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CHALLENGING BLOOD TEST RESULTS IN COURT

TABLE OF CONTENTS

I. BLOOD TEST RESULTS ARE CRITICAL TO A DRUNK DRIVING PROSECUTION

Breath and blood tests are the primary chemical tests used to determine if a driver is intoxicated. A breath test is an indirect measure of alcohol in the blood and a blood test is a direct measure of alcohol in the blood. The breath test is designed to detect only alcohol (although it sometimes incorrectly reports other substances as alcohol); a blood test can detect a wide range of intoxicants other than alcohol such as opioids and marijuana. This booklet deals primarily with the subject of alcohol and blood analysis.

In some states, a person arrested for drunk driving can choose the type of test. In these states, most people opt for a breath test because it is less invasive. In other states, the decision is up to the police. Reasons why the police want a driver to submit to a blood test include:

- The officer suspects that the driver is impaired by a substance other than alcohol.
- The driver has been injured and transported to a hospital following an accident, where a blood test is more readily available. Sometimes the driver is unconscious and cannot provide a breath sample.
- The driver is unable to perform a breathalyzer because of a medical condition. For example, a person who has COPD, asthma, or another respiratory illness may not be able to summon enough deep lung air to complete a breath test.
- The driver has refused to submit to a chemical test. It's not possible to force someone to exhale into a breathalyzer, but a person can be forced to submit to a blood test.

Many people charged with drunk driving mistakenly think there is no defense against a blood test that indicates their blood alcohol concentration (BAC) was in excess of the legal limit. That is not true. Blood analysis is not a perfect science and blood test results can be successfully challenged.

II. HOW THE STATE USES BLOOD TESTING RESULTS TO GET A CONVICTION

A. Blood Testing and the "Per Se" Offense

In all states, it is illegal to operate a motor vehicle with a blood alcohol concentration of 0.08 percent or more. (The number is lower for commercial drivers and drivers under 21.) This offense is often called the "per se" offense because you can be guilty regardless of how well you were driving and how little you were affected by alcohol.

A person with a high alcohol tolerance could, in theory, pass all the roadside tests, show no signs of impairment, yet be considered legally impaired with a blood-alcohol level at or above .08. (This is not an endorsement or encouragement to drink and drive. Many people think they can "handle" their alcohol and then get behind the wheel. Frequently, tragic consequences ensue.)

Without the blood test or other chemical analysis, a prosecution based on a per se offense would not be possible. The police cannot determine your blood-alcohol level by observing your behavior or from results of roadside sobriety

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tests. Such observations may provide clues to a person's blood-alcohol level, but typically those tests are not sufficient to establish you have exceeded the legal limit.

B. Blood Testing and the "Driving While Under the Influence" Offense

It is also illegal to operate a motor vehicle while under the influence of (or impaired by) an alcoholic beverage. This offense refers to the deterioration of a person's performance due to alcohol consumption. No reference is made to blood alcohol concentration. Arguably, a person could have one drink and his skills could become so impaired he could be found guilty of driving while impaired.

The blood analysis in a "driving while under the influence" case provides evidence to bolster a police officer's charge that you were impaired by alcohol. Field tests and a police officer's testimony you were swerving in the road are easier for a defense attorney to discredit than a blood test.

A blood test provides a number; it appears to be definite. Numbers generated by a scientific test can be more persuasive than a police officer's testimony. The jury does not have to ponder whether the officer was unfair or inaccurate because they see a number that appears objective and unbiased. The jury does not have to consider if the driver "behaved" as a person who was intoxicated.

Even when the blood test indicates a blood-alcohol level below the legal limit, the test results can still be used as evidence against you. Assume a police officer testifies a person was staggering, had slurred speech, and could not perform the roadside tests. The blood test indicates she had a blood-alcohol level of .07, which is below the legal limit in most situations. Since a person can be convicted of driving while impaired regardless of the blood-alcohol level, a blood test reading below the legal limit does not automatically result in a not guilty verdict. Indeed, the test provides evidence of alcohol in the person's system.

