



'The Strip', Christchurch, early on Sunday morning (John Kirk-Anderson, *The Press*, Christchurch).

## TWO SIDES OF THE ALCOHOL COIN

### NO ORDINARY COMMODITY

*"...alcoholic beverages are items of consumption with many customary uses, and are also commodities important to many people's livelihood. **But social customs and economic interests should not blind us to the fact that alcohol is a toxic substance.** It has the potential to adversely affect nearly every organ and system in the body. No other commodity sold for ingestion, not even tobacco, has such wide-ranging adverse physical effects. Taking account of alcohol's potential for toxicity is therefore an important task for public health policy."*<sup>1</sup>

## KEY FACT AT A GLANCE

Happiness, confidence, relaxation, sociability and a sense of belonging: this list illustrates the fundamental nature of the benefits we associate with drinking.

# ALCOHOL – THE RISKS AND THE BENEFITS

## CHAPTER 4

### INTRODUCTION

Every year about 1,000 New Zealanders die from alcohol-related causes.<sup>2</sup>

About half of these deaths are due to accidents and another quarter will be alcohol-related cancers.

In addition, hundreds of New Zealanders will be injured in alcohol-related road trauma. Hundreds more will be admitted to hospitals around the country to be treated for an array of conditions ranging from gross intoxication and alcohol poisoning, to facial fractures and wrist and hand injuries resulting from accidents and

assaults. Some will be the innocent victims of other people's drunken behaviour, others will be perpetrators and some will have been both victim and perpetrator.

Experts have suggested that if alcohol were to be categorised on the same risk basis as illicit drugs, it would merit a Class B classification. This is the same classification as opium and ecstasy, and higher than cannabis.<sup>3</sup>

The World Health Organisation's International Agency for Research on Cancer recently classified alcoholic beverages as 'carcinogenic to humans',

in the same hazard category as agents such as asbestos, formaldehyde and tobacco.<sup>4</sup>

For those of us who enjoy the benefits of moderate drinking with no apparent harm, these types of statement may appear extreme. Perhaps even alarmist. Illicit drugs are associated in our minds with violent rampages, broken lives and raging addiction. Alcohol is associated with sociability, enjoyment and for some, even a sense of cultural and national identity.

Not surprisingly we struggle when asked to think of alcohol as a 'risky drug' on the

one hand, and on the other as a product enjoyed by many of us as an ordinary commodity, as readily available as bread and cheese – and often at lower prices.

However in the view of our Police Commissioner Howard Broad, and frontline officers from Invercargill to the Far North, too many of us are using alcohol in a way that is injurious both to ourselves and the wider community, resulting in unacceptable levels of violent offending, injury and disorder.

Judges sitting in the District, Family and Youth courts have echoed the Police's concerns, telling the Law Commission that alcohol is an underlying factor in a disturbingly large proportion of the cases that come before their courts each week and must be tackled if we wish to stem the tide of criminal offending.<sup>5</sup>

Similarly our frontline emergency staff and medical doctors are increasingly concerned at the impact alcohol is having on our already strained health budget and medical services. In a rare move, the 13 Presidents of the Medical Colleges in New Zealand have placed on record "their collective concerns about the pervasive medical harms that continue to occur as a result of alcohol intoxication, abuse and dependency."<sup>6</sup>

The next two chapters, 'Alcohol, Crime & Antisocial Behaviour' and 'Alcohol, Health, Injury and Wellbeing' attempt to summarise the evidence of alcohol-related harm in our community. The chapters draw on the input of New Zealand doctors and alcohol researchers, judges, police and those working to enforce the current liquor laws.

## HOW ALCOHOL WORKS

But to understand how alcohol can contribute to this wide range of harms, we need first to understand alcohol as a substance and its effects on the human body and how these effects account both for the *pleasure* and the *risks* associated with drinking.

## ALCOHOL'S EFFECTS ON THE BODY<sup>7</sup>

After drinking, alcohol quickly moves across cells and distributes throughout the body.

Alcohol causes intoxication mainly through its effects on the brain. It affects several different parts and processes of the brain, which account for the variety of subjective experiences and behaviours that result from drinking. Alcohol affects the activity of several chemicals in the brain (for example, serotonin, dopamine and opioid peptides) that contribute to the feelings of euphoria and pleasure. Some of the physiological processes are similar to those of morphine and heroin. Alcohol also affects chemicals and areas of the brain that have a role in seeking rewards (one of the dopamine pathways), which is how alcohol can be addictive. Very small amounts of alcohol interfere with a chemical that affects memory (glutamate), and at higher doses may produce memory blackouts.

