

# Instructor Guide

# DWI Detection and Standardized Field Sobriety Testing (SFST)

Session 2 - Detection and General Deterrence

50 Minutes

## Session 2

### Detection and General Deterrence



DWI Detection and Standardized Field Sobriety Testing

Session 2 – Detection and General Deterrence

## Learning Objectives

- Describe frequency of DWI violations and crashes
- Define general deterrence
- Describe relationship between detection and general deterrence
- Describe a brief history of alcohol
- Identify common types of alcohol
- Describe physiological processes of alcohol absorption, distribution, and elimination



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*Learning Objectives*

At the conclusion of this session, participants will be able to:

- Describe the frequency of DWI violations and crashes
- Define general deterrence
- Describe the relationship between detection and general deterrence
- Describe a brief history of alcohol
- Identify common types of alcohol
- Describe the physiological processes of absorption, distribution, and elimination of alcohol in the body

<u>CONTENT SEGMENTS</u> .....	<u>LEARNING ACTIVITIES</u>
A. A. The DWI Problem.....	Instructor-Led Presentations
B. B. The Concept of General Deterrence .....	Video Presentation
C. C. Relating Detection to Deterrence Potential .....	Reading Assignments
D. Evidence of Effective Detection and Effective Deterrence	
E. Physiology of Alcohol	





Session 2 – Detection and General Deterrence

## National Statistics

What number of drivers commit this violation?



**Weekend Nights – 10% or More**



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A frequently quoted, and often misinterpreted, statistic places the average incidence of DWI at one driver in fifty. Averaged across all hours of the day and all days of the week, two percent of the drivers on the road are DWI. The 1 in 50 figure is offered as evidence that a relatively small segment of America's drivers, the so called "problem" group, account for the majority of traffic deaths. There's nothing wrong with that figure as a statistical average, but police officers know that at certain times and places many more than two percent of drivers are impaired. NHTSA research suggests that during the late night, weekend hours, as many as 10% of drivers on the roads may be DWI. On certain holiday weekends, and other critical times, the figure may go even higher.

*How Many? How Often?*

The issue of how many DWIs are on the road at any given time is an important factor in measuring the magnitude of the problem. However, from an overall traffic safety perspective, the more important issue may be the number of drivers who ever commit DWI. Just how widespread is this violation?

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## General Deterrence



The fear of arrest



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### B. Concept of General Deterrence

The fear of arrest is the leading deterrent.

One approach to reducing the number of drinking drivers is general deterrence of DWI. General deterrence of DWI is based in the driving public's fear of being arrested. If enough violators come to believe that there is a good chance that they will get caught, at least some of them will stop committing DWI at least some of the time. However, unless there is a real risk of arrest, there will not be much fear of arrest.

Law enforcement officers must arrest enough violators enough of the time to convince the general public that they will get caught, sooner or later, if they continue to drive while impaired.

*How many DWI violators must be arrested in order to convince the public that there is a real risk of arrest for DWI?*

Several programs have demonstrated that significant deterrence can be achieved by arresting one DWI violator for every 400 DWI violations committed. Currently, however, for every DWI violator arrested, there are between 500 and 2,000 DWI violations committed.

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## General Deterrence

There is no reason to fear arrest



When the chances of being arrested are one in two thousand, the average DWI violator really has little to fear.

There are three noteworthy reasons.

- DWI violators vastly outnumber police officers. It is not possible to arrest every drinking driver each time they commit DWI.
- Some officers are not highly skilled at DWI detection. They fail to recognize and arrest many DWI violators.
- Some officers are not motivated to detect and arrest DWI violators.



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## The Ultimate Goal: Changing Behavior

The goal is to encourage more Americans to:

- Avoid committing DWI
- Control drinking prior to driving
- Select alternative transportation
- Avoid riding with impaired drivers
- Recognize impaired driving is unacceptable behavior at all levels



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### *The Solutions*

#### *The Ultimate Goal: Changing Behavior*

What must the comprehensive community based DWI programs seek to accomplish?

