

ALCOHOL HANGOVER



*“Peter Harrison Asleep”, watercolor on paper, John Singer Sargent c.1906.*

*Work is the curse of the drinking classes*

*Oscar Wilde.*

*A hangover is the wrath of grapes.*

*Anonymous.*



*Joey...Baby...  
Don't get crazy  
Detours, fences...  
I get defensive....*

*I know you've heard it all before  
So I don't say it anymore  
I just stand by and let you  
Fight your secret war*

*And though I used to wonder why  
I used to cry till I was dry  
Still sometimes I get a strange pain inside  
Oh Joey if you're hurting so am I*

*Joey...Honey...  
I've got the money  
All is forgiven. Listen....listen...*

*But if I seem to be confused  
I didn't mean to be with you.  
And when you said I scared you  
Well, I guess you scared me too*

*But we got lucky once before  
And I don't want to close the door  
And if you're somewhere out there  
Passed out on the floor...*

*Oh... Joey, I'm not angry anymore*

*And if I seem to be confused  
I didn't mean to be with you.  
And when you said I scared you  
Well I guess you scared me too...*

*But if it's love you're looking for  
Then I can give a little more  
And if you're somewhere drunk and  
Passed out on the floor...*

*Oh... Joey, I'm not angry anymore  
Angry anymore, angry anymore.*

*"Joey", Johnette Napolitano, Concrete Blonde, 1990.*

*Love may help the addiction, but precious little will help the hangover!*

# ALCOHOL HANGOVER

## Introduction

Hangover refers to the unpleasant symptoms that develop 4 - 6 hours after a person consumes an excessive amount of alcohol.

Studies have shown that alcohol hangover has substantial economic and health consequences in both the USA and Britain. <sup>1</sup>

This has also been found to be true in Australia. <sup>2</sup>

Despite a vast host of popular (often bizarre) “hangover cures”, there is no compelling objective scientific evidence in existence to suggest that any conventional or complementary intervention is effective for preventing or treating alcohol hangover. <sup>1</sup>

The most effective way to avoid the symptoms of alcohol induced hangover is to practise abstinence or at least moderation!

The paucity of randomised controlled trials is in stark contrast to the plethora of “hangover cures” marketed on the internet. This confirms the gross unreliability of the internet in healthcare matters! <sup>1</sup>

## Pathophysiology

The symptoms of hangover are thought to relate to various metabolites of alcohol and/ or chemical additives.

These include:

### 1. **Acetaldehyde:**

- The symptoms of *alcohol hangover* are thought to be predominantly due to ethanol’s main metabolic product **acetaldehyde**.

Symptoms develop as this metabolite accumulates in the blood, after blood alcohol levels have fallen to zero.

### 2. **Tannins:**

- Red wines contain **tannins**, compounds that are known to trigger headaches in some people.

Beer and clear liquors, such as vodka and gin will limit symptoms in those who are susceptible to the effects of tannins - but of course it’s all a matter of degree with these as well!

### 3. Other chemical congeners of alcohols:

- Other chemical congeners of alcohols may also contribute to symptoms of hangover in some people.

These substances include; **esters, histamine** and **phenols**.

Trace elemental additives, including **iron, lead,** and **cobalt,** especially in darker liqueurs may also be responsible for symptoms in some people.

**Clear** liquors, such as gin, vodka, and rum, may produce **less severe** hangovers.

**Malt** liquors, like whisky, tend to produce **more severe** hangovers.

#### Risk factors:

Recognized risk factors for alcoholic hangover include:

- Never drinkers
- Dehydration
- Lack of concurrent food intake
- Sleep deprivation
- Poor general physical condition

**See also appendix 1 below for risk profile for harmful drinking.**

A common folk wisdom holds that beer taken *before* wine will reduce the chances of hangover. This “wisdom” is expressed across cultures:

- “**Beer before wine and you’ll feel fine; wine before beer and you’ll feel queer**” (**English**).
- “**Wein auf Bier, das rat’ ich Dir-Bier auf Wein, das lass’ sein,**” (**German**).
- “**Bière sur vin est venin, vin sur bière est belle manière.**” (**French**)

Jöran Köchling et al, however, in a well conducted randomized controlled multiarm matched-triplet crossover trial of beer and wine, have sadly disproved this this wisdom.

#### Epidemiology

The rates of medically certified alcohol related sickness absence seem to be higher in:

- Never drinkers

- Current or former heavy drinkers

*when compared to current light drinkers.*

In Australia more than half the burden of alcohol-related absenteeism is incurred by low-risk drinkers and those who infrequently drink heavily.

In the UK in 2003 it was estimated that alcoholic hangover cost the UK economy **2 billion** pounds! <sup>3</sup>

Significant economic consequences have also been found in Australia

### Clinical features

Hangovers may occur after a single bout of drinking, and although unpleasant are usually mild and benign, in contrast to true *withdrawal symptoms* which occur after multiple, repeated bouts of heavy drinking and where symptoms are far more severe, even life threatening.

Hangover is distinguished from alcohol withdrawal syndromes, by symptoms occurring following a well defined single episode of intoxication.

Hangover symptoms develop **4 - 6 hours** after a person consumes an excessive amount of alcohol.

The effects of most alcohol hangovers last **8 to 24 hours**.

Reported symptoms include:

1. General constitutional:

- Lethargy/malaise/fatigue
- **Headache**

♥ This is a characteristic and *prominent* feature.

2. Disturbed sleep patterns:

Although alcohol has sedative effects that can promote sleep onset, the **fatigue experienced during a hangover** results from alcohol's *disruptive* effects on sleep.

