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# Introduction

None of us want alcohol-related harms in our lives. This resource in the **Alcohol and Health Series** focuses on the immediate effects of an occasion of drinking, and the opportunities that exist to reduce the risk that comes with alcohol. It's important those drinking, and those not, all understand these effects and the practical ways to prevent them in the first place or to reduce their severity. As health professionals or community members, we can make a difference.

## More Alcohol, More Effects

### Standard Drink

As the volume of alcohol (ethanol) increases in the body, each person who drinks will experience more risk. Each country defines a **fixed amount of ethanol as a standard drink** so there is a shared understanding of the amount of pure ethanol regardless of the beverage (beer, wine, spirits).

**In Canada, a standard drink** is 17.05 millilitres or 13.45 grams of pure ethanol. This is the equivalent of:

- a bottle of beer (12 oz., 341 ml, 5% alcohol)
- a cooler, bottle of cider or 'ready-to-drink' beverage (12 oz., 341 ml, 5% alcohol)
- a glass of wine (5 oz., 142 ml, 12% alcohol)
- a shot glass of spirits (1.5 oz., 43 ml, 40% alcohol)



Canadian Centre on Substance Use and Addiction (2023). Canada's Guidance on Alcohol and Health.

## More standard drinks, higher blood alcohol concentration

As the person drinks each standard drink of alcohol, the blood alcohol concentration in their body rises. **The liver can only break down one standard drink at a time**, typically taking 1-2 hours for each standard drink to be broken down by the liver. The rest of the drinks waiting in line to be metabolized cause the blood alcohol concentration to increase.

- The higher the percent alcohol of the drinks you are consuming, the higher the blood alcohol concentration.
- The more standard drinks consumed in a length of time, the higher the blood alcohol concentration.

## Tolerance

With regular use of alcohol, the body gets used to having alcohol in its system. This means some of the outward signs of intoxication may be less obvious. The more often a person drinks alcohol, the more alcohol they need to feel the same effects. This is called **tolerance**. A person who drinks a lot of alcohol and does not appear intoxicated still has a high blood alcohol concentration, and its related risks to their body, and to the person's interactions in community.

# Alcohol Combined with Other Drug Use

Mixing any psychoactive drug is risky, and this applies to mixing alcohol with other drugs too. It's tricky to predict how the alcohol combinations will impact the body, factoring in the dose of each substance and how the chemical interaction of both drugs plays out. The alcohol combination's impact on a person's communication, decisions, relationships, and mood can also play out in unexpected ways. **Sticking to alcohol, and no other drug when drinking can reduce your harms, and the harms for others from your drinking.** Let's explore some alcohol combinations and why this is important.

## Alcohol and Caffeine



Caffeine is a stimulant found in varying amounts in coffee, tea, cola, chocolate, energy drinks, energy shots, and cold or pain medicines with caffeine. Caffeine's stimulant effect can mask the depressant effect of alcohol, resulting in someone feeling more alert than they typically would from the standard drinks of alcohol consumed. This may have the person drinking longer, underestimating the number of drinks consumed and creating more risk for themselves and others,

for example through injury, impaired driving or alcohol poisoning. Remember, caffeine does **not** change the blood alcohol concentration in the body or reduce the impairment from alcohol.

Health Canada requires that all caffeinated energy drinks carry warning statements on the label stating that these products are not to be mixed with alcohol. Due to the serious risk of alcohol poisoning, alcoholic drinks that have directly added caffeine are illegal in Canada.

Reference: Information update - Health Canada reminds Canadians not to mix caffeinated drinks with alcohol; Starting date: September 27, 2018; Type of communication: Information Update; Subcategory: Chemical Source of recall : Health Canada; Issue: Food Safety Audience: General Public; Identification number: RA-67820

## Alcohol and Cannabis



Cannabis, often called marijuana, has psychoactive (mind altering) effects. When alcohol and cannabis are used in combination, a person is significantly more impaired. Reflexes are more severely slowed, and coordination and judgement are reduced.