Ultimately, nothing less than fundamental behavioral change, on a widespread basis. The goal is to encourage more Americans to:

- Avoid committing DWI, either by avoiding or controlling drinking prior to driving or by selecting alternative transportation.
- Intervene actively to prevent others from committing DWI (for example, putting into practice the theme "friends don't let friends drive drunk")
- Avoid riding with drivers who are impaired.

The final test of the value of DWI countermeasures on the national, state and local levels is whether they succeed in getting significantly more people to modify their behavior. The programs also pursue other more immediate objectives that support or reinforce the ultimate goal. However, the ultimate goal is to change driving while impaired to an unacceptable form of behavior at all levels.

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## Prevention

- Promote positive attitudes
- DWI is wrong
- No one has the right to endanger others
- DWI cannot be tolerated or condoned



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*Prevention: the Ultimate Solution*

DWI countermeasures that strive for the ultimate achievement of drinking and driving behavioral changes have been grouped under the label "Prevention." There are many kinds of DWI preventive activities. Some are carried out by and in our schools, some through the mass media, some through concerned civic groups, and so forth. The various preventive efforts focus on different specific behaviors and address different target groups.

However, they seek to change drinking and driving behavior by promoting more positive attitudes and by fostering a set of values that reflects individual responsibilities toward drinking and driving.

Preventive countermeasures seek society's acceptance of the fact that DWI is wrong. Some people believe that drinking and driving is strictly an individual's personal business; that it is up to each person to decide whether or not to accept the risk of driving after drinking. Preventive activities try to dispel that outmoded and irresponsible belief. Instead, they promote the idea that no one has the right to endanger others by drinking and driving, or to risk becoming a burden (economically and otherwise) to others as a result of injuries suffered while drinking and driving. Realistically, everyone has an obligation not only to control their own drinking and driving, but also to speak up when others are about to commit the violation. Only when all of society views DWI as a negative behavior that cannot be tolerated or condoned, will the public's behavior begin to change. That is the long term solution.

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## Deterrence

- Driving public's fear of being arrested
- Enough violators must be arrested to convince public they will get caught




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## Deterrence

- Deterrence is negative reinforcement
- Strives to change DWI behavior.




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General deterrence of DWI is based on the driving public's fear of being arrested. If enough violators come to believe that there is a good chance that they will get caught, some of them (at least) will stop committing DWI at least some of the time.

Unless there is a real risk of being arrested, there will not be much fear of arrest.

Law enforcement must arrest enough violators to convince the public that they will get caught, if they continue to drive while impaired.

### **C. Relating Detection to Deterrence Potential**

#### *Deterrence: the Interim Solution*

DWI countermeasures that seek a short cut to the ultimate goal of behavioral change usually are labeled "Deterrence." Deterrence can be described as negative reinforcement. Some deterrence countermeasures focus primarily on changing individual drinking and driving behavior while others seek to influence people to intervene into others' drinking and driving decisions.

The key feature of deterrence is that it strives to change DWI behavior without dealing directly with the prevailing attitudes about the rightness or wrongness of DWI. Deterrence uses a mechanism quite distinct from attitudinal change: fear of apprehension and application of sanctions.

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## The Fear of Being Caught and Punished

- Fear long term costs and inconvenience



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*The Fear of Being Caught and Punished*

Large scale DWI deterrence programs try to control the DWI behavior of the driving public by appealing to the public's presumed fear of being caught. Most actual or potential DWI violators view the prospect of being arrested with extreme distaste. For some, the arrest, with its attendant handcuffing, booking, publicity and other stigmatizing and traumatizing features, is the thing most to be feared. For others, it is the prospective punishment (jail, stiff fine, etc.) that causes most of the concern. Still others fear most the long term costs and inconvenience of a DWI arrest: the license suspension and increased premiums for automobile insurance. For many violators the fear probably is a combination of all of these. Regardless, if enough violators are sufficiently fearful of DWI arrest, some of them will avoid committing the violation at least some of the time. Fear by itself will not change their attitudes; if they do not see anything inherently wrong with drinking and driving in the first place, the prospect of arrest and punishment will not help them come to this realization. However, fear sometimes can be enough to keep them from putting their anti-social attitudes into practice.