III. BLOOD TEST EVIDENCE CAN BE DEFEATED

Many people think their only option is a guilty plea if they took a blood test and the results were over the legal limit. Admittedly, courts and jurors like numbers, particularly when the numbers have the air of scientific proof. However, the results of an alcohol blood test can often be refuted.

As with most types of evidence, there are two strategies for challenging blood test results in court:

1) Requesting the judge to suppress the results (keep them out of court) because proper procedures were not followed, the results are too untrustworthy to be considered, or the blood sample was obtained by violating your constitutional rights.
2) Attacking the results at trial by convincing the jury (or judge if there is no jury) that the results are untrustworthy. Remember, the defense need only raise a reasonable doubt about the accuracy of the test results.

A defense lawyer may decide to present the blood test defenses he or she intends to use to the prosecutor before the trial. If they are strong enough, the prosecutor may decide to dismiss the case or offer a favorable plea deal.

Challenges to blood test results usually fall within one of the following categories, each of which is discussed in more detail below:

- Inherent problems with blood analysis.
- Deficient testing procedures.
- Gaps in the chain of custody.
- Hospital blood test conversion issues.
- Blood draw timing issues.
- Fourth Amendment constitutional violations.

One advantage that the defense sometimes has in a blood test case is an inexperienced prosecutor. Breath tests are far more common than blood tests. It is not unusual to have a trial with a prosecutor who has tried many drunk driving cases but has never tried one involving a blood test. This fact, combined with errors in the collection, transportation, and storage of the blood sample is how many blood cases are fought (and won) in court.

IV. INHERENT PROBLEMS WITH BLOOD ANALYSIS

A. Fermentation

One of the main defenses in a drunk driving blood test case rests inside the blood vial. Alcohol can be produced on its own in a blood vial through the process of fermentation. The glucose in the blood can combine with microorganisms to produce alcohol.

Blood alcohol testing procedures are incapable of determining where the alcohol being analyzed originated. The testing device cannot tell if the alcohol was in the blood when it was drawn, or whether it was generated in the blood vial by fermentation.

Fermentation can be accelerated if the blood collection vial contains inadequate preservative, the blood and preservative are not adequately mixed, the sample is stored without refrigeration, or the sample is tested long after it is taken. Each of these problems is discussed in more detail below.

B. Clotting

The needle and syringe through which the blood flows into a collection vial do not contain anticoagulants. Therefore, clotting can occur during the initial phases of blood analysis. Furthermore, clotting can occur when blood is collected directly in a vial from the needle.

The consequences of clotting on the alcohol analysis of the blood can be significant. Blood has a liquid portion called serum. When clotting occurs, there is a greater percentage of serum in the blood sample that is drawn. Serum contains a higher percentage of alcohol than whole blood. Therefore, the blood analysis can show a higher concentration in the sample than was present in the whole blood. What this means is before the test has begun, and assuming no further mistakes are made, the results could be in error.

C. Hemolysis

Hemolysis is the breakdown or rupturing of red blood cells and can occur during the collection process. A tourniquet that is too tight, wrong needle size, or trauma to the skin can cause hemolysis. When hemolysis occurs, substances can be released into the blood that cause a higher alcohol reading than was truly present in the blood.

D. Lactic Acid

When the body suffers trauma or undue exertion, lactic acid is often produced. Lactic acid can mimic alcohol when tested during blood analysis. A scenario where the build-up of lactic acid in the body can lead to an inaccurate high blood-alcohol reading can easily occur. For example, if a driver is involved in an automobile accident, the driver may have suffered trauma to the body and/or physical exertion in the aftermath. Next, the driver is transported to the hospital and a blood sample is drawn. A trooper directs the lab to perform an alcohol blood analysis. Due to the build-up of lactic acid, which was a result of an injury sustained during the accident, the blood analysis is inaccurate. In addition, diabetics are more prone to the build-up of lactic acid in their tissues.

V. DEFICIENCIES IN PROCEDURE

Adding to the innate problems with drawing blood specimens and conducting a blood analysis is the issue of whether proper procedures were followed. Under the best circumstances, things can go wrong in the analysis process. Failure to follow proper protocol can result in an inaccurate blood analysis.

