

Keeping Adolescence Healthy

Exploring the Issues Facing Today's
Kids and Communities

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Chapter 7

Rethinking underage drinking – What science says about the risks and how to minimize them

Alcohol use is pervasive among adolescents in the U.S. Despite a minimum legal drinking age of 21, roughly two-thirds of high school seniors report having been drunk. One-third sees no great risk in consuming 4 or 5 drinks per day, every day. Underage drinking costs taxpayers an estimated \$60 billion each year, three times the amount spent on alcohol by underage drinkers. If alcohol were a benign drug, teen drinking wouldn't be a big cause for concern, but it's not benign – particularly for teens. Alcohol plays a prominent role in the three leading causes of death among adolescents and young adults (unintentional injury, homicide, and suicide). By a margin of about 6 to 1, alcohol consumption accounts for more adolescent deaths than all other drugs combined. The use of alcohol by teens is associated with many other risky behaviors and bad outcomes, including sexual assault, violence, unintended pregnancy, and use of other drugs. Little progress has been made toward addressing the problem on a national level, though levels of use have declined slightly in recent years. Alcohol manufacturers have been given a long leash to target kids with both television and print advertising, simply claiming that any appeal their ads have to kids under 21 is purely accidental. The industry has been exempt from the efforts of the official War on Drugs. Where does alcohol come from and how did it get so popular? How big of a problem is it for adolescents, including college students? What ought we do about it? We will address those questions and others in this chapter.

Alcohol is the world's intoxicant of choice, and has been for thousands of years.¹ Drinking predates written history by a long shot. Clay vessels with wine residue in them were discovered in Northern China and date back to 7000 B.C., revealing that humans have been intentionally fermenting and bottling alcohol for at least 9000 years. The first known writing sample dates back to about 3500 B.C., meaning that our ancestors were drinking alcohol for quite some time before they could even write about it. In what is now western Iran, wine and beer were made and bottled as early as 5400 B.C. Distillation was added around 1000 B.C., giving us the categories of beer, wine, and liquor that we enjoy today.

When the European colonists set sail for the new world, they brought with them a culture of drinking and an ample supply of booze to sustain them for the long journey. Once arriving, they quickly set about the task of making more. Modern America was founded by drinkers. Sociologist Dr. David Hanson provides the following facts:²

- The Mayflower carried more beer than water on its voyage to the New World.
- There wasn't a single abstainer among the original signers of the Declaration of Independence.
- George Washington, Benjamin Franklin, and Thomas Jefferson made their own alcohol.
- Thomas Jefferson wrote the first draft of the Declaration of Independence in a tavern.

In the centuries since the colonists arrived, Americans have enjoyed a love-hate relationship with alcohol. Mostly love. The 18th amendment prevented citizens from drinking between the years of 1919 and 1933. During these "Prohibition" years, the only way to obtain alcohol legally was by getting a prescrip-

tion for distilled spirits written by a doctor and filled at a pharmacy. For the most part, the American Medical Association opposed prohibition, primarily because, at the time, alcohol was used as a medicine for several conditions. Indeed, it was the preferred treatment for snake bites, and appears to have been the cause of death for many snake bite victims.

Prohibition caused small decreases in consumption, but generally failed to achieve its objectives.³ The hope was that outlawing alcohol would make society safer and healthier, but it ended up doing the opposite. There was a decrease in documented liver disease, but the social costs of that health effect were staggering. Until prohibition, going to bars was primarily a male dominated activity. Now that everyone had to hide their drinking, women were invited to the bars, too. People started making their own alcohol, called bathtub booze, often with disastrous, and poisonous, consequences. Murder rates skyrocketed at the beginning of prohibition and came back down after prohibition was repealed in 1933.

In the years since prohibition, drinking levels in America have fluctuated greatly, reaching a peak of about 2.75 *gallons* of alcohol per person 14+ in the late 1970s and declining thereafter. In the present day, Americans consume more than 60 billion servings of beer, 13 billion servings of wine, and 29 billion servings of distilled spirits each year. That's still a lot of alcohol!

During the 1970s, research began to reveal that alcohol produces a litany of deleterious effects on health, including effects on the brain. Alcohol is a neurotoxin, a substance capable of injuring cells in the brain. It also blocks the ability of the brain to change with experience, often leaving holes, known as *black-outs*, in one's memory.

Alcohol is particularly bad for developing brains, as it prevents circuits from forming correctly. Any circuits forming when alcohol is present might not form at all. This can have

lasting consequences depending upon which circuits are developing when alcohol enters the brain. When the brains of unborn children are exposed to alcohol, the drug can interfere with normal brain development in the womb, leading to cognitive deficits and sometimes anatomical abnormalities. These realizations led to swift changes in how we view the relationship between alcohol and pregnancy, and led to widespread reductions in drinking while pregnant. Early indicators suggest that a similar shift is underway with regard to drinking during the teen years, given evidence that the teen brain is still developing and that alcohol could interfere with that development.

What is “underage drinking”?

After prohibition, most states adopted a minimum drinking age of 21 to restrict access to alcohol for young people. At the time that America was colonized by Europeans, the concept of underage drinking didn't exist. Everyone drank, often out of necessity due to poor water quality. That all changed during the 20th century with the growing realization of the dangers posed by alcohol and the enacting of laws preventing people under certain ages from drinking legally. In essence, such laws amount to age-related prohibition, but with good reason.

In July of 1971, the 26th amendment to the constitution lowered the voting age to 18. Based partly on the logic that, if kids are old enough to die for their country they should be old to drink, 29 states lowered their drinking ages to 18 or 19. In 1984, President Reagan signed the National Minimum Drinking Age Act, and by 1987 all 50 states had raised the legal drinking age to 21. Failure to conform would have cost states a significant portion of Federal highway funding.

The appropriate legal drinking age remains a matter of debate to this day. As this book is being written, a movement is afoot to stimulate discussion of the legal age 21 issue. In an op-

ed column written for the New York Times, former Middlebury College president, Dr. John McCardell, argued that problems with excessive drinking on college campuses might be ameliorated if the legal drinking age were lowered. Dr. McCardell's organization, *Choose Responsibility*,⁴ is sponsoring seminars and policy forums on college campuses across the U.S. in an effort to promote a data-driven discussion of the pros and cons of a legal age of 21. A growing chorus of voices, mostly from the academic world, has joined his movement.

From a purely neuroscientific standpoint, the drinking age should probably be raised to 25, rather than lowered to 18. Still, not everyone bases their viewpoints on data from the field of neuropsychology, and even the most compelling scientific perspective does not necessarily carry the day in public policy or law. Dr. McCardell argues that the legal age of 21 has failed to achieve its main objectives – keeping young people safe. He points out that, while fewer people under 21 probably drink than would if the age were lower than 21, those who drink underage often go way overboard and do so more quickly than they would if they were able to drink in public. As we will see, drinking a lot of alcohol in a short period of time can be a recipe for disaster.

Dr. McCardell and his group make several compelling arguments for lowering the drinking age. Ultimately, the argument hinges on the assumption that we could do a better job of getting adolescents to make responsible choices around alcohol if we lowered the age at which they could drink, legally. If the age were lowered to 18, we could begin to have candid discussions with young people about how to drink safely and wisely.

At present, there seems to be little doubt that the movement to lower the drinking age is premature. The Choose Responsibility website includes the following statement:

“Alcohol is a reality in the lives of young Americans. It cannot be denied, ignored, or legislated away.”

Yes. This is true. The presence of alcohol in young people’s lives cannot be denied, ignored, or legislated away, and the statement seems to argue strongly against trying to approach the problem by messing with legislation regarding the legal age of access.

How alcohol affects the body is not culturally bound. Whether the drinking age is moved up or down, the fact remains that those who start drinking at young ages seem to be at greater risk of developing dependence. With that said, there are several alcohol-related variables that can be influenced by culture. For instance, how aggressively a person drinks, how often they drink, and how they act when they drink can all be influenced by learning.

As we will discuss throughout the current chapter, it appears that the culture here in the U.S. plays a prominent role in fueling our current problems with excessive drinking by some young people. If the culture were to change in substantial ways, and teens were raised with a greater sense of personal responsibility and restraint, perhaps the drinking age could be lowered by a few years or even removed altogether. However, at present, simply lowering the drinking age would probably prove disastrous, particularly early on, and would stand in direct opposition to the implications of recent research on alcohol and adolescent development. Further, the majority of 18 year olds are not in college. It’s unclear how lowering the drinking age would affect them.

The author agrees with the intentions of the Choose Responsibility movement. However, before we consider lowering the legal drinking age so that kids can *choose* responsibility, we

need to make stronger efforts to *promote* responsibility. At present, there is simply no reason to expect that, in the current cultural climate, lowering the legal age would be of any real benefit. Cultural changes, and more science regarding the age-dependent effects of alcohol, should precede any further tinkering with the minimum legal drinking age.

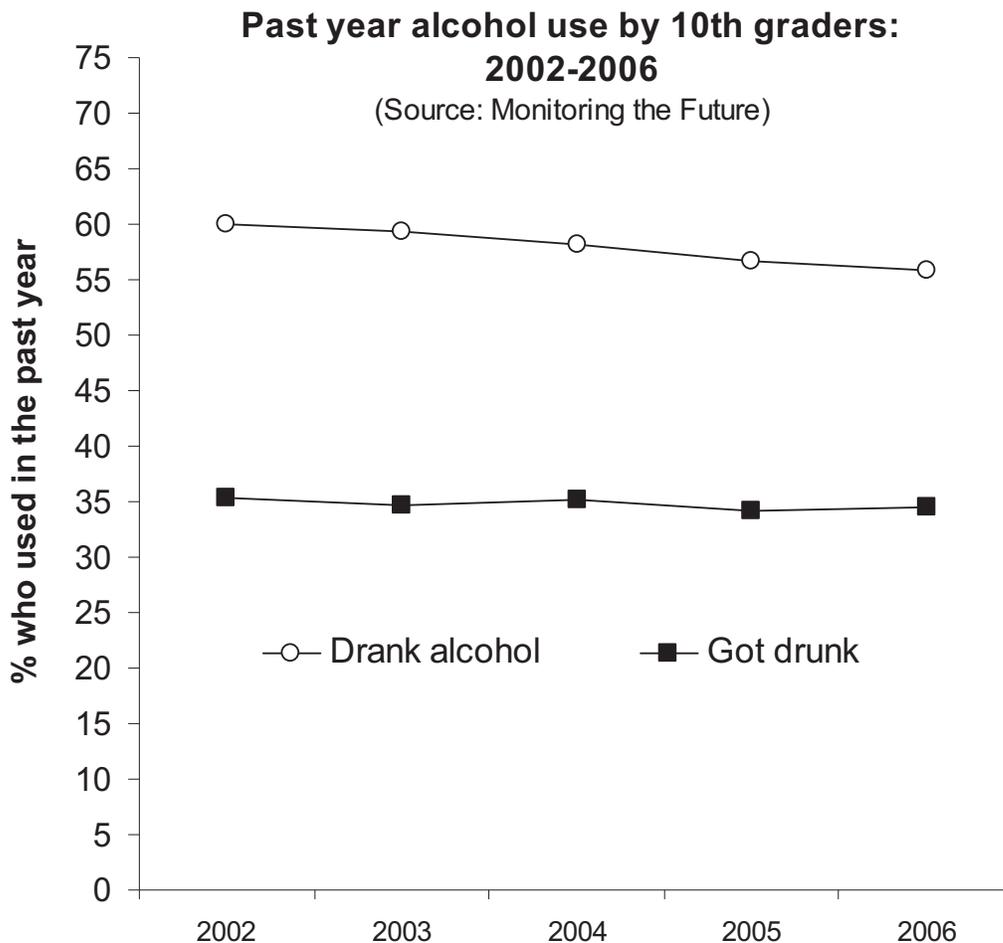
The cost of underage drinking

Despite substantial changes in U.S. alcohol use during the past century, alcohol use by adolescents continues to cause serious problems. Teen drinking contributes to ruined relationships, pregnancies, the spread of sexually transmitted infections, wrecked cars, injuries, and death. The National Institute of Alcoholism and Alcohol Abuse (NIAAA) estimates that alcohol kills 6.5 times more kids under 21 than all other drugs combined.

