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Editor – Rosie Pears, Health Promotion Agency
It's encouraging that national surveys are finding that more secondary school-aged young people are choosing not to drink alcohol, and when they do drink, they're drinking at less harmful levels.

Remaining alcohol free throughout childhood and into adolescence is important to ensuring a healthy start in life. Not being exposed to alcohol before birth is particularly crucial to preventing lifelong alcohol-related harm.

Delaying the uptake of alcohol and other drugs by young people is one of the four objectives of the Government’s National Drug Policy. Early uptake of alcohol and other drugs is a predictor for ongoing problems, including substance use and dependence. Another objective is reducing the hazardous drinking of alcohol. Although the trends for youth drinking are dropping, there are still too many who are drinking at hazardous levels.

Through the implementation of the refreshed New Zealand Health Strategy, we want a health system that’s able to ensure that young people with alcohol and or drug problems receive the help that they need.

It's the early investment in the health and wellbeing of children and young people by parents and whānau that sets the foundation for lifelong health, including free from alcohol-related harm.

This issue of AlcoholNZ provides interesting articles about the impact of alcohol on the developing brain, the importance of understanding adolescent development and the parenting role, youth drinking data, and examples of innovative youth-focused initiatives. It’s useful information for developing intervention strategies and for expanding understanding about why it's important for young people to delay drinking alcohol and for parents to delay supplying it to them.
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Welcome to the Health Promotion Agency’s (HPA’s) AlcoholNZ magazine. AlcoholNZ provides evidence-based articles, topical commentaries, case studies and summaries of new alcohol-related research to update readers’ knowledge of, and inform debate about, alcohol issues in New Zealand. The theme of this issue is young people, with a focus on those under 18-years-old.

AlcoholNZ contributes to HPA’s statutory alcohol-related functions to:

- give advice on the sale, supply, consumption, misuse and harm of alcohol
- undertake, or work with others, to research alcohol use and public attitudes towards alcohol in New Zealand, and problems associated with, or consequent on, the misuse of alcohol.

This issue of AlcoholNZ provides evidence-based articles about the impact of alcohol on the developing brain and taking a positive, strengths-based approach to keeping young people safe from alcohol. Other articles highlight the work of two youth organisations helping to change the youth drinking norm. It also features an analysis of data about who, what and how young people are drinking alcohol and who isn’t drinking.

Named articles are the express views of the authors of the articles.
There are promising signs that a generational shift is taking place among New Zealand’s young people. More are choosing not to drink alcohol and, if they do drink, fewer are drinking at harmful levels (Ministry of Health, 2015). It is a trend also being observed in other countries, such as Australia, USA and the United Kingdom. This is encouraging, as the age young people drink, the way they drink, how much they drink, and the culture that supports their drinking can all increase their likelihood of experiencing alcohol-related harm.

The evidence for why young people should delay drinking alcohol, even into their twenties, is also expanding. It has been known for some time that alcohol affects the developing adolescent brain in different ways from the adult brain. The science, though, of what happens and the impact from drinking alcohol, especially from heavy drinking, is now more advanced.

The culture of youth partying is starting to show signs of changing, too, with a growing number of non-alcohol events and the promotion of alcohol-free alternatives that celebrate young people’s creativity. Youth organisations that have emerged in recent years are contributing to this change.

It is hoped that increased parental awareness of alcohol-related harms and the important role parents play in supporting their children to remain alcohol free may also be a factor in a changing youth drinking norm. A recent HPA survey found that 10% of 15 to 17-year-olds who were non-drinkers, when asked their reasons for choosing not to drink, indicated that it was related to adult or parental pressure. A further 18% reported that it was because they were not interested or it was not part of their life (Gray, Newcombe & Gordon, 2015).

References


Teenagers and alcohol

Taking a strengths-based approach to keeping them safe from alcohol

The following article has been written by Dr Sue Bagshaw, Director of the Collaborative Trust, which provides training and undertakes research and evaluation focused on helping young people develop well. She is also a Clinical Senior Lecturer at the Christchurch School of Medicine, University of Otago.

When my four children were growing up, we, along with many parents, thought that it was the right thing to do to ‘teach’ our children how to drink. The logic was that the use of alcohol is a widespread social custom in our culture, and that children need to learn how to handle it while they are still in the care of their parents. Today that advice has changed, particularly in light of emerging research on the effect of alcohol on the developing brain.

As a primary care doctor, I have worked with young people in various settings – at Family Planning, at a centre for treatment of drug use and then in a Youth One Stop Shop providing health and social services for 10 to 25-year-olds. I have learnt a lot from young people and their parents and enjoy their energy and ability to bounce back. In this article I will briefly touch on some of the developmental issues, including development of the brain, that are happening during adolescence and the impact drinking alcohol can have. I will then discuss resilience and protective factors and why these are important. Finally, I will cover what this means for young people and for those supporting them.
In this article, I use the word ‘teenager’ to refer to young people aged between 11 and 19 years and ‘young people’ to refer to those between 10 and 24 years of age. This is because young people develop at different times and different rates so a range of ages reflects reality more than referring to a specific age for specific steps of development.