Alcohol's effects on another brain chemical (gamma-aminobutyric acid or GABA) are to sedate the brain mildly, which explains some of the cognitive changes experienced after drinking (for example, slowed reaction time, difficulty concentrating, reduced responsiveness

to social expectations, talkativeness and social disinhibition, and impaired judgment). Alcohol also affects brain processes that are involved in a range of physiological functions including:

- **mood regulation (for example, sadness, happiness and anger)**
- **sleep (even small amounts of alcohol can cause sleepiness or sedation, awaking during the night, and suppression of the dreaming phase of sleep)**
- **body temperature (alcohol reduces body temperature, which is perceived as a feeling of warmth)**
- **appetite**
- **sexual responses**
- **aggression**
- **the development of tolerance to the subjective effects of alcohol and**
- **withdrawal symptoms**

As blood alcohol levels increase with continued drinking, the effects on the brain increasingly lead to impaired balance and movement, drowsiness, slower reaction time, impaired judgement, emotional changes and reduced responsiveness to social expectations. These effects increase the chance of accidents, injuries, risky

## BENEFITS

It will surprise none of us to know that alcohol's roles as a 'social lubricant' and a 'relaxant' feature strongly in our responses when we are asked to explain why we drink. Of those participating in an ALAC survey on our attitudes towards alcohol:<sup>8</sup>

- **68 per cent said that drinking alcohol helped them to wind down and relax**
- **27 per cent said they felt more confident when they drank**
- **24 per cent said everything seemed happier when they drank**

- **39 per cent agreed that alcohol helped them to get to know people**
- **45 per cent said they enjoyed the buzz they got when they drank**
- **32 per cent said having a drink with friends and family gave them a sense of belonging**

Happiness, confidence, relaxation, sociability and a sense of belonging: this list illustrates the fundamental nature of the benefits we associate with drinking. Two American academics have gone so far as to suggest drinking may be associated with individual financial benefits.<sup>9</sup>

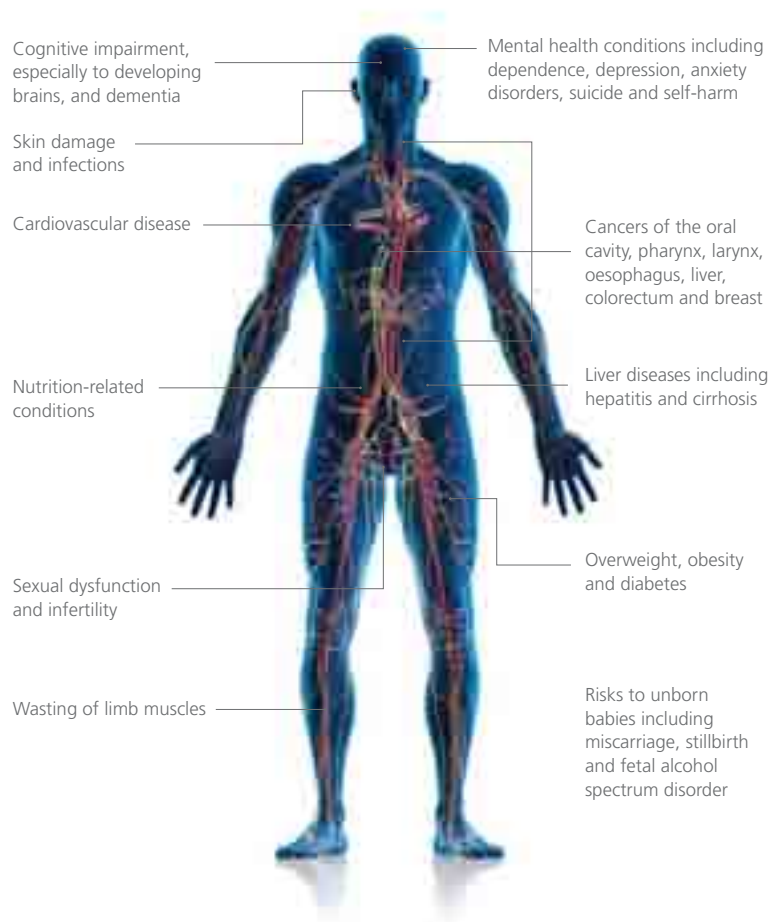
behaviour (for example, unplanned sex), and violence. Higher levels of blood alcohol can lead to nausea, vomiting, unconsciousness, reduced breathing and death.

