinking.

The risk factors for this sort of heart disease are:

- Diet
- Blood pressure
- Smoking
- Stress
- Water hardness
- Alcohol consumption

Many of these factors are linked, e.g. smoking and alcohol both raise blood pressure.

#### What happens?

Mostly the effect is the narrowing of the blood vessels (arteries) in the heart muscle. This stops the flow of blood to the heart muscle and the heart stops working (heart attack). This is a very simple explanation. The heart can recover if the attack is not severe but attacks are frequently fatal.

#### Does 'somebody' have heart disease?

Check out these photos:



**Photos 34 and 35** Frank's sign. This is 'somebody' who has a crease in the ear lobe and although some doctors don't agree, many think it is a sign of heart disease. Note that the ear also looks blue. This shows a lack of oxygen to the tissues because of heart failure.

**Photo 46** Cross-section of a coronary artery (artery to the heart muscle). This is from 'somebody' who died from heart disease. The inner wall is very thick and you can see a massive blood clot (thrombus) taking up much of the photo.

**Photo 38** This is a slice through both ventricles (lower chambers of the heart) from 'somebody' with very high blood pressure. The left ventricle is towards the left of the screen, and shows enormous thickening of the wall. The heart is almost twice the size as it should be, because it has had to work much harder than normal.

**Photo 37** This slice is also through both ventricles (compare it to photo 38). The left ventricle is towards the right of the image as you look at it, and shows a white area of in the heart wall. This is muscle tissue, which has died due to lack of blood supply (infarction)

**Photo 36** This shows swelling of the hands because fluid has collected in the person's body tissues. Someone has just pressed on the hand of 'somebody' – you can see the dent. Such swelling is a sure sign of heart disease.

### **A little of what you fancy does you good. Can alcohol make you healthy?**

Some recent evidence suggests that alcohol in **very small** amounts can help protect against heart disease.

---

## **5. The liver**

### **What happens in the liver?**

Alcohol is taken to the liver in the blood and broken down. An enzyme breaks it down to acetaldehyde, which is very toxic substance. Acetaldehyde is then broken down to acetate by another enzyme.

It takes the liver one hour to break down one unit of alcohol. Too much alcohol in a short period of time or frequent use over a long period of time means the liver can't cope. Acetaldehyde builds up killing liver cells.

'Binge' drinking (lots to drink every now and then) will therefore damage the liver just as much as long-term use in moderation.

Women are more susceptible to liver disease than men. They have more body fat and less body water which results in higher concentrations of blood alcohol. Women will get drunk quicker!

### **The effect of alcohol on the liver**

The Liver can be affected in four ways:

- (a) Fatty liver
- (b) Hepatitis
- (c) Cirrhosis
- (d) Liver cancer

Whenever liver damage occurs a yellowing of the skin and eyes occurs. This is called jaundice. Does 'somebody' have these symptoms? If so use the following photos:



**Photo 5** Yellow eyes due to jaundice – a build up of a pigment called bilirubin.

**Photo 7** This shows the appearance of jaundice in a hand.

**Photo 6** Yellow red hands. This shows yellowing of the tops of the hand but a reddening of the palms - see fatty liver.

**Photo 16** Another curious symptom of liver disease, clubbed fingers.

### (a) Fatty liver

Most regular alcohol abusers will develop this. Fat builds up in the liver. For most people there are no real symptoms, but some people will develop:

- Dilated blood vessels in the skin (the nose is a common place)
- Reddening of palms of the hands (see Photo 6 - the palms are red but the top side of the hand shows a yellow colouration due to jaundice)
- Enlarged red blood cells (see Photo 8 - here the red blood cells are almost as large as the white blood cells)

Does 'somebody' have a fatty liver? If so use the following photos:



**Photo 3** The liver is very pale due to the fat deposits.

**Photo 2** Fatty liver sometimes leads to yellowish colouring of the liver.

**Photo 4** All the white cells should not be there. They are because of fat build up in the liver.

Most people can recover from fatty liver if they stop drinking. If alcohol intake continues the next step is hepatitis.

### (b) Alcoholic hepatitis

This is inflammation of the liver. It can be a mild disease or fatal, depending how much a person drinks and how badly it affects them. Does 'somebody' have alcoholic hepatitis?

- Loss of appetite
- Tiredness

- Pain on right hand side of the abdomen
- Bruising of skin
- Poor wound healing
- Broken blood vessels under the skin (drinkers nose)
- Red palms
- Poor blood clotting

If '*somebody*' has alcoholic hepatitis they are more ill than if they have fatty liver. If '*somebody*' does have hepatitis use the following photos:



**Photo 5** Yellow eyes due to jaundice. A build-up of bilirubin pigment

**Photo 16** Clubbed fingers.

**Photo 6** Yellow red hands. The tops of the hands are yellow but the palms are red.

**Photo 8** Large red blood cells. The red blood cells are almost as large as the white blood cells

Alcoholic hepatitis develops after 3-5 years of regular, excessive alcohol consumption in 35% of alcohol abusers. Females are at greater risk.

The good news is that '*somebody*' can recover from hepatitis. They need to give up alcohol, take extra vitamins and eat healthily.