The developing adolescent brain and alcohol

The effect of alcohol on the developing brain seems to be different from that on the developed brain. There will be more on this in another article in this issue of AlcoholNZ. Understanding the way the brain develops in the teens and early twenties, after sexual and reproductive puberty, is highly relevant to understanding the harm of alcohol. If we understand this better it can help us know how to minimise the harm.

It used to be thought that once sexual and reproductive puberty is complete there is no more left to be done and a child has become an adult. Since the development of MRI (magnetic resonance imaging) scanning and the ability to study how the brain develops and works, it has become apparent that there is a long way to go before the child has become a fully formed adult, after the body changes have finished.

Alcohol consumption can be damaging at any stage of brain development, from conception and growing in the womb till completion. Currently we do not know enough about how much alcohol would be damaging and at what stage it is most damaging, but we do know that in adults there is a correlation between brain damage and amount and duration of use. There is now research to show that there is a marked effect on the memory areas of the brain in teenagers who drink alcohol (Tapert et al., 2004). This may be an indication of binge drinking, that is, more than five drinks at one time, but it may also indicate that new ways of laying down memory in the brain, which are highly active for young people, are much more easily destroyed by alcohol. Many other effects of alcohol on the developing brain have been shown. It seems that, until we know more, we should be encouraging young people to delay using alcohol until their brain development is complete.

Understanding how young people view risk and rewards

Risk and taking risks are a significant part of life for everyone. Many people feel that young people decide about taking risks in a different way from adults. In fact, they probably don’t. Most people take a risk to achieve what they want. Adults try to weigh the pros and cons, which are generated by knowledge and experience, but in the end take the risk because they ‘want to’; the end result is so important that it is worth taking the risk.

Young people are no different. They do not have the knowledge and experience, or the full brain development that provides the skills of fine judgement and impulse control, that adults have but they do things because they feel that they will achieve what is important to them. To understand the risk taking of teenagers, we must understand what is important to them. The point of difference may well lie in the difference between what is important to an adult and what is important to a teenager.

So how can adults prepare young people for the use of alcohol or in fact any activity that has the potential to create addiction? Understanding what is important to a young person is crucial. This is going to differ between individuals according to their personality and family and cultural context but some generalisations can be made. Anyone who has been in a high school playground on mufti-day can observe the importance of belonging. Dress is considered an essential sign of belonging, as are speaking the same language and taking part in the same activities. Belonging is very important to young people.
The approval of parents also matters to teenagers, even though some parents would not believe it. Teenagers in high schools across New Zealand would like to spend more time with their parents than they do (Clark et al., 2013). Spending time with teenagers will help parents understand what teenagers find important. For example, if a curfew is in place and the consequence of not keeping it is denial of permission to do an activity that is valued (such as having access to their cellphone) then the curfew will be kept even if it means driving with a drunk driver or being a drunk driver or taking any other risks that are to hand. Parents need to be aware of the implications of the consequences they impose. It is also important for parents to monitor their young people’s activities and provide clear boundaries for those activities (Bobakova, Geckova, Klein, Reijneveld & van Dijk, 2012).

The role of reward is also important to understand. Everyone enjoys the satisfaction of achievement, and gaining reward provides that for young people. It is a much greater motivator for teenagers than the avoidance of punishment. Thus consequences that provide reward are going to be more effective in encouraging good behaviour than those that take away that sense of achievement. This is again probably linked to the changes in the brain occurring at this time.

The difference in the importance of time structures between adults and young people is also relevant. Adults tend to want things done to fit in with their timetable, and small children fit in with that as they have no choice. Teenagers have, and in fact are expected to have, their own timetables and are learning how to organise their activities to fit the demands of timetables. Frequently clashes occur when teenagers do not fit in with the timetables of the adults who try to control them. Adults need to learn that their timetable must blend with that of their teens and that they can no longer expect an ‘automatic’ fit. This is probably one of the most important steps to enable young people to learn self-discipline as opposed to discipline that is imposed on them. One of the key goals of parenting is for the child to be able to control their own behaviour.

So what does this mean for alcohol use by teenagers?

We all know that children learn more from observing and imitating the adults around them than from what we tell them. Teenagers are no exception. So the first thing to do to help young people is to provide a role model of a way to drink alcohol. If we want them to go out and socialise but limit their alcohol use, then that’s what we need to do. If we want them to wait until their developing brains are not so affected by alcohol use, we need to provide them with opportunities and challenges from which they can reap rewards that are meaningful for them, so they are happy to delay the use of alcohol.

Joining a sports team is ideal, also rock climbing or kayaking, and for others it might be playing a musical instrument in an orchestra or band. Playing video games seems to be a ubiquitous pastime which has its pros and cons. Action games potentiate the learning process and provide lots of rewards, but can be as addictive as alcohol. There is growing evidence that television is harmful to the brains of small children, but we still have a lot to learn about how video games affect the brains of teenagers.