The presence of food in the stomach reduces the absorption of alcohol into the blood stream and slows the increase in blood alcohol level. The liver works at a fixed rate (around one standard drink per hour depending on the person) to remove alcohol from the blood. Alcohol reduces the production of a hormone that usually ensures the kidneys absorb enough water. This leads to increased urine production and dehydration.

Like any drug, when misused, alcohol has the potential to harm. Immediate harms, like alcohol poisoning and accidental injury or assaults, occur at the time of consumption and are typically the result of intoxication. Longer term or chronic health harms are associated with the cumulative effects of the volume of alcohol consumed over a lifetime and include a range of cancers, cardiovascular disease, liver disease, high blood pressure, depression, anxiety disorders, and alcohol dependence.

Some of the medium to long-term effects of alcohol are shown in figure 4.1.

Figure 4.1. Some short and long-term effects of alcohol on the body.



Source: Adapted from *Australian Guidelines to Reduce Health Risks from Drinking Alcohol* (2009).

The authors note a positive correlation between drinking and individual earnings and hypothesise this may be explained by social drinkers accruing more social capital, including larger social networks, which in turn are associated with better earning opportunities. As discussed in the introduction to this paper, drinking is an important accompaniment to many of our family, social, sporting and cultural lives, and the benefits we derive from its use are reflected in the billions of dollars we expend on alcohol each year. We return to these personal benefits in chapter 7.

But in addition to the psychoactive benefits of drinking there have been broadly cited studies indicating that moderate alcohol consumption (as opposed to abstinence or heavy drinking) may also be associated with a reduced risk of death from coronary heart disease.<sup>10</sup> Consistent with this, surveys have shown that about one in three drinkers in New Zealand think drinking is good for their health.<sup>11</sup>

Recently some epidemiologists have questioned these protective effects

because of methodological problems with the studies in the area,<sup>12</sup> and because the levels of alcohol consumption purported to be protective for heart disease may lead to increased risks for other health problems.<sup>13</sup> University of Otago alcohol research specialist Dr Jennie Connor explains:<sup>14</sup>

The people who are trying to look after their health are being sold a faulty message: that they're doing a good thing by drinking moderately.

A similar caution was sounded in a 2005 *Lancet* article:<sup>15</sup>

Do not assume there is a window in which the health benefits of alcohol are greater than the harms – there is probably no free lunch.

The tentative conclusion appears to be that there may not be any overall health benefits from drinking and that if any health benefits do exist they probably have been overstated. Debates on the effects of alcohol on coronary heart disease are just one example of why ‘sensible limits’ are particularly complex. As with assessing all health risks, an individual’s personal preferences (for example, balancing their interest in improving their health status with their enjoyment of drinking) and characteristics (for example, age, other health problems and medications) will determine what level of alcohol consumption, if any, is acceptably ‘safe’.<sup>16</sup>

## RISKS

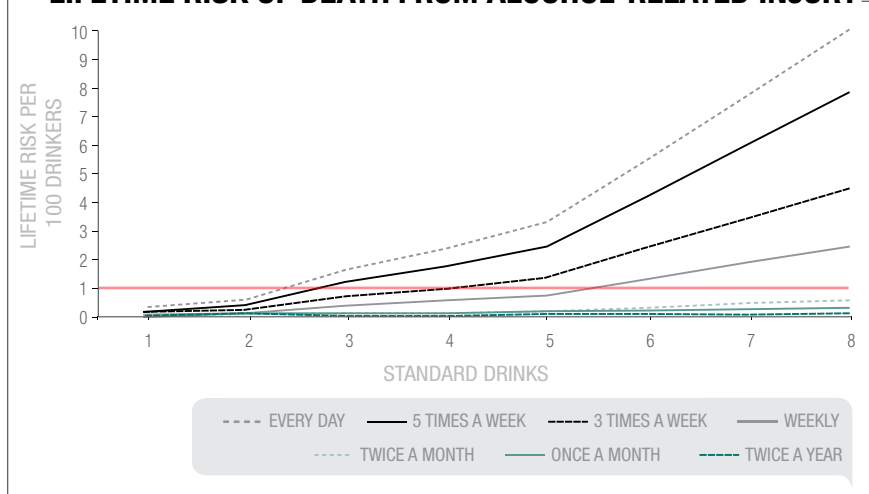
In chapter 3 it was established that while the majority of New Zealanders drink moderately, a substantial minority, some 25 per cent, drink heavily. We also established that *how* we drink, the quantity and frequency, determines the risks we face of various harmful outcomes.