The National Center on Addiction and Substance Abuse at Columbia University (CASA) estimates that roughly 1/4 of all underage drinkers (relative to 1/10 adults) meet the criteria for abuse or dependence. CASA also estimates that, in 2005, alcohol abuse and addiction among Americans, young and old, cost tax payers roughly \$220 billion. They contrast this value with the yearly cost of cancer (\$196 billion) and obesity (\$133 billion). How much of that cost can be attributed to underage drinking? Researchers at the Pacific Institute for Research and Evaluation (PIRE) estimate that underage drinking alone costs taxpayers \$62 billion annually. By their estimate, each \$1 that kids spend on alcohol ends up costing the country \$3. The money shelled out by taxpayers each year to clean up the damage caused by alcohol is in addition to the \$120 billion or so spent on the products! Researchers at CASA and PIRE place underage alcohol sales at roughly \$20 billion. That's a lot of money! Far more money than is available for alcohol abuse education and prevention efforts.

Early signs that the situation is improving

On a positive note, data from the most recent National Youth Risk Behavior Survey (NYRBS), conducted by the Centers for Disease Control (CDC), shows some promising trends. In a nutshell, the data suggest that the percentage of teenagers actively drinking (one or more drinks in the previous month), as well as the percentage engaging in heavy episodic drinking (five or more drinks in a row), has declined. Data from the 2006 Monitoring the Future (MTF) study paint a similar picture, though the declines in drinking are less obvious.⁵



The graph on the previous page displays the percentage of 10th graders who drank in the year before the survey, as well as the percentage of 10th graders who got drunk in the year before the survey. There have been small but encouraging declines.

The topic of underage drinking is a complicated one, but the bottom line is simple – alcohol can be a dangerous drug, particularly for teenagers whose brains, including the cognitive control centers that allow for good decision making, are nowhere near finished developing. There is nothing wrong with moderate, responsible drinking during adulthood, nor with the occasional overindulgence if done with a little foresight. The trick is figuring out how to convey the truth about alcohol to our teens in such a way that they recognize the importance of waiting until their brains have finished growing before deciding whether to start drinking. Doing so will require all of us to take a close look at ourselves, at the unmet needs of today's teens, at the alcohol industry, and at our policies regarding underage drinking.

Effectively dealing with the underage drinking issue requires knowing the facts. Not just facts about how many people drink and how much, but facts about what alcohol is and how it works. We will now backup a little bit and discuss these issues. After we have covered the basics about alcohol and how it works, we will return to our discussion about the impact of alcohol on adolescent health and examine strategies for using the information in this chapter to help keep kids safe.

Alcohol the drug

There are several different types of alcohol, but ethyl alcohol, the kind in beverages, is the only kind that is relatively safe to drink. All alcohols can kill you – ethyl alcohol (the beverage kind) just kills you more slowly!

Alcohol is a product of fermentation – a process by which yeast gobble up sugar and give off alcohol as a waste

product. Tossing yeast into a container with wet sugar, or just waiting until spores of yeast simply land in the concoction, is all that's really necessary to make alcohol. The amount of alcohol found in the brew will vary depending on the amount of sugar and the length of time that elapses. Yeast can't live in an environment with more than about 14% alcohol, so 14% alcohol – about the concentration in many wines – is the upper limit for naturally fermented beverages.

The alcohol content of beers varies considerably, but, on average, is in the 5% range. Concentrations of alcohol in liquor, or distilled spirits, can approach 95% in some cases, but tend to average around 40% (80 proof). Distilled spirits are made by heating a fermented mash and running the steam through a length of tubing where it condenses and drips into a bottle. The basic premise is that the alcohol vaporizes at a lower temperature than water, so the condensate in the tubing contains a higher concentration of alcohol than the original fermented concoction.

Alcoholic beverages come in many shapes, sizes, concentrations, and types. This can make it difficult for an individual to keep track of how much alcohol they actually consume. Other countries, like Australia, have taken the important step of requiring alcoholic beverage containers to state, specifically, how many servings of alcohol they contain. This is consistent with the ways in which foods and other beverages are labeled to

SideNotes

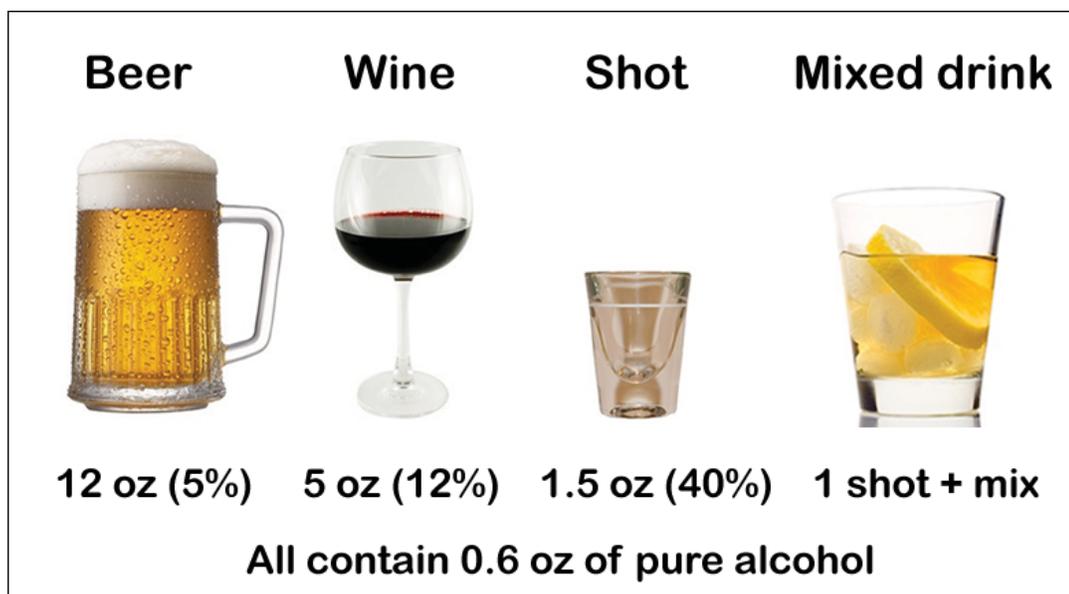
Proof and percent – It's all about concentration

The alcohol content in liquor is either expressed as a percentage or in terms of "proof." Proof is double the percentage – so vodka with 40% alcohol can be said to be 80 proof. Why? The story goes that British soldiers would test the alcohol content of their rations by mixing the alcohol with gunpowder and setting it on fire. Alcohol has to be at least 50% in order to burn in this case. So, if it burned, that was considered proof that it was a legitimate ration. Thus, 50% alcohol conveyed 100% proof.

describe the numbers of servings per container and other important information related to the possible health consequences of consuming them, and would be an excellent idea for alcohol-containing beverages here in the U.S.

The need for greater awareness of the alcohol content of drinks is illustrated by some research that the author and his colleagues have done showing that college students tend to over-pour their drinks. They make the largest errors when pouring liquor, but also over-pour beer and wine. This is particularly unnerving given that women tend to drink mixed drinks more often than males, and it's very easy to pour far more than one serving of liquor into a mixed drink. Other researchers have found that people in the general public also pour drinks that are larger than they think.

Below is a graphic showing standard drink equivalents. Each of the beverages is a single serving and contains the same amount of pure alcohol (0.6 oz) as the others. Please keep in mind that there is no universal standard drink. What matters is that a single serving of each type of drink is defined in such a way that they all contain equivalent amounts of alcohol.



If you are an adult and you drink, please keep the above values in mind. It is common to hear that moderate drinking – up to one or two drinks per day (one for a woman or two for a man) – can help prevent cardiovascular disease, which is more or less true. However, for women, anything over one drink per day can increase the risk of breast cancer. So, if you have one glass of wine each night, but the glass happens to hold 32 ounces, you could be doing more harm than good!

What about those new fruity-flavored products from Skyy, Smirnoff, and other names? The ones many argue were created to draw in young female drinkers. Where do they fit? Most of them contain about 5% alcohol, on par with beer. This is no accident – they are more like Mountain Dew with alcohol added to them than actual beer. The manufacturers can put in exactly how much alcohol they want. The real difference between normal beer and so-called “malternative” beverages, beyond taste, is the calorie content. While a standard beer, such as a can of Budweiser, contains about 140 calories, sugary drinks, like Smirnoff Ice, contain well over 200 calories! That’s about as much as a candy bar.

For those who are weight conscious, even moderate drinking can pack on the pounds. Let’s say a person has two standard drinks, each 200 calories, every day. During a one month period, that adds up to 5600 calories, or roughly 1.5 pounds of extra body fat! Over a 12 month period, those two drinks would add up to 18 pounds of added weight. Any potential benefit a few drinks could have for heart health is quickly undone by the deleterious effects of added body weight on the cardiovascular system.

What does alcohol do to the body?

When we drink alcohol, it enters the stomach, mixes with food (if any is present), and eventually gets emptied into the

small intestine. It is here, not the stomach, that most of the alcohol is absorbed into the blood. Once it gets into the blood stream it makes a pass through the liver before being pumped throughout the body.

As soon as alcohol enters the body, the liver goes to work getting rid of it. An enzyme called alcohol dehydrogenase breaks alcohol down into acetaldehyde, which is toxic. From there, acetaldehyde dehydrogenase breaks the acetaldehyde down into acetate and water. How long this takes depends on a person's liver. In general, it takes about 90 minutes to get rid of the alcohol in a single drink but, as the chart on the next page reveals, these numbers vary a lot depending on factors like sex and weight.

Interestingly, alcohol actually competes with other drugs for the attention of the liver, which means that drinking while taking other drugs can cause unexpected and undesirable consequences. For instance, those who take Tylenol or other acetaminophen-containing products while they drink are at a heightened risk of liver damage. The reason is that alcohol competes with acetaminophen for metabolism, causing levels of toxic byproducts of acetaminophen metabolism to build up and reach potentially damaging levels as the liver tries to process the alcohol.

The amount of alcohol in a person's system can be measured in a variety of ways – most commonly through blood or breath. Alcohol is a very small molecule, small enough to travel anywhere in the body that water goes. Unlike a lot of drugs, alcohol mixes easily with both water and fat. Some drugs, like Ritalin, mix most easily in water. Others, like THC (the psychoactive agent in marijuana), mix most easily in fat. The presence of both fat-loving and water-loving components allows alcohol to travel more freely throughout the body than some

other drugs, and to distribute itself pretty evenly, including in and around the brain and lungs.