How resilience and protective factors fit in

Resilience has been described as the ability to bounce back. It has been thought of as protective factors or assets that can be encouraged to grow in a child and young person so that they can bounce back (Benson, Scales & Syvertsen, 2011; Ginsburg & Jablow, 2011), and it has been thought of in terms of relationships and the environments that grow those relationships (Masten & Tellegen, 2012). The early pioneers in resilience noted that a common factor that helped young people from very violent and low socio-economic backgrounds was a positive, strengths-based relationship with at least one caring adult. Resilience and bouncing back are important as they help to make risk taking and getting into risky behaviours less harmful.
The context for growing these relationships in cultures all across the world is the family. It has long been known that secure attachment with one caring adult in the first three years of life (Bowlby, 1958) predicts positive behavioural development later. It has also long been known that authoritative parenting styles with a high degree of consistent love and warmth, and clear boundaries which are negotiated, are the most effective in encouraging positive, less risky behaviour.

So what does this mean for us as we try to provide a great environment for our children and teenagers so that they don't get involved in too many harmful, risky situations?

**First** – in the first few years of life make sure that babies feel secure and that they are fed when they are hungry, get plenty of cuddles, are played with regularly, and are clean and warm.

**Second** – as they grow older, provide clear expectations of what they are allowed and not allowed to do. Always try to give a reason and be consistent.

**Third** – we all get angry and lose our tempers, but don't take it out on the child. Try to get over it quickly and apologise for losing control. By doing that, we are showing them how to regain control and maintain good relationships.

As they grow, they need the freedom to develop emotionally, not just physically. Most people learn by making mistakes. They need the freedom to make mistakes but they need parents to be there to help them get up again.

Everyone needs a cheerleader in their lives. Parents and caregivers should become coaches and guides, and, above all, excellent negotiators. The boundaries set when children are little are about keeping them safe physically; the new boundaries for teenagers can be wider but emotional safety is now key. Teach them to respect others and themselves through our example of respecting them.

When young people have confidence, they can make good decisions. That confidence comes from a secure, loving relationship with their whānau, who find things to praise them for, support them in finding things they are good at, give them challenges, and reward them.

If our families all did that for their children, with the help of our schools, maybe alcohol and other drug use would not have to play such a large part in their lives.

**What about young people with alcohol problems?**

Sadly, for many different reasons, our families and schools are often not as nurturing as they might be. The wonderful thing about development is that it is never too late. The most important thing for young people with alcohol problems is for the adults around them to recognise the underlying reasons young people use alcohol. It may be that they:

- are just out for a good time – and how do we have a good time in Kiwi culture? We get drunk
- are bored and there is nothing else to do but go out with mates and get drunk
- are very shy and find it difficult to make friends – alcohol is a great help for that
- have bad memories of being abused sexually, physically or emotionally and are trying to drown out the pain
- are ill and have anxiety or depression and are trying to treat themselves with alcohol.

Sometimes parents are too close to find out the reasons and that's where helping services can provide a listening ear and help the young person figure out what is going on. Youth services with youth workers who can encourage the young person to join a group with things to do other than drinking are a great help. Organisations such as St John Youth New Zealand, Scouts New Zealand, GirlGuiding New Zealand, church youth groups and many other youth organisations and groups are there to provide challenges and things to do. Counsellors and doctors are helpful if the reasons for drinking are more serious. Youth One Stop Shops around the country provide all those services in one place, and school health services can also be helpful.
References


Supporting young people and creating environments for positive youth development

“I think that making it cool to have alcohol-free parties is something to develop. These ideas all link into creating a new normal.”

Female participant in BGI youth perspectives exercise in 2015

One of the principles of the Youth Development Strategy Aotearoa (Ministry of Youth Affairs, 2002) is that “youth development is about young people being connected”. It is not just one connection that is important but multiple connections. The more settings where young people feel welcomed, valued and understood, the better. Positive youth development is also about building on and developing young people’s skills and talents, allowing young people to participate fully, and creating supportive environments for this to happen. The more strengths in a young person’s life, the better, and the less likelihood of negative outcomes, such as alcohol misuse and harm.

Many people support young people’s positive development – parents and caregivers, whānau, teachers, youth workers, school nurses, police youth aid officers, and many others working with young people as volunteer workers and professionals.

Youth organisations play a critical role in supporting young people to identify and reach their full potential. Creating a fun environment where young people don’t feel the need to drink alcohol and helping them to have the skills and knowledge to make good life choices are key ways youth organisations contribute to delaying initiation of drinking and preventing and reducing alcohol-related harm.

The two articles that follow are examples of youth organisations that are passionate about creating a ‘new normal’ for young people where the presence of alcohol is not needed in order to have a good time. These articles describe some of the efforts and activities that Red Frogs and Zeal engage in to create a cultural shift in the way young people view and engage with alcohol.

Reference

Red Frogs originated in Australia in 1997 when Andy Gourley and his mates volunteered to work with young people in a hotel at the infamous Schoolies Week on the Gold Coast. They saw a massive need for support for the many young people who were partying there. They used Allen’s Red Frogs lollies as ice breakers to initiate conversations and became known as the Red Frogs crew. Red Frogs is now a global youth support programme working in several countries.