For example, a person may only drink once a month. But if, when they do drink, they drink large quantities, they face a significantly increased risk of immediate alcohol-related harm such as injury. Another person may drink on average two glasses of wine a day (the equivalent of three standard drinks) and face an increased risk of longer-term harm such as cancer or liver disease.

In the past two decades the understanding of alcohol’s effects on the human body and brain has improved, leading to constant revisions of what constitutes ‘safe’ levels of consumption. Australia’s National Health and Research Council recently published its new evidence-based guidelines to reduce health risks from drinking alcohol. The guidelines contain some blunt messages about the relative risks of both immediate and longer term harm from

FIGURE 4.2

## LIFETIME RISK OF DEATH FROM ALCOHOL-RELATED INJURY



Source: Australian Guidelines to Reduce Health Risks From Drinking Alcohol (2009).

what many of us might consider moderate drinking:

Immediate harm:

- **Those who consume more than four standard drinks on a single occasion more than double their risk of injury over the next six hours and the more they drink the further the risk increases.**<sup>17</sup>

Longer term harm:

- **For healthy men and women, the lifetime risk of death from alcohol-related disease or injury remains below 1 in 100 if no more than two standard drinks are consumed on each drinking occasion, even if the drinking is daily**
- **However, above two standard drinks a day, the risk rises to just above 1 in 100 and continues to rise as average daily consumption increases.**<sup>18</sup>

The relationship between consumption patterns (frequency and quantity) and the lifetime risk of death from alcohol-related injury for Australian males is illustrated in figure 4.2. The pattern for females is similar.

The Law Commission asked the Ministry of Health to reanalyse data from the *Alcohol Use in New Zealand* survey to calculate the proportion of New Zealand drinkers who

typically consume more than four standard drinks in a session.<sup>19</sup> It found that one in five drinkers over 12, and nearly half of drinkers aged 12 to 24, usually drink more than this, at least doubling their risk of injury in the six hours after drinking.<sup>20</sup>

Similarly, the Ministry analysed the proportion of New Zealand drinkers who were drinking on average *more* than two

## FACTS AT A GLANCE

Every year about 1,000 New Zealanders die from alcohol-related causes.<sup>2</sup>

In an ALAC survey on our attitudes towards alcohol 24 per cent said everything seemed happier when they drank.<sup>8</sup>

Those who consume more than four standard drinks on a single occasion more than double their risk of injury over the next six hours and the more they drink the further the risk increases.<sup>17</sup>

Nearly one in three drinkers drink on average more than two drinks a day.<sup>21</sup>

standard drinks a day and so faced a greater than 1:100 risk of dying of an alcohol-related disease or injury. The results showed that nearly one in three drinkers over 12 drink on average more than two drinks a day – including a quarter of drinkers aged 35 to 64.<sup>21</sup>

How the risk of alcohol-related harms is assessed depends on what benchmark is being used and the type of harms being considered. Nothing in life is risk free and as individuals we constantly weigh the risks and benefits of our decisions.

However, while a well-informed adult is able to weigh their long-term risks of, for example, contracting cancer against the benefits they gain from moderate daily drinking, this may not be the case for all drinkers in all circumstances. This is particularly so given alcohol's impacts on judgement and cognitive functions.

For example, important new research has found that young people experience more harm per standard drink than older drinkers.<sup>22</sup> The highest risk is for those under 15 years, but there is still an elevated risk of harm per drink for young

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people up to the age of 25 years.<sup>23</sup> This is one of the factors that has led Australian and UK experts to recommend no drinking before the age of 15, and to delay and limit drinking among 15 to 17 year-olds.<sup>24</sup>

There are also a range of harms specific to young people's drinking that do not affect adults in the same way or to the same extent. Early initiation of drinking in adolescence is associated with immediate and later alcohol-related health and social problems.<sup>25</sup> New Zealand research has found that early exposure to alcohol (defined as multiple occasions before the age of 15) is associated with a range of poor adult outcomes including substance dependence,

criminal convictions, herpes infection and failure to achieve educational qualifications.<sup>26</sup> Heavy drinking among teenagers and young adults is associated with poorer brain functioning, particularly in terms of attention and visuospatial skills,<sup>27</sup> and alcohol has detrimental effects on adolescents' liver, hormones, bone density and brain structure.<sup>28</sup>

Significantly too, the risks associated with alcohol misuse are not limited to the individual drinker. One of the reasons for this review of the sale and supply of liquor was the increasing concern regarding the extent of alcohol-related harm in the community.