After a person drinks, a small amount of alcohol comes out, unchanged, in their breath. By having that person exhale a specific volume of air – a standard amount used for all breath alcohol readings on a particular device – the amount of alcohol contained in the sample can be measured and used to calculate how much alcohol there is in the person’s body. This value, called a blood alcohol concentration (BAC), is important for several reasons. Laws regarding drinking and driving incorporate BAC levels. Every state in the country uses 0.08% as the legal threshold for adults and, technically, 0.00% for people under 21. It is illegal for people under 21 to drive with any detectable alcohol in their systems. To cover the error margins of the breathalyzers used to assess BACs, many states use a threshold of 0.02% for people under 21 rather than 0.00%, but the policy is still considered zero tolerance.

Blood Alcohol Concentrations (BAC) resulting from a single drink in males and females of different weights and how long it will take the body to get rid of it				
Weight	Males		Females	
	BAC from one drink	Time to get rid of it (in hrs)	BAC from one drink	Time to get rid of it (in hrs)
100 lbs	0.043	2.5	0.051	3.0
125 lbs	0.034	2.0	0.041	2.4
150 lbs	0.029	1.7	0.034	2.0
175 lbs	0.025	1.4	0.029	1.7
200 lbs	0.022	1.3	0.025	1.5

BAC values also allow for educated guesses about a person’s level of impairment. Certain affects on the brain and behavior tend to emerge or peak at certain BAC levels. There is

quite a bit of variability in the impact of alcohol on individuals, so there are no set rules with regard to when a given person will start to stumble, slur words, vomit, etc. Just guidelines. The table below breaks down what to expect at increasing BAC levels.

The effects of alcohol at different BAC levels and the number of drinks it takes to get there			
BAC (%)	Drinks in one hour		Effects on behavior and bodily functions
	125lb female	150lb male	
0.02	0.5	0.75	Illegal to drive in every state if you are under 21
			Drowsiness (sleepiness) begins, attention is impaired
0.03-0.04	1.0	1.5	Driving is definitely impaired at this level
			Vision, balance, and hand-eye coordination are impaired
0.05-0.06	1.5	2	Reaction time, perception, and memory are impaired
0.07	1.75	2.5	All driving-related skills are dangerously impaired by this level
			Nausea and perhaps vomiting at this level and up
0.08	2	3	Illegal to drive in all states even if 21+
0.10	2.5	3.5	Approx 10-15X more likely to die in a car crash than when sober
0.15	3.75	5	Almost 400 times more likely to get into crash than when sober
0.30	7.25	10	Memory blackouts very common at this level and up. Many college students over the years have died with BACs between 0.30 and 0.40
0.40-0.50	10	14	Estimated that 50 out of 100 people would die from an overdose

The BAC values in the table were calculated assuming that all drinks were consumed within one hour and the BAC reading was taken at the end of the hour. In real life, a drinker's BAC level at any given time depends on several factors – including sex and weight, how much they had to eat before drinking, how quickly they consumed their drinks, whether their livers are healthy, etc. Women reach higher BACs than men after each drink due in part to lower levels of an enzyme that breaks some of the alcohol down before it ever gets absorbed into the blood. Women also achieve higher BACs than men because women have less available water in their bodies. The less body water a person has, the higher the concentration of alcohol there will be within it. Regardless of whether one is male or female, drinking on an empty stomach allows the alcohol to get into the body faster, raising the BAC higher than it would go if the person had a Big Mac before their Budweiser. Similarly, drinking beverages with high alcohol concentrations, like shots, allows the alcohol to be absorbed more quickly than if the person drinks a beer.

Once inside the blood stream, and distributed to various organs, alcohol has so many different effects that it is more like a shotgun blast than a precise hit. It is what we might call a “dirty” drug, because rather than bind cleanly with specific receptors to produce effects, like most drugs do, alcohol interacts with brain cells in a variety of ways and produces widespread changes throughout the brain. There are few brain areas, or brain functions, not affected in a negative way by alcohol. Indeed, at high enough levels, alcohol can actually shut off important centers in the brain necessary for keeping us alive.

The case of Rahim Bathe, a Duke student who died of an overdose in 1999, serves as an example of how hard alcohol hits the brain. Rahim returned home from a night of drinking with his friends with a belly full of alcohol. He put himself to bed.

However, at some point during the night, it seems the alcohol concentration in his brain reached a level sufficient to cause his body to vomit – a last ditch effort to purge the body of poisons. Tragically, the alcohol content was also high enough to severely inhibit the area responsible for alerting him when something like vomit was blocking his airway. As a result, he inhaled some of his own vomit and eventually contracted aspiration pneumonia, a deadly condition that occurs when bacteria enter the lungs. Rahim died a week later. His mother, Catherine Bathe, has since become a vocal proponent of education and prevention initiatives on college campuses and now serves as vice-president of a non-profit organization called *Security on Campus*. Coming from a good family, getting into a good college, being a good kid, and having a wonderful mother are not sufficient to protect one from the deadly effects of high doses of alcohol. The physiological effects of alcohol on brain activity are unrelated to the quality of one's upbringing or current environment.

The deaths of two students at Colorado schools in the fall of 2004 are hauntingly similar. Samantha Spady and Lynn Gordon “Gordie” Bailey Jr. were young, healthy students who drank too much and died after shutting down crucial centers within their brains. The tragedy involving Gordie Bailey is the focus of a feature length documentary called *Haze*, released in the spring of 2008.⁷ His death was particularly horrendous, as the fraternity members that urged him to drink the lethal dose of alcohol he consumed that night also wrote racial slurs and other comments on his body in marker, and then tried to wipe them off after they found him dead the following morning.

In short, alcohol is a toxic drug. But it also causes brain changes that, for many, create a pleasant buzz. For this, and other reasons, alcohol has a high potential for abuse and dependence, with minimal medicinal benefits. Sounds much more like a DEA Schedule II drug than a legal and recreational compound

that can be purchased at gas stations in many states. Indeed, if alcohol were not already a legally available product, it is inconceivable that it would survive as either a prescription or non-prescription drug in today's litigious climate. The financial power of the alcohol industry would not be sufficient to earn alcohol approval as an over-the-counter or prescription product. It would go right into the poison category.

Given the popularity of alcohol among adults, and its legal status for those over a particular age-limit, it is easy to get. The billions of dollars spent each year by beverage manufacturers to promote their products ensure that consumers, both young and old, will keep consuming them. Danger or no danger, alcohol is here to stay.

Fortunately, most young people do not die when they drink. However, it is becoming clear that alcohol produces very significant impairments in thinking, as well as memory formation, at far lower doses than those necessary to cause death. For the author, one of the most fascinating and truly frightening consequences of overindulgence is the alcohol-induced memory blackout.

Blackouts – An example of the powerful effects of alcohol on the brain

Most people know someone – maybe even you – who has woken up after a night of drinking unsure about what happened the night before. These memory lapses are called “blackouts.” Blackouts are more common than many people think – particularly among young people. They are so common, in fact, that people don't really seem to make a big deal out of them unless something really bad happens. In reality, blackouts are no laughing matter and actually represent a

<p>Blackout – Inability of the brain to record memories for places a person goes or things they do while intoxicated but still conscious.</p>

serious neurological event. To put them in context, if you fell and hit your head hard enough to induce a memory deficit, or had a seizure that caused a memory gap, your doctor would order a full neurological workup immediately, and probably an MRI scan of your brain, as well.

Blackouts are periods of amnesia during which a person actively engages in behaviors (e.g., walking, talking) but their brain is unable to create a memory trail for the events.⁸ This is quite different from “passing out,” which means either falling asleep from excessive drinking or literally drinking oneself unconscious. Blackouts are gray areas of consciousness in which one functions but will not later recall having done so. Blackouts are common. A study conducted by the author and colleagues in 2002 indicated that, at one selective university, 50% of all students who had ever consumed alcohol had experienced at least one blackout in their short drinking careers. Of those who drank in the year before the study, 40% experienced a blackout during that period. Finally, of those who drank in the two weeks before the study, 1 in 10 had at least once blackout. These are alarming numbers given the neurological severity of a blackout. If 1 in 10 students experienced a concussion with memory loss at least once every two weeks, there would be very serious concern for their well-being.

All blackouts are not the same, and are differentiated based on their severity. *En bloc* blackouts represent a complete inability to recall events that occurred during a given period of time. Memories for some portion of the evening’s events are missing in their entirety – like film on the cutting room floor. The memories are never formed and so no amount of digging will uncover them. They don’t exist. *Fragmentary blackouts* are less severe and are characterized by spotty, or fragmented, memories of events. Fragmentary blackouts are far more common than the *en bloc* type. More often than not, a drinker who blacks out

remembers some details of events but not others, and perhaps not enough to make sense of what transpired. In the case of fragmentary blackouts, probing one's memory can often jog recall of some of the missing pieces.

From a neurological standpoint, blackouts are fascinating for several reasons. They cause an inability to form *new* memories but spare the ability to remember things that happened *before* the blackout began. Because of this, even in the midst of a blackout, a person can carry on conversations, drive a car, even tell stories about events that happened earlier while they were intoxicated but not yet in the memory vacuum. Outside observers are typically unaware that an individual is in a blackout. The person in a blackout might not even appear to be very intoxicated. They are present yet vacant at the same time, engaging in experiences that won't have staying power for them, even if they have staying power for those around them.

Anything a person can do while they're drunk and not blacked out, they can do while they're blacked out – they just won't remember it the next day. This includes anything from the mundane, like brushing one's teeth, to the insane, like murder or jumping off of an apartment complex roof into a swimming pool. The author once worked with an undergraduate, now doing his medical residency, who loved to drink but frequently experienced blackouts when he did so. Indeed, this student participated in a story about underage drinking and teen brain development written for *Discover* magazine in 2001. In the article, he went by the name "Chuck," which is the name he gave the alter ego that often emerged when he drank too much. The litany of things Chuck did during blackouts without getting killed or arrested was astonishing. A trip to Mardi Gras comes to mind. Our young friend recalls being in a bar buying a round of drinks. The next memory he formed was upon awaking in a car full of strangers in a different state. Upon demanding an expla-

nation, he was told that the idea was his, and that he had somehow convinced the group to take the drive. It is easy to see how this could be very funny – if it weren't so dangerous.

Unfortunately, the events that transpire during blackouts are not always benign. During his research, the author has learned of blackouts encompassing events ranging from vandalism to sexual assaults. The number of young women who awaken to be told that they had engaged in sexual intercourse, but with no recollection of the event itself or the events leading up to the sex, is impossible to know for certain, but is high. This is one of the truly tragic aspects of alcohol misuse among students and underscores the life-altering impact of blackouts for some young drinkers. In the aforementioned 2002 study of blackouts among college students, 25% of respondents indicated that they had engaged in some type of sexual activity during a night of drinking and had to be told about it later. Sexual activity is a very memorable event, at least it should be, and to not remember something of that magnitude is a good indicator of the suppressive effects that alcohol can have on brain circuits.

From the sidelines, the author has watched several court cases unfold in which either the alleged victim or alleged perpetrator of a rape did not recall what happened. The most common scenario is as follows – A young male and female, both drinking, have intercourse. The female has no recollection, and is therefore uncertain whether the sex was apparently consensual (that is, it seemed to be consensual from the male's perspective) or if an intentional rape occurred. Charges are brought against the young male and the courts are left to decide what happened. Sometimes, the evidence suggests that rape occurred. Other times, it seems that the young male, intoxicated himself, was convinced by the female's actions that she was giving him consent. In some cases, eye witness testimony from credible sources suggests that the female involved actually initiated the

interaction. In some cases, it appears the male was completely aware of the female's compromised state and knowingly committed rape.

