

# Alcohol and You

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## ABSORPTION

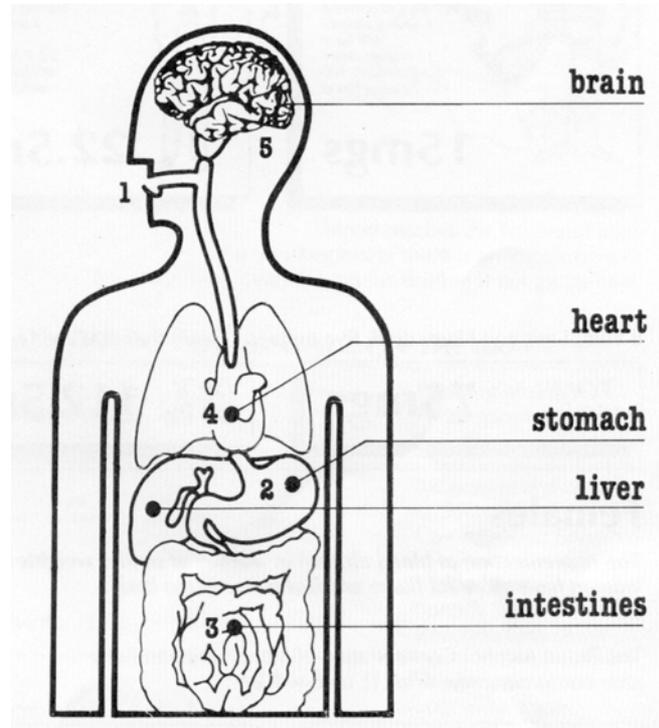
1 Alcohol is taken into the body through the mouth. It produces a 'burning' taste on the back of the throat.

2 The alcohol is absorbed by the stomach wall and enters the blood stream. The amount of food in the stomach and type of drink consumed will significantly affect the rate of absorption.

3 The remaining alcohol passes into the small intestines where it is absorbed into the blood more rapidly than from the stomach. (About two-thirds of the alcohol is absorbed in this way).

4 Once in the blood, alcohol travels to all parts of the body.

5 When alcohol enters the body it soon affects the brain, being carried there by the bloodstream. Alcohol enters the nerve cells, slowing down their activity.



**ABSORPTION** is the process whereby the capillaries, tiny blood vessels in the stomach and intestines, pick up alcohol and transport it to all parts of the human body within a few moments after it has been drunk. It is during this stage that alcohol affects the brain and its functions.

It is not the amount of alcohol taken into the stomach, but the percentage actually circulating at any given time in the blood, which decides the degree of impairment to the brain.

The amount of alcohol circulating in the blood is described as **Blood Alcohol Concentration (BAC)**.

Broadly, one standard drink raises the BAC by 15mg% in an adult male of average weight and build.

In the UK, a standard drink is defined as a measure containing 8g of alcohol. This is approximately the amount of alcohol contained in the standard measures of alcoholic drinks. However, the advent of both higher and lower strength beers and wines, etc. has complicated the picture and the below should only be regarded as a rough guide to equivalence:



## BLOOD ALCOHOL CONCENTRATION (BAC)

### Males

The Blood Alcohol Concentration of drinkers Tom, Dick and Harry after consuming **one drink** (1 unit) will be :



**TOM**  
150 lbs

An average adult male weighing 150 lbs and drinking 1 unit of alcohol will have 15 milligrammes of alcohol per 100 millilitres of blood

**15mgs**

**DICK**  
100 lbs

A light adult male weighing 100 lbs and drinking 1 unit of alcohol will have 22.5 milligrammes of alcohol per 100 millilitres of blood

**22.5mgs**

**HARRY**  
250 lbs

A large adult male weighing 250 lbs and drinking 1 unit of alcohol will have 9 milligrammes of alcohol per 100 millilitres of blood

**9mgs**

If Tom, Dick and Harry drink **five units** in 1 hour, their BAC will be :



**TOM**  
150 lbs **75mgs**

**DICK**  
100 lbs **112.5mgs**

**HARRY**  
250 lbs **45mgs**

### Females

The concentration of blood alcohol in women of similar weights to the three men will be slightly higher, since women have more fat tissue and less water in the body.