Red Frogs New Zealand has been operating since 2007 and has a vision to see a radical change in the drinking and party culture in New Zealand. The focus is mostly on young people aged 15 to 25 years, as this is a stage of life when people are being exposed to environments where alcohol is present and they are starting to go to parties. Red Frogs began working first with university students but is finding that it is now increasingly working with the younger age group.

There is currently only a small team at Red Frogs but it is the two to three hundred volunteers that are crucial to the work that Red Frogs does. Most of the volunteers are between 18 and 25-years-old and are able to relate to and come alongside their peers.

Caring for young people when they are drinking at risky levels, for example, by providing safe zones at major events or in a CBD, is part of what Red Frogs does but equally important is its work on early intervention and prevention. This involves teaching and modelling a good partying culture and how to create a great environment where young people don’t have to drink and don’t feel the need to drink to have a good time.

Red Frogs comes alongside high school and university students to talk about how they can plan and put on a great event, such as a ball, where alcohol isn’t the focus and there isn’t the feeling of needing to have an alcoholic drink in your hand all the time – the ‘Say Yeah, Nah’ kind of idea. A recent Red Frogs’ survey of roughly 1,300 university students found that 43% of them, if they had a chance, would go to a non-alcoholic event rather than an alcoholic event, but that there were limited options.

Another focus of the prevention work that Red Frogs does is on keeping safe in a party environment. They help young people to have the skills and knowledge to look after their mates and themselves when they are in a party environment. If they do drink alcohol, they have a good night and get home safely.

Red Frogs teams of mostly volunteers have worked at several major events, including the NRL Auckland Nines, the Wellington Sevens, New Year festivals, and music festivals. Red Frogs works in partnership with promoters and venues, Police, security services and event medical services and others. At an event, what they do often involves helping to keep people hydrated with water.
A team of 10 people may give out 300 to 600 litres of water a day at a large event like the Wellington Sevens. Red Frogs also provides safe zones – a safe environment where young people needing help or time out, such as those in the early stages of intoxication, can come and receive support.

Team members look out for and get alongside young people who may be drinking too much alcohol. There may be an area of an event that is seen as a danger zone for high levels of intoxication. Red Frogs sends in a team to engage with people early on and help create a better atmosphere and prevent alcohol-related harm.

Red Frogs has been working for some time with universities and other tertiary institutions, in particular the halls of residence, providing training for residential assistants and helping event organisers gain the skills to assess risk, and plan and put on events, including alcohol-free events. Work with this age group is often in partnership with other organisations, such as local councils, local Police and youth workers from other youth organisations, like Zeal.

Increasingly, Red Frogs is also working with secondary schools, giving presentations at school assemblies and providing skills training for ball committees. There is a lot of potential to get in early and give young people the skills they need to create a new normal youth partying culture through youth events that don’t involve drinking alcohol, or drinking only at low risk levels.

Ollie Nelson, National Coordinator, Red Frogs New Zealand, says that “as Kiwis we have a culture of glorifying the guys that are viewed as ‘the legends’ – the first guy to get drunk or vomit into the bush. For some reason in our culture we glorify this – the ‘Yeah Jono what a legend’ – when really this shouldn’t be the norm. Drinking like this should be like smoking is starting to become, where it is almost socially unacceptable. Our culture needs to change to a point where drinking to excess isn’t an accepted norm for how we engage in an alcohol environment”.

More information about Red Frogs New Zealand can be found at nz.redfrogs.com.
Zeal has always had a passion for youth and for promoting an alcohol-free experience while focusing on drawing out the innate talents and creativity of young people. This is highlighted in its vision statement, which says “positively influencing New Zealand young people through creativity”. If you ever get the chance to hang out with the Zeal team, you’ll see that they definitely personify this statement. Instead of focusing on harms, Zeal uses a world-leading strengths-based approach to youth development. This approach looks for the creative spark in every young person regardless of their background, struggles or socio-economic status.

Zeal started back in 2001, on Victoria Street in Wellington, as New Zealand’s first under-age music venue. From day one, Zeal had a passion to create a space and experience free from alcohol harm and filled with creativity and opportunity. This led to mentoring and supporting some of New Zealand’s top artists through their teenage years – like Brooke Fraser, Kimbra and Steriogram. Young people from across the Wellington region left their habits of inner city drinking and house parties to get into Zeal and experience the highs of great music, great people and an opportunity to explore their own creativity.

Soon Zeal was being recognised in other areas around New Zealand and in 2008 Zeal West Auckland opened as Zeal’s flagship youth facility. Without serving a drop of alcohol, this venue was ranked in the top five music venues by the New Zealand Music Managers Forum in 2012. Zeal’s U18 alcohol-free events grew steadily across the North Island, attracting local, national and international artists. Last year, Zeal ran a staggering 200 U18 events across the country, with over 15,000 attendees. Their passion for the ‘alternative normal’ experience without the presence of alcohol remains today.

In 2014 Zeal teamed up with the Health Promotion Agency (HPA) to offer U18 care for 15 to 17-year-olds attending Wellington’s Jim Beam Homegrown festival. The festival is run on Wellington’s waterfront but is an R15 event, despite the presence of an alcohol naming sponsor.