### (c) Cirrhosis

If alcohol intake continues the next step is cirrhosis. Small lumps grow all over the surface of the liver. The inside of the liver gets gristly. 10-39% of all drinkers will develop cirrhosis.

Does '*somebody*' have cirrhosis?

- Yellow skin and eyes
- Swelling of legs
- Slight fever
- Enlarged red blood cells

Most of the symptoms are similar to hepatitis but the liver develops lumps and lots of gristle. You could use all the hepatitis photos and these extra ones:



**Photo 10** The liver is pale with lots of stringy fibres and some lumps. Look carefully at the surface.

**Photo 11** The red cells are liver cells and the blue material is abnormal gristle caused by cirrhosis.

**Photo 12** Rather like photo 11 the brown cells are liver cells, surrounded by a mass of abnormal gristle (stained blue).

**Photo 13** This is a brilliant photo of the liver clearly showing knobbly bits- a true indication of cirrhosis due to alcoholism. Cirrhosis due to alcoholism progresses quite slowly. If 'somebody' stops drinking and gets treatment then some recovery is possible. If not then death is likely.

#### **(d) Liver cancer**

This occurs in about 10% of heavy drinkers. It often develops in people with cirrhosis. Strangely enough it develops more often in those people who have had cirrhosis and given up alcohol. The symptoms are the same as cirrhosis but with more pain and bleeding in the gut. Check out Photo 15 if 'somebody' has liver cancer.

---

### **6. Gut and pancreas**

**The gut** is where most alcohol gets absorbed into the body. Some alcohol is absorbed directly through the stomach wall. This is how it gets into the bloodstream so quickly. The intestine is where most alcohol is absorbed. It passes quickly into the blood stream. Food in the gut does slow down absorption. The most common complaint from drinking too much alcohol is diarrhoea (after a binge or more often with alcoholics). Other effects include early morning nausea, retching and internal bleeding.

#### **Beer belly?**

Large amounts of alcohol will make the waist bigger – you put on weight. However the more serious biological effects are internal. Too much alcohol causes inflammation of the stomach (gastritis); this could lead to bleeding and stomach ulcers.

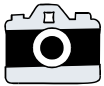


See **Photos 49 and 50**

One of the jobs of the **pancreas** is to control blood sugar. If your blood sugar falls very low then you could lapse into a coma and die. After binge drinking, especially on an empty stomach, blood sugar levels can drop dangerously low. This is called the 'Sunday morning syndrome'. Most pancreas problems are caused by alcohol abuse. The damage is mainly to the tubes from the pancreas.

Pancreatitis (inflammation of the pancreas) is common in people from wine drinking countries where a high intake of wine is accompanied by high protein food. Recovery is possible with treatment, but 50% of people with severe pancreatitis will die. Failure of the pancreas will lead to diabetes, poor digestion and poor nutrition.

Cancer of the pancreas is more commonly linked with smoking rather than drinking.



**Photo 45** Pancreatitis has caused bleeding inside the pancreas. All the brown staining is blood. The patient died.

Has '*somebody*' got pancreatitis? If they have the symptoms are:

- Pain in the abdomen
- Vomiting
- Collapse

---

## 7. Nutrition

Alcohol abuse is often linked to poor nutrition (malnutrition). The most important factor is not enough intake of most food types, especially protein. An alcoholic will spend any money they have on alcohol rather than food. Alcohol abuse in the long term reduces a person's appetite.

The next important factor is alcohol poisoning of the gut. This reduces the uptake of nutrients and destroys many nutrients. Alcohol also causes increased urination and diarrhoea, so a lot of nutrients are lost from the body. Severe malnutrition contributes to brain and liver damage.

Alcohol contains a lot of 'empty calories', so-called because they do not have any nutrients. When someone starts to drink they usually put on weight. In later stages a person may lose weight because they are very ill with one of the diseases linked to alcoholism.

---

## 8. Diabetes

Having diabetes does not affect the way in which the body deals with alcohol. However, alcohol can seriously damage the pancreas and lead to diabetes. Diabetics can still drink occasionally, but should avoid heavy drinking and take into account the sugar content of the drink.

e.g.

<b>Drink</b>	<b>Alcohol content (%)</b>	<b>Volume (ml)</b>	<b>Sugar Content (g)</b>	<b>Energy (kcal)</b>
<b>Lager</b>	3-5.5	280	8-15	80-120
<b>Spirits</b>	40	24	0	50
<b>Regular cola</b>	0	120	10	40

## 9. Oriental flush

Half of all people of Japanese or Chinese cultures are made quite ill even by small amounts of alcohol.

Their face flushes, they get a severe headache and sometimes have quite severe reactions including vomiting. Unless they stop drinking alcohol they will become very ill.

### Why?

It seems that there is a gene mutation which stops the enzyme that gets rid of acetaldehyde. Acetaldehyde is made when the liver breaks down alcohol. If it isn't got rid of it just builds up in the body making the person very ill.