The issue of alcohol and sex, in general, must be dealt with more aggressively and honestly through alcohol education and prevention initiatives and discussions between parents and teens. Regardless of what happens in the movies, and the fact that alcohol ads tell us that drinking and sex go together like peanut butter and jelly, it is never acceptable to take advantage of a person's intoxicated state to facilitate sex. It is also not acceptable to feed someone drinks in the hope that it will increase the odds of having sex. It is not only morally wrong, it is illegal. These are facts that are not often conveyed to young people until after they have started drinking, and many find out the hard way after making bad choices around the issue of alcohol and sex, or falling prey to someone else's bad choices.

Importantly, even at levels of intoxication sufficient to produce blackouts, alcohol does not erase knowledge of the rules of right and wrong. Thus, not remembering what one did is no excuse for doing obnoxious, dangerous or criminal things.

Over the years, the author and his colleagues have received countless e-mails from people struggling with guilt after acting out of character during a blackout. People who are told they did offensive things, yet have no memory of doing them, are often concerned that they might be losing their minds – that an alternate and devious personality might be lurking below the surface. One impetus for this guilt is the widespread misperception that alcohol makes us act more like our true selves. Clearly, this is not the case! If it were, the CIA would use vodka in interrogations and alcohol would save marriages not ruin them. Ultimately, we are still responsible for the behaviors we engage in while drunk, whether we can remember them or not, but there

is no reason to expect that those behaviors are necessarily accurate representations of our true selves.

What does alcohol do to the brain to produce blackouts?

It appears that alcohol shuts down circuits in the hippocampus, a brain area that plays a very important role in making memories for what happens in our day-to-day lives. Information coming from both the outside environment and the inside environment is sent to the neocortex, a layer of tissue blanketing the top of the brain. Eventually, this information is funneled down into the hippocampus, where it enters a loop of circuitry that sends it back out to the neocortex and to several important brain areas that influence our emotional states. Somehow, this process results in a relatively choppy and selective recording of our daily lives. (As an exercise, rather than seeing how much you can remember from childhood, think about all of the events for which you really have no memory at all!)

Research suggests that a key part of the memory-making process involves the opening of pores, or passageways, that allow for a trickle of calcium atoms to enter neurons in the hippocampus. This trickle of calcium sets off a cascade of changes that leads to potentially permanent alterations in how the neurons look, work and with whom they communicate. Experiences are stored as a result and the brain uses these stored experiences to modify future behavior. Alcohol prevents the calcium pores from opening completely, thus preventing the calcium influx and, presumably, any memories that would have been made at that time are either degraded, incomplete, or completely missing.

By interfering with how these memory circuits work, alcohol creates a void into which the incoming information about what's happening simply disappears. Even if the informa-

tion gets through the loop, it isn't going to be recorded without the calcium, or at least that's what the research suggests.

Several laboratory studies using rat brains suggest that alcohol blocks the opening of calcium channels in the hippocampus more effectively in adolescent brains than adult brains. As a result, smaller amounts of alcohol are needed to disrupt activity in the memory circuits of young, developing brains than adult brains.⁹ Assuming this is also true in humans, it could help explain why blackouts are so incredibly common among adolescent drinkers, and would serve as yet another example of how dangerous alcohol can be for young people. If any other drug, over the counter or prescription, carried even a small risk of causing amnesia, both the public and the FDA would be up in arms. So far, this has not yet been the case with alcohol.

SideNotes

Could a person commit murder during a blackout and not know it?

Donal Sweeney is a physician with decades of experience studying blackouts in clinical practice. His interpretation of the literature is different than the author's, but his book, *The Alcohol Blackout: Walking, Talking, Unconscious & Lethal*, is well worth reading. In it Dr. Sweeney discusses several fascinating anecdotes about blackouts. In one passage, he recounts his interview with a young man sitting in prison for two murders apparently committed during a blackout. The young man was drinking at a bar with friends until they decided to move on. On the way to their next destination, he crashed his car into a guardrail. His passengers headed back to the bar, but he decided to walk home. He recalls nothing else until awakening in bed, in his parents' home, naked, with no clue where his clothes were. A few days later, the news reported that a husband and wife were stabbed to death in the bedroom of their home. The young man's drunken walk would have taken him near the home, the young man and his family once lived in that home, and the slain couple slept in the young man's old room. Could he have done it? A few years later, while attending an Alcoholics Anonymous meeting, the young man told the story and disclosed his fear that he could have been the killer. Someone relayed the story to police, who discovered that his prints matched those found in dried blood in the murdered couple's room.



Make it a night you won't forget,
not one you can't remember

Malternative beverage advertisement circa 2004

By providing such a warning to consumers, the manufacturer acknowledged that their products can shut down memory centers in the brain and produce temporary amnesia. The ad suggests this would happen if a person had six servings rather than two. How quickly the blood alcohol level rises is key here, but six could certainly do it!

Research suggests that there are several factors that can increase one's risk of blacking out, in addition to having a young developing brain. Anything that causes a person's BAC to rise

quickly and reach a high level puts one at risk. The BAC rises quickly when lots of alcohol gets into the bloodstream at once. This could mean drinking on an empty stomach, doing shots, chugging beers, or all three. Being a female is also a risk factor for several reasons, some of them cultural and some biological. In today's society, females are more likely to drink on an empty stomach than males, and they tend to drink beverages with higher concentrations of alcohol than beer, such as mixed drinks, shots and wine. From a biological standpoint, they reach higher BACs than males after each drink due to differences in critical enzyme levels and the amount of free-floating water in the body. In all cases, the best predictor that a drinker will blackout is whether they have blacked out before. Some people seem to be very susceptible to them, while others are relatively resistant to the serious effects of alcohol on memory.

Blackouts aren't necessarily a sign of a problem with alcohol, but they are always a reason for concern. In one of the author's studies of blackouts among college students, we observed that a single blackout doesn't say much about an individual. However, students who had experienced three or more blackouts in their lifetimes had lower grade point averages, started drinking at younger ages, were more likely to have a history of alcoholism on their father's side, and were far more likely to have had friends and/or relatives voice concerns about their drinking. Blackouts should always serve as a good reason to evaluate a person's relationship with alcohol. At the very least, a history of blackouts suggests the person is susceptible to suffering acute amnesia when they drink, which is a good reason on its own to consider altering one's drinking habits!

Alcohol use at colleges and universities

Very few topics related to teens have drawn more media attention than college drinking, in part because more than half of

college students nationwide are not legally old enough to drink. Despite what it might look like on television or movies, there is no epidemic of college alcohol abuse and the problems are not new. However, heavy drinking continues to do damage night after night on college campuses around the country. In most cases, students are able to balance drinking and school work and keep out of trouble. For others, the consequences of overindulgence while at school are disastrous.

During the past decade, the overall level of alcohol use among college students has remained relatively stable. This stability has been maintained by the migration of students into two opposing categories of drinkers – abstainers and heavy drinkers. That is, more and more students are choosing not to drink at college. However, at the same time, the proportion of students who drink excessively (three or more instances per two-week period of having 4+ drinks per occasion for females or 5+ drinks per occasion for males) has also grown.

Colleges have attempted to deal with the growing number of heavy drinkers using a wide variety of approaches. Many have chosen to employ education and prevention models

SideNotes

Rohypnol (“roofies”) and date-rape. Is alcohol enough?

Rohypnol is a drug that is structurally similar to the anti-anxiety drug Valium, but much more potent. Like Valium, Rohypnol can be lethal when combined with alcohol. In recent years, rape and other forms of sexual assault involving acquaintances and alcohol have become common. For awhile, there seemed to be good reasons to think that many attackers used the drug Rohypnol to facilitate their assaults. In England, the Association of Chief Police Officers examined 120 cases of date-rape between November, 2004 and October, 2005. They found a list of other drugs involved, but did not find any sign of Rohypnol. This certainly does not mean that rape involving Rohypnol doesn't occur, it simply suggests that it might not be as common as once feared. At least not in England. According to Det Ch Supt Dave Gee, author of the report, “The most common method of spiking drinks is alcohol.”

like *social norming* – changing how students define normal levels of drinking – which has shown some promise at reducing overall consumption among students. Recent advances in technology have allowed for the development of highly interactive online alcohol education programs, such as *AlcoholEdu*, that combine elements of a variety of programs. Many institutions now require all incoming freshmen to complete such programs either before they arrive on campus or shortly thereafter.

The Drug-Free Schools and Communities Act of 1989 require all institutions of higher education receiving Federal funds to have explicit policies aimed at combating the underage possession, distribution, and consumption of alcohol, as well as the use of other drugs. The specific policies implemented by schools vary considerably. While one might expect an increase in the strength and enforcement of policies to lead to reductions in consumption and the risky behaviors that follow, this is not always the case. In recent years, there has been an increase in the number of students receiving sanctions (e.g., fines, mandatory attendance at alcohol education classes, and community service) for violation of campus alcohol policies, yet the number of heavy drinkers and the negative consequences associated with drinking have remained stable or continued to rise. Indeed, even at schools that completely ban the use of alcohol, nearly 40% of students engage in heavy episodic, or *binge*, drinking.

Such data support the position that dealing with underage drinking, or any risky activity that has taken root in youth culture, requires broad and comprehensive strategies, not just the use of educational initiatives or disciplinary action.

Obviously, drinking by college students is a complex problem, and college administrators have been struggling with it for years. The limited research suggests that strict enforcement of campus drinking policies by campus security might deter underage drinking for those students living on campus. Howev-

er, other studies indicate that most underage drinking occurs in off-campus housing, putting many students beyond the reach of the institution. One study indicates that roughly 37% of underage students who attend off-campus parties drink 5+ drinks, whereas only about 10% of those attending parties in dorm rooms consume alcohol at that level.¹⁰

On the other hand, the conventional wisdom is that many underage college students drink heavily in their dorm rooms before going out for the evening so that they can get their evening's dose of alcohol before heading out onto campus where they might not be able to drink. Many college administrators feel that this type of "front loading" leads students to consume high doses of alcohol over short periods of time – thus increasing their risk of blackouts, injuries, and other adverse effects of high alcohol doses. They would argue that if a student is going to drink five drinks, it would be better to allow them to do that on campus, over the course of a five-hour evening, than to force them to pack it into one hour of front loading behind closed doors. Similar logic led to changes allowing pubs in England to stay open all night in the hope that patrons would space their drinks rather than binge. By all accounts, the move has failed to achieve its objectives and has contributed to an increase in alcohol-related problems in the country. It turns out that patrons just stay and drink longer! There is no reason to believe that colleges would have better luck keeping kids safe from harm by making it easier for them to drink, at least not in the current culture, which seems to promote and glorify drunkenness rather than moderate consumption.

In-bound college students bring their drinking habits with them

Heavy underage drinking is a problem that colleges often inherit rather than create. Many heavy drinking students begin

doing so well before they arrived on campus. Several studies, including some of the author's own, have reported that students' drinking habits during high school predict their drinking habits at college and their likelihood of experiencing alcohol-related consequences. Students that drink heavily during high school generally continue drinking heavily during college.

Clearly, prior to arriving at college, the responsibility for establishing and enforcing rules regarding alcohol use rests on the shoulders of the students, their parents, and the communities in which they live, not the colleges that they will later attend. Quite simply, if parents are unable to control alcohol use by their college-bound high school students, it is unreasonable to assume that the administration of a college will be able to control them once they arrive on campus. Efforts to deal with the problem must consist of more than administrative decision-making and policy enforcement.

