

YOUNG PEOPLE & ALCOHOL

What does the
medical evidence
tell us about the
legal drinking age
in New Zealand?



FAMILY
FIRST NEW ZEALAND

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Executive Summary

Issues involving alcohol and young people are often discussed in terms of social, cultural, political and financial considerations. However, while these aspects provide an interesting context, ultimately alcohol policies and decisions about a legal drinking age should be firmly based on the health and well-being of New Zealand's young people.

In considering key factors to decide upon establishing the legal drinking age, New Zealand is in no way a unique or special case. The effects of alcohol on the brains and bodies of young people in New Zealand are the same as they are on young people on the opposite side of the world. And the social consequences are also highly similar.

Fortunately, a new generation of evidence from a wide variety of medical and biosciences including neurophysiology, genetics, neuropharmacology, molecular neurobiology, forensic pathology, toxicology, hepatology, teratology, epidemiology and developmental psychobiology have brought into sharp relief the full range of new found effects of alcohol on young people.

In particular:

- Alcohol is now considered more harmful than all popular illegal substances.
- It is an injurious myth that drinking small amounts of alcohol, in particular red wine, may confer modest health benefits on young adults. In point of fact, even the most modest and infrequent consumption of alcohol confers no health advantages whatsoever, but is linked to a variety of negative health effects.
- It is myth that the French are healthier because they drink alcohol. In truth, the French suffer from serious problems with alcohol. The world view that the French are able to control their drinking habits is also entirely untrue. France's death rate from cirrhosis of the liver is about four times higher than that in New Zealand.

Physical childhood continues for many years after the current legal drinking age. While children legally become adult at the age of 18, a child's brain doesn't actually reach physical and functional adulthood until they're almost 25 years old. At the same time, a new generation of research is now finding that drinking alcohol can damage the normal growth and development of a teenager's brain cells in a variety of regions. Recent well-controlled studies are finding a link between alcohol consumption and cerebral brain volume [size] in teenagers and adults of all ages.

- In teenagers who only binge drink *infrequently* (4-5 drinks once a month) brain cells in 18 parts of the brain are found to be thinner and weaker with less protective coating leading to poor, inefficient communication between brain cells
- The hippocampus is a crucial area for memory formation and learning. Several studies have found links between alcohol consumption and "*significantly smaller left hippocampal volumes*" in teenagers and young adults.
- Alcohol seems to interfere with the natural division and migration of the brain cells in the hippocampus. Furthermore this lasting alcohol-induced reduction in brain cell production and development is accompanied by an increase in brain cell degeneration.

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- Research is now identifying the precise chemical chain of events that damage adult brain cells in the hippocampus during binge drinking: '*neuropathological*' and immune system changes induced in the brain including '*neuro-inflammation induced in the hippocampus*'.

In the United States, the U.S. Surgeon General's Call to Action To Prevent and Reduce Underage Drinking (under the age of 21) makes the US Government's concern over the neurological effects of alcohol on young adults explicitly clear: "*Underage [under the age of 21] drinking can cause alterations in the structure and function of the developing brain, which continues to mature into the mid to late twenties, and may have consequences reaching far beyond adolescence*" (US Department of Health, 2007).

Alcohol-related brain changes are linked directly to a young person's intellect, personality, mental and physical health. Alcohol, even in small amounts, may have long-lasting effects on young people's brains that we simply didn't know about before.

- Exposure to alcohol before a young person's impulse control is fully developed upsets the balance between brain areas driving a young person's impulses versus those areas involved in controlling those impulses, thereby heightening risk-taking and distorting the learning process necessary to acquire self-control.
- Consuming alcohol is now found to influence human DNA thereby changing the way our genes actually function. Binge drinking has recently been found to cause changes in gene expression within the brains of animals. For example, changes have been observed in genes in the amygdala, a part of the brain which plays a key role in the processing of emotions.
- More generally, drinking alcohol causes widespread alterations in gene expression that can result in long-term physiological changes. A number of studies have now identified a variety of genes that are 'upregulated' or 'downregulated' by short- or long-term exposure to alcohol in experimental animals and humans.
- There are implications for the fertility of young females who binge drink. Even one episode of 'binge drinking' may induce chromosome changes in female eggs. In animals, those eggs fertilised had a "*high chance of being spontaneously aborted*" or babies "*show moderate to severe degrees of mental retardation, craniofacial and other abnormalities, as well as having a significantly reduced life expectancy.*"

New medical evidence on accident probability, disease and brain development makes it absolutely clear that delaying the age at which teenagers and young people have easy access to alcohol will reduce the level of damage they and society suffer at the moment as well as contributing to their future health and well-being.

Recent evidence makes it abundantly clear that *ideally* young people should not consume any alcohol at all - including having a drink with parents at home - until they have reached at *least* the age of 24.5 years.

New Zealand would benefit from adopting a single legal drinking age of 21, even if this is difficult to enforce. This will send an unambiguous message to young people and society about what is good for young people and will make it easier to exert authority over those of them who increasingly feel entitled to drink.

- Fewer young people will incur illness or die between ages 18 and 21 and beyond.

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- Fewer young people will develop alcohol use disorders between ages 18 to 21 and beyond.
- Alcohol consumption has secondary effects and consequences such as increased levels of sexually transmitted disease and HIV, unplanned pregnancy, and rape/date rape. A rise in the legal drinking age is likely to result in a reduction in all of these secondary outcomes.

Contrary to the received wisdom, raising the legal drinking age to 21 will *not*, as parents and legislators fear, cause teenagers to rebel and drink even more.

Evidence clearly shows that children and young people absorb parental and societal values and rules about alcohol - even though they may claim otherwise. And this subconscious awareness that the government and parents stand together on this matter is highly likely to exert a positive influence on young drinking habits.

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Author

Dr Aric Sigman is a Fellow of the Society of Biology, an Associate Fellow of the British Psychological Society, and a recipient of the Chartered Scientist Award from the Science Council. He recently addressed the European Parliament Working Group on the Quality of Childhood in the European Union in Brussels, on the impact of electronic media on child and adolescent health. Dr Sigman's most recent biology paper on the biological aspects of media, body image and dieting, is published in *Biologist*, the Journal of the Society of Biology. He currently gives health education lectures to British schools on the effects of alcohol. His health book *Getting Physical* won *The Times* Educational Supplement's Information Book Award. Dr Sigman's book on child development *The Spoilt Generation* has recently been published, and his previous book *Remotely Controlled* addressed the physiological effects of screen media on children and young people. He has visited NZ in 2004, 2007 and most recently in 2010.



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