Disruptive mechanisms include:

- Alcohol induced sleep may be of shorter duration and poorer quality because of a *rebound excitation* effect after blood alcohol concentrations fall, leading to *insomnia*
- Alcohol also disrupts the *normal sleep pattern*, decreasing the time spent in the dreaming state (i.e., rapid eye movement or REM sleep) and increasing the time spent in deep (i.e., slow-wave) sleep.
- In addition, alcohol relaxes airway muscles, resulting in increased snoring and, possibly, periodic cessation of breathing or sleep apnea

**Alcohol induced sleep is therefore not as restful as normal physiological sleep.**

### 3. Disrupted circadian rhythms and responses to stress

Alcohol interferes with other biological rhythms as well, and these effects persist into the hangover period.

- It disrupts the normal 24 hour (i.e. circadian) rhythm in body temperature, inducing a body temperature that is abnormally low during intoxication and abnormally high during a hangover.
- Alcohol induces the release of adrenocorticotrophic hormone from the pituitary gland, which in turn stimulates the release of cortisol, a hormone that plays a role in carbohydrate metabolism and stress response; alcohol thereby disrupts the normal circadian rise and fall of cortisol levels.

Overall, alcohol's disruption of circadian rhythms induces a "jet lag" type syndrome (lethargy, malaise, fatigue) that has been hypothesized to account for some of the deleterious effects of a hangover.

### 4. GIT:

- Nausea
- Anorexia
- Diarrhea

### 5. CVS:

- **Tachycardia/ Palpitations**, (which can be prominent)
- Postural hypotension, (Light-headedness)

### 6. CNS:

- Impaired memory
- Reduced visual-spatial skills
- Concentration difficulties.
- Altered or heightened sensory perceptions:
  - ♥ Light, (photophobia)
  - ♥ Sound (hyperacusis)
  - ♥ Smell ((hyperosmia)

### Investigations

There are no specific investigations necessary, other than those that may be required to rule out a significant secondary complications of heavy alcohol consumption, such as alcoholic hepatitis or acute pancreatitis, or to rule out alternative diagnoses

In general terms the following may be considered:

1. FBE
2. CRP
3. U&Es/ glucose
4. LFTs
5. Lipase
6. ECG
  - For persisting palpitations

### Management

Despite a vast host of popular “hangover cures”, there is no compelling objective scientific evidence in existence to suggest that any conventional or complementary intervention is effective for preventing or treating alcohol hangover.

The most effective way therefore to *avoid* the symptoms of alcohol induced hangover is to practise abstinence or at least moderation!

Taking alcohol with non-alcoholic fluids and well as food may *reduce* (but not eliminate) the *acute* effects of alcohol. Non-alcoholic fluids can help maintain hydration and reduce

the overall amount of alcohol consumed, as well as dilute its effects. Food (*prior* to alcohol) may limit alcohol absorption from the gut.

The commonly held belief that an *extra* drink in the morning (so-called “eye-opener”) will reduce hangover effects is false - this will not alter hangover symptoms, or at best merely delay (but intensify) them.

Symptoms of alcohol hangover are self-limiting and eventually resolve over 8 to 24 hours and so *time* is the most effective *remedy* for alcohol hangover symptoms.

Although not curative the following symptomatic treatments are useful:

1. Simple analgesics for headache:

- Aspirin
- NSAIDs

It is interesting to also note that alcohol alters normal cytokine production resulting in increased levels of thromboxane B<sub>2</sub>. This effect can be blocked by prostaglandin inhibitors, perhaps explaining why NSAIDs including aspirin may have some limited prophylactic effect on hangover development.<sup>3</sup>

Paracetamol is probably better avoided, as repeated doses in the setting of heavy alcohol consumption may lead to liver damage.

2. Rehydration:

- Oral or IV for severe symptoms

3. Caffeine:

- For lethargy/ malaise

Note that caffeine is a mild diuretic and so may be expected to exacerbate symptoms relating to dehydration, however the clinical benefit that caffeine seems to provide for lethargy and malaise for most people is probably greater than any *theoretical* adverse effects. In any case the dehydration aspect can be countered by concomitant oral rehydration.

4. Anti-emetics:

- Metoclopramide
- Prochlorperazine
- Ondansetron/ Granisetron.

5. Antacids:

- Mylanta/ gaviscon may be useful for symptoms of mild gastritis

6. Melatonin:

- Melatonin may be of some benefit in some people in helping to restore normal circadian sleep patterns.

## Appendix 1

### Risk profile for harmful drinking

#### 1 National Health and Medical Research Council (NHMRC) Australian alcohol guidelines<sup>10\*</sup>

Risk of short-term harm	Low risk	Risky	High risk
Men	Up to 6 (on any one day, no more than 3 days per week)	7–10 (on any one day)	11 or more (on any one day)
Women	Up to 4 (on any one day, no more than 3 days per week)	5–6 (on any one day)	7 or more (on any one day)
Risk of long-term harm	Low risk	Risky (Hazardous†)	High risk (Harmful†)
Men: on average day	Up to 4 (per day)	5–6 (per day)	7 or more (per day)
Men: overall weekly level	Up to 28 (per week)	29–42 (per week)	43 or more (per week)
Women: on average day	Up to 2 (per day)	3–4 (per day)	5 or more (per day)
Women: overall weekly level	Up to 14 (per week)	15–28 (per week)	29 or more (per week)

\* Numbers are standard drinks (10 g [12.5 mL] alcohol). † Old (1992) NHMRC terminology which only applied to long-term risk. ◆





### References

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3. Ioana Vlad, “Alcohol Related Illness”, in *Textbook of Adult Emergency Medicine*, Cameron et al 4<sup>th</sup> ed 2015.
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Dr J. Hayes  
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