Avoid consuming cannabis with alcohol to reduce the risk of extreme anxiety, nausea, vomiting and fainting. If vomiting results, with alcohol and cannabis use combined, the vomiting may be due to alcohol poisoning (the body trying to rid itself of the alcohol toxicity) or cannabinoid hyperemesis syndrome (a condition where a person may vomit more than 20 times in a 24 hour period).

## Alcohol and Medications



Medications, both of the prescription and “over the counter” type come with serious risk when combining with alcohol. **Be sure to read the labels on medications carefully**, and review the information sheets that come with the medication. Your pharmacist or doctor will help answer, “can I drink alcohol while using this medication – or not?”

**Alcohol combined with medication can make a medication less effective, useless, or toxic.** It may cause nausea, vomiting, drowsiness, headaches, put you at risk of internal bleeding, difficulties breathing, loss of coordination or heart problems. **Some medications contain alcohol** (cough syrups, laxatives) and so the person’s blood alcohol concentration will include both the ethanol from the medication and from drinking alcohol if they are combined in time.

**Prescription sedatives** depress or slow brain activity and are commonly used as medications for treating anxiety, insomnia and sleep disorders. Sedatives include:

- benzodiazepines (e.g. Alprazolam, Diazepam, Lorazepam),
- non-benzodiazepine sleep medication (e.g. Zopiclone) and
- barbiturates.

On their own sedatives can affect driving ability and in combination with alcohol can increase risk of a collision. Sedatives should generally not be combined with alcohol, opioids or both as this increases the risk of poisoning/over-dosing.

**Pain medications** for muscle ache, fever, inflammation, minor arthritis (Ibuprofen, Naproxen, Aspirin, Acetaminophen) when combined with alcohol may result in stomach upset, bleeding, ulcers. **Alcohol and acetaminophen** (Tylenol®) combined, comes with the risk of liver damage, including for people with liver problems from their drinking. For this same reason, taking acetaminophen (Tylenol®) for a hangover symptom such as a headache may create harm for some.

Liver damage is a serious concern when alcohol is combined with **medications for high cholesterol** (e.g. Pravastatin).

Hopefully getting a glimpse into some alcohol and medication combinations shows **how important it is to not drink alcohol when using medication**, or how one can make an informed decision by first learning about the risks in mixing alcohol with the specific medication being taken.

## Alcohol and Tobacco



Drinking alcohol may be paired with many types of commercial tobacco and nicotine (a very addictive chemical in tobacco). To name a few; cigarettes, cigars, pipes, e-cigarettes (vaping) with nicotine, traditional hookah/shisha/waterpipe smoking with nicotine; smokeless tobacco such as chewing tobacco, and snuff.

Combining alcohol and tobacco increase the effects.

### Drinking alcohol:

- increases the desire/urge to smoke,
- decreases the time to initiate the next smoking, and
- increases the amount smoked.

Tobacco and nicotine use:

- increases the desire/urge to drink alcohol,
- decreases the **subjective** effect of feeling intoxicated or sedated (which may result in people underestimating their alcohol impairment), and
- increases the amount of alcohol consumed.

Co-use of alcohol and tobacco as a pattern in a person's life also results in significantly higher health risks and death rates than from each of these two drugs separately for cancers, cardiovascular risk and liver cirrhosis.

## Alcohol and Illicit Drugs



Alcohol combined with illicit drug use can result in many different effects depending on how the additional drugs affect the body. Even the setting can impact the risk to the person using the alcohol and illicit drug combo. For example, if there are immediate effects is there someone not using substances nearby to help?

**Alcohol and cocaine** are a dangerous mix of a depressant and a stimulant which have been shown to increase the risk of a heart attack even in the young and healthy age group. Cocaine use increases high blood pressure and fast or irregular heartbeat. When alcohol and cocaine are used in combination, the liver produces cocaethylene, a substance significantly more toxic than cocaine that can result in sudden death. Overdose risk increases using both alcohol and cocaine too.

**Alcohol and GHB** (gamma-hydroxybutyrate), a central nervous system depressant and potent sedative sold as a street drug, have a significantly higher overdose and death risk when taken together.