This type of DWI deterrence, based on the fear of being caught, is commonly called general deterrence. It applies to the driving public generally and presumably affects the behavior of those who have never been caught. There is an element of fear of the unknown at work here.

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## Specific Deterrence

- Those who have been caught and arrested
- Public must perceive that there is an appreciable risk of being caught and convicted
- Enforcement creates and sustains fear of being caught




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## Specific Deterrence

- Supportive roles: Legislators, Prosecutors, Judiciary, and Media




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Another type of DWI deterrence, called specific deterrence, applies to those who have been caught and arrested. The typical specific deterrent involves some type of punishment, perhaps a fine, involuntary community service, a jail term or action against the driver's license. The punishment is imposed in the hope that it will convince the specific violator that there is indeed something to fear as a result of being caught, and to emphasize that if there is a next time, the punishment will be even more severe. It is the fear of the known that comes into play in this case.

The concept of DWI deterrence through fear of apprehension or punishment seems sound. But will it work in actual practice? The crux of the problem is this: If the motoring public is to fear arrest and punishment for DWI, they must perceive that there is an appreciable risk of being caught and convicted if they commit the crime. If actual and potential DWI violators come to believe that the chance of being arrested is minimal, they will quickly lose whatever fear of arrest they may have felt.

Enforcement is the mechanism for creating and sustaining a fear of being caught for DWI. No specific deterrence program can amount to much, unless police officers arrest large numbers of violators; no punishment or rehabilitation program can affect behavior on a large scale unless it is applied to many people. General deterrence depends on enforcement -- the fear of being caught is a direct function of the number of people who are caught.

Obviously, the police alone cannot do the job. Legislators must supply laws that the police can enforce. Prosecutors must vigorously prosecute DWI violators, and the judiciary must adjudicate fairly and deliver the punishments prescribed by law. The media must publicize the enforcement effort and communicate the fact that the risk is not worth the probable outcome. Each of these elements plays a supportive role in DWI deterrence.

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## How Much Deterrence is Enough?

For every DWI violator arrested, there are approximately 600 undetected DWI violations




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## How Great is the Risk?

- Does the average DWI violator fear arrest?
- Should they be afraid?
- Intense publicity may enhance the perceived risk




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*How much deterrence is enough?*

Estimates from around the country vary. For every DWI violator arrested, there are approximately 600 undetected DWI violations.

According to the National Survey on Drug Use and Health (2013), more than 28 million people drove under the influence of alcohol. According to the CDC (2011), the average person who reported driving under the influence also reported doing so an average of 28 times per year. This results in approximately 784 million DWIs per year. According to the FBI UCR, 1.28 million DWI arrests were made in 2012, which means law enforcement arrested approximately one out of every 612 DWI episodes.

*How Great is the Risk?*

The question now is, are violators afraid of being caught? More importantly, should they be afraid? Is there really an appreciable risk of being arrested if one commits DWI?

The answer to all of these questions unfortunately is: probably not. In most jurisdictions, the number of DWI arrests appears to fall short of what would be required to sustain a public perception that there is a significant risk of being caught.

Sometimes, it is possible to enhance the perceived risk, at least for a while, through intensive publicity. However, media "hype" without intensified enforcement has never been enough to maintain the fear of arrest for very long.

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## Stockton, California

### 3 Year Intensive Weekend DWI Enforcement

- **Before:** Arrest/violation ratio of 1 in 2000 or less, 9% of weekend drivers were operating with BAC of 0.10 or higher
- **During:** Intensive DWI enforcement on weekends nights
- **Officers intensively trained, enforcement publicized, justice community coordinated**




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## Stockton, California

- **Arrests increased 500%**
- **Weekend nighttime crashes decreased 34%**
- **Proportion of nighttime, weekend drivers legally under the influence dropped from 9% to 6%**




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Several enforcement programs have succeeded in achieving significant DWI deterrence. Consider, for example, the three year intensive weekend DWI enforcement program in Stockton, California.

