



A GUIDE TO ALCOHOL CONSUMPTION AND TYPE 1 DIABETES

**DIABETES: RELATED TO ALCOHOL -
NEW KNOWLEDGE (DRANK PROJECT)**

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Having type 1 diabetes and more than 1 or 2 alcoholic drinks can have a big effect on blood glucose levels. It's important to understand the risks of high and low glucose levels, why these happen and how to prevent these risks.

IMPORTANT POINTS

1. High, low and unpredictable glucose levels can all happen when drinking alcohol.
2. The factors that cause these are:
 - The amount of carbohydrate or carbs, and glucose in the drink
 - The units of alcohol in the drink
 - The amount of alcohol consumed
 - If carbohydrate food has been eaten
 - Physical activity either before, during or after drinking can also increase the risk of going low, such as playing sport before having a drink, walking, dancing and sex.
3. The common risk period for hypoglycaemia after drinking alcohol is 8 to 12 hours.

Current adult guidelines for the general population who drink alcohol regularly

To keep health risks from alcohol to a low level it is safest not to drink more than 14 units a week on a regular basis.

If you regularly drink as much as 14 units per week, it is best to spread your drinking evenly over 3 or more days. If you have one or two heavy-drinking episodes a week, you increase your risks of death from long-term illness and from accidents and injuries.

The risk of developing a range of health problems (including cancers of the mouth, throat and breast) increases the more you drink on a regular basis.

If you wish to cut down the amount you drink, a good way to help achieve this is to have several drink-free days each week.

WHAT HAPPENS INSIDE THE BODY?

To understand how alcohol affects your blood glucose, you need to think about what happens inside the body. This fact-sheet from drinkaware.co.uk explains the process. Also:

- One of the tasks of your liver is to store glucose. Liver glucose is used in times when you haven't eaten for a while, and also overnight. If your blood glucose level drops, then your liver pushes out glucose to raise it.
- Your liver also releases small amounts of glucose all of the time to give your body energy. (Your long-acting or basal insulin looks after this glucose and moves it into cells to use for energy.) This can be most obvious when you may not have eaten overnight, but your glucose is higher in the morning.
- When you eat carbs or sugar containing food you take fast-acting or bolus insulin (which moves the glucose from that food into the cells to use for energy). Any glucose that isn't used for immediate energy is stored in the liver and in fat cells.

WHY ARE HYPOS COMMON?

- Your liver is the organ where alcohol is broken down and removed from your body.
- When you have drunk alcohol, the liver's priority is to get rid of alcohol from the body because alcohol is a poison. However, when it is doing this it cannot do its usual tasks, and so it will stop releasing glucose for energy.
- This is why you are at risk of hypos. The more alcohol you drink, the less glucose your liver will release, and the longer this effect will last for. Both of these will make your blood-glucose levels drop.
- Physical activities that may accompany drinking (e.g. walking, dancing, sex) can make you more at risk of hypos.

Remember that the same thing happens to people who do not have diabetes. This is why people often crave starchy/carb foods before bed and at breakfast - they aren't getting glucose into their blood from their liver. So they feel hungry, and eating carbs will increase their blood glucose level.

WHAT CAN YOU DO TO PREVENT HYPOS?

Remember that alcohol is the commonest cause of severe hypoglycaemia.

- Alcohol makes you more sensitive or responsive to insulin, so you may need less bolus when eating or taking a correction dose, and also less basal overnight, to prevent hypos.
- It's also useful to eat carbs before drinking because this stops alcohol being absorbed too fast.
- High-carb with high-fat snacks are absorbed slowly, so they can cause your blood-glucose to rise hours later. This may help when overnight hypos are a risk. If you are drinking sugar-free alcoholic drinks in the evening, eating high-fat, high-carb snacks before bed will have delayed glucose absorption. This can combat early-morning hypos. Foods such as pizza, chips, cheeseburgers, and kebabs all contain fat and carbs (Be aware though that eating these food often, can increase your cholesterol).
- If you are drinking sugar-free and carb-free alcoholic drinks, it may help to also have a couple of sweetened mixer drinks.

HYPOS THE FOLLOWING MORNING ARE ALSO A RISK, SO WHAT CAN YOU DO?

Remember that only one unit of alcohol can be processed and removed from the body each hour. So the more you drink the longer you will still have alcohol in your body.

'Morning-after' hypos are common. Whether they happen usually depends on the amount of alcohol you've drunk the night before. As described above, your liver can take a while to process alcohol so it is completely removed from your body. So the risk of going hypo can last a while after your last drink. It's important to set your alarm clock to make sure you don't sleep through a hypo because this can result in the hypo becoming severe and you needing medical help. At breakfast it might be worthwhile to either eat extra carbs or cut down your breakfast dose of fast-acting insulin. It's important to keep testing your blood glucose through the full day after drinking.