**Alcohol and Heroin**, a highly addictive opioid are very risky for overdose and death when used in combination.

**Alcohol and Fentanyl**, a toxic opioid in very small amounts, create a very dangerous combination. A person is more likely to overdose if they use both alcohol and fentanyl together.

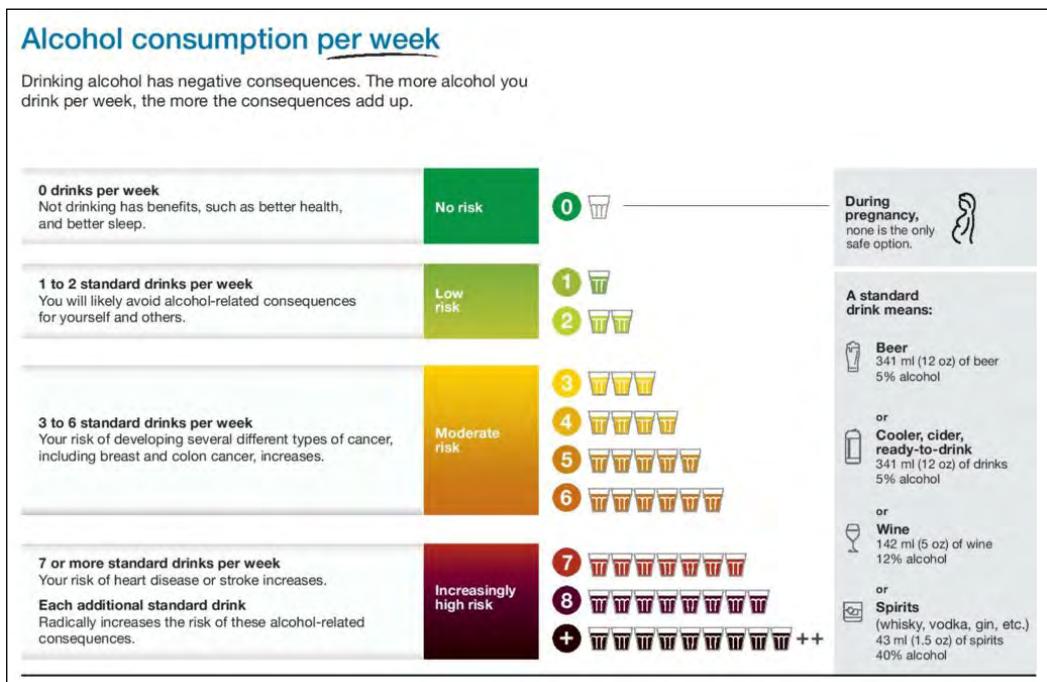
The possible drug interactions of alcohol and an illicit drug are as unique as the number of illicit drugs out in community. One can also not always know exactly whether the drug consumed is the drug the person thought they were taking which results in very unexpected "alcohol and" combinations.

# Canada’s Guidance on Alcohol and Health

In our communities, many people do not drink alcohol, and many people do. In community, we can:

- support those who do not drink to maintain their “no alcohol” decision, as they are already making the healthiest choice there is for their body and their mental wellness by not consuming any alcohol. People make this choice for many different reasons, and we respect the diversity of these reasons.
- support those who drink alcohol to become informed, and then apply Canada’s Guidance on Alcohol and Health. The current guidance:
  - outlines the number of standard drinks consumed per week that is associated with both short-term health effects, and long-term effects,
  - encourages people living in Canada to drink less alcohol as a way to improve their health,
  - provides information on situations when zero’s the limit (when no alcohol use is best), and
  - suggests delaying first use of alcohol if you are under the legal drinking age in your province (18 or 19 years).

## Weekly Alcohol Use



### Aim to drink less

Drinking less benefits you and others. It reduces your risk of injury and violence, and many health problems that can shorten life.

**Here is a good way to do it**

Count how many drinks you have in a week.



Set a weekly drinking target. If you're going to drink, **make sure you don't exceed 2 drinks on any day.**

**Good to know**

You can reduce your drinking in steps! Every drink counts: any reduction in alcohol use has benefits.

