DDRC Healthcare – looking at things slightly differently… Alcohol

Compiled by the DDRC Healthcare research department

www.ddrc.org

info@ddrc.org

facebook and twitter - @DDRCPlymouth

This presentation has been put together by DDRC Healthcare. It focuses on a basic understanding of alcohol, and some of DDRC's research findings from a study, recently conducted by them, which looked at the alcohol habits of divers.

This talk, however, is not intended to be prescriptive or "lecturing", but it is hoped that it will stop and make you pause and think before you go drink diving.

What are we going talk about?

Alcohol and diving

What you should know about alcohol – the basics

What are units, AbV and BAC?

Real life research data about divers and alcohol

The alcohol hangover

Diving when you are unfit to drive a car?

First of all why should we be motivated to sit and listen about the real life experiences of divers who have been drinking alcohol and then gone diving?

Simply because when divers get together for a club night out, diving weekend, or holiday, researchers wanted to know exactly what *was* happening – how responsible were divers – and what are their drinking habits? Just how much basic understanding is there concerning alcohol?

Do you in an everyday environment know what AbV and BAC are? What is the legal BAC limit for drink driving for example?

As divers, if you can hear and learn about a few basics and some real life attitudes and research data, it will help you to be more informed and responsible.

Alcohol and Diving

Size does matter, so does strength, and so does gender!

What's in a glass?

How strong is it?

Is it good for you?

Size and strength really are important! Just because it's big, doesn't mean to say it's strong!

We perhaps need to have a better understanding of what is in the glass, especially as, for example wine, which is increasingly sold in bigger, and bigger glasses.

What is alcohol strength? And again, wine is a good example, because it can be different strengths.

And of course how good is alcohol for you? The medical literature is brimming over with studies – some of which tell you a moderate amount is good for you for certain aspects of health, and some studies will tell you alcohol is harmful when looking at other areas of health.

Many alcohol recommendations use the word "moderate" when talking about daily intake. How do you define moderate – and how do you apply "moderate" to a given situation ie. diving?

Only by knowing some basics about alcohol can one be expected to make a reasonable judgement.

Alcohol and Diving

Government unit recommendations

Daily:
3-4 units per day for males
2-3 units per day for females

Weekly:
11 to 21 units per week for males
8 to 14 units per week for females

So – starting at the very beginning with units – here are the Government recommendations for daily and weekly alcohol consumption – as you probably already know they are different for men and women.

Alcohol and Diving

What is a unit?

Wine (AbV)	125ml (small glass)	175ml (standard glass)	250ml (large glass)	One bottle
12%	1.5 units	2.1 units	3 units	9 units
14%	1.75 units	2.45 units	4 units	11 units

Beer (AbV)	Half Pint	1 Pint
4%	1.1 units	2.3 units
5%	1.4 units	2.8 units

Cider (AbV)	Half Pint	1 Pint
7%	2 units	4 units

Spirits (AbV)	25ml (single)	50ml (double)
40%	1 unit	2 units

Sherry (AbV)	100ml
20%	2 units

http://www.britishlivertrust.org.uk/home/looking-after-your-liver/alcohol.aspx

ddrc healthcare

Now let's try and put units of alcohol into some kind of context. This table can't deal with every kind of alcohol, as that would result in a huge table!

But if we take wine as an example, which is a popular drink and statistically more so with women, and then remind ourselves that the daily recommended intake for women is 2 to 3 units a day, and *then* look at the number of units in the 175ml and 250ml glasses of wine (dependant on AbV – strength – and we'll come to that in a bit), we will see it is very easy to drink much more than you think you are, and easily exceed your daily limit!!!

A pint of cider can be deceptive too. How many of you maybe sink three or four pints (or more) a night – how many units is that?

And who in this room drinks spirits – and perhaps on a club night has a chaser after a couple of pints…. And then dives the next morning?

Note: opportunity here for audience discussion

Alcohol and Diving

Does a specific number of units affect everyone the same way?