As early as 1975, a study showed that the city's total number of DWI arrests (700) were considerably less than one percent of the areas licensed number of drivers (130,000). The implication here was that Stockton police were only maintaining the arrest/violation ration of 1:2,000, or less. In addition, roadside surveys on Friday and Saturday nights disclosed that nine percent of the drivers were operating with BAC's of 0.10 or higher.

Then things changed.

Beginning in 1976 and continuing at planned intervals through the first half of 1979, Stockton police conducted intensive DWI enforcement on weekend nights. The officers involved were extensively trained. The enforcement effort was heavily publicized and additional equipment (PBTs and cassette recorders) was made available. The police effort was closely coordinated with the District Attorney's office, the County Probation office, and other allied criminal justice and safety organizations.

All this paid off. By the time the project came to a close (in 1979) DWI arrests had increased by over 500%, and weekend nighttime collisions had decreased by 34%, and the number of operators committing DWI dropped one third.

The implication of this study, and of other similar studies, is that for every DWI violator actually arrested for DWI, three others are contacted by police officers, but are not arrested for DWI. It is clear that significant improvement in the arrest rate could be achieved if officers were more skilled at DWI detection.

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## Improve DWI Detection

**Keys to success:**

- Officers skilled at DWI detection
- Willing to arrest all violators detected
- Policies and application supported by agency

**In each state where the number of DWI arrests increased, alcohol related crash fatalities decreased**




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## Detection: Key to Deterrence

- Deterrence can vastly exceed the level of enforcement officers achieve
- In Stockton, increased enforcement effort convinced at least one third of the violators to change their behavior substantially




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Improved DWI detection can be achieved in virtually every jurisdiction in the country.

The keys to success are police officers who are:

- Skilled at DWI detection
- Willing to arrest every DWI violator who is detected
- Supported by their agencies in all aspects of this program, from policy through practical application

Since the historical Stockton study numerous states have conducted similar studies to determine the degree of effect that DWI arrests would have on alcohol related fatalities in general, and total fatalities in particular. Most of these studies were conducted between 1978 and 1986.

The results of these studies graphically illustrated in each state that when the number of arrests for DWI increased, the percentage of alcohol related fatalities decreased. Further, the results of a study conducted in Florida from 1981-1983, showed that when DWI arrests per licensed driver increased, total fatalities decreased (12 month moving average).

*Detection: The Key to Deterrence*

It is important to understand how increased DWI enforcement can affect deterrence. Deterrence can vastly exceed the level of enforcement officers achieve on any given night. True, weekend DWI arrests can increase by as much as 500 %, as in the Stockton study.

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## Example of General Deterrence

When arrest/violation ratio is 1 in 400:

- Many violators **WILL** be caught
- General perception level of being caught increases
- Behavior changes




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## Increased DWI Detection Skills

- Community benefits
- Officers recognize cues and clues
- Gained confidence in field sobriety tests
- Fewer violators stopped avoided arrest




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The law of averages quickly starts to catch up with DWI drivers. Unless violators change their behavior, many of them will be caught, or at least will have known someone who has been arrested. Coupled with the heavy publicity given to the enforcement effort, those experiences were enough to raise the perception level of apprehension among DWI operators that sooner or later they would be caught. As a result, many of them changed their behavior. This is the best example of general deterrence.

In addition, during the same time that DWI arrests went up over 500% in Stockton, citations for other traffic violations increased by a comparatively modest 99%. The implication is that Stockton's officers were stopping and contacting only twice as many possible violators as they had before, but they were coming up with more than five times as many arrests.

What have the results of these studies shown? Basically, they have shown that a community will benefit from their officers' increased skills at DWI detection. Principally because of their special training, the officers were better able to recognize "cues" of impairment when they observed vehicles in motion, and they were more familiar with the "clues" or human indicators of impairment exhibited by violators during personal contact. The officers also had more confidence in the field sobriety tests they used to investigate their suspects. The most important factor was that far fewer of the violators being stopped now avoided detection and arrest.