Once students arrive on college campuses, nearly all are legal adults, even if they are under the legal drinking age. As such, students themselves are responsible for their behaviors and any consequences that follow – not their parents and certainly not the universities they attend. The role of colleges should be to create and maintain healthy environments for all students, doing their utmost to minimize problems such as underage drinking. However, colleges cannot control the lives of their adult students and they are not responsible for the decades of experience students have before arriving on campus. Ultimately, it is up to parents to do all they can to send their kids off to college prepared to make healthy decisions regarding alcohol.

The damage done by irresponsible college drinking

As the number of heavy drinkers on campuses has increased, so has the incidence of alcohol-related problems

among students. As is the case with high school students, college students experience, and cause, a wide range of negative consequences as a result of alcohol misuse.¹¹ Alcohol increases the odds that college students will commit crimes, including vandalism and physical assault, and non-drinkers routinely suffer from other students' irresponsible drinking. The more a student drinks the lower his or her overall GPA is likely to be. More than 1/2 of students in one nationwide survey reported having their studying or sleep disrupted by someone else's alcohol use. In addition, as in the larger population, drinking and driving is a problem on many campuses. Traffic crashes claim more lives than any other cause among young people, and alcohol is involved in a significant proportion of these crashes.

While these statistics are stark, and clearly indicate that alcohol misuse is a problem on college campuses, it is important to recognize that not all college students misuse alcohol. Yes, some college students drink irresponsibly and do great harm to themselves and/or others. But it is unfair to assume that all college students are drunkards. Indeed, the data tell a much different story. The majority of college students either do not drink or do so without causing problems. Indeed, African American students, whether on diverse campuses or at historically black colleges and universities, tend to drink far less than their Caucasian counterparts. However, based on media reports, it is easy to understand why so many people believe that the majority of college students drink to excess. It is virtually impossible to read the paper or turn on the news these days without hearing ominous statistics about the supposed epidemic of alcohol abuse on college campuses.

The recent legal debacle involving Duke Lacrosse players highlights many of the problems with college drinking, and the fact that small groups of people misusing alcohol can do big damage to a school, its reputation, and its relationship with the

surrounding community. In the spring of 2006, the players had a raucous party at their off campus house, wedged between the University and the surrounding town. This wasn't the first loud party the players had. In fact, this small group of young men – all white except for one player – was responsible for a disproportionate number of complaints filed by citizens against Duke students in off campus housing. At this particular party, the boys hired two strippers from the area, both African-American. One of the strippers emerged from the party alleging that she had been berated, humiliated, and forcibly raped in a bathroom by several players. The public outcry was tremendous. Three players, including the team captain, were eventually charged with rape and kidnapping by an overzealous District Attorney (DA). Shortly after the DA won re-election, it became clear that there was simply not enough evidence to pursue legal charges against the boys. Still, the DA stuck to his guns until, humiliated by the ineptitude of the investigation, and his own inappropriate public statements early in the case, he turned the case over to the North Carolina Attorney General. After a thorough investigation the Attorney General dropped all charges, apologized to the wrongly-accused players, and referred to the DA as a “rogue prosecutor.” Ethics charges against the DA were filed and he was eventually stripped of his license to practice law in North Carolina. The truth was a welcome relief to the University and friends of the players.

Despite the fact that the case against the lacrosse players was without merit, and they were not guilty of the charges, the situation brought several problems associated with off-campus drinking to the forefront. Underage drinking is a problem at Duke, as it is on other campuses. The party attended by the strippers was certainly not the first obnoxious party held at the Lacrosse team's house. Hopefully, a new movement toward changing the drinking culture on Duke's campus has enough

momentum to be effective and the strained relationship between Duke and the surrounding community can be healed.

The trouble with binge-drinking

When it comes to underage drinking issues, particularly at the college level, media reports tend to focus on “binge-drinking.” When used colloquially, the term “binge” implies consuming large amounts of alcohol in a relatively short period of time. But how much alcohol, and how much time? In Europe, the term “binge” is often used synonymously with the word “bender,” which means getting drunk, and staying that way for days. In the U.S. the term binge has come to mean something more specific – four or more drinks (4+) per occasion for females and five or more drinks (5+) per occasion for males. These thresholds might seem too low to some people, but that is really just a semantic argument. The thresholds were established in a rigorous, scientific way and do have some practical meaning.

In the 1980s and 90s, Henry Wechsler and his colleagues at the Harvard School of Public Health measured levels of drinking among college students as well as rates of alcohol-related consequences, like hangovers, sexual assaults, and others. They observed that the risk of experiencing alcohol-related negative consequences goes up when females hit the 4 drink mark and males hit the 5 drink mark – hence the 4+/5+ definition of a “binge.” It is estimated that roughly 45% of college students nationwide meet or exceed this threshold at least once every two weeks. The author’s own research findings concur with that estimate.

A panel assembled by the National Institute on Alcoholism and Alcohol Abuse (NIAAA) recently recommended modifying the one-dimensional definition of binge drinking offered by Harvard to take blood alcohol concentrations (BAC) into consideration. The modified definition adds a time frame, a

two-hour period, during which the 4+/5+ threshold must be reached. Theoretically, this pattern of consumption could lead the average male or female to achieve a peak BAC level of roughly 0.08%, though actual BAC readings could be much higher or lower depending on the factors discussed above.

The new definition is better than the old one, but it still falls short. Like the Harvard definition, the NIAAA definition still places all drinkers that reach a certain threshold, now 4+/5+ drinks in a two hour period, into the same category. Without further refinement, according to that definition a student that barely reaches the legal limit for operating a motor vehicle would be classified the same as a student that overdoses on alcohol and dies. The same level of risk is assigned to all students that cross the threshold regardless of how far beyond the threshold they go.

This creates a number of problems that can hold back our understanding of, and thus our ability to respond to, risky drinking. In the fall of 2004, Samantha Spady, a 19 year old student at Colorado State University, died of an alcohol overdose. She was one of at least five students around the country to do so that year. News reports sprung up overnight linking her death to binge drinking. No doubt about it, she did engage in binge-drinking that night. But, rather than stopping at or around the four drink threshold, Samantha consumed an estimated 40 drinks during the hours leading up to her death. That's ten times the binge-threshold. Tying her death to binge-drinking over-inflates the risks posed by consuming four drinks of alcohol, and unfairly demonizes students who drink alcohol and technically fall into the binge drinker category but do not go to such extreme levels of consumption.

The author and his colleagues have long been intrigued by the fact that the standard binge definition simply lumps students into a few categories without measuring how far

students go once they enter the binge category. To address this question, they analyzed survey data from over 10,000 first-semester college freshmen.¹² In the two-weeks preceding the survey, roughly one in five freshmen males actually consumed 10+ drinks and one in 10 females consumed 8+ drinks, twice the binge-threshold. This tells us that using a simple binge definition is just too simple. There is limited utility in dividing all students into two categories – binge and non-binge. Differences in how far students go once they cross the binge threshold are just too great. We need to begin looking at specific drinking levels, or at least begin dividing drinking levels more finely than just binge or non-binge. Doing so will go a long way toward identifying students at particular risk of experiencing and causing consequences and could allow schools to make better decisions about how to allocate their limited resources for dealing with alcohol misuse on their campuses.

Spring break hype

Nothing seems to conjure images of the debauchery of college drinking better than the concept of “Spring break.” Over the years, spring break has become synonymous with drunken, irresponsible behavior. Every spring, the media saturate us with images of bikini clad young women and buff young men wandering around the planet’s beaches with cups of beer in their hands. Add some wet t-shirt contests and spring break coverage is sure to draw in viewers.

Spring break is huge business, not just for the cities receiving students, but the travel agents sending them there and the cable channels covering the events. A quick perusal of websites for spring break trips reveals a multitude of all inclusive packages for students, many of which include unlimited drinking at a variety of clubs for the entire duration. And many of the

students to whom the packages are sold are quite underage according to U.S. laws.

Unfortunately, the media always focus on the festivities that occur during spring break, not the consequences that occur during the breaks or after. Spring breakers not only do damage to their livers, they also wreak havoc in spring break hotspots. An estimated 150,000 to 200,000 students, hell bent on partying, descend on Cancun alone each year. The damage they do is noteworthy! According to one article:¹³

“The U.S. Consulate in Merida, Mexico, whose territory includes Cancun, says that during the eight-week spring break period in 2002, U.S. students accounted for two deaths, 360 arrests, four injuries that required medical evacuations out of the area, one rape, 495 reports of lost or stolen property and 504 ‘general welfare inquiries’ — usually from parents back in the USA who were worried about a student’s whereabouts.”

Those are just the crimes and consequences that the host government documents. The weeks following spring break are extremely busy for campus health centers and local doctors, who have to deal with the spike in pregnancies, abortions, and cases of sexually transmitted infections that result from all of that drunken decision-making. Exact numbers can’t be known due to confidentiality concerns, but it is likely the numbers would not be comforting.

While stereotypical spring break trips do happen, and the consequences are real, much of the hype surrounding spring break is just that – hype. A few years ago, a student in one of the author’s classes told him an interesting story about her spring break experience in Jamaica. She said that she walked out onto a

sparsely populated beach and noticed a small group of people crammed into a small area of sand, with TV cameras focused on them. It was MTV and they were clearly trying to capture footage that American consumers wanted to see – kids going crazy on their wild spring break trip to Jamaica. Few advertisers would pay to push their products in between footage of an empty beach in Jamaica, so they were apparently trying to create the illusion of craziness as best they could. This is certainly not to suggest that spring break trips are Zen-like experiences for most students. The point of these trips is often to go to some far off place and get drunk repeatedly over a period of a week. However, the public do not see episodes of MTV's show, *Spring Break*, in which students volunteer to build homes for the homeless, deliver food aid in foreign countries, and so on. They simply see craziness, even if it has to be manufactured by the media to give the public what they want. A little digging quickly turns up plenty of alternatives to stereotypical spring break trips, like working for Habitat for Humanity, going on a backpacking trip, sight-seeing that does not include beaches and bars, or even going to beautiful spring break-like destinations that don't draw very many spring breakers.

A few years ago, the folks at MTV decided to take their *Real World* program concept and extend it to a spring break trip to Cancun. In fact, they called it *The Real Cancun*. The pseudo-documentary captures and displays many of the stereotypical spring break activities, including wet t-shirt contests, drunken club hopping, drinking on the beach, etc. It is referred to here as a pseudo-documentary because the footage does not capture the normal behaviors of spring breakers in their natural habitat. The producers created many of the scenarios in which the kids, all of whom were underage according to U.S. alcohol laws, acted out their hedonistic fantasies. They chose the cast, paid for the trip, and enabled their antics.

This story is mentioned because it serves as a perfect example of how the media sometimes encourage and then exploit the adventures and misadventures of kids in order to make money, regardless of the cost to the kids. In one scene, two of the characters are shown and heard, briefly, having intercourse that was captured on night-vision cameras in their rooms. Both cast members were intoxicated at the time. Another cast member on the *The Real Cancun* was a reserved 18-year-old who had never had alcohol and did not plan to do so on the trip. The producers were complicit in situation after situation in which he was pressured by peers to drink until he finally caved. What if something tragic had happened as a result? What if he goes on to become an alcoholic after blowing his plans to stay alcohol-free? From an ethical standpoint, despite the fact that the kid was 18 and agreed to be on the program, the producers would have been more than a little responsible for his fate.

Do alcohol ads increase consumption?