The Law Commission's terms of reference required the Commission to explicitly consider, among other things:<sup>29</sup>

- **The effects of alcohol use on the level of offending in the community and consideration of ways to minimise such offending**
- **The health effects of alcohol use and ways to ameliorate those adverse effects**
- **Whether we have achieved the appropriate balance between alcohol harms and consumer benefits in society.**

### CAUSE AND EFFECT

Alcohol's role in social and health harms is usually contributory. That is to say, alcohol is one of a number of risk factors responsible for the harm. Those other factors may include existing health status, other health risk behaviours and exposures, genetic make up, gender, ethnicity, socio-economic

Important new research has found that young people experience more harm per standard drink than older drinkers.<sup>24</sup>



Source: Alcohol Advisory Council of New Zealand.

status, personality type, peer group and environmental and cultural influences.

To determine whether a disease is partially or wholly attributable to alcohol, researchers consider a range of criteria including consistent correlations and plausible biological pathways. On this basis, the World Health Organisation has determined that alcohol directly contributes to over 60 different disorders and a range of injuries<sup>30</sup> and has classified it as “carcinogenic to humans”.<sup>31</sup>

Measuring alcohol’s contribution to social problems is often more complex.

The precise nature of the relationship between alcohol and crime, for example, is the subject of a vast international literature – including some New Zealand studies. The reasons why one individual will become violent after drinking and another not, are thought to lie in a complex mix of pharmacological, cultural, gender, socio-economic and environmental factors.

There is overwhelming evidence implicating alcohol in aggressive and violent behaviour, with alcohol’s ability

to ‘cause’ aggression dependent on a number of individual and environmental variables including the social setting.

Experimental laboratory research has shown a biological mechanism linking alcohol to aggressive behaviour. In other words alcohol itself promotes risk-taking and aggressive behaviour independent of other factors such as gender or socio-economic status.

Outside the laboratory setting, a study by Professor David Fergusson and John Horwood, from the Christchurch School of Medicine, examining the association between alcohol abuse and juvenile offending in a birth cohort of over 1,000 young New Zealanders between the ages of 15 and 21 found similar effects for alcohol on aggression and criminal offending.<sup>32</sup> Using complex statistical modelling, the study was able to isolate the specific contribution alcohol played in rates of offending, as distinct from other risk factors such as deviant peers and social disadvantage.

Controlling for these factors, the study concluded that alcohol abuse was

significantly related to both violent and property offending:<sup>33</sup>

The conclusion that alcohol abuse is associated with increases in rates of crime appears to be generally consistent with the results of laboratory-based research, which has suggested that increasing consumption of alcohol is associated with corresponding increases in antisocial behaviour and particularly aggression...These parallels between the findings of longitudinal research and laboratory research clearly reinforce the view that statistical linkages between alcohol abuse and crime, in part at least, reflect a cause and effect association in which the heavy consumption of alcohol increases risks of criminal behaviours.

While this conclusion may seem unremarkable to emergency workers and police officers who work in the real-world laboratory (where the only evidence which counts is that which piles up in the watchhouse for processing every Saturday and Sunday morning), it is nonetheless significant when it comes to shaping alcohol laws.

Put simply, it suggests that if we can reduce alcohol consumption – independent of other factors like socio-economic status – then we may stand some chance of reducing the levels of violent offending in society.

Harmful alcohol consumption is a modifiable risk factor, and reducing harmful consumption can reduce the harms of alcohol caused to others (assaults, sexual offending, family violence and road trauma) as well as improving individual health mortality and morbidity outcomes.

In the following chapter the link between alcohol and crime is explored in greater detail. Chapter 6 then examines the relationship between alcohol and health, injury and wellbeing. These harms often overlap and intersect. For example, in the course of a night’s drinking an intoxicated person may become both victim and offender and may feature in crime, hospital and accident records at the same time. But both areas must be examined separately.

The precise nature of the relationship between alcohol and crime is the subject of a vast international literature – including some New Zealand studies.



## CHAPTER 4 ENDNOTES

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