How the number of units of alcohol relates to a person's blood alcohol content (BAC) depends on many factors

Food, and carbonation of drink, effect speed at which alcohol is absorbed into blood stream

Food slows it down, carbonation speeds it up

ddrc healthcare

Next we have to understand that alcohol effects different people in different ways. There is no "one size fits all".

The effects of alcohol are many and very complex, with food and carbonation (fizziness) of the drink affecting the rate at which alcohol is absorbed into the blood stream, after having been absorbed through the lining of the stomach and small intestine.

Carbonated (fizzy) drinks speed up the absorption, whilst food in the stomach will slow down the process.

Alcohol and Diving

Does a specific number of units affect everyone the same way?

Gender also plays a role, with the average woman having a lower alcohol tolerance than the average man

Ethnicity also plays a role, with men and women of European descent tolerating alcohol better than Aboriginal Australians, Native Americans and some East Asian groups

ddrc healthcare

Gender also plays a role with women, particularly younger women, who in general have a lower tolerance threshold than men. Women and girls metabolize (process) alcohol differently, meaning alcohol passes more quickly into their bloodstreams. As a result, they feel the effect of alcohol faster than men.

Ethnicity (your race back-ground) is important, with white Europeans tolerating alcohol better than some other groups.

Also some medications taken before or during drinking alcohol may also interfere with the speed that the liver can process the alcohol consumed.

Alcohol that has not been processed remains in the blood stream, and is then measured as blood alcohol content (BAC).

Alcohol and Diving

What is BAC?

Blood alcohol content (BAC)

Why do we want to know the BAC?

To measure intoxication for medical and legal purposes

For example – drink driving

What is the UK legal drink drive BAC?

80mg of alcohol per 100ml of blood

ddrc healthcare

So – we now know that BAC is the alcohol that the liver cannot process fast enough, and is left in the blood stream.

Put simply, it is this alcohol left in the blood stream and that travels to the brain, that causes us problems with reaction times, judgement, visual function and a whole range of other health factors.

We need to know a persons BAC because reaction times are affected – even the next morning when you have a hangover, but think you are still quite capable of functioning normally after a couple of pills – the fundamental question is “Are you fit to drive a vehicle or operate machinery?”

This is why in the UK we have a legal BAC of 80mg of alcohol per 100mg of blood as the legal drink drive limit.

Not all countries worldwide have the same BAC drink drive legal limit, with many countries having a much lower BAC or a zero tolerance drink drive legal limit.

Note: the BAC limits worldwide can be found here at this website

http://www.drinkdriving.org/worldwide_drink_driving_limits.php

Alcohol and Diving

What is AbV?

AbV means *Alcohol by Volume*

It is not only the size of the drink, but how much alcohol it contains

15% AbV means when calculated, that 15% of the volume is pure alcohol

And for those with a mathematical brain who want to know more …

Volume = Volume of liquid measured in millilitres (mL)
%AbV = Percentage of Alcohol by Volume in that liquid
Units = Number of Units of Alcohol in that amount of that liquid.
(where 1 Unit contains 10 mL of ethanol)

Then the following relationships are true:

Units = Volume × %AbV ÷ 1000 **Volume** = Units × 1000 ÷ %AbV
%AbV = Units × 1000 ÷ Volume

ddrc healthcare

So far from these slides we have a better understanding of units and BAC, but what about AbV?

This means “alcohol by volume” and relates to the *strength* of the drink.

All alcoholic drinks containers/bottles etc now tell you the AbV

By looking at the AbV on the bottle, and understanding that the higher the number the stronger the drink - you will begin to appreciate the strength of the drink you are consuming!

Note: this website expands on this subject and is very useful

http://www.cleavebooks.co.uk/dictunit/booka.pdf

Alcohol and Diving

What does alcohol do to us?!

Alcohol affects the ability to organize, orientate, and concentrate

Judgment, decision making, mood and visual accuracy are impaired

Dehydration risk for DCI

Hangover can effect cognitive function and ability to function safely

All are a contra-indication to safe diving

ddrc healthcare

So what does alcohol do to us?