There had been some undesirable incidents at the festival in 2013 but, to Homegrown’s credit, the organisers worked with Zeal and HPA to create a care model for U18s. Zeal’s role at the festival is to run the ticketing booths for all U18 attendees and then offer care to young people throughout the day in a fun and friendly manner. Zeal youth hosts (as they are called) are the friends of young people at the festival, providing water, sunscreen, social media competitions, free sunglasses and a couple of youth tents equipped with photo booths and food.

The youth hosts’ approach leads to a fun and safe environment for the U18s, despite the presence of festival bars and alcohol. This year the impact of Zeal’s work can be seen in the numbers. Zeal staff connected at ticketing...
with all 1,400 15 to 17-year-olds. Then throughout the day they had over 1,665 interactions with youth (offering things like water, sunscreen and programmes), and 855 conversations with young people (checking their safety, hydration and signs of intoxication). But the real impact is seen in the 70 safety interventions that youth hosts coordinated. A safety intervention is defined as a moment where a Zeal youth host intervened in a situation where an U18 was threatened, hurt, intoxicated or lost. In most of these cases Zeal youth hosts intervened early enough for no harm to be done, saving on the precious time of event security personnel, St John event medical services and Homegrown staff.

It’s great to see the behaviour of teens changing over the years at the festival. Zeal has seen a marked reduction in the number of young people trying to enter the festival intoxicated and in side loading (drinking in and around the festival illegally).

Zeal recently completed its state of the art Zeal Event Box stage truck. Fully equipped with sound system and lighting, the truck has been built to offer communities around New Zealand alcohol-free events, taking on the road the success Zeal has seen in its venues. The Event Box recently ran an U18 stage at Wellington’s CubaDupa 2016 festival, giving young people an enjoyable and safe drug- and alcohol-free experience. Social media was buzzing with all the chatter about it. The Zeal Event Box has a unique role in training young people in the events industry, with support from established professional partners such as the Production Co. Zeal has a passion to use its Event Box across New Zealand, with a specific focus on alcohol-free events for youth or the community. The Zeal Event Box runs as a social enterprise initiative.

Challenging and changing the norm about drinking alcohol

Since Zeal’s humble beginnings, huge progress has been made in creating an ‘alternative normal’ to the common story of teenage drinking. Everything within the Zeal brand carries an alcohol-free value, giving young people all over New Zealand a different path filled with creativity, opportunity, belonging and support, without the booze. Whether it be Zeal’s U18 events, creative pathways, after-school programmes or street youth work, the message sitting behind the brand is one that celebrates youth creativity and achievement and offers hope for the future instead of an instant fix for today. In Zeal’s history hundreds of youth have decided to leave the bottle behind and join the movement of celebrating creativity. Their work continues to show New Zealand that you can replace the bottle with a microphone, paint brush, camera or coffee machine, and divert a young life away from harm and towards health.

Brook Turner, CEO, Zeal.

More information about Zeal can be found at – zeal.nz.
The science of the adolescent brain and alcohol

The following article has been written by Anthea Springford and Sue Wright of Brainwave Trust Aotearoa. Brainwave Trust is a charitable trust whose purpose is to raise public awareness about new findings in brain research and the important implications of this knowledge. More information about alcohol and adolescent brain development can be found at brainwave.org.nz.

“If we expose our young people to positive, supportive environments they will flourish. But if the environments are toxic, they will suffer in powerful and enduring ways.”

Steinberg, 2014

The adolescent brain is not just a young version of an adult brain – it is biologically different. It is going through an important period of change which makes it more vulnerable to the toxic effects of alcohol – and all other psychoactive drugs. In New Zealand the most common form of problematic substance use in adolescents is binge drinking of alcohol (Fleming, Lee, Moselen, Clark & Dixon, 2014).

What’s special about the adolescent brain?

Human brains are extremely complex. There is still a lot more to learn about how and why they work as they do. In the past 25 or so years, technology like magnetic resonance imaging (MRI) has enabled scientists to observe the brains of children and adolescents – while they are alive.

Unlike other organs, brains are only partly formed at birth. Early experiences influence the architecture of the brain, which enables humans to adapt and thrive in the environment they are born into. From conception and
through the first few years, a child’s brain develops in response to a complex interplay between their genes and their experiences.

Adolescence is the period of transition from the dependence of childhood and importance of the family to the interdependence of adulthood. There have been many studies of adolescent behaviour, but until recently only limited research on the accompanying brain changes. The scientific community had thought the brain formed in the early years and then completed its development into the adult brain by mid-adolescence.

At the turn of the century, Professor Jay Giedd (Giedd et al., 2006) was concerned he had made a mistake when he detected further growth in a number of key areas of the brain which continued through to the early twenties in women and mid-twenties in men. Just as happens in the early years, another exuberant growth of connections occurs. Those used most often, both positive and negative, are strengthened and made more efficient through a process known as myelination. This myelinated part of the brain is known as white matter. The pathways used less often function less efficiently and may be eliminated (or ‘pruned’ away). This is ‘use it or lose it’ in action.

Unlike brain development in the first few years of life, which occurs throughout the brain, the brain development in this second phase occurs mainly in a few specific areas.

