

How alcohol can damage your body.

Alcohol and the cardiovascular system.

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The heart and blood vessels form part of the cardiovascular system. Blood is pumped around the body by the heart, via these blood vessels through arteries, capillaries and veins. The blood delivers nutrients and other materials to all parts of the body, including alcohol, which is absorbed directly into the blood stream mainly via the stomach and small intestine.

The cardiovascular system is affected by alcohol. At the time of drinking, alcohol can cause a temporary increase in heart rate and blood pressure. In the long-term, drinking above the guidelines can lead to on-going increased heart rate, high blood pressure, weakened heart muscle and irregular heartbeat. All of which can increase the risk of alcohol-caused heart attack and stroke.

 In 2013 about one person per month died from alcohol-related stroke in WA.

 In 2014 alcohol-related stroke hospitalisations in WA was estimated to cost \$1.3 million.

Increased heart rate

Heart rate is the number of times the heartbeats per minute. Alcohol can cause variability in the way the heart beats – the time between heart beats. Studies have found that regular heavy drinking can cause episodes of tachycardia (increased heart rate due to problems in the electrical signals that produce a heartbeat). Complications due to regular episodes of tachycardia, vary depending on their frequency, length and severity, but it can cause blood clots that can lead to a heart attack or stroke.

Increased blood pressure

Blood pressure is a measure of the force blood places against blood vessel walls. High blood pressure is when the blood is pumping with more force than normal through the arteries. Drinking alcohol on a single occasion can see a temporary

increase in blood pressure, and regularly drinking alcohol above the guidelines can cause alcohol-caused hypertension (high blood pressure). It is likely there are multiple mechanisms which cause alcohol to raise blood pressure, and studies have shown that a reduction in alcohol intake can lower blood pressure. High blood pressure can cause hardening and thickening of the arteries, and is a risk factor for heart attack and stroke. The Australian Heart Foundation recommends having no more than two standard drinks on any day, as studies have found the consumption of more than two standard drinks a day can see an immediate increase in blood pressure, and increases the risk of developing hypertension.

Weakened heart muscle

The heart is critical in getting oxygen and nutrients around the body and achieves this by generating the pressure for blood to circulate around the body, ensuring blood only flows in one direction. The frequency and force of the hearts contractions adjust depending on the needs of the body. The anatomy of the heart is complex, but the heart's ability to contract is due to the muscle layer within the heart wall. Heart muscle is called myocardium, and damaged heart muscle is called cardiomyopathy. Heavy alcohol consumption can lead to cardiomyopathy.

Dilated cardiomyopathy results in weakened heart muscle that causes the four heart chambers to enlarge, resulting in weaker contractions (this makes it harder for the blood to circulate around the body).

Cardiomyopathy can eventually lead to congestive heart failure, which is when the heart doesn't pump enough for the needs of the body.

Reducing your drinking, will reduce your risks.

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Irregular heart beat

A change in heart rhythm is called an arrhythmia. Arrhythmias can occur because of changes to the heart's electrical system, which can be caused by blocked signals, abnormal pathways, irritable heart cells, medicines and stimulants. Some of the common arrhythmias include the heart beating too slow (bradycardia), or too fast (tachycardia). There are many mechanisms for how alcohol can create a change in heart rhythm. Arrhythmias can cause cardiac arrest and stroke.

The occurrence of acute cardiac rhythm disturbances (atrial fibrillation is the most common) have been found to be induced by alcohol. Sometimes referred to as 'holiday heart' these disturbances were found to be more frequent after weekends or holidays like Christmas or New Years which are known to have higher alcohol consumption.

Atrial fibrillation

Atrial fibrillation is one type of arrhythmia, and causes the upper chambers of the heart (the atriums) to quiver rather than beat normally. Alcohol causes atrial fibrillation through multiple mechanisms and can be seen both acutely (after one off drinking occasion) and from the cumulative effects of alcohol on the heart muscle. This means blood does not circulate as efficiently as it should. This can result in blood, which hasn't left the atrium, to pool and clot. If the blood that has clotted within the atrium breaks off and is within the blood stream it can lodge in an artery within the brain causing an ischemic stroke.

What cardiovascular diseases can alcohol cause?

Heart attack

Your heart muscle needs oxygen so it can keep pumping. A heart attack is when an artery supplying oxygen to the heart muscle is reduced or cut off completely, preventing the heart muscle receiving oxygen. The blood flow to the heart can be blocked due to a gradual build up of plaque, fat and cholesterol

that cause a narrowing of the coronary arteries.

Alcohol consumption can raise the levels of fat in the blood, especially triglyceride. People with high triglyceride often have high levels of bad cholesterol and low levels of good cholesterol. High levels of bad cholesterol can clog arteries and if a piece of plaque breaks off, a clot forms and a heart attack can result.

Stroke

Alcohol consumption can increase the risk of two types of strokes occurring. Both result in a disrupted blood flow to brain tissue, and can result in a loss of motor (movement) and sensory (touch, temperature sensations) functions. A stroke can also damage other systems in the body including the skeletal, muscular, respiratory, digestive and urinary systems.

Ischemic stroke

This is when an artery supplying blood to the brain tissue is blocked. This blockage can result from a clot that has formed in the artery or from a foreign body (such as a fat globule) that has broken off and becomes lodged in the artery, blocking it.

Alcohol increases the risk of ischemic stroke because it can:

- Cause a clot, formed due to irregular heartbeat and weakened heart muscle, lodging in a blood vessel in the brain.
- Cause high blood pressure which can result in a foreign body such as plaque to break off, enter the blood stream and lodge in a blood vessel in the brain.
- Raise the levels of fat (bad cholesterol) in the blood and if a clot forms in a clogged artery a stroke can result.

Haemorrhagic stroke

This results from an artery supplying brain tissue, tearing and bleeding. Alcohol increases the risk of haemorrhagic stroke because it can cause high blood pressure. High blood pressure can create weak points on artery walls, including those in the brain, increasing the chance of them bleeding due the force of high blood pressure.