The Blood Alcohol Concentration of Mary, June and Betty after consuming **one drink** (1 unit) will be :



**MARY**  
150 lbs

An average adult female weighing 150 lbs and drinking 1 unit of alcohol will have 18 milligrammes of alcohol per 100 millilitres of blood

**18mgs**

**JUNE**  
100 lbs

A light adult female weighing 100 lbs and drinking 1 unit of alcohol will have 27 milligrammes of alcohol per 100 millilitres of blood

**27mgs**

**BETTY**  
250 lbs

A large adult female weighing 250 lbs and drinking 1 unit of alcohol will have 10.8 milligrammes of alcohol per 100 millilitres of blood

**10.8mgs**

If Mary, June and Betty drink **five units** in 1 hour, their BAC will be :



**MARY**  
150 lbs **90mgs**

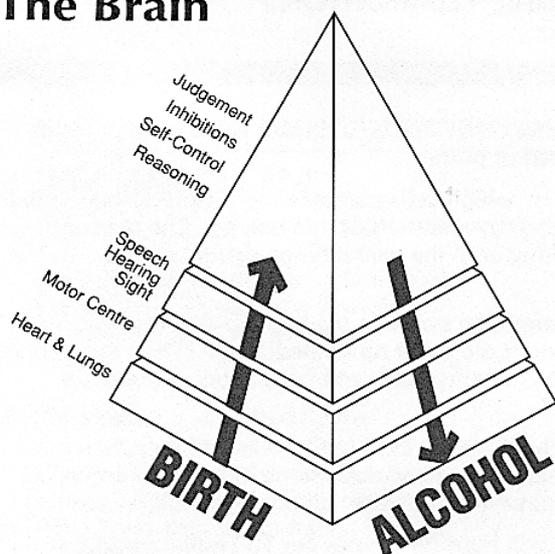
**JUNE**  
100 lbs **135mgs**

**BETTY**  
250 lbs **54mgs**

(These estimates must be taken as a very rough guide, since the investigations by the BMA in 1958 would give higher levels of BAC for each unit of alcohol)

## THE EFFECT OF ALCOHOL ON THE NERVOUS SYSTEM

### The Brain



The effects of increasing doses of alcohol on the brain is similar to anaesthetics. The faculties last to be acquired in life are the first to go (conduct and behaviour), and those first to be acquired, are the last to go.



Alcohol absorbed into the blood reaches the brain and from the very beginning there is an impairment of brain function, even though the drinker is not aware of it.

### BEHAVIOUR IS AFFECTED BY INCREASING AMOUNTS OF ALCOHOL ON THE BRAIN

<b>1 to 3 units</b>	<i>I can drive when I drink.</i>	Flushing of skin Heart speeds up Talkative
<b>4 to 6 units</b>	<i>I can drive when I drink</i>	Judgement is slower Giddiness Co-ordination impaired
<b>7 to 9 units</b>	<i>I can drive when I drink.</i>	Vision blurred Speech fuzzy Reaction time slows
<b>10 to 15 units</b>	<i>I can drive when I drink</i>	Staggering Loss of balance Double Vision
<b>20 units plus</b>	<i>I can drive when I drink</i>	Skin is clammy Pupils are dilated
<b>30 units plus</b>		Unconsciousness Death