The adolescent changes start with the onset of puberty, as early as 8 or 10. During adolescence the brain undergoes particularly extensive changes in the areas that control how pleasure is experienced, how we view and think about other people, and our ability to self-regulate. These three areas of the brain are moulded by experiences during adolescence, but they are also the ones that are most easily harmed (Steinberg, 2014).

The limbic system is located in the middle of the brain and is sometimes called the centre of emotion. It contains the reward centres, which are highly sensitive during early and mid-adolescence and are not strongly wired up to the parts for exercising judgement and impulse control in the prefrontal region. This sensitivity is linked to risk taking, particularly in the presence of peers (Gardner & Steinberg, 2005). Interestingly, adolescents are just as capable as adults in assessing risks (Reyna & Farley, 2006). However, their finely tuned reward centres, combined with the social influence of their peers, mean they get a bigger return for taking a risk compared with an adult.
The upper areas of the brain, known as the cerebral cortex, undergo extensive restructuring as new connections form and strengthen in waves across the regions. This includes the parietal lobe (logic and spatial reasoning), the temporal region (language) and the frontal region, including the prefrontal cortex.

The prefrontal cortex plays a critical role in self-regulation, planning, decision making, working memory and impulse control, for example, and is the last region to mature. In adolescence sometimes the connections to the prefrontal cortex work, but sometimes they don't. Emotionally charged adolescents often make impulsive, emotional decisions until the ability to more consistently control behaviour emerges into the mid-twenties.

Two other regions also demonstrate significant change. The corpus callosum connects the left and right sides of the brain and is involved in creativity and higher-level thinking. During adolescence these connections are significantly strengthened and made more efficient. The cerebellum, which controls movement and contributes to a wide range of cognitive and emotional functions, also matures in adolescence.

So, adolescence is a second wave of brain development, where experience moulds the brain ready for adulthood. This is a time of great opportunity but also vulnerability.

**What happens when alcohol is drunk?**

There are many obvious and well-researched risks and consequences of heavy drinking, including car accidents, crime, violence, injuries and sexual risk taking, as well as depression and suicidal behaviour (Ferguson & Boden, 2011). But alcohol consumption, particularly excessive consumption, during this time may also have profound effects on both the structure of the brain and the way it functions.

Alcohol affects a developing adolescent brain differently from an adult brain. The imbalance in the way the brain develops, with limbic/reward systems (think social-emotional) maturing before prefrontal/cognitive control (thinking), may leave adolescents more vulnerable to engage in risk-taking behaviours like alcohol use. Adolescent drug taking, including alcohol, may further alter these developmental processes and increase the imbalance between reward and regulatory control systems (Squeglia et al., 2015). Alcohol exposure during adolescence not only has an immediate impact on brain function, it also may lead to consequences for various brain functions that last even into adulthood (Hiller-Sturmhofel & Swartzwelder, 2004/2005).

**Changes that can occur with heavy drinking**

Numerous studies have investigated in either, or both, rats and humans the effects of alcohol on the structure of the adolescent brain and how it functions. This evidence is now being corroborated by longitudinal human studies, which can track the changes over time, identifying cause and effect. The effects, while not always dramatic, can be significant. The following list is not exhaustive but illustrates the fact that changes in the structure and/or function of the adolescent brain have been observed in many different parts of the brain:

- A longitudinal study found that adolescents who went on to develop heavy alcohol use started with significantly smaller brain matter volumes in several areas of the brain involved with inhibitory functioning, self-regulation, impulsivity and attention compared with those who remained alcohol free (Squeglia et al., 2014).
- There was a decrease in the volume of the hippocampus (a key region for learning new information and emotional memory) in heavy-drinking adolescents (Medina, Schweinsburg, Cohen-Zion, Nagel & Tapert, 2007).
A reduction was observed in the prefrontal cortex in heavy-drinking adolescents and young adults (De Bellis et al., 2005).

There was a reduction in the integrity of the corpus callosum (which connects the two sides of the brain) among heavy-drinking adolescents (Tapert, Theilmann, Schweinsburg, Yafai & Frank, 2003).

It is the drinking to the point of being drunk (binge drinking – usually defined as four or five standard drinks in a session) rather than how often and how much is drunk overall which appears to cause damage to cognitive functioning, such as spatial working memory and pattern recognition (Weissenborn & Duka, 2003).

Binge-drinking adolescents, even those with no history of alcohol use disorder, showed widespread areas of compromised white matter, particularly those underlying learning, memory and executive functions (McQueeny et al., 2009).

A number of studies have demonstrated that even after a period of abstinence from alcohol, attention performance and other activities were worse in those who had abused alcohol (Brown, Tapert, Granholm & Delis, 2000).

Adverse effects can happen in a gender-specific way, which may reflect the fact that the brains of boys and girls mature at different rates. Differences have been observed in both brain structure and brain function. For example, in terms of brain structure, the prefrontal cortex volumes of adolescent females with alcohol use disorders were shown to be smaller than controls and those of males larger than controls (Caldwell et al., 2005).

In terms of gender differences in brain function, in females more drinking days in the year were correlated with worsening visuospatial functioning. In males, more severe hangover symptoms in the preceding year were correlated with worsening sustained attention (Squeglia, Schweinsburg, Pulido & Tapert, 2011).