No discussion of underage drinking would be complete without examining the role that advertising plays in shaping and molding kids' attitudes toward alcohol and their expectations about what alcohol will do for their lives. The purpose of most advertisements is to convince us that the quality of our lives will improve if we use a particular product. One of the author's personal favorites is a Hummer commercial in which a humus eating thirty-something male "reclaims his manhood" simply by buying a Hummer. Clever, yet transparent.

Many ads, including the Hummer commercial, are designed to make us feel uncomfortable with our current lives. Once that has been accomplished, the pitch is made. This involves telling us how our lives could be better if we would only buy their particular products or use their particular services. Deodorant commercials fit perfectly into this category. In

deodorant commercials, characters are often rejected because of their smell, only to find acceptance once the deodorant is applied. Alternatively, those who apply the deodorant before socializing are instantly accepted.

Other ads, like those for alcohol, try to sell us products by telling us, or showing us, what awaits us if we use them. Some ads suggest that drinking will instantly make our lives, including our romantic lives, more exciting. Some suggest that we will feel refreshed – a reasonable pitch despite the fact that alcohol is a depressant! Alcohol ads are notorious for pairing scantily clad, attractive young women with their products. This is smart marketing, as simple classical conditioning ensures that young brains will learn to associate the two in memory.

Do such ads actually cause people to drink more? Research has so far failed to reveal a clear-cut relationship between alcohol ads and alcohol use – though some studies suggest that some alcohol ads are appealing and quite familiar to children. Recently, researchers at the University of Connecticut reported a correlation between the number of alcohol ads viewed by teens and their levels of alcohol drinking.¹⁴ A similar relationship was found between industry advertising expenditures per state and the drinking levels in those states. While these findings are suggestive, they do not establish a causal link between alcohol advertising and the amount of alcohol that people consume.

Rather than recruiting new users, it makes more financial sense for a beverage company to use ads in an effort to grab market share. Americans spend more than \$120 billion on alcohol every year, \$50-\$70 billion of which is spent on beer. A company stands to make far more profit by stealing a few percent of the market away from a competitor than by causing a few abstainers to start drinking. For instance, gaining 0.5% of a

\$50 billion market would generate an extra \$250 million for a company.

If alcohol ads do not cause non-drinkers to start drinking alcohol, then what's the harm? The constant stream of ads reinforces the false perception that everyone drinks and that alcohol is so safe that it is not even considered a drug. Companies promise short-term scratches for adolescent itches, including instant fun and social acceptance. Their marketing tactics transmit and reinforce social messages that the world could do without. Beer commercials, and now new liquor commercials, promote the expectation that alcohol and sex go together perfectly, and yet society is still figuring out how to deal with sexual assault, teen pregnancy, and the spread of sexually transmitted infections related to alcohol use. The vast majority of teens and adults are unaware of the laws regarding sexual contact with females who are intoxicated. Beer commercials only serve to confuse the issue by promoting, implicitly and explicitly, the use of alcohol to facilitate sexual encounters.

There is reason to be concerned that such commercials might affect how male teens view and treat women, or how young women view themselves. These would be concerns regardless of whether the ads influenced drinking choices at all. How many beer commercials have you seen that send the message that women should be treated with respect? In many ads, women are shown as the prize that men will receive for drinking a particular brand of beer. All of this is done without any warnings that things could go terribly wrong. Beverage manufacturers are not required to list potential side effects, health effects, or drug interactions in their ads, despite the powerful, and often disastrous, consequences that routinely follow purchasing and consuming their products.

Beverage manufacturers should be allowed to advertise just like everyone else. But they also have a responsibility to list

the potential side effects, warnings about drug interactions, and appropriate serving size information on their products. The logic is simple and the proposal seems sensible. When companies sell potentially hazardous products, they simply must do all they can to protect consumers from the harm their products may cause.

Booze in the barracks

High school and college students are not the only young people dealing with alcohol related issues. Many military men and women begin their service as adolescents, and estimates suggest that more than 25% of military personnel aged 18-25 engage in heavy drinking one or more times per week. In many ways, 18 marks the dawn of adult-like responsibilities, but it does not necessarily mark the end of adolescence – certainly not from a neurological standpoint. Healthy 18 year old recruits can follow directions well. But what about when their fingers are on the triggers and they have to decide, in a split second, whether to fire or hold fire? We have already discussed the impact that immature frontal lobes can have on impulse control and decision making. We have also seen that young brains are more likely to interpret emotional expressions on other's faces as indicating fear and other negative feelings. When the adrenaline is pumping, it is a lot to ask of an 18 year old to make split second, and accurate, decisions. Add alcohol, or hangovers, which we know cause problems with attention and can make fingers unsteady, and the possibilities are unsettling.

The amount of pressure experienced by young recruits is difficult to imagine, and many young soldiers, like their non-military peers, drink alcohol to excess. This fact simply evades public discourse about alcohol until something newsworthy happens, and then soldiers are often characterized unfairly as drunken brutes.

Soldiers represent an additional source of income for beverage manufacturers. As is the case with civilians, the cost of the damage done by alcohol abuse among soldiers is picked up by tax payers – not by the companies selling the products.

How much does it cost? A 1997 report from the Office of the Inspector General of the Department of Defense concluded the following:¹⁵

“In FY 1995, the military retail system generated alcoholic beverage sales of about \$600 million and realized gross profits of about \$164 million. However, DoD costs for health care associated with the detection, rehabilitation, and treatment of active duty, retiree, and dependent personnel with alcohol related diseases and injuries were about \$557 million. The lost productivity costs for active duty personnel hospitalized for alcohol attributable disease was approximately \$13 million for the same period. Non-DoD societal costs for alcohol related incidents attributable to active duty, retiree, and dependent personnel were roughly \$396 million.”

Note that the estimate of beverage sales does not include money spent on booze off base.

Additional research has shown that the stress of deployment, even for non-combat missions, leads many soldiers to increase their consumption in an effort to deal with the strain. Recreational drinking is a common means of escape and relaxation for soldiers, many of whom are fresh out of high school. This usually occurs without incident. However, as is the case in the civilian world, when rapes, murders, and other violent offenses occur, alcohol is often involved. As in the larger society,

in the military, the cost of alcohol overshadows the amount of money spent on it.

Alcohol and young brains

The social and direct health consequences of underage drinking should be sufficient to compel the conclusion that we should work hard to keep alcohol out of the hands (and brains) of our kids. A rapidly growing stack of literature suggests that alcohol affects adolescents differently, at a neurological level, than adults, adding further reasons to view alcohol as inappropriate for kids. These data will be reviewed very briefly here.

Studies with both rats and humans suggest that the adolescent brain is affected differently by alcohol than the adult brain in both short-term and long-term ways. Here are some of the key findings from research on the topic, with the species studied included in parentheses:

- Adolescents sustain more brain damage following a lengthy drinking binge than adults (rats)
- Alcohol prevents new cell birth in the brain more potently in adolescents than adults (rats)
- Alcohol impairs memory more in adolescents and young adults relative to adults (rats and humans)
- The brain circuitry involved in memory, including the hippocampus and frontal lobes, is more vulnerable to damage by alcohol abuse in adolescents than adults (rats and humans)
- Alcohol produces less sedation, or sleepiness, in adolescents and young adults than in adults (rats and personal experience!)

- Alcohol impairs balance less in adolescents and young adults relative to adults (rats and some human work)
- Alcohol abuse during adolescence alters the way the brain responds to alcohol later in life, leading to an increased risk of dependence and alcohol-induced memory impairments (rats and humans)
- Repeated drunkenness leads to lingering deficits in cognitive functions like attention and decision-making (humans)

Differences in how alcohol affects adolescent and adult brains could help explain why those who start drinking at young ages are more likely to become alcoholics than those who delay the onset of drinking until young adulthood.¹⁶ Researchers at NIAAA, led by Dr. Ralph Hingson, examined data from 43,000 U.S. adults aged 18 and older. Overall, those who started drinking by the age of 14 were much more likely to become dependent on alcohol at some point in their lives (47%) compared to those who waited until they were 21 or older (9%). The study also suggests that earlier drinking is associated with a broader range, and greater severity, of alcohol related problems. The prognosis is simply poorer for those that start drinking at an early age. It seems these data provide a compelling argument that delaying the onset of drinking among kids should be an important component of any strategy aimed at reducing alcohol abuse and dependence.

The pivotal question, of course, is whether kids that start drinking early are driven to drink at a young age due to family history or some other genetic or environmental contributions, or if the early exposure itself leads to a higher propensity for alcohol abuse. Dr. Hingson's study revealed that age of onset was a significant predictor of alcohol dependence *even after* family

history and several personality variables were statistically controlled for, suggesting that the age at which the brain is first exposed to alcohol really does influence the odds of developing a problem with alcohol down the road. Hopefully, future work will tell us more about how age of onset contributes to problems with alcohol. But, for now, we do know that the association exists, and it can be a persuasive component of alcohol education, whether such education occurs in schools or around the dinner table. While the nature of the relationship between age of onset and alcoholism remains

unclear, there can be no doubt that trying to delay the onset of drinking is a worthwhile effort.

SideNotes

Who cares about rats?

Much of the available data on the potential brain damage caused by exposure to alcohol during adolescence comes from studies done with rats. How relevant could such data could possibly be to the human condition? After all, rats and humans are not exactly the same. The truth is that most of what we know about how all drugs—prescription and illicit— affect the brain has been gleaned from research with rats. Research on Fetal Alcohol Syndrome serves as a prime example of the sometimes beneficial interplay between human and rat research. We know that women who drink during pregnancy can give birth to children with physical and/or cognitive abnormalities. Yet, there is no *proof* from the human work that alcohol *causes* the symptoms seen in Fetal Alcohol Syndrome. However, rat research, in which pregnant rats are given alcohol and their offspring are studied, provides support for the damaging effects of alcohol on the developing fetus. It is true that rats are not humans, but our brains are similar enough that insights gleaned from rat research can be used to guide hypothesis-driven research with humans.

Drinking and driving – bringing the laws in line with the science

If we held a conversation with every adult in the country simultaneously, it is unlikely that very many people would disagree that operating a motorized vehicle, any kind of moto-

rized vehicle, after drinking is dangerous — so dangerous in fact that it shouldn't be done, people should be educated about the risks, and laws preventing it should be enacted and enforced. If only it were that easy.

In the U.S., adults are technically allowed to drive cars after drinking until their BAC levels reach 0.08%. The legal threshold has decreased over the years, thanks in part to extremely hard work by Mothers Against Drug Driving (MADD), but the limit is still out of step with the science. Some of the abilities needed to drive effectively are impaired at BAC levels as low as 0.02%, others fall off at levels around 0.04%; one-quarter to one-half of the current level at which it is legal to drive! Indeed, 0.02% is the legal limit enforced in some European nations. By the time a person, particularly a light drinker, reaches 0.08%, there aren't any driving related skills left unimpaired. Because of this, driving at or near 0.08% is extremely dangerous. It is true that most fatal accidents caused by drunk drivers occur at BAC levels higher than 0.10%, but that doesn't negate the fact that driving at 0.08% is quite dangerous.

While gearing up to do a study in which college students were administered enough alcohol to raise their BAC levels to about 0.08%, the author mixed himself the cocktail he would be giving students, ingested it, and measured his BAC level to see how impaired he felt at this dose. There is no way he could have safely operated a motor vehicle at that level, not that he's the safest driver on earth sober, either! The reader might be surprised how intoxicated they would feel at 0.08%. For a 200 pound man, reaching that limit requires consuming 4 or 5 drinks in a one-hour period. That's more than just having a drink or two at dinner with friends.