A. Blood Drawn by Unqualified Person

Because the drawing of a blood sample is an invasive procedure, only qualified persons are allowed to draw blood for the purpose of determining alcohol content. These generally include physicians, nurses, and medical technicians or phlebotomists who are trained to draw blood. If the prosecution cannot establish that the blood was drawn by a qualified person, the blood test evidence may be excluded.

B. Alcohol Used to Clean Puncture Site or Site Not Cleaned

The blood sample is usually obtained from the antecubital vein, which is on the inside of the elbow. Before drawing any blood, the puncture site needs to be sterilized. Alcohol should not be used to sterilize the area because alcohol on the puncture site can get into the blood sample and lead to a falsely elevated result.

While it may seem obvious that alcohol should not be used to clean the site, it does happen. The place where it usually happens is in a hospital setting. Here, forensic alcohol blood drawing kits are not always available. In addition, hospital personnel are not always as attuned to the needs of law enforcement as are the on-call phlebotomists who work regularly with the police.

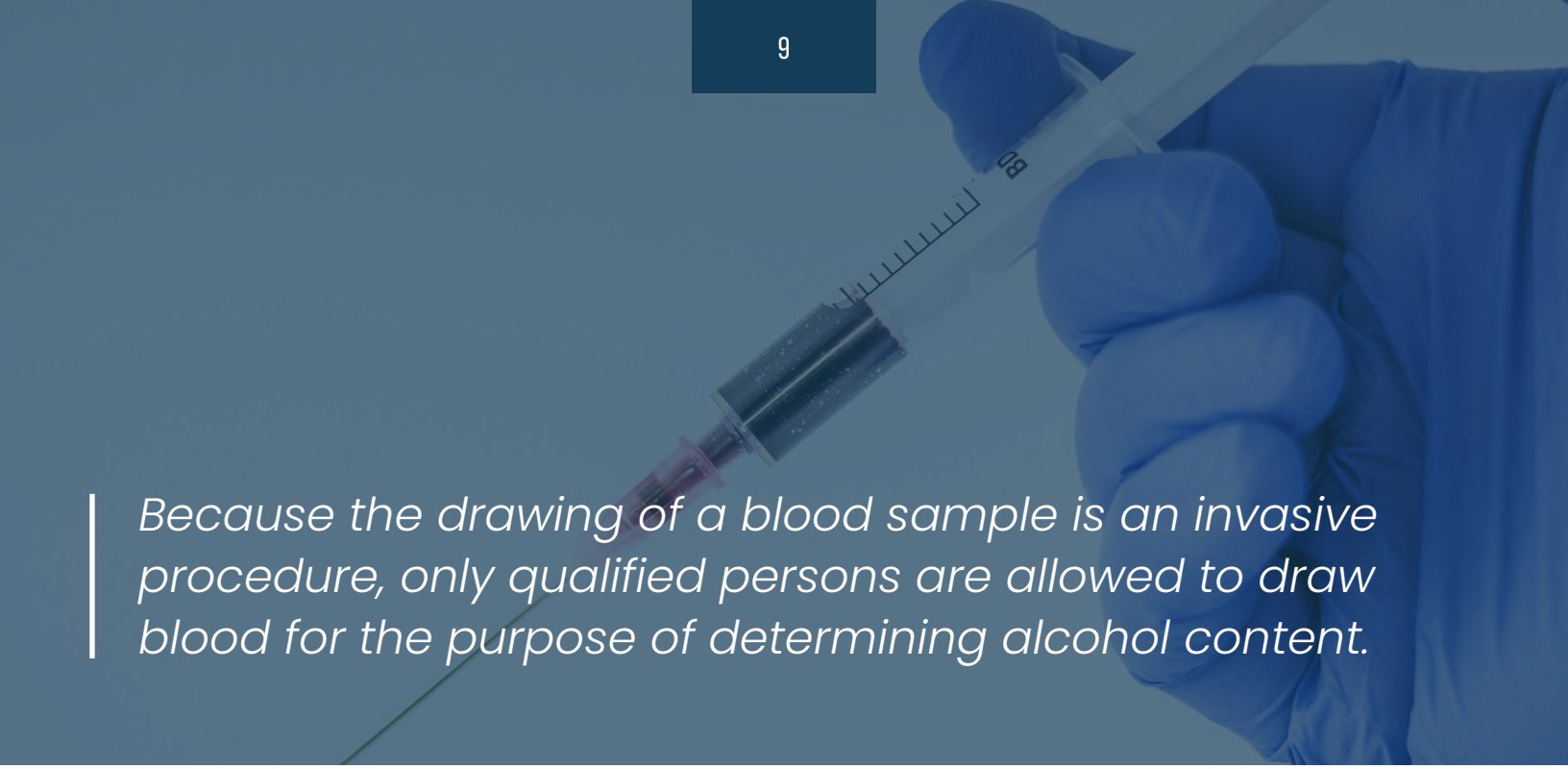
If the puncture site is not sterilized before the blood draw, bacteria, yeast, and fungus on the skin can contaminate the blood sample and cause inaccurate results.