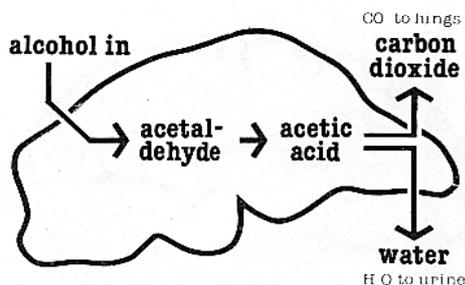
### OTHER FACTORS AFFECT WHAT ALCOHOL WILL DO

- 1 Time period over which drinking occurs - one drink each hour will show little noticeable effect, compared with 3-4 drinks per hour. However, spacing drinks only affects the degree of intoxication, not health damage. It is generally accepted that males drinking more than 7 units per day, and females more than 5 units per day, run a greater risk of cirrhosis of the liver.
- 2 The social situation in which drinking is occurring and the mood of the individual e.g. highly emotional state - effects may be more pronounced.
- 3 Food in stomach. Initially slows down alcohol's absorption into bloodstream and the peak level of blood alcohol will be reduced.
- 4 Age and Drinking Experience. Older and more experienced drinkers are able to partially compensate for the effect of alcohol. They acquire tolerance, both physically and psychologically

## DISPOSAL OF ALCOHOL FROM THE BODY

The body disposes of alcohol in two ways – by **OXIDATION** and by **ELIMINATION**.

### The Liver



### OXIDATION

Over 90 per cent of alcohol consumed by a drinker is disposed of inside the body by being oxidised or burnt.

Oxidation is the process by which cells combine the dissolved food in the blood with oxygen and thereby release heat and energy. The heat and energy, or calories, resulting from the oxidation of alcohol are used by the body cells.

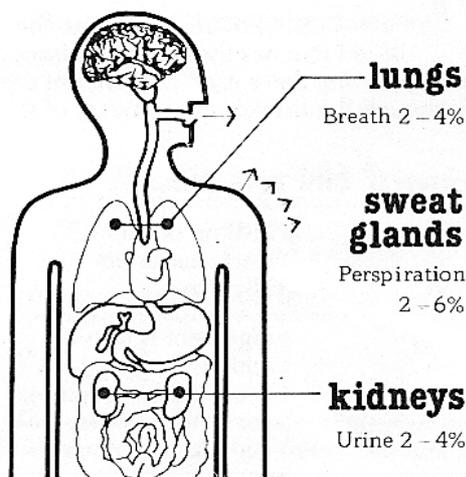
These alcohol calories cannot be stored in the body for future use as with most foods. Alcohol calories are burnt up immediately. While the alcohol is being used by the body, carbohydrates and fats are being stored for future energy supply.

Alcohol is metabolised chiefly in the cells of the liver and the rate is constant for any individual. The rate varies among individuals according to body weight and an enzyme in the liver - alcohol dehydrogenase.

The average 150 lb man will burn up 15 mgs per 100 millilitres of BAC in 1 hour (1 drink - 1 unit).

**General Rule of Thumb:**

**IT WILL TAKE AS MANY HOURS AS THE NUMBER OF DRINKS CONSUMED TO COMPLETELY BURN**



**UP ALL THE ALCOHOL.**

### ELIMINATION

A small quantity of alcohol - about 2 per cent and no more than 10 per cent - escapes unused via breath, urine or sweat glands.