### It's time to pick a new target

**What will your weekly drinking target be?**



**Tips to help you stay on target**

- Stick to the limits you've set for yourself.
- Drink slowly.
- Drink lots of water.
- For every drink of alcohol, have one non-alcoholic drink.
- Choose alcohol-free or low-alcohol beverages.
- Eat before and while you're drinking.
- Have alcohol-free weeks or do alcohol-free activities.

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**Drinking less benefits your health and the health of those around you.**  
 Every drink counts—any reduction in alcohol use has health benefits.

Reference: Canadian Centre on Substance Use and Addiction (2023). Canada's Guidance on Alcohol and Health.

When Zero is the Limit

**Low-risk is not no-risk**, so there are times when you need to take a time out from drinking alcohol – a series of hours, a day, a work week, a month, a year or more.

**Here are the situations when zero's the limit** for the health and safety of the individual, one's family, one's work colleagues, and others out in community and on the roads.

**Do not drink alcohol at all when you are:**

- living with mental or physical health issues
- taking medicine or other drugs that interact with alcohol
- pregnant, planning to become pregnant or about to breastfeed
- doing any dangerous physical activity
- driving a vehicle or using machinery and tools
- living with alcohol dependence
- responsible for the safety of others
- making important decisions

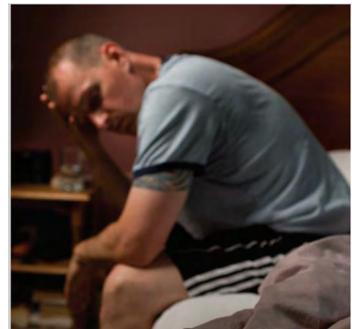


# Acute effects of drinking

Here are some of the acute effects if you drink too much during a single drinking occasion. **Binge drinking** is currently defined as 5 or more standard drinks for men and 4 or more standard drinks for women. However, Canada's Guidance on Alcohol and Health suggests that harms from alcohol are more likely for those who drink more than 2 standard drinks on any given day or drinking occasion. The short-term effects begin as soon as the drinking does, and vary based on the amount of alcohol, the timing between drinks, what the person expects alcohol to do, the exposure to previous drinking, the location for the drinking, and the mental and emotional state of the person.

## Alcohol Hangover

Alcohol hangovers are a common immediate impact of drinking alcohol. The medical community also calls a hangover by the term "veisalgia". **An alcohol hangover is "the combination of negative mental and physical symptoms which can be experienced after a single episode of alcohol consumption, starting when blood alcohol concentration (BAC) approaches zero"**

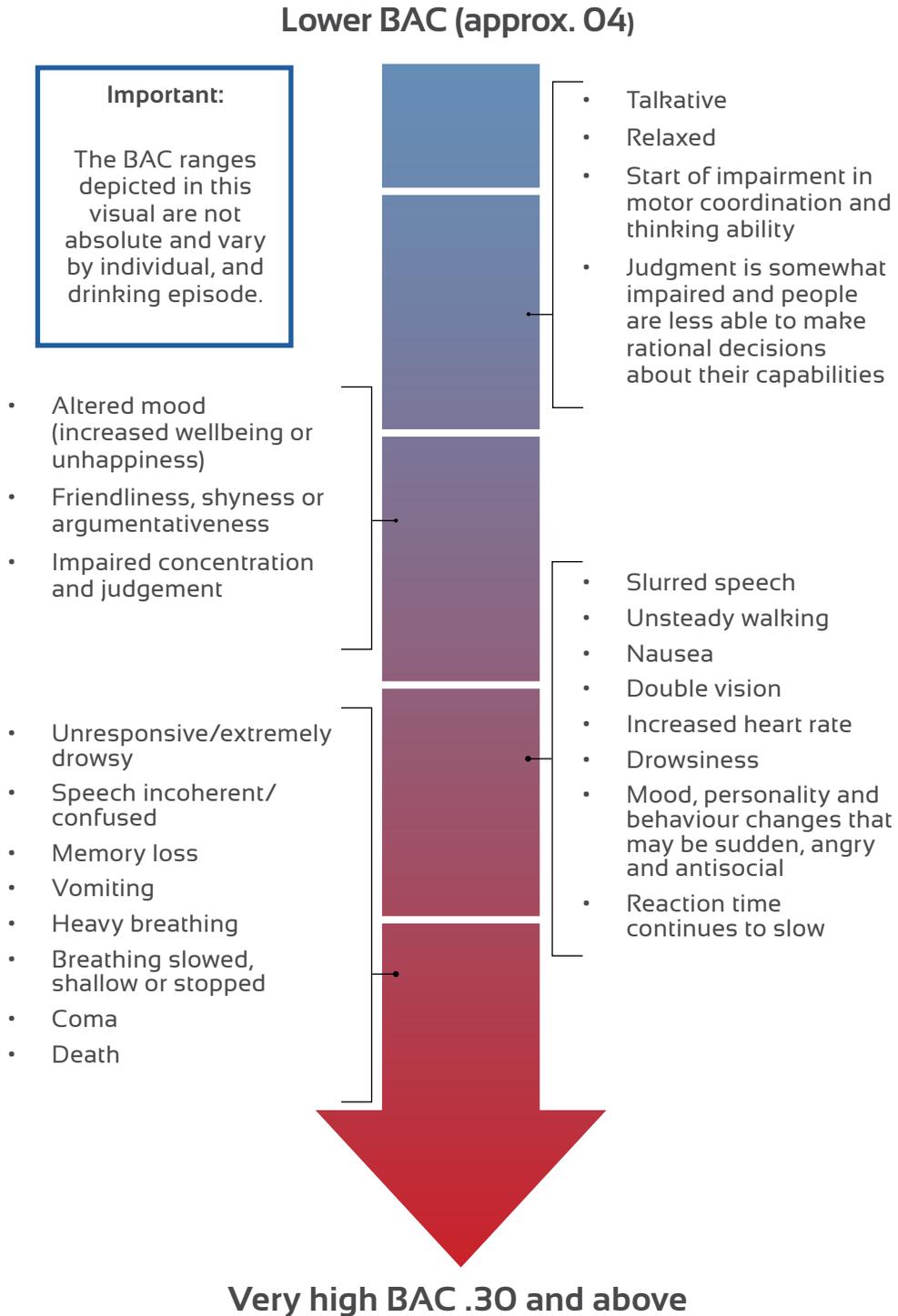


Reference: Updating the Definition of the Alcohol Hangover Joris C. Verster, Andrew Scholey, Aurora J. A. E. van de Loo, Sarah Benson and Ann-Kathrin Stock, J. Clin. Med. 2020, 9, 823.

**Hangovers are "not" just limited to those who consume a large number of standard drinks.** A person may or may not have an alcohol hangover after drinking on any specific drinking occasion.

- The severity of a person's hangover may vary from one drinking occasion to the next.
- The amount of alcohol consumed and the blood alcohol concentration were not strong predictors of hangover severity.
- Even when a person drinks the same volume of alcohol, and their body reaches the same blood alcohol concentration as on a previous drinking occasion, the hangover experience may be different from the last drinking experience.

## Acute effects of drinking alcohol from lower to higher Blood Alcohol Concentration (BAC)



**A hangover from a single drinking episode is different than withdrawal symptoms for a person with an alcohol use disorder. A person with an alcohol use disorder should access clinical support** as they have extensive homeostatic adaptations in how their body functions which can result in life-threatening complications as their body reaches a blood alcohol level of zero.

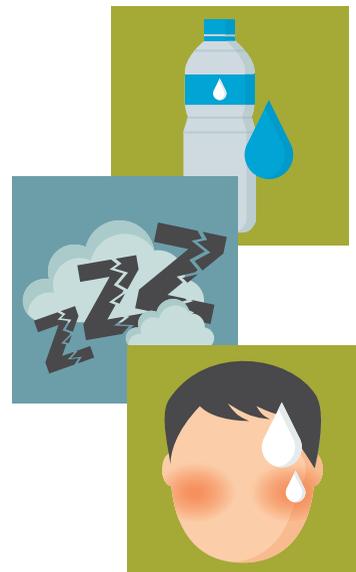
## Hangover Symptoms

Typical symptoms of a hang-over include one or more of:

- feeling thirsty or dehydrated
- headache
- feeling tired or fatigued; length and quality of sleep reduced
- feeling nauseous and/or vomiting; stomach ache
- feeling dizzy or faint or weak
- trouble concentrating; confusion
- feeling more sensitive to light or sound
- feeling depressed or apathetic
- feeling clumsy
- heart racing or pounding
- sweating
- shivering
- muscle pain
- feeling anxious
- less appetite

The amount of alcohol drunk directly impacts the severity of hangovers and associated impairments. Typically more alcohol consumed results in a more severe hangover, but these factors also play a role in hangover severity:

- age
- genetics,
- whether a person also smokes tobacco or uses other drugs,
- the sleep quantity and quality after the drinking, and
- the type of drink consumed on the single drinking occasion



**Cogeners** are compounds other than ethanol that are produced during fermentation and add to the taste and smell of a drink. Darker spirits such as brandy and bourbon have more congeners than clearer spirits such as vodka and gin. Sulfites are preservatives added to wine. Although it has been suggested that non-alcohol ingredients in alcohol drinks may create different levels of severity of hangovers this area has little systematic research. Whether these ingredients make a difference in a hangover are certainly fodder for many an informal conversation or news article. Alcohol is the key reason for a hangover but other ingredients in an alcoholic drink may contribute to the hangover symptoms.

**Myths exist about ways to prevent or cure a hangover but there is no magic solution** (drinking coffee, having a shower, having more alcohol, electrolyte drinks). The body needs time to finish clearing the toxic by-products of alcohol use, for rehydrating, for reduction in inflammation and more. To reduce the chances of another hangover, get familiar with Canada's Guidance on Alcohol and Health, or choose to not drink at all when you must avoid the risk of a hangover happening.

### Risks from a Hangover

During the hangover state, the changes in mood and reduced cognitive and physical functioning create family, community and workplace risk. The more severe the hangover, the more significant the negative emotions experienced during the hangover, regardless of whether the mood during the drinking experience was positive or negative. These negative emotions and reduced ability to sustain attention in a family conversation may create conflict at home, or in a workplace presentation may create poor performance and confusion at the boardroom table. Changes in psychomotor speed may result in mistakes and risk in operating any machinery even when your body is back to a BAC of zero. Driving performance, a cognitively and physically complex task, is



significantly impaired during the hangover state. With short and long term memory affected, an older adult may have worsened memory challenges that day or a student may be less capable in a university classroom or laboratory in the hangover state.

It's possible with the symptoms of a hangover to not realize a person is experiencing **low blood sugar (hypoglycemia)**. When the liver has been focused on

breaking down alcohol, it does not release glucose from its glycogen stores into the bloodstream. A delayed low blood sugar after drinking may symptomatically look similar to a hangover, which can be a danger when not addressed if one has diabetes.

## Risks from No Hangover

Some people do not experience hangovers after drinking. Those who are “hangover resistant drinkers” are at risk of being involved in potentially dangerous activities in daily life without ensuring their blood alcohol level has returned to zero. For example, a person may drive impaired the morning after a night of drinking if they don’t feel any hangover symptoms, or go to sign a legal document when alcohol is still affecting their decision making.

People who drink a large amount of alcohol and don’t experience hangovers may not wait until their blood alcohol level is back to zero from the first drinking occasion. They may begin a second drinking occasion later the same day or the next day with a raised blood alcohol concentration. This puts them at risk of incorrectly estimating the number of standard drinks in their body, putting them at increased risk of continuing to heavy drink, or an alcohol poisoning.

# Alcohol Poisoning (Overdose)

Alcohol is a depressant that impacts the whole body, including the central nervous system (the brain), cardiovascular system (the heart), and respiratory system (the lungs and breathing). When someone drinks too much alcohol or too quickly, it can overwhelm or suppress the healthy performance of these systems in the body. This can lead to the person passing out or having alcohol poisoning. A person can die from alcohol poisoning if their respiratory system (breathing) shuts down.

## Signs of Alcohol Poisoning:

- constant throwing up (vomiting)
- throwing up while passed out
- not waking up after throwing up
- not responding when being talked to or shouted at
- fast heart rate
- not responding to being pinched, shaken, or poked

- not responding to efforts trying to wake the person up
- not being able to stand up
- breathing that is slow and sounds like it's hard for the person to breathe
- skin that is a blue or purplish
- cold, clammy skin

**Don't take chances when a life is at stake.**

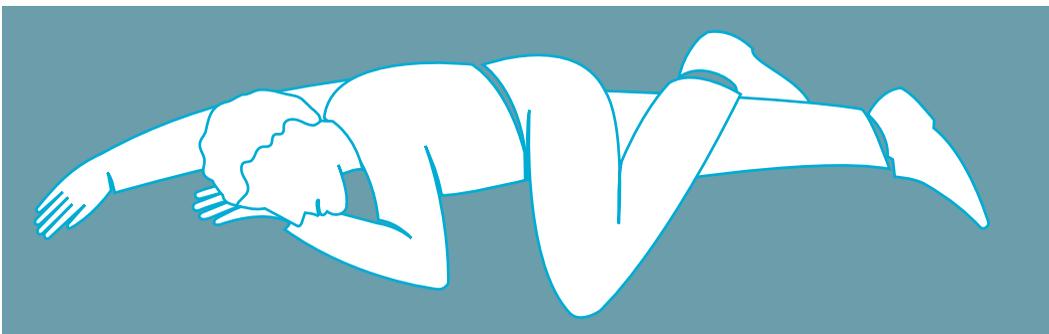
If you see any of these symptoms in someone who has been drinking, get medical help as soon as possible.

## What to Do When Possible Alcohol Poisoning

- Call an ambulance.
- Roll the person on their side into the recovery position so they won't choke if they throw up.
- Don't leave the person alone. Stay with them and make sure they're breathing until medical help arrives.
- If you aren't sure what to do, it's always better to be safe than sorry. GET HELP if you suspect an alcohol overdose, even if the person is underage.

## Recovery Position

If someone passes out from drinking too much, you can help by putting them in the recovery position so they won't choke if they throw up. You may not think they've had too much to drink, but they may have mixed alcohol with another drug. Or they may have a medical condition you don't know about.



- Raise the person's closest arm above their head. Prepare the person to roll toward you.
- Gently roll the person's entire body toward you. Guard the person's head while you roll them.
- Tilt the person's head to keep their airway open. Tuck the person's nearest hand under their cheek to help keep their head tilted.
- Do not leave the person alone. Stay with them until medical help arrives.

The position doesn't have to be perfect, it's more important to keep their airway open so fluids like vomit can drain from their mouth.

## Tips for Safer Alcohol Use

Here are some practical ideas to share to reduce the risk of a hangover, an alcohol overdose, and a myriad of other possible health, relationship, and community risks; some of which change lives forever (arguments with friends, domestic violence, drowning, unprotected sex, ...)

Before you drink:

1. Consider today's activities, level of health and responsibilities to decide whether today is the best day to drink alcohol or if it is a day when zero's the limit?
2. Plan how many standard drinks you want to consume before you start drinking.
3. Choose a safer drinking environment that has policies in place to ensure those visibly intoxicated are no longer served alcohol, and applies consistently regardless of privilege the liquor control laws meant to protect you and the neighbourhood where the drinking location is. This applies to informal house parties, licensed venues and public festivals and spaces. Increased alcohol availability, increased alcohol consumed, increased risk for everyone.
4. Think about the setting in which you will be drinking and how best to keep track of the standard drink amount you set in this location.



- o Look at the drink menu for percent alcohol of items.
  - o Pour your own drinks so you can be sure of the amount of ethanol in the drink at an informal setting.
5. Eat food and hydrate with water before (and during) the drinking occasion.
  6. Budget how much you will spend on alcohol, and stick to it.
  7. Avoid “shots” and drinking games.
  8. Follow Canada’s Guidance on Alcohol and Health.
  9. Tell someone who is not drinking and not attending the drinking occasion:
    - o who you are going out to socialize with,
    - o the address of the drinking occasion, and
    - o the time you expect to be home so they can check in with you.
  10. Bring important gear - identification, money, charged cell phone, phone charger, access to a safe contact’s phone number in writing outside your cell in case you lose it, epi pen etc.
  11. Ensure you know who is at the drinking occasion that you trust and intends to not drink. Ask them beforehand if you drink whether you can count on them being your sober buddy for safety. However, drinking 2 or less standard drinks keeps the risk of harm low for you and those around you.
  12. Do not drive if you have drank any amount of alcohol. Also important, do not ride along with a driver who has drank any amount of alcohol. How you feel does not tell you the level of alcohol in your body.
  13. Have a plan for getting home that involves a person who is sober (no alcohol or no other drugs used) (family, friend, taxi, bus, or light rail or walking with a sober buddy)



## While you drink:

14. Back out of the plan to drink if you realize as you go to start drinking that “when zero’s the limit” applies (e.g., pregnant, just took a medicine that should not be combined with alcohol, you are the responsible adult for children who could need you at any time).
15. Follow all the policies and laws of the drinking location and jurisdiction (e.g., legal drinking age; no providing alcohol to a minor).
16. Hand in your keys if you drove to the drinking location to a sober, safe and trustworthy contact.
17. Check the alcohol percent of the alcohol beverage you are considering drinking; it’s on the label.
18. Choose low percent alcohol drinks.
19. Drink slowly, no more than 2 standard drinks in 1.5 hours.
20. Keep hydrating, alternate an alcoholic drink with a non-alcoholic one; preferably water.
21. Don’t mix alcohol with energy drinks, sugary drinks or other drugs

## Conclusion

With this resource you explored how drinking more alcohol creates more effects, which can harm the person who drinks and those with whom they interact. Following Canada’s Guidance on Alcohol and Health, when zero’s the limit, tips for safer alcohol use, and how to respond to a possible alcohol poisoning can increase the safety and health for individuals and their communities. Please consider reading more of the topics in AHS’ Alcohol and Health Series (listed on the inside of the back cover).

To find out more about how we can help you, your family, your workplace, your school or community create health promoting or preventative change related to alcohol use email [addiction.prevention@ahs.ca](mailto:addiction.prevention@ahs.ca).

To find an addiction services office near you, please call the **24-hour Addiction Help Line, 1-866-332-2322**. For 24/7 nurse advice and general health information call Health Link at **811**.

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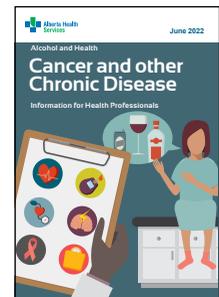
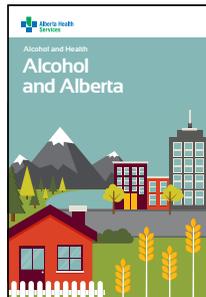
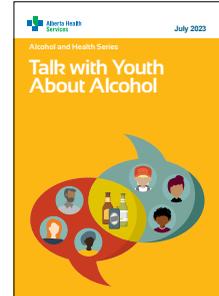
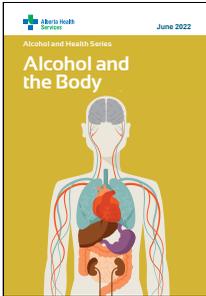
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# Explore the AHS Alcohol and Health Series



## More information means informed decisions

Well informed health professionals and communities will be more aware of the impacts of alcohol on their health and the health of those around them. This awareness provides the opportunity for upstream conversations on how to prevent or reduce alcohol-related harms.

The Alcohol and Health Series is available digitally and in print.

[Alcohol & Health Series | Alberta Health Services](#) (digital download)

Allied health professionals should contact their local AHS Addiction and Mental Health office to access print copies.

Alberta Health Services offers a wide range of addiction and mental health services.

For individuals looking for help for someone they care about, or for themselves the Addiction Helpline and the Mental Health Helpline are available.

**Addiction Helpline**  
**1-866-332-2322**

**Mental Health Helpline**  
**1-877-303-2642**

Both helplines are free, confidential and available 24 hours a day.