The difficulty in detecting DWI among operators personally contacted by officers has been well documented. Analysis of roadside survey and arrest data suggest that for every DWI violator arrested, three others actually have face to face contact with police officers but are allowed to go without arrest. Direct support of that inference was found in the Fort Lauderdale BAC study, where researchers demonstrated that police officers arrested only 22% of the DWI operators they contacted, whose BAC levels were subsequently shown to be between 0.10 and 0.20.



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## Alcohol

A family of closely related chemicals whose molecules are made up of hydrogen, carbon, and oxygen.



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## Some Types of Alcohol

- Methyl Alcohol (Methanol)
- Ethyl Alcohol (Ethanol)
- Isopropyl Alcohol (Isopropanol)



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### E. Physiology of Alcohol

A brief overview of alcohol:

Alcohol is the most abused drug in the United States.

"Alcohol" is the name given to a family of closely related and naturally occurring chemicals. Each of the chemicals that is called an "alcohol" contains a molecule chemists refer to as a "hydroxy radical." This radical contains one oxygen atom and one hydrogen atom bonded together. The simplest alcohol has only one carbon atom, three hydrogen atoms, and one hydroxy radical. The next alcohol has two carbon atoms, five hydrogen atoms and one hydroxy radical. The third alcohol has three carbon atoms, seven hydrogen atoms and one hydroxy radical. That is how the alcohols differ from one another.

Alcohols are molecularly very similar and produce similar effects. They produce intoxicating effects when ingested into the human body. Only one of them is meant for human consumption. However, when ingested in substantial quantities it can cause death.

Three of the more commonly known alcohols are Methyl, Ethyl, and Isopropyl.

- Methyl alcohol also known as Methanol or wood alcohol
- Ethyl alcohol also known as Ethanol or beverage alcohol
- Isopropyl Alcohol (Isopropanol) also known as rubbing alcohol

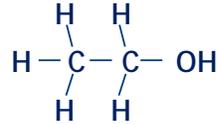
# Ethanol

Ethyl Alcohol  
(Intended for human consumption)

## Chemical Symbols

ETOH

C<sub>2</sub>H<sub>5</sub>OH



The ingestible alcohol is known as ethyl alcohol, or ethanol. Its chemical abbreviation is ETOH. The "ET" stands for "ethyl" and the "OH" represents the single oxygen atom bonded to one of the hydrogen atoms, ("hydroxy radical"). Ethanol is the variety of alcohol that has two carbon atoms. Two of ethanol's best known analogs are methyl alcohol (or methanol), commonly called "wood alcohol", and isopropyl alcohol (or isopropanol), also known as "rubbing alcohol".

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## Ethanol Production - Fermentation

Yeast combines with sugars from fruit or grains in a chemical reaction that results in ETOH



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## Ethanol Production - Distillation

Fermented beverage is boiled at a controlled temperature to extract and concentrate the ethanol fumes



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Ethanol is what interests us because it is the kind of alcohol that features prominently in impaired driving. Ethanol is beverage alcohol, the active ingredient in beer, wine, whiskey, liquors, etc. Ethanol production starts with fermentation. That is a kind of decomposition in which the sugars in fruit, grains and other organic materials combine with yeast to produce the chemical we call ethanol. This can occur naturally, as yeast spores in the air come into contact with decomposing fruit and grains. However, most of the ethanol in the world didn't ferment naturally, but was produced under human supervision.

When an alcoholic beverage is produced by fermentation, the maximum ethanol content that can be reached is about 14%. At that concentration, the yeast dies, so the fermentation stops. Obtaining a higher ethanol content requires a process called distillation. This involves heating the beverage until the ethanol "boils off", then collecting the ethanol vapor. It is possible to do this because ethanol boils at a lower temperature than does water.

Distilled spirits is the name we give to high ethanol concentration beverages produced by distillation. These include rum, whiskey, gin, vodka, etc. The ethanol concentration of distilled spirits usually is expressed in terms of proof, which is a number corresponding to twice the ethanol percentage.

For example, an 80 proof beverage has an ethanol concentration of 40%.