C. Wrong Type of Tube Used

The most common process involves a vacutainer system. In this system, one end of the syringe goes into the test subject's arm, and the other into a rubber stopper on the top of the tube. The tube has a partial vacuum in it. When the syringe is inserted into the stopper, the vacuum inside the tube helps draw the blood up into the tube. The rubber stoppers on the top of the tubes are usually gray. This color indicates the existence of preservative in the sample, which is necessary to slow fermentation. If the tube had a different color stopper, it may not have contained the necessary preservative.

D. Blood Taken from Artery, Not Vein

A little bruising often occurs around the puncture site. If you observe significant bruising, something may have been wrong in the blood draw. Significant bruising may indicate that the phlebotomist was not very adept at drawing blood.



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It may also indicate that the draw was taken from an artery instead of a vein. The taking of venous blood is normally required.

E. Vial Did Not Contain Sufficient Preservative and Anticoagulant

One of the ways to inhibit fermentation of alcohol in the blood sample is to mix the sample with a preservative. The preservative is usually already in the blood vial before the blood is drawn. The right amount slows the fermentation process but does not stop it. Similarly, an anticoagulant is added to the blood vial to preventing clotting.

Sometimes, the vial does not contain enough preservative and anticoagulant. In many jurisdictions, the crime laboratory does not put the chemicals in itself. The companies from which the vials are purchased insert the chemicals and they can make mistakes. Crime labs do not test the vials to see if they come with the right amount of preservative and anticoagulant in them. Nor do they check when the blood is tested for alcohol to see if any preservative and anticoagulant are in the vial.

F. Sample Not Mixed or Improperly Mixed

After the sample is obtained, it must be mixed with anticoagulant and preservative. The purpose of mixing the sample is to adequately disburse the anticoagulant and preservative chemicals into the blood sample. The chemicals cannot work if they are not mixed into the blood they are meant to preserve. If there is no mixing, the integrity of the sample has been compromised.

Often the phlebotomist will say he or she gently rocked the vial back and forth after obtaining the sample. But the instructions from a leading manufacturer of blood collection tubes say that, at the time of the blood collection, the

tube should be inverted eight times to ensure proper mixing of the blood sample with the additive. The instructions also specify that the tube should be inverted gently and not shaken.

G. Wrong Gage Needle or Too Tight Tourniquet

The needle gauge can affect the validity of the sample. The wrong needle size, or gauge, can cause hemolysis. As previously explained, hemolysis is the rupturing of the red blood cells, which in turn can cause a higher alcohol reading in the sample.

Even done properly, a tourniquet can cause rupturing of the red blood cells. The problem becomes worse when the person drawing the blood does not follow proper procedure and makes the tourniquet too tight.

H. Sample Stored without Refrigeration or for Lengthy Period before Testing

Freezing or refrigeration slows the fermentation process. However, blood samples often are stored in an evidence locker or some other non-refrigerated holding area. In some cases, the blood can sit a month or longer before being analyzed. The longer you have from the date of capture of the blood sample to the date of analysis of the blood sample, the more fermentation will have taken place, i.e., the more alcohol will be created in the vial that is unrelated to the alcohol you consumed.

I. Raising Test Procedure and Accuracy Problems in Court

The state has to prove what the blood test results are. The technician who performed the test typically must testify to the results of the test and who conducted the test. The defense can then question the technician about the condition of the blood sample when the lab received it. For example, was clotting present, was evidence of hemolysis present, and how was the blood stored?

