WHAT IS BAC?

BAC (Blood Alcohol Content or concentration) is the percent of alcohol present in the blood. There are various means of determining BAC. An absolute level can be obtained by drawing a sample of blood. The most reliable estimate can be obtained via very accurate breathalyzers that take a sample of deep lung air. These are often used by police departments, and are considered legal evidence in a court of law. Handheld breathalyzers are less accurate, and while they are not considered legal evidence of intoxication, they can be used by police to determine probable cause to obtain a BAC that is considered legal evidence in a court of law.

Alcohol Effects

Alcohol can have significant effects on feelings, perceptions, and physiology. Although alcohol may give you a feeling of elation and aroused senses due to a lessening of inhibitions during the early stages of alcohol intoxication, alcohol is a depressant. It depresses the central nervous system—leading to slowed reactions, slurred speech, and ultimately, to unconsciousness. Alcohol progressively affects different brain areas. Alcohol first affects the part of the brain that controls inhibitions. When people lose their inhibitions, they may talk more, get rowdy, and do foolish things. After several drinks, they may feel "high," but really, their nervous system is slowing down.

Alcohol acts fast because it is not digested like food. Instead, it moves directly into the bloodstream from the stomach and small intestine. It takes a long time for alcohol's effects to wear off—as it takes approximately one hour for the liver to process the alcohol in one drink.

Elimination Factors

The liver is responsible for the elimination of alcohol. The liver eliminates of 95% of ingested alcohol from the body through metabolism. The remainder of the alcohol is eliminated through excretion of alcohol in breath, urine, sweat, feces, milk and saliva. Healthy people metabolize alcohol at a fairly consistent rate. As a rule of thumb, a person will eliminate one average drink or .5 oz (15 ml) of alcohol per hour. Several factors influence this rate. In general, the rate of elimination tends to be higher when the BAC in the body is very high or very low. Elimination factors include rate of consumption, tolerance, and gender:

Points to remember:

- ✓ Vomiting doesn't get rid of the alcohol in your blood, therefore it does not lower your BAC or make you less drunk.
- ✓ A person who drinks to a .25 at midnight will still be over the legal limit at 10 am the next morning.
- ✓ Eating before drinking does not decrease the BAC, but helps to slow the absorption of alcohol

Rate of Consumption

Blood alcohol concentration depends on the amount of alcohol consumed and the rate at which the user's body metabolizes alcohol. Because the body metabolizes alcohol at a fairly constant rate (somewhat more quickly at higher and lower alcohol concentrations), ingesting alcohol at a rate higher than the rate of elimination results in a cumulative effect and an increasing blood alcohol concentration.

Consumption at a rate of one drink per hour will, for most people, maintain your current BAC.

Gender Differences

Another gender based difference is in the elimination of alcohol. Although not explained, studies indicate that women eliminate alcohol from their bodies at a rate 10% greater than that of men.

It is important to remember that this difference in the eliminate rate is by far outweighed by gender differences related to distribution factors. Thus, women will, in most cases, reach higher BACs as their male counterparts that consume the same amount of alcohol.

Blood Alcohol Content (BAC)

Four factors work together to determine an individual's BAC.

1. Weight
2. Gender
3. Amount of alcohol consumed
4. Amount of time spent drinking

Determining your level of BAC:

The first step in using any chart or computer program to estimate your BAC is to determine the amount of alcohol you consume. The key is to think in terms of "standard drinks." A standard drink is 0.5 oz. of alcohol. To calculate standard drinks you need to know the beverage size in ounces and the percent alcohol content. Some alcoholic beverages are labeled by percent alcohol by volume (i.e., 5%), but most beers are not. Use the information below to estimate alcohol content:

To calculate the number of standard drinks:

- Multiply the serving size (in ounces) by the percent alcohol by volume to get the total ounces of alcohol.
- Then divide by 0.5 (the size of one standard drink).

Example: For a 12 oz. beer with 5% alcohol:

Standard Drinks =

$$\frac{12 \text{ oz.} \times .05\%}{0.5 \text{ oz. alc.}} = \frac{0.6}{0.5} = 1.20$$

or you can use this simpler formula:

12 oz. x .05% x 2 = 1.20

Standard Drinks Chart

One Standard Drink is 0.5 oz. of Alcohol

Percent Alcohol by Volume	Drink Size in Ounces				
	Shot	Wine Glass		Cup/Bottle	
	1.25 oz	6 oz	8 oz	12 oz	16 oz
3.5%				0.84	1.12
4.0%				0.96	1.28
4.5%				1.08	1.44
5.0%				1.20	1.60
5.5%				1.32	1.76
6.0%		0.72	0.96	1.44	1.92
7.0%		0.84	1.12	1.68	2.24
8.0%		0.96	1.28	1.92	2.56
9.0%		1.08	1.44	2.16	2.88
10.0%	0.25	1.20	1.60		
12.0%	0.30	1.44	1.92		
14.0%	0.35	1.68	2.24		
15.0%	0.38	1.80	2.40		
20.0%	0.50	2.40	3.20		
30.0%	0.75				
40.0%	1.00				
42.5%	1.06				
45.0%	1.13				
47.5%	1.19				
50.0%	1.25				

EXAMPLE:
A 16 oz. beer with an alcohol content of 4.5% is equal to 1.44 standard drinks.

College Alcohol Abuse Prevention Center, Virginia Tech

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The percent alcohol content of beverages varies across both beverage type and brand. Use the following general guidelines to determine the relative alcohol content of a specific alcoholic beverages:

Beer:	The darker the beer the more alcohol. The more bitter the beer the more alcohol.
Wine:	With the exception of Chardonnay, red wines have more alcohol than whites. The sweeter the wine the lower the alcohol content.
Liquor:	The darker the liquor the more alcohol. The sweeter the liquor the lower the alcohol content. With the exception of grain alcohol, clear liquors have about 40% alcohol.

Percent Alcohol by Volume

Type of Drink	Percent Alcohol Average	(Range)
Lagers		
Light	4.2%	(3.8 - 4.4)
Regular	4.5%	(4.1 - 4.9)
Ice	5.5%	(5.0 - 5.9)
Ales	4.5%	(4.0 - 6.0)
Porters/Stouts	6.5%	(6.0 - 8.0)
Wines	12.0%	(7.1 - 14.2)
Chardonnay	12.5%	(11.0 - 14.0)
Other Whites	10.0%	(7.1 - 12.0)
Red Wines	13.0%	(12.0 - 14.2)
Vodka	**40.0%**	**(40.0 - 50.0)**
Gin	**42.5%**	**(40.0 - 48.5)**
Rum	**45.0%**	**(40.0 - 95.0)**
Tequila	**45.0%**	**(45.0 - 50.5)**
Brandy	**42.0%**	**(40.0 - 43.0)**
Whiskey	**50.0%**	**(40.0 - 75.0)**