"If I've drank a lot the night before, I need to cut back my insulin sometimes for the whole following day! I can get away with eating biscuits or a chocolate bar and not take any quick-acting insulin! I didn't realise alcohol can affect me for so long afterwards."

"BE CAREFUL WITH THE AMOUNT OF CARBS - IN THE PAST I'VE HAD A WHOLE PIZZA (WHICH I SUPPOSE WAS PROBABLY 100ISH GRAMMES OF CARBS) WHICH STOPPED ME FROM GOING HYPO BUT ENDED UP AT 22 WHEN I GOT UP IN THE MORNING! MADE ME FEEL REALLY ROUGH AS I HAD A HANGOVER TOO!!"

"I FELT REALLY STRANGE
AFTER 2 BOTTLES [OF
SMIRNOFF ICE]. MY
BLOOD WAS AROUND 7
AT TEATIME, AND SO I
THOUGHT I WAS FINE.
POPPED TO THE TOILET
AND CHECKED AND
IT WAS 24 - AFTER 2
BOTTLES!!!"

WHY CAN GLUCOSE LEVELS GO TOO HIGH?

This can happen if you drink high glucose drinks such as alcopops, or full-sugar mixer drinks. Beer, lager, cider, liqueurs, shots and cocktails can also contain large amounts of carbs or glucose.

“Must admit I never checked my bloods when I went out. But one night we were drinking free bottles of Smirnoff Ice at a promotion night, and I felt really strange after 2 bottles. My blood was around 7 at teatime, and so I thought I was fine. Popped to the toilet and checked and it was 24 - after 2 bottles!!! That really freaked me out and I haven't had them since.”

People may try to make their blood-glucose higher before bed, to prevent hypos, by reducing insulin doses and/or eating a lot of carbs. This is understandable but it's important not to go too high because this could lead to Diabetic Ketoacidosis, especially if you have also reduced your basal insulin, and have been drinking sugary alcoholic drinks. You can increase your risk of Diabetic Ketoacidosis if you have poor blood-glucose control (high HbA1c readings) and drink a lot of alcohol regularly.

Remember that when you have an alcoholic drink that contains sugar or carbs, this will increase your blood-glucose.

WHAT CAN YOU DO IF YOUR BLOOD GLUCOSE IS HIGH?

Important: the obvious treatment is to take fast-acting (bolus) insulin. However, be very careful.

As mentioned earlier, alcohol can make you more sensitive to insulin. This means you may well need less insulin after drinking. If you take too much insulin, this could cause a severe hypo, especially if you take it before bed. It is common for drunk people not to be woken by hypos, even if they usually have good hypo awareness.

- Drink plenty of water to prevent dehydration before bed and the following morning.
- If you do take a bolus insulin dose with carbs, or as a correction dose, take much less than you would normally take.

If your blood glucose is over 14mmol/l (pump-users), or 17mmol/l (injection-users), check for ketones. This is most important because at these levels Diabetic Ketoacidosis is a risk, especially if you have drunk sugary drinks and taken less insulin to prevent hypos. If you have more than 0.6 blood ketones, follow sick-day rules, get someone who can help to stay with you, go to the nearest A&E or call NHS24 (dial 111).

“When I was younger I used to take random amounts of insulin when I was out. Got home one night and it must've been high, so I took quick acting insulin but can't remember how much, I was really drunk. I was on my own too which was stupid. Had a bad hypo, was trying to get out the front door but couldn't. Then realised I shouldn't be going out the front door! I couldn't find the kitchen but found dextrose which I keep by my bed. When I came round a bit I was really scared. If I got out the front door it would have locked behind me!! My blood the next morning was well into the 20s, so I was pointless taking that correction as I ended up even worse off and still high!”

BEING DRUNK CAN MAKE SOMEONE NOT REALISE IF THEY ARE HIGH OR LOW

This can be a problem because as some symptoms of low and high glucose levels are similar to those of being drunk (see the table below). So being drunk could affect your blood glucose awareness. This can be dangerous if you are drunk because you may not be aware of what is happening to your blood glucose, so you miss signs telling you to treat a hypo or high blood glucose. That is why it is important to tell your friends or family about your diabetes and your blood glucose levels. Otherwise they might not notice that you are behaving differently from when you are just drunk.