As we have said previously – there are many factors that affect the *rate* at which alcohol effects us.

But when it does, what are those affects?

It may leave us dehydrated and affect our thought processes, our visual accuracy, judgement, decision making, and overall our ability to function safely, though we may not realise it.

And this is the problem – not realising we are not capable!

All these factors are reasons why we have drink driving laws.

Which brings us to the next thought process - we have to function safely to dive safely, not to mention dehydration and DCI risk.

Therefore - what should we do when it comes to drink diving?

DDRC research data

Alcohol and Diving

Research results

Over the winter of 2010/11 DDRC conducted an anonymous on-line questionnaire to gather data about the general alcohol habits of divers

Over 800 divers, with an age range of 17 to 74 provided information

It was with this in mind that researchers decided to try and find out what divers were drinking, how much, and the closest time to drinking alcohol and then going diving.

Over the winter of 2010/11 DDRC ran a study to which over 800 divers responded, with some very interesting results.

Overall 49% of the respondents knew the government recommendations for daily alcohol intake for both genders, with more women than men reporting drinking wine, and more men than women reporting drinking strong beer, larger or cider.

DDRC research data

Alcohol and Diving

Research results

34.5% divers admitted to consuming alcohol between six hours and less than 30 minutes before a dive

39.78% of that group admitted they had gone diving when unfit to drive a car

16 divers reported they had consumed alcohol less than 30 minutes before a dive

18.46% of the whole study group said they had gone diving when unfit to drive a car

ddrc healthcare

But although the type of alcohol consumed, as reported by respondents in the study, followed the national trends, over 34% admitted to consuming alcohol between six hours and 30 minutes before a dive, and within that group nearly 40% admitted *they had gone diving when considering themselves unfit to drive a car.*

A small number of divers admitted to consuming alcohol less than 30 minutes before a dive.

And of real interest is that 18% of *all the divers in the study* said they had at some time gone diving when they considered themselves unfit to drive a car.

How many units had they consumed, and what was their BAC we wonder, and why did they decide to go diving when they wouldn't have driven a car?

Note: opportunity to discuss these points?

DDRC research data

Alcohol and Diving

Research results

Younger divers were more likely to binge drink*

Older divers were more likely to exceed the recommended weekly amount of units as age increased

Some divers had attended hospital for drink related accidents – broken bones, concussion, & car crash

A small number of divers admitted to alcohol health related problems

*Binge drinking is defined as drinking more than double the daily recommended units of alcohol in one session

ddrc healthcare

Further investigation of the data showed that younger divers were more likely to binge drink – binge drinking, by the way, is when you may not have had a drink every day, and when you do - you then drink in excess of double the daily recommended units of alcohol in one session.

The study also showed that older divers were more likely to exceed the weekly amount of units as age increased!

There were also a number of divers who reported that they had had to attend hospital for broken bones, concussion, and even a car crash due to alcohol problems.

In a few cases divers had alcohol related health problems.

Note: opportunity to debate how divers with alcohol health related problems could be "slipping through the medical net" and diving

DDRC research data

Alcohol and Diving

Research results

22.86% divers said they had witnessed a diving incident that they considered might be alcohol related

"I have witnessed two diving incidents due to excessive alcohol consumption, both involving the person still being drunk the morning after"

"I regularly witness a diving instructor drinking irresponsibly and diving whilst hung-over"

"I have seen one guy pulled from the water and he died. He had drunk a lot the night before a deep dive course"

ddrc healthcare

Because the study was anonymous, many divers were very up front concerning incidents they had witnessed with regard to diving incidents that in their opinion may be alcohol related.

Some of these accounts make sobering reading – and the examples on these slides are just a very few of the responses the researchers received.