This unusual reaction has also been used in a treatment for alcoholism called 'Antabuse' which contains the drug disulfiram. This drug stops acetaldehyde from being broken down. It builds up so the person gets flushing of the face, shortness of breath, headache, fast and often irregular heart beats, nausea, vomiting, weakness, fainting or collapse. Recovery follows in hours, after the alcohol has been broken down. A person taking Antabuse is warned that even a small drink will make them ill. The immediate symptoms of Antabuse are supposed to put people off drinking.

Is 'somebody' taking 'antabuse' or does 'somebody' have the gene mutation?



---

## 10. The five stages of drunkenness

### (a) Very smart

You are an expert on every subject. You know absolutely EVERYTHING! You want to tell anyone who will listen. You are also ALWAYS right. And of course the person you are talking to is very wrong. You will talk for hours trying to convince people that you are right. If the other person is also 'SMART' then it can make for an interesting argument. **The Science:** In low doses, alcohol produces 'a relaxing effect'. It reduces tension, it lowers inhibitions, it increases confidence.

### (b) Handsome/Pretty

This is when you are convinced that you are the best-looking person in the entire room and everyone is looking at you. **The Science:** In medium doses, alcohol reduces shyness but you lose reasoning and your sense of control.

### (c) Rich

This is when you suddenly become the richest person in the world. You can buy drinks for the entire bar. **The Science:** Judgement and self-control are almost gone.

## (d) Invisible

This is the final stage of drunkenness. At this point you believe that you can do absolutely anything because no one can see you. All your social inhibitions are gone. You can do anything, because no one will know. And you certainly won't remember.

**The Science:** Lack of physical control, vomiting, breathing difficulties and unconsciousness coma.

These of course are the funny stages of being drunk. The more sinister stages are:

- (a) Stupid
- (b) Aggressive and stupid.
- (c) A worry to friends and family, aggressive and stupid.
- (d) Seriously ill and unable to pay for bills and food.

---

## 11. Interesting facts on alcohol

(a) The strongest that any alcohol beverage can be is 190% proof (which is 95% alcohol). At higher proof, the alcohol takes up water from the air and gets diluted.

(b) Methyphobia is fear of alcohol.

(c) Yeast feeds on sugar and makes alcohol. This is called fermentation. Before thermometers were invented, brewers would dip a thumb or finger into the liquid to check the temperature was right for adding yeast. From this we get the phrase 'rule of thumb'.

(d) Dipsomania is an uncontrollable craving for alcohol.

(e) Drinking lowers rather than raises the body temperature. People feel hot because alcohol causes blood vessels near the skin to get wider and fill with more warm blood. Giving alcohol to someone who is cold will make them worse.

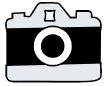
(f) When alcoholic drinks were banned from sale in America during prohibition some people drank methanol. This is poisonous and affects the nerves to the eye. They became temporarily blinded, which gave us the expression 'blind drunk'.

(g) Most vegetable, and virtually all fruit juices, contain alcohol in very small amounts.

(h) What is it? The French call it "*wood mouth*,"  
Germans refer to it as "*wailing of the cats*,"  
Italians call it "*out of tune*,"  
Norwegians identify it as "*carpenters in the head*,"  
Spaniards call it "*backlash*,"  
Swedes refer to it as "*pain in the hair roots*,"  
and most English speakers call it a "*hangover*."

Whatever you say, it can always be prevented by drinking in moderation.

(i) Gout is an inherited condition. Abusing alcohol can make it worse.



See **Photos 47 and 48**

---

## 12. Accidents

In section (1) on alcohol and behaviour you found that when '*somebody*' is drunk they can do lots of strange, weird and dangerous things. It is not surprising that many types of drunken behaviours lead to accidents and violence.

On Friday and Saturday nights in casualty departments of hospitals, the majority of patients are under the influence of alcohol. The only advantage to the patient is that alcohol acts as a type of anaesthetic so there is less pain. Indeed before anaesthetics were invented, doctors used to get patients drunk before surgery or amputation.

This is a problem for hospital staff because drunken patients can often be abusive or aggressive. Is '*somebody*' aggressive when drunk?

Many accidents are minor, but many are serious and death a real possibility.

Drinking and driving is a major problem and will kill. Don't drink and drive.



**Photos 18, 19 and 21** show accidents that led to death. They were the result of drinking and driving.

## 13. For further information on-line

### General

Wired for health	<a href="http://www.wiredforhealth.gov.uk">www.wiredforhealth.gov.uk</a>
World Health Organisation	<a href="http://www.who.int/home-page">www.who.int/home-page</a>
Health Promotion	<a href="http://www.hpe.org.uk">www.hpe.org.uk</a>
Health Development Agency	<a href="http://www.hea.org.uk">www.hea.org.uk</a>

### Alcohol

Alcohol research and education	<a href="http://www.aerc.org.uk">www.aerc.org.uk</a>
Institute of Alcohol Studies	<a href="http://www.ias.org.uk">www.ias.org.uk</a>

**Pathology photos** – yet more gory photos  
<http://www-medlib.med.utah.edu/WebPath/webpath.html>

**Animated images and clip art** on smoking and alcohol to cut and paste into your PowerPoint presentation. [www.clipart.co.uk](http://www.clipart.co.uk)