The stages of the effect of alcohol on any person:

1	Happiness, decreased self-consciousness, diminished judgement, passing more urine and increased thirst.
2	Awkwardness and clumsiness, loss of judgement, poor memory and concentration.
3	Confusion, disorientation, poor balance, slurred speech, increased or exaggerated emotions.
4	Sleepiness, floppiness, incontinence, muscular incoordination.
5	Coma and possible death.

MAKING SURE YOUR FRIENDS AND FAMILY UNDERSTAND

Remember that if someone is very drunk they may have signs of a severe hypo.

You may not realise you are hypo. With the risk of severe hypos it's important that someone with you understands how to treat them. It's useful to warn family or friends that if you start acting strange or shaking/sweating, they must insist you check your blood-glucose. They should also know the risk of overnight hypos, and that you must get up at breakfast time and eat carbs.

If you have diabetes, your friends and family must not presume you are drunk if you appear to be drunk. They must be able to test your blood-glucose. If it is low, and you can't swallow a sugary drink, they must call an ambulance.

"LOOKING BACK I FEEL
SORRY FOR MY BEST
MATE. SHE KNEW WHEN
I WAS HYPO AND DRUNK
AND HAD TO GET ME TO
CHECK MY BLOOD. THINK
I WAS STROPPY A FEW
TIMES WHEN SHE TOLD
ME TO TEST. BUT SHE WAS
ALWAYS RIGHT - I WAS
ALWAYS HYPO! NOW I DO
AS I'M TOLD!"

DIFFERENT TYPES OF ALCOHOLIC DRINKS

Remember - the more units of alcohol you drink, the more at risk of hypos you become.

The following information was gathered from research on specific types of drinks. Unfortunately there is no research on drinking alcopops, shots, cocktails or on mixing types of drinks.

White wine and spirits usually lower blood glucose.

When drinking modest amounts of wine, bolus and basal insulin doses may need reduced.

When drinking sweet white wine, check your blood glucose level. If it is high, it may be useful to check for blood ketones because there is small risk of developing them.

Red wine can cause high glucose levels.

Two glasses of red wine consumed with a meal does not appear to cause problems with glucose levels. However, when drinking red wine at lunchtime, depending on the amount drunk, increased bolus insulin may be needed to prevent high glucose levels in the afternoon.

Beer can cause hypo and high glucose levels.

It's useful to understand the effects of the alcohol content and carb content of beer. The Alcohol By Volume (ABV) is important to be aware of. See the drinkaware.co.uk guide.

A low carb (3-7g per half-pint or unit of alcohol) beer with 5% or less ABV, should cause fewer glucose swings and problems with blood glucose.

Low-alcohol (less than 5% ABV) and ordinary or high-carb beer can cause high glucose levels.

High-alcohol (more than 5% ABV) and low-carb beer may cause or increase the risk of hypos within 3 hours after drinking.

When looking at nutritional content of specific alcoholic drinks, in general the following applies to carb content:

Type of drink	Carbohydrate included
Dry white wine	Minimal
Off-dry and medium-sweet white wine	Small amount
Dessert/Fortified white wine	Yes
Red Wine	Minimal
Dessert/Fortified red wine	Usually yes
Rose wine	Usually yes
Spirits alone without mixer drink	No
Liqueurs	Usually yes
Alcopops	Yes
Cocktails	Usually yes
Lager, Beer, Ale, Cider	Differing amounts

As mentioned earlier, the amount of alcohol drunk can also increase the risk of low glucose levels. The [Drinkaware](#) calculator is useful for working out the units and calories of what you drink.

CALORIFIC AMOUNTS

The amount of sugar or carbs in your drink is important with regard to your glucose levels, but your body-weight and the calorie content of your drinks is also something to think about. This is especially important if you want to lose weight or not gain weight.

Unfortunately by law, alcoholic drinks do not need to have a nutritional label. The calorie content of similar drinks can differ a lot. If you drink 'diet' or sugar-free mixer drinks, lower-carb beers and lager, dry cider, or dry white wine, this can:

- Really cut down the amount of carbs and amount of added sugar. That can help your blood glucose level and stop highs.
- Greatly reduce the amount of calories you are drinking.
- Usually not change the alcohol content of your drinks.

[Action on Sugar](#) has a guide that explains the sugar content in alcoholic drinks. Pages 6 to 8 give examples of high-and lower-sugar drinks.

Remember that calorie amounts also might be of interest to your friends and family. They can really reduce their calorie-intakes by drinking reduced-sugar drinks.

“...I CAN REMEMBER NOT KNOWING WHETHER TO TAKE INSULIN IF I WAS HIGH, OR HAVE GLUCOSE IF I WAS LOW! IT WAS REALLY HARD AND I DECIDED TO GO HOME AS I WAS SCARED IF I DID THE WRONG THING I'D END UP WORSE!”