**Are adolescents more sensitive to alcohol?**

Conventional wisdom might say that adolescent drinkers would be more sensitive to the effects of alcohol than adults. This is only partly true. Adolescents are more sensitive than adults to the rewarding effects of alcohol, such as reduced shyness in social settings (Varlinskaya & Spear, 2004). However, they are less sensitive than adults to the physical effects which are indicators that too much alcohol has been drunk, like sleepiness (Varlinskaya & Spear, 2004) and hangovers (Doremus, Brunell, Varlinskaya & Spear, 2003). In a time before ethical conditions were a consideration, Behar et al. (1983) found no behavioural signs of intoxication in 8 to 15-year-old boys who were given a dose of pure ethanol that caused peak blood alcohol levels to within the intoxicating range for adults. So, for adolescents it takes more alcohol for the physical warnings of toxicity to hit than for adults, while the pleasurable effects of drinking occur with less alcohol.

Insensitivities to alcohol may be particularly pronounced during the early stages of adolescence (Varlinskaya & Spear, 2004).

**Why understanding how alcohol affects the adolescent brain is important**

Adolescent brain development hasn’t changed just because research has now highlighted this as a period of vulnerability. The study of brains is ongoing and complex and is likely to explain even more about how and why the brain is affected over time. Our current understanding of how alcohol affects the adolescent brain must inform all alcohol-related interventions and prevention activities developed by professionals.
What parents do does matter. Many people begin to experiment with alcohol during adolescence, often with the blessing of their parents, who, according to New Zealand research, are the main providers of alcohol to their adolescents. However, a large study in the US and Australia explored the influence of parental use, attitudes and supervision on alcohol use. Adult-supervised alcohol use resulted in higher levels of harmful alcohol consequences than when adults discouraged the use of alcohol in Australia (McMorris, Catalano, Kim, Toumbourou & Hemphill, 2011). When parents understand the impact of alcohol on the adolescent brain, they are empowered to limit access to alcohol and to discourage its use, particularly for younger adolescents.

We know that adolescents’ brains are biologically tuned to take higher risks, especially in the company of their friends, and also that they do not experience the negative effects of excess alcohol in the same way as adults. The reconstruction of the adolescent brain from puberty through to the twenties means it is especially vulnerable to toxic insults, such as from alcohol and other drugs. There are many and varied ways in which both the structure of the brains of adolescents and their brain function can be affected by the use of alcohol, both in the short term and permanently. It appears to be binge drinking in particular that causes changes to the brain. This is before the confounding effects of marijuana and other drug use.

When adolescents boast that they “killed off a few brain cells last night”, everyone needs to understand that research now shows that is exactly what they may have done.

References


Who, what and how young people are drinking alcohol and who isn’t drinking

What the data shows

This article provides an overview of data about young people’s alcohol use, including who isn’t drinking alcohol. It uses data from the Ministry of Health’s New Zealand Health Survey (NZHS), the Health Promotion Agency’s Attitudes and Behaviour towards Alcohol Survey (ABAS) and Youth Insights Survey (YIS), and the University of Auckland Adolescent Research Group’s Youth2000 Survey Series (Youth2000 Surveys) of secondary school students (Years 9 to 15). The age range covered varies for each survey. The focus in this article is on young people under 18 years.

The proportion of New Zealand secondary school students reporting they currently drink alcohol has dropped*

*Adolescent Health Research Group, 2013; Ameratunga et al., 2011; Clark et al., 2013.
Who is drinking or not drinking alcohol?

The good news is that New Zealand national surveys indicate that an increasing proportion of under 18-year-olds are choosing not to drink alcohol, and of those who do drink alcohol fewer are drinking in a potentially harmful way. Internationally, countries with drinking cultures comparable with New Zealand’s, such as Australia, USA and the United Kingdom, are observing similar improvements in youth drinking over time (Pennay, Livingston & MacLean, 2015). It is not clear why this is occurring but a promising generational shift in youth drinking appears to be taking place.

The Ministry of Health’s NZHS found that the proportion of 15 to 17-year-olds who reported consuming alcohol within the past 12 months has declined from 75% in 2006/07 to 57% in 2014/15. It also found that the proportion of past year drinkers aged 15 to 17 years who consumed 6+ drinks of alcohol at least once a month has declined from 34% in 2006/07 to 19% in 2014/15 (Ministry of Health, 2015).

The Youth2000 Surveys found that the proportion of secondary school students who reported that they currently drink alcohol has declined from 70% in 2001 to 61% in 2007 to 45% in 2012. Those who reported binge drinking (five or more alcoholic drinks within four hours) within the last four weeks has also declined, from 46% in 2001 to 34% in 2007 to 23% in 2012 (Adolescent Health Research Group, 2013; Ameratunga et al., 2011; Clark et al., 2013).

Even though the proportion of under 18-year-olds who are drinking has fallen, a significant proportion of them are still drinking alcohol in a potentially harmful or risky manner, especially in the 15 to 17 age groups. This is illustrated in Figure 1, which shows the total and the pattern of the changes in alcohol use with age, including for different levels of alcohol use. The proportion of secondary school students who reported drinking alcohol increases with age, with a much larger proportion of older students drinking alcohol than younger students (Adolescent Health Research Group, 2013).