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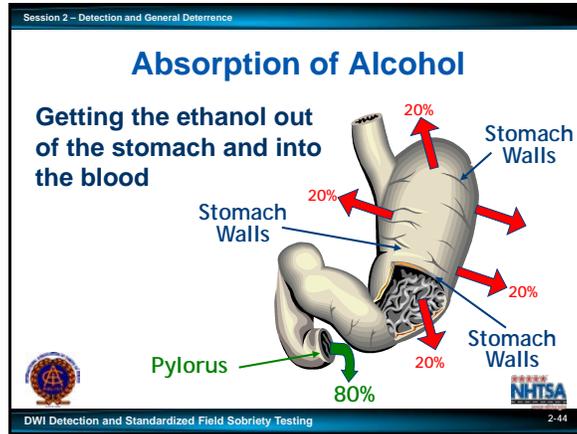
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Once the ethanol gets into the stomach, it has to move into the blood. The process by which this happens is known as absorption. One very important fact that pertains to alcohol absorption is that it doesn't have to be digested in order to move from the stomach to the blood.

Another very important fact is that alcohol can pass directly through the walls of the stomach. These two facts, taken together, mean that, under the right circumstances, absorption of alcohol can be accomplished fairly quickly. The ideal circumstance for rapid absorption is to drink on an empty stomach.

When the alcohol enters the empty stomach, about 20% of it will make its way directly through the stomach walls. The remaining 80% will pass through the stomach and enter the small intestine, from which it is readily absorbed into the blood. Because the body doesn't need to digest the alcohol before admitting it into the bloodstream, the small intestine will be open to the alcohol as soon as it hits the stomach.

But what if there is food in the stomach? Suppose the person has had something to eat shortly before drinking, or eats food while drinking; will that affect the absorption of alcohol?

Yes it will. Food has to be at least partially digested in the stomach before it can pass to the small intestine. When the brain senses that food is in the stomach, it commands a muscle at the base of the stomach to constrict, and cut off the passage to the small intestine. The muscle is called the pylorus, or pyloric valve. As long as it remains constricted, little or nothing will move out of the stomach and into the small intestine. If alcohol is in the stomach along with the food, the alcohol will also remain trapped behind the pylorus. Some of the alcohol trapped in the stomach will begin to break down chemically before it ever gets into the blood. In time, as the digestive process continues, the pylorus will begin to relax, and some of the alcohol and food will pass through. But the overall effect will be to slow the absorption significantly. Because the alcohol only slowly gets into the blood, and because the body will continue to process and eliminate the alcohol that does manage to get in there, the drinker's BAC will not climb as high as it would have if he or she had drunk on an empty stomach.

















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### Test Your Knowledge

- Name three different chemicals that are alcohols.
- Which of these is beverage alcohol, intended for human consumption?
- What is the chemical symbol for beverage alcohol?
- What is the name of the chemical process by which beverage alcohol is produced naturally?
- What is the name of the process used to produce high concentration beverage alcohol?



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### Test Your Knowledge

- Blood alcohol concentration is the number of \_\_\_\_\_ of alcohol in every 100 milliliters of blood.
  - Grams
  - Milligrams
  - Nanograms.



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3. Name three different chemicals that are alcohols.

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4. Which of these is beverage alcohol, intended for human consumption?

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5. What is the chemical symbol for beverage alcohol?

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6. What is the name of the chemical process by which beverage alcohol is produced naturally?

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7. What is the name of the process used to produce high concentration beverage alcohol?

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8. Multiple choice: Blood alcohol concentration is the number of of alcohol in every 100 milliliters of blood.

- Grams
- Milligrams
- Nanograms

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### Test Your Knowledge

9. True or false: Pound for pound, the average woman contains more water than does the average man

10. What do we mean by the “proof” of an alcoholic beverage?

11. Every chemical that is an “alcohol” contains what three elements?



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### Test Your Knowledge

12. True or false: Most of the alcohol that a person drinks is absorbed into the blood via the small intestine

13. What is the name of the muscle that controls the passage from the stomach to the lower gastrointestinal track?

14. True or false: Alcohol can pass directly through the stomach walls and enter the bloodstream.



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