For adolescents between the ages of 15-20, motor vehicle crashes are more likely to claim their lives than anything else. While they make up only 7% of the licensed drivers in the

country, people in this age range account for 20% of all traffic fatalities. Nearly a third of drivers aged 15-20 that are killed in fatal crashes were drinking at the time. The majority, 75%, had BAC levels below 0.08% - the legal limit for adults.

Every state in the country now observes zero tolerance laws for underage drinking and driving. If you aren't old enough to buy alcohol, then it is illegal to drive with any detectable amount of alcohol in your system. While the limit is technically 0.00%, some states use thresholds as high as 0.02% or 0.03% to account for error in the measuring devices. These laws are only useful if they're enforced, both in terms of arrests and in terms of sentencing.

Regardless of how stringent the laws are, and in spite of a drop in teen drunk driving fatalities over the years, a large percentage of young drinkers continue to drink and drive. This includes many students on their way to some of the best colleges in the country. In a recent study, the author examined alcohol consumption and alcohol-related consequences

SideNotes

The tragic and inspiring story of athlete Mark Zupan

Mark Zupan is a quadriplegic wheelchair rugby, known as murderball, superstar. He was also a central focus of the compelling documentary, *Murderball*. Mark began playing murderball after a surreal drunk driving crash left him completely paralyzed from the waste down and with minimal use of his arms. At 18, Mark was a college soccer player on scholarship. After drinking heavily at a bar, he stumbled into the parking lot, climbed into the back of his friend's truck, and passed out. His friend, drunk himself, later left the bar unaware that Mark was in the back. On the way home, the truck spun out on a highway and struck a tree. Mark was thrown from the bed of the truck, over the tops of some trees, and into a ravine. His neck was broken, but he somehow managed to hold on to a branch for 14 hours, covered from head to toe with red ants. Until he was spotted by an employee on his lunch break the following day, no one was aware that Mark was missing or that he had been in the back of the truck. He has made the most of his life since, accomplishing more than most people in perfect health could possibly do and he seems to have a great deal of fun doing it. He has also forgiven his friend, the driver, who is still working to forgive himself.

among college-bound students during the summer between high school graduation and their first college semester. Roughly 12% of students, both male and female, drove after drinking at least once during a two-week period. That is way too high. Perhaps if these bright and motivated students understood the true impact of alcohol on driving-related brain functions, some would re-think the decision.

With enough effort, healthy morays surrounding drinking and driving could become engrained in the culture. Indeed, there is certainly more awareness about drinking and driving now than at any time in the past, and rates of drinking and driving have declined. Much more can be done to reduce these rates even further. Modifying and enforcing the laws is one part of the process. But the rest has to do with communicating the risks and consequences to teens in a way that motivates them not to do it. As is always the case, parents are the first line of defense here, and should lead the way in teaching kids to avoid combining alcohol and things with engines.

Over the years, the alcohol industry has spent a portion of its riches promoting designated driver programs. Do they work? Sound scientific data are lacking, but the programs deserve a close look. Essentially, the message from the industry is that it's okay to go to bars or parties and get drunk, just make sure someone else drives you home. Designated driver ads do send the message that getting drunk and driving is a bad idea. However, they also imply that getting drunk is perfectly fine, as long as there isn't any driving involved. The alcohol industry, like other for-profit industries, is motivated to make money. As such, the true intentions of all voluntary endeavors, like the promotion of designated driver programs, should be considered carefully.

What can parents do about underage drinking?

Moderate consumption of alcohol can be part of a healthy adult lifestyle. However, the odds go up that drinking will become a problem down the road the earlier one starts. Alcohol can also interfere with healthy adolescent development in several ways, such as by increasing the risk of injuries, car crashes, violence and sexual assaults, and perhaps by altering adolescent brain development. By delaying the onset of drinking as long as possible, the chances increase that a developing adolescent will be able to enjoy a healthy relationship with alcohol during their adult years.

As with other drugs, parents are the first line of defense in protecting kids from the damaging effects of alcohol. Early and honest discussions with kids about the potential impact of alcohol on developing brains combined with early detection of alcohol use and abuse and healthy adult modeling are central to minimizing the risks. The right balance of establishing and enforcing rules, encouraging teens to explore and spread their wings while making good decisions, and establishing strategies to help get them out of dangerous situations in a hurry, can help protect their brains and allow them to reach their full potential.

Before initiating a discussion with your teen about alcohol, get prepared. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) suggests that answering the following questions can help parents assess how prepared they are.

Yes___ **No**___ Do you know how to discuss alcohol with your child and where to get information to help you?

Yes___ **No**___ Do you know your child's friends, and do you feel that they provide positive influences on your child's activities?

Yes___ **No**___ Do you know the extent of drinking by children in your neighborhood and how to find local organizations that are working on the issue?

Yes___ **No**___ Do you know the legal consequences if your child is caught drinking alcohol?

Yes___ **No**___ Do you know your State's laws about providing alcohol to anyone under 21?

If you answered “no” to the first question, about where to find information, the author recommends beginning at the homepages of either NIAAA (www.niaaa.nih.gov) or SAMSHA (www.samsha.gov). A particularly helpful SAMSHA website called “Family Guide” can be accessed at www.family.samhsa.gov. Remember that you do not have to be an expert on these topics. If your child raises questions that you don't have the answers to, tell them you'll find the answers. Relay the information to them once you do. Alternatively, search for the answers on the Internet with your child. This strategy provides additional opportunities to discuss issues like drinking with your kids.

As we have discussed in previous sections, there is something about family dinners that serve as protective factors against teen drinking. Specifically, kids who have dinner with their families on a nightly or near nightly basis are less likely to drink and engage in other risky behaviors than kids who eat alone. Why this is, no one knows for sure, but it probably has more to do with the conversations that take place around the table than the actual eating part. If you eat dinner as a family, it's

a perfect time to have conversations about your child's life and to be proactive, discussing topics that are not yet a big deal in the child's life but might be soon. This can help your child establish healthy expectations for the future and for parents to establish policies. Discussing driving in the year before the child begins the process of earning a drivers license is a good example.

Acronyms often spell cute and condescending words – but they can be helpful for remembering strategies for communicating with teens about alcohol and other pertinent issues. The U.S. Department of Health and Human Services recommends a strategy known as “WISE” to help facilitate discussions with teens about risky behaviors.

“**W**” is for “**Welcome**”

Be available and treat your adolescent with trust and respect. Whether you know it or not, you are the most important resource that your child has.

“**I**” is for “**Interest**”:

Ask your teens questions that show your interest in their opinions, friends, school, etc, and do it in a non-judgmental manner. Let your teen talk freely about his or her concerns and experiences. Remember that this is a golden opportunity to let them tell you what is on their minds.

“**S**” is for “**Support Good Goals**”

Talk with your teen about their goals for the future and support those that are healthy. Let them know about your hopes for them. Set high expectations for them. Data show that our teens want to know what we expect of them.

“**E**” is for “**Encourage, Educate and Empower**”

Give your teen the guidance, information and skills they need to be successful

Like other strategies, this one works best when healthy lines of communication already exist. Indeed, we know that children are less likely to drink or engage in other risky behaviors if they feel connected with their parents. Even if things are rocky at the moment between you and your teen, the WISE strategy can help get things on track.

Humans seem most content when we can predict the future. We would rather know that a major stressor, like an exam or surgery, is coming up rather than being hit with it out of the blue. Life for teenagers is a rollercoaster ride. Their bodies and their social worlds change so much that it can be dizzying for everyone. A structured home life with set rules and expectations might seem annoying to some teens, but it will probably help them to thrive in the long run.

It is a good idea to establish, and perhaps even post, a set of house rules. They don't necessarily have to contain anything specific about drinking, but that can help. These rules make everyone's expectations clear, and can serve as a contract of sorts between parents and kids. Thus, if rules are broken there are no surprises. Here are some tips for creating your House Rules and strategies for disseminating and enforcing them.

1. Rules should be clear, fair and consistently enforced
2. Discuss the rules and be certain that your teen understands what you expect
3. Make consequences clear
4. Do not modify rules on the fly even if your teen complains (this is part of their job!), just keep referring them back to the list
5. Remember that rules create valuable structure

and help teens feel safe, no matter how much they moan about it!

Once house rules are established, the work begins for both parents and teens. Parents must help to ensure success by structuring circumstances in ways that are consistent with the rules. For instance, if the rule regarding alcohol use is that it isn't acceptable, then we should try to guide teens away from alcohol and reinforce their decisions not to drink. This can be accomplished by following some additional suggestions, gleaned partially from the U.S. Department of Health and Human Services:

1. Encourage supervised group activities. Know and support the groups your teen participates in. If you do not approve, do not let your child go.
2. Make sure your teen is not spending too much time in unsupervised activities. Sports, tutoring, and even after-school jobs are positive ways to ensure that your teen is safe and productive during the after-school hours. Kids involved in extracurricular activities are less likely to drink, do other drugs, or engage in other risky behaviors.
3. Form a pact with your teen that you will pick him/her up if they ever find themselves in an uncomfortable or potentially dangerous situation. If you are so inclined, agree not to ask your teen questions about their evening until the next day. This could reduce the teen's resistance to the idea of calling you for a ride.
4. Determine a set list of questions that must be addressed before you agree to let your teen leave for an outing. If they won't answer the ques-

tions, or don't answer them honestly, they can't go. Such questions could include:

- Where will you be?
- What will you be doing?
- Who will be there?
- When will you be home?
- Will adults be present?
- How can I reach you?
- When will you call to check in?

5. Be available to talk to your teen regularly. Attempts to initiate discussions with teens can often be met with high levels of resistance. Keep trying. Good communication supports good decisions.

We all want teens to make the journey through adolescence with as little discomfort as possible for everyone involved. There are no magic recipes for success and we simply cannot protect them the way we did when they were children. We will eventually have to let them go. Adolescence is the training period – for us as well as them. The main trick seems to be using a combination of unconditional love and conditional support. Kids who know they're loved but also know the rules will fare much better than those without overt love and with no structure or consistent enforcement of rules.

Should parents let their kids drink at home?

You might be surprised how common it is for parents, particularly affluent parents, to allow teens – theirs and other people's – to drink in their homes. Prom parties and high school graduation parties are common examples of when this might

happen, but typical weekends are fair game for these folks, too. Is that legal? Under most circumstances, no. At present, 32 states have laws on the books, called “social host” laws, forbidding adults from allowing people under 21 to drink in their homes. To check your state’s laws, please visit this page on the Mothers Against Drunk Driving website – www.madd.org/laws. Keep in mind that, even if such laws haven’t been passed at the state level, your city or community might have its own ordinances outlawing teen drinking in your home.

An article in the Chicago Sun Times discusses a situation that represents a worst case scenario. In October, 2006, two Chicago area parents allowed teenagers to drink in their basement to celebrate homecoming. After leaving the party, one of the teens, an 18 year old student, crashed his car into a tree near the home – killing himself and the passenger. The parents, Jeffrey and Sarah Hutsell, were charged with allowing the teens to drink in their basement. The Hutsells lived in a nice neighborhood and were characterized by neighbors as very decent people. The guilt they feel must be overwhelming. They certainly didn’t intend for the party to end that way. In a similar, equally tragic case, three teens were killed in a drunk-driving accident in Pennsylvania in 2003 after leaving a party hosted by a parent. The parent was sentenced to 1 – 4.5 years in prison for involuntary manslaughter.