What alcoholic drinks are being drunk?

The 2012 Youth2000 Survey found that the types of alcoholic drinks that secondary school students usually consumed were RTDs (ready-to-drink mixes) (53%), beer (28%), spirits (9%), wine (5%) and other (4%). Females were more likely to consume RTDs (71%) than males (32%), and males (51.9%) were more likely to consume beer than females (9%) (Adolescent Health Research Group, 2013).

How are they getting alcohol?

Parents and friends are the main suppliers of alcohol. The 2012 Youth2000 Survey of secondary school students found that the most common reported sources of alcohol were parents (60%), friends (44%) and someone else who bought the alcohol for them (30%). Eleven percent of students reported buying the alcohol themselves. Multiple responses were allowed. The students who were buying alcohol themselves varied by age and included 3% to 5% of students aged 15 or under, 9% of students aged 16 years and 24% of students aged 17 or older (Clark et al., 2013; Adolescent Health Research Group, 2013).

Usual sources of supply varied depending on the secondary school students’ level of substance use (any one of alcohol, marijuana or other substance use). Students with very high levels of substance use tended to have higher rates for most sources of alcohol supply compared with students with lower levels of substance use (Fleming et al., 2014). Figure 2 shows these differences in reported sources of usual supply.

What are the alcohol-related risks and harms?

Some under 18-year-olds reported risky drinking and experiencing harms as a result of their alcohol use. HPA’s 2014/15 ABAS found that, of the 15 to 17-year-olds who consumed alcohol on at least one occasion over the previous four weeks, 22% reported having had too much to drink on an occasion and 33% reported that they got drunk or intoxicated on an occasion (Nelson, Gray & Holland, 2016).
Figure 1: Secondary school students’ levels of alcohol use, by age

Source: Graph created from data in Adolescent Health Research Group (2013).

Figure 2: Usual sources of supply of alcohol to secondary school students, by substance use level

Source: Graph created from data in Fleming et al. (2014).
The 2012 Youth2000 Survey found that the secondary students who were current drinkers reported a range of problems after drinking alcohol. The most common were getting injured (15%), doing things that could have got them into trouble (eg, stealing) (13%) and having unsafe sex (12%). In this same group, 11% reported that friends or family had told them to cut down on their drinking, 8% reported that they were themselves worried about how much they drink, and 13% reported that they had tried to cut down or give up their drinking at least once (Adolescent Health Research Group, 2013).

HPA’s YIS found that, among 14 to 15-year-olds, those who drank alcohol at risky levels more frequently were more likely to also smoke tobacco and/or use marijuana. This group was more likely to be female, of Māori ethnicity, attend a low decile school, report having a high past week income, have low social connectedness and have parents who did not monitor their expenditure or whereabouts or enforce rules (White, Walton & Walker, 2015).

Who are the under 18-year-old non-drinkers?

As outlined earlier in this article, more under 18-year-olds are choosing not to drink alcohol. HPA’s 2014/15 ABAS collected information about non-drinkers. The survey found that, of the 15 to 17-year-olds who reported that they did not consume alcohol within the last year, 90% identified themselves as having always been a non-drinker, when asked how long they had not been drinking alcohol. They were also asked if there were any reasons for their choice not to drink alcohol (multiple responses were possible). The top five reasons reported were: no specific reason (26%); not interested or that it was not part of their life (18%); did not drink for health-related reasons (11%); did not like the taste or the way it made them feel (10%); and it was related to adult or parent pressure (10%) (Gray, Newcombe & Gordon, 2015).

References


Smashed ‘n Stoned?
An early intervention programme for young people

HPA’s Smashed ‘n Stoned? programme is a small-group early intervention programme designed to be run with 13 to 18-year-olds whose alcohol and drug use puts them at risk. It aims to help young people focus on their alcohol and drug use and decide for themselves what they want to change to improve their health and wellbeing and to learn how to draw on their own strengths. It was adapted for a New Zealand youth audience from the adult guided self-change programme developed by Canadian Professor Linda Sorbell.

Young people who complete the Smashed ‘n Stoned? programme find that they have improved their goal-setting skills and have a greater sense of control over alcohol and drugs in their lives.

It is recommended that Smashed ‘n Stoned? is run for small groups of three to six young people. This creates more opportunities for facilitators to help each young person identify what they want to change and drive their own progress over the four sessions. Programme resources include a facilitator’s guide and a participant workbook for each session.

Becoming a Smashed ‘n Stoned? facilitator is a simple process. HPA funds the Youth Odyssey team to run two-day facilitator training at various locations and times throughout the year. The training is very interactive to help participants feel confident to facilitate the programme and have conversations with young people about alcohol and drugs. It includes hands-on experience with other participants in delivering Smashed ‘n Stoned? Feedback from training attendees has been overwhelmingly positive, with many reporting that the interactive nature helped them to build their confidence and skills to facilitate these guided self-change groups with young people.

People can register for the free training at alcohol.org.nz/events.