### HEALTH DAMAGE

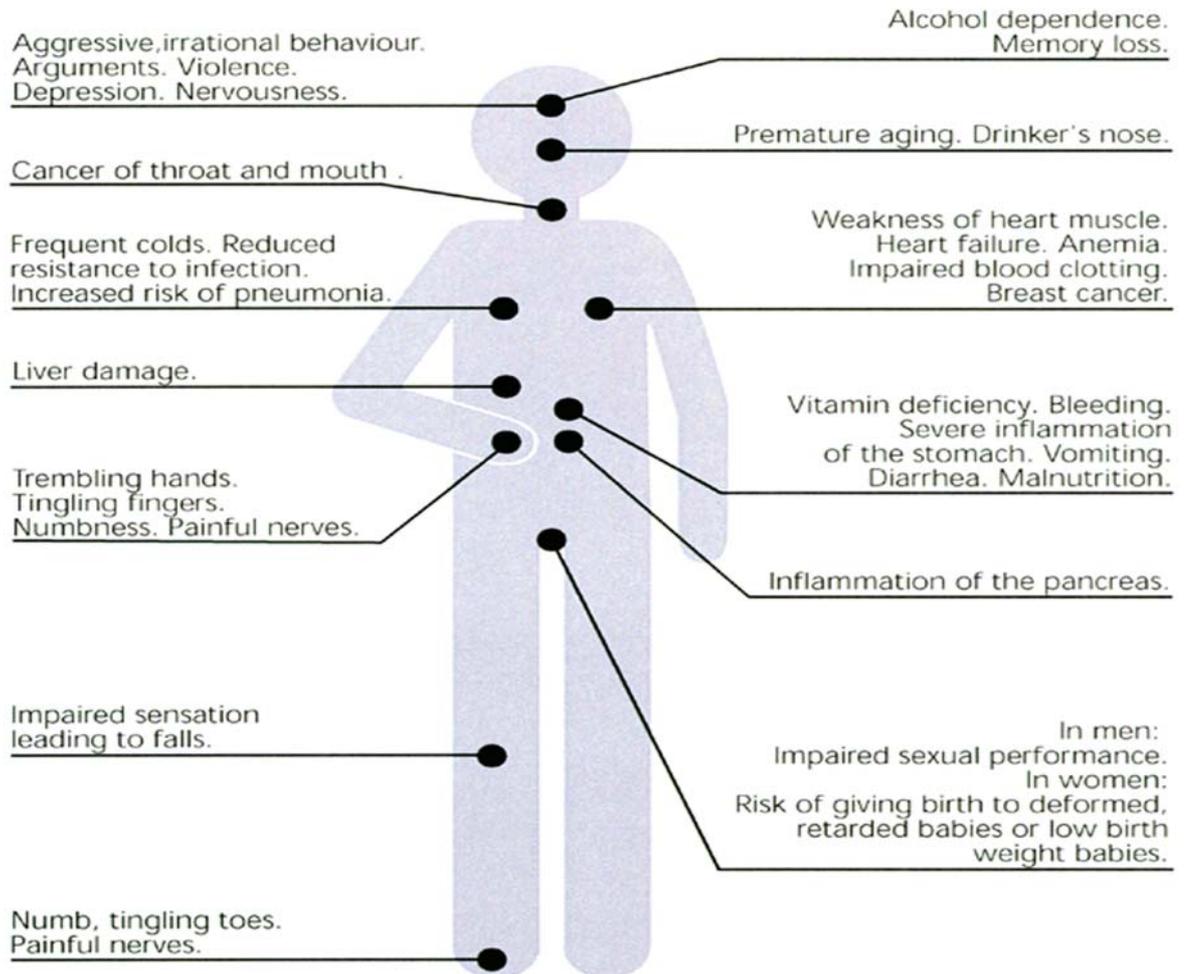
Drinking more than a daily average of 3 units for an adult male and 2 units for a female increases the likelihood of various diseases.

### REMEMBER:

Even a moderate drinker consuming alcohol before driving or using machinery increases the likelihood of damage to themselves or others.

A drinker in a coma is near death, either from vomiting, causing choking, or unabsorbed alcohol in the stomach, which can build up to the lethal point.

## Effects of High-Risk Drinking <sup>1</sup>



High-risk drinking may lead to social, legal, medical, domestic, job and financial problems. It may also cut your lifespan and lead to accidents and death from drunk-en driving.

### References

1. Adapted from: Babor, Higgins-Biddle, Saunders, Monteiro: The Alcohol Use Disorders Identification Test: Guidelines for use in primary care. WHO, 2001

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20<sup>th</sup> April 2004