DDRC research data

Alcohol and Diving

Research results

"Many people in our diving club still drink heavily during a diving weekend. One, a first class diver and national instructor, is well known for sinking a couple of pints at lunchtime in between dives"

"During a Dive-master stint saw a fellow DM Coming out of a night club and straight on the boat in the morning, doing a dive on the Thistlegorm, he ended up with DCI and 14 hours in the pot"

"Took group on guided dive when they had a hangover, only a shallow dive but they were all over the place and vomited on return to surface"

ddrc healthcare

In addition, some divers observed, in their opinion, a relationship between increased susceptibility to nitrogen narcosis and alcohol, whilst others felt they observed an attitude of drink dive denial amongst some divers.

In the unsolicited free text of the study, some of the divers pointed out that diving is a very social/sociable sport, and here lies the dilemma; it was also pointed out that diving week-ends and holidays away are even more likely to encourage excessive drinking – so what is the answer to this culture?

Note: opportunity here for discussion – what is the answer?

DDRC research data

Alcohol and Diving

Research results

Only 54% of the respondents thought that their club/fellow divers had a responsible attitude to alcohol and diving around a normal club diving situation

And less than 40% of respondents thought their club/fellow divers had a responsible attitude to diving when on a diving holiday or a diving week-end away

ddrc healthcare

It is interesting to note that when it comes to drink driving, national data comparing the attitudes of drinking and driving within legal limits shows drivers have their own individual set limits, often based within their concept of the legal limit to drive.

Divers have no recommended drink diving set limit, therefore there is no such “psychological” guidance.

As we have seen from these data, and the percentages on this slide, which show that divers think their fellow divers are less responsible with alcohol on a diving holiday or week-end, divers generally do not regard diving after drinking the night before, or diving with a hangover, as the legal equivalent of “drink driving”.

DDRC research data

Alcohol and Diving

DDRC diver DCI treatment data

2007 – 65% consumed alcohol within 24 hours (range 2-16 units, average 6 units)

2008 – 63% consumed alcohol within 24 hours (range 1-18 units, 5 units average)

2009 – 71% consumed alcohol within 24 hours (range 1-20 units, 9 units average)

ddrc healthcare

And just to reinforce the strength of the real life study data, look at these statistics from DDRC's treatment records.

The alcohol question is always asked when a diver is treated at DDRC for DCI, and these data show for the years 2007 to 2009 the percentage of divers treated for DCI who had consumed alcohol within the previous 24 hrs - there was some heavy drinking going on, with an average of 9 units in 2009!

These data are food for thought perhaps!

DDRC research data

Alcohol and Diving

In summary

How the number of units of alcohol relates to a person's blood alcohol content (BAC) depends on many different factors

Alcohol not only causes dehydration, but affects the ability to organize, orientate, concentrate, and react to an incident; judgment, decision making, mood and visual accuracy are also impaired

Hangover can also effect cognitive function and ability to function safely

ddrc healthcare

So in summary – we hopefully have a clearer idea that the number of units relates to BAC – and BAC depends on many different factors,

Alcohol isn't just about dehydration in the context of diving – it is about being able to dive safely, and hangover should be in the equation too.

Therefore - what should we do when it comes to drink diving?

Perhaps, the answer lies in understanding more about how alcohol can affect you personally, even if you think it is only a hangover.

DDRC research data

Alcohol and Diving

In summary

18.46% of divers had dived when unfit to drive a car

34.5% divers consumed alcohol between six hours and less than 30 minutes before a dive

22.86% divers said they had witnessed a diving incident that they considered might be alcohol related

Next time you drink alcohol consider when you will next go diving

Next time you go diving consider when you last consumed alcohol

ddrc healthcare

So the take home message of all this is:

Think before you go diving if you consider you are unfit to drive a car

Think about how much you had to drink, and how long ago

Think – are you safe to go diving?

Are you safe to drive?

Note: perhaps an opportunity to debate the drink diving issue – should there be some "psychological" guidance recommended – such as drink driving guidance?

DDRC Healthcare would like to thank you for using this presentation and hope that you have found it informative. If so, please tell your diving friends about us, the work we do, and the services we provide.

All our diving research relies on funding from our charitable status, so we would appreciate you, or your club/school, making a donation for the use of this presentation, if you feel able.

Thank you so much!

DDRC Healthcare is a registered charity (No 279652)