The technician can also be questioned concerning the test's accuracy. For example, if a person is injured, the technician can be questioned on how the presence of lactic acid can cause a high blood-alcohol reading that is not accurate. Also, questions concerning the effects of clotting on the accuracy of the blood test can be raised by the defense attorney.

Problems can occur at this point for the prosecution. The technician and the prosecutor will try to put the best spin on the test's accuracy. However, when the defense questions the technician and finds a weak point, that can throw doubt into the jury's mind concerning the state's entire case. For example, if the defendant was injured in an accident and the prosecutor fails to discuss the effect of lactic acid in the blood sample, that can become an opening for the defense. The defense attorney can cross-examine the technician concerning lactic acid's effect on the blood sample. If it appears the prosecution attempted to hide this point, the technician's credibility then may become suspect.

Questions concerning the technician's forthrightness can be all that is needed to win an acquittal.

VI. GAPS IN CHAIN OF CUSTODY

A. What the Prosecution Must Prove

The prosecution must establish a chain of custody for the blood sample before blood test results are admitted at trial. A chain of custody means the prosecution must be able to identify who possessed the sample, when they possessed it, and what they did with it. There are two reasons a chain of custody must be established for a blood sample:

- To prove the sample tested was actually your sample.
- To prove that the sample was not compromised or contaminated by improper handling.

Jurors may not assume the correct sample was sent to the lab for analysis or that the sample was properly stored until it was sent to the lab.

B. Missing Witnesses

Often, multiple witnesses are involved in the chain of custody: the person who drew the blood; the person who picked up the blood from the evidence locker; the person who logged the evidence in at the laboratory; the person who opened the evidence envelope; the lab analyst; and possibly others. Even though the prosecution may be able to establish the chain of custody, it may be inconvenient for one or more of the witnesses to testify. This can put pressure on the prosecutor to offer a favorable plea deal in what is otherwise a close case.

Persons who draw blood samples often do not make this their career. It is not a high paying occupation, and the hours often require working late at night, since this is when most drunk driving arrests take place. As a result, by the time the case comes to trial, it may be difficult for the prosecution to find the person who actually took the blood sample.

If the gaps in the chain of custody are significant, the court may not allow the blood test result into evidence. Otherwise, a defense attorney can bring them out at trial to raise reasonable doubt about the test result.

C. Missing Records

Another important chain of custody issue is record keeping. Police stations, laboratories, and hospitals are busy places. Recordkeeping is sometimes lax and records can go missing.

Records need to be maintained that tell when a blood sample was taken, from whom the blood was drawn, who drew the blood, when and where the sample was stored. In addition, a record must be maintained that the proper protocol was followed in the blood draw process. For example, was the driver questioned regarding any medical issues that would make a blood draw inappropriate, was an alcohol swab used, what apparatus was used to draw and store the blood, what are the qualifications of the person drawing the blood? Although state statutes vary in the language that is used, blood draws must be done in a medically reasonable fashion.

Next, the sample is analyzed. Again, proper records must be maintained. Records should identify when the sample was received by the lab, the blood sample's condition, (was clotting present, is there evidence of hemolysis, etc.) who transported the sample to the lab, was the identification checked on the sample. Furthermore, the records should tell who conducted the analysis and the person's qualifications.

D. Raising Chain of Custody Problems in Court

Frequently, state courts treat a break in the chain of custody as going to the weight of the evidence rather than its admissibility. This means the evidence comes in at trial and the jury or judge decides whether to believe it considering the breaks in the chain.

For example, if a medical technician does not record that she took a blood sample, but states it is her practice to take a blood sample when transporting an accident victim to the hospital, there is a strong chance the blood analysis would be allowed as evidence. The defense attorney will highlight the credibility problem when questioning the technician and arguing the case. The lack of detail in her testimony may cause the jury or judge to doubt that the blood sample in question belonged to the defendant.

Of course, if there is no documentation, no memory, or no protocol in place for tracing the blood sample to the defendant, the evidence may be suppressed. Furthermore, the blood test can be suppressed if the evidence indicates someone tampered with the sample. These situations do occur but are not common.