GLUCOSE TESTING

Glucose testing or awareness is essential, no matter whether you use a using a blood-glucose meter ('finger-prick'), Flash Glucose Monitoring (e.g. Freestyle Libre), or a Continuous Glucose Monitoring system (CGM). In general, the more testing the better, or keep an eye on your Libre or CGM. As a minimum, test before drinking, halfway through drinking, and before bed. The story below is from a young person who has Type 1 diabetes and shows the importance of testing:

"I would never go out for a drink now without my meter. A while ago (when I was much younger) a few of us went out in the afternoon to watch a big football match. I was on the bus and realised I didn't have my meter but had my insulin pens. My pals were all drinking Magners cider to start and I didn't want to be different so I had one too. Then I went onto lager as I knew it didn't have much sugar in it.

By teatime we were starving and had some chips so I had insulin. We then went onto vodka and diet coke and it was then that I didn't know if I was high or low. I was really thirsty (which could've been through drinking or cos I was high), going to the toilet all the time (could've been cos I was drinking big volumes of lager and cider earlier. Or could've been that I was high), and I also felt a bit lightheaded (maybe I was drunk or going hypo!).

I can remember not knowing whether to take insulin if I was high, or have glucose if I was low! It was really hard and I decided to go home as I was scared if I did the wrong thing I'd end up worse! When I got home my sugar was 3.2. I really had thought I was just drunk and high from the cider and chips. Luckily I didn't just take extra insulin otherwise I could've had a really bad hypo!"

INSULIN ADJUSTING

If you drink more than 1 or 2 alcoholic drinks, your insulin doses may need to be adjusted to prevent highs or lows.

It can be difficult to decide whether or not to adjust. The table below shows what causes high and low glucose levels when drinking. You need to match your drinks (sugary or non-sugary) with more or less insulin, with more or less carbs, and also physical activity. Also think of bolus doses (to look after food and high-glucose drinks) and basal insulin (to look after glucose levels overnight and the following day).

High glucose is caused by:	Low glucose is caused by:
Sugary alcoholic drink	Non-sugary alcoholic drink
Too little insulin	Too much insulin
Too many carbs	Too little carbs
In-activity (drinking at home)	Increased activity (dancing, walking home, sex)

ONE WAY TO ADJUST INSULIN IS BY PREDICTING WHAT YOU ARE DOING:

I'll have my evening meal at 5:00pm and start drinking around 8:00pm **SO** I'll take my normal bolus dose with food. I don't need to reduce it because I'm not drinking for a few hours.

I'll drinking vodka and diet coke all night, and will walk between bars and probably dance **SO** I'm at risk of hypos because I'll drink non-sugary drinks and will be active. I'll have a few normal cokes with vodka to prevent hypos. And I'll reduce my basal insulin overnight.

I'll share a bottle of dry white wine during my lunch **SO** I'm at risk of having a hypo. I'll reduce my lunch bolus insulin slightly but test my blood-glucose during the afternoon and evening. I may need to reduce my evening meal bolus insulin dose.

I'll have a couple of pints of beer in the afternoon. My beer is usually 4% ABV but it has carbs and I usually go high by evening time, **SO** I'll take some bolus insulin with my second pint if my glucose is going high. I'll check my glucose in the evening too.

I'll drink quite a lot of white wine in the evening so I'm at risk of having a hypo through the night **SO** I'll reduce my basal insulin to help through the night when I'm at risk of a delayed night-time hypo. And I'll have high fat carby snack at bed-time.

I'll drink a few cocktails in the afternoon. I don't know how much glucose will be in the drinks **SO** I'll choose cocktails with less added sugar (without orange juice, milk, sugary coke/lemonade, red bull). I can ask the bartender to use sugar-free or diet mixer drinks. I'll check my glucose - if I start to go high I'll take a small amount of bolus insulin. I'm aware that I might go low hours later as the cocktails will have a lot of alcohol. I might need to reduce my following bolus or basal insulin.

If I've had too much alcohol I'm at risk of hypos the next day **SO** I'll reduce my overnight basal insulin, I'll set my alarm, and I'll reduce my breakfast bolus insulin to prevent morning hypos. I'll regularly test my blood-glucose.

ACKNOWLEDGEMENTS

This publication includes information from the following documents.

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The ENU&NHSL DRANK team are not responsible for how individuals use this information. If a person is unsure of how to manage an aspect of diabetes management when consuming alcoholic beverages, they should contact their own diabetes team or health care professional.

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