“Not sharing alcohol with your children is a risk factor for binge drinking”

- Stanton Peele, CNN.com
Sept 28, 2007

“What??”

- Author of this book

These examples should serve as strong warnings. It might seem sensible to let teens drink in your home so that they don’t do it on the street, but it’s a very slippery slope, and one best staying off. Even if you can prevent teens from leaving your basement and getting behind the wheel of a car, your

presence upstairs cannot always prevent overdoses, vomiting, death, sexual assaults, and some of the other unpleasant things that can stem from teen drinking. In addition, allowing other kids to drink in your home sends very mixed messages about underage drinking, and potentially undermines the efforts of other parents. It would certainly violate their trust, and place you at risk for law suits. In short, if you're thinking about letting teens drink in your home, or at a party hosted by you for any occasion, it's best to reconsider. You might seem cool to the kids, but you could seem like a criminal to the community.

One of the confusing issues that make it difficult for parents to decide how to deal with drinking in their homes has to do with teen drinking in European countries. The general perception here in the U.S. is that parents in European countries have the adolescent drinking thing figured out. Here's the logic:

- Their teens can drink — ours cannot.
- Their teens drink in moderation — ours drink to get drunk.
- So, if we let our teens drink — at least at home — they will learn to drink in moderation like the European kids.

Even if the logic seems to work, the basic premise is flawed. First of all, the U.S. and Europe are different. Secondly, there are large differences between teen drinking habits across European countries. And the perception that European cultures, in general, have the problem under control is simply inaccurate. Let's look at the data.

The European Union (EU) recently commissioned a report on alcohol use among its 25 member states. The report was released in June, 2006. Among EU members, the average age of first drink was 12.5 and the average age of first drunkenness was 14. In Denmark, 70% of 15 year olds were drunk at

least twice in the year before the data were collected. U.S. kids look like teetotalers by comparison. In the 2005 Monitoring the Future Study, 34% of 10th graders in the U.S. reported being drunk at least once in the previous year.

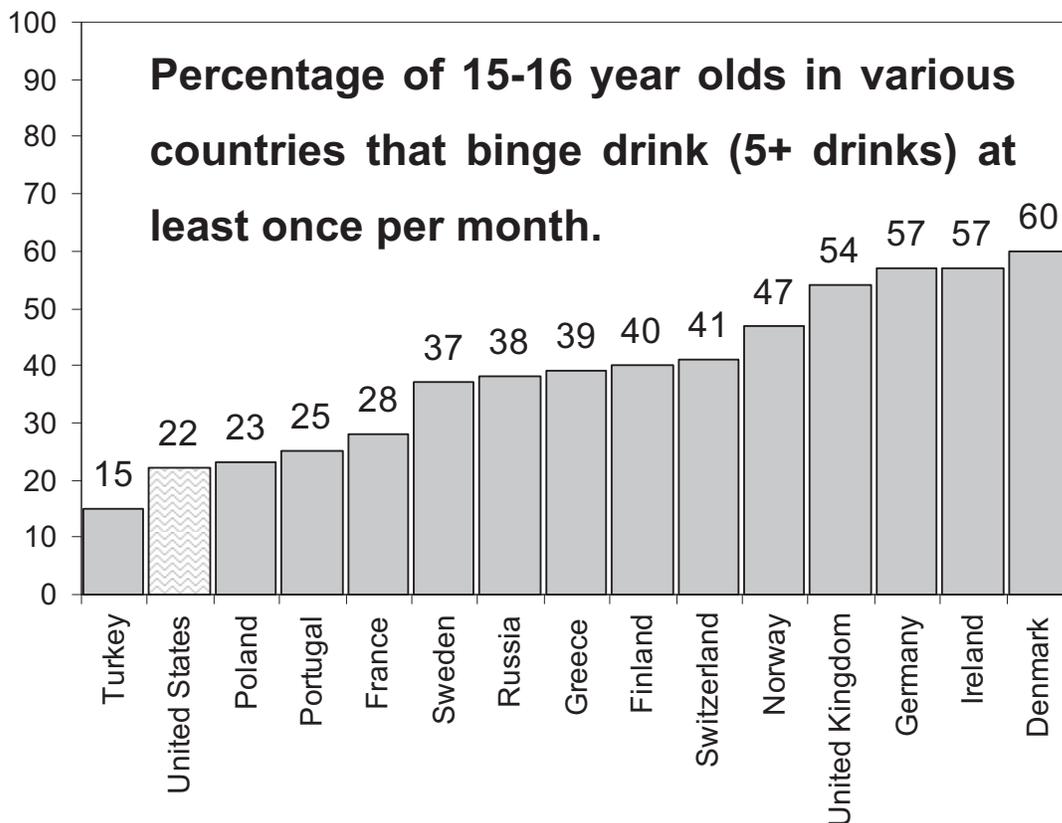
What about binge drinking? There is a belief that European kids drink more often, but consume less per drinking occasion, while kids in the U.S. are more likely to binge. Actually, according to a 2005 report from the U.S. Department of Justice and the Pacific Institute for Research and Evaluation, American teens (15-16 year olds in this case) were less likely to binge (5+ drinks) in a 30 day period than teens in 34 out of 35 European nations. The graph on the following page includes data from U.S. teens and those in 14 countries examined in the EU report.

When trying to interpret data comparing drinking rates in various countries, it is important to keep in mind that what constitutes a single serving can vary tremendously. For instance, while teenagers in Spain are more likely than teenagers in the U.S. to report crossing the five drink threshold for binge drinking, their servings might be considerably smaller than those in America. As such, what appear to be large differences in rates of binge drinking in the U.S. and various countries might not be so large after all.

There do appear to be differences between how American and European teens drink that go beyond the amount of alcohol they consume. Research indicates that there is a strong placebo affect with alcohol. In laboratory settings, college students served non-alcoholic beer rather than real beer still exhibit many of the changes in thoughts and behaviors associated with alcohol. In part, this has to do with expectations regarding how people are supposed to behave when they drink. These expectations are culturally influenced. In the U.S., many kids are led to believe that anything a person does when they're

drunk is excusable. “What happens in [insert city here], stays in [insert city here].” Indeed, drinking is often used as an opportunity to express pent up urges that are inappropriate to express during daily life. Vandalism, aggression, sexual promiscuity, and so forth. In some ways, this is captured by the ubiquitous utterance on college campuses – “Work hard, play hard” – though there are plenty of students that play hard harmlessly.

Kids in many other countries do not seem to share the view that anything goes when a person is drinking. While teens in many European countries out-drink teens in the U.S., becoming overly rowdy and obnoxious while drinking is not widely accepted in many of those countries, so it doesn’t happen as often. American kids might not drink as much as European kids, but they often act like they do! The good news here is that reshaping expectations about how one is supposed to express themselves when they drink could ameliorate some of the



consequences of underage drinking here at home, including sexual assaults, drunk driving, vandalism and other crimes.

Here is a passage from an article in the June 25, 2007, issue of Newsweek containing the author's opinion on the issue of whether parents should allow kids to drink at home:

“Even if they don't become alcoholics, teens who drink too much may suffer impaired memory and other learning problems, says Aaron White of Duke University Medical Center, who studies adolescent alcohol use. He says parents should think twice about offering alcohol to teens because their brains are still developing and are more susceptible to damage than adult brains. ‘If you're going to do that, I suggest you teach them to roll joints, too,’ he says, ‘because the science is clear that alcohol is more dangerous than marijuana.’ ”

Each parent has to form their own opinion on this topic, and the author definitely is not suggesting that parents teach their kids to smoke marijuana. However, it is important to look at this issue honestly, and from a data-driven perspective. Most parents would not want their kids smoking marijuana, yet many see no harm in “teaching them how to drink.” Why not “teach them how to have sex,” or perhaps “teach them how to drive drunk.” The odds are that many teenagers will do those things, too.

Clearly, not every adolescent will be affected negatively by a parent's decision to allow them to have an occasional glass of wine with dinner. However, the risks are many and great. The parent might have the best of all intentions, but opening the door to drinking during adolescence leaves kids vulnerable to the misleading messages coming from those who wish to prey on

their desire to break the rules, fit in with other kids, and practice acting like adults. To you, it might seem like healthy life-skills training. To them, it might seem like a green light to drink alcohol. There are no guarantees they will take their single-serving drinking habit with them when they leave home.

Further, upwards of 20% of the population will, at one point in their lives, have a problematic relationship with alcohol, and drinking early increases the odds that a kid will end up on the wrong side of the equation. Do we really need to stack the deck against kids even further by intentionally giving them the drug at home?

Again, it is the author's view that there is nothing wrong with alcohol use by responsible adults. However, it can be unhealthy for developing brains and should be unnecessary in a world where the needs of adolescents are met through other, healthier activities.

What does it all mean?

As far as drugs go, alcohol can be a risky one, even if it can be fun and relaxing. The legality of the drug and the messages conveyed through aggressive, glitzy marketing campaigns are out of step with the risks that alcohol poses. Moderate consumption (one drink per day for females, up to two for males) among adults can be part of a healthy lifestyle, assuming the adult in question can maintain a moderate level of use without it escalating and impacting their life negatively. Delaying the onset of drinking as long as possible decreases the odds that alcohol use will become a problem.

It would be helpful if companies manufacturing alcoholic beverages took more ownership of the fact that their products can do great harm to consumers and adjusted their marketing strategies accordingly. Large amounts of data exist regarding the direct and indirect consequences to health posed by alcohol. It is

undeniable that drinking too much alcohol at once can lead to death, yet no such warning exists on alcohol beverage containers. Providing consumers with accurate, and complete, information about the risks associated with alcohol is a social responsibility that beverage manufacturers should be willing to meet.

At this point, the underage drinking problem is firmly rooted in the culture in which our kids are raised. Through commercial and print ads, movies in which young people drink, and adult modeling, we make alcohol too alluring for many kids to pass up. We then blame them when they fall for the bait. Funding for education and prevention programs is lacking. The available programs can help, but it will take a much more concerted effort including parents, schools, prevention specialists, politicians, and kids themselves, to stimulate the kind of widespread change necessary to minimize teen drinking, dissuade heavy drinking among adults, and convey the message that alcohol is only safe when used in moderation, and only after the brain is finished developing. Parents are, and will always be, on the front lines in the battle to protect kids from the negative effects of alcohol and other threats and should be part of this effort.

Quick Facts:

- As is the case with adults, adolescents use and abuse alcohol more than any other drug.
- Research with both rats and humans suggests that adolescents might be more vulnerable than adults to the effects of alcohol on memory, including a type of temporary amnesia called “blackouts.”
- Alcohol is well-known to be a neurotoxin capable of interfering with brain development.

- Moderate drinking (1-2 drinks per day) is relatively risk free for healthy adults. However, because the brain is still developing during adolescence, there is no known safe level of use for them.
- The earlier that one starts drinking, the greater the likelihood that they will go on to develop a problem with the drug, perhaps because the adolescent brain learns about the drug and habits surrounding it so quickly.
- Contrary to popular misperception here in the U.S., kids from European countries do not drink less than adolescents here, suggesting that allowing kids to start drinking at younger ages causes more problems than it solves.
- Beverage manufacturers have been given free rein to market their products as they see fit, which includes promoting alcohol as a drug that will instantly improve life with no health risks beyond those posed by drinking during pregnancy and driving while intoxicated. Hopefully, this will change in the near future.
- In order to diminish the problems caused by drinking during adolescence, we adults must do a better job of educating kids about the risks, debunking faulty expectations about the good things that alcohol will do for them, and modeling healthy drinking habits.