VII. HOSPITAL BLOOD TEST CONVERSION ISSUES

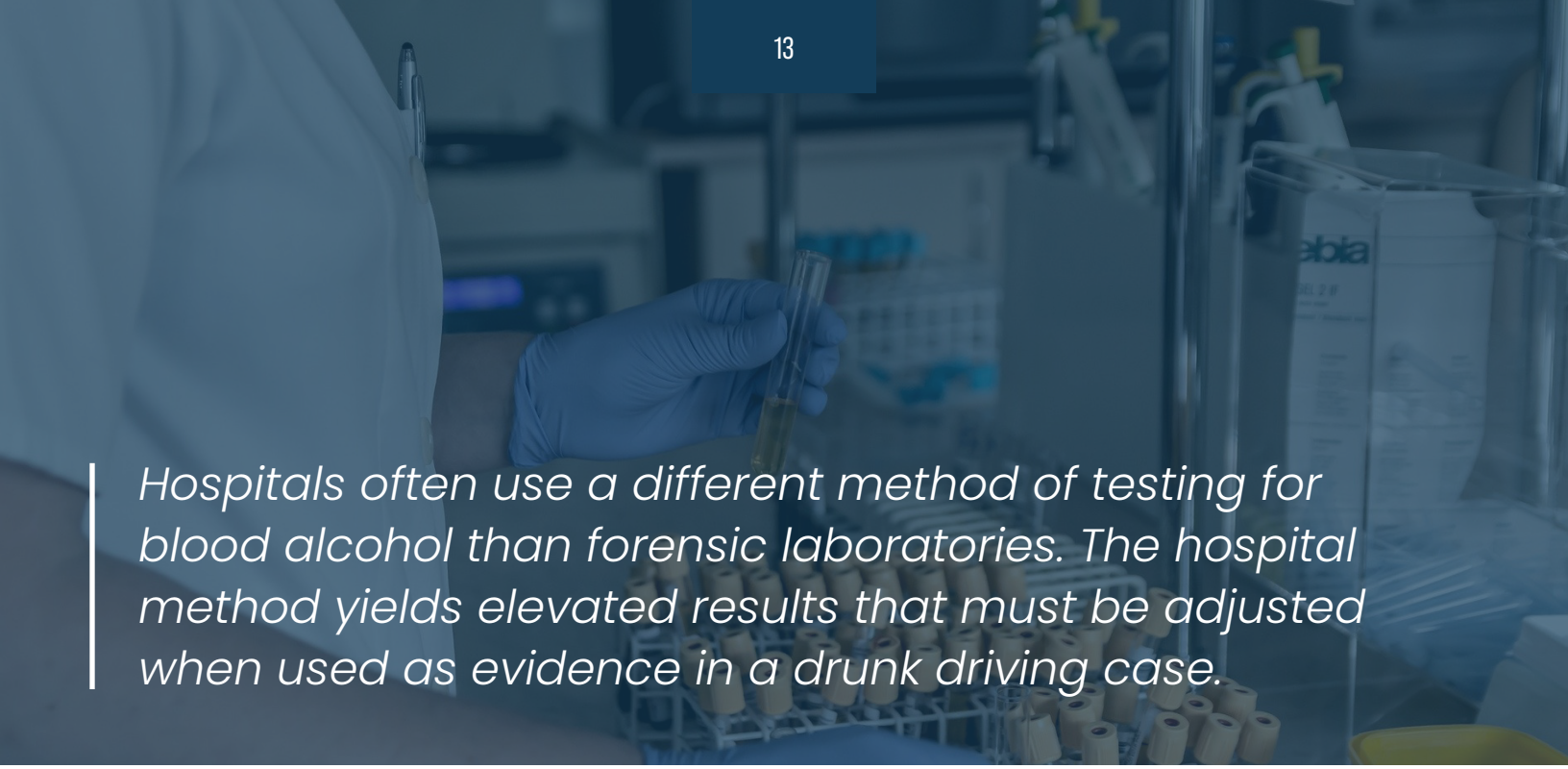
A. Hospitals Test Serum or Plasma, Not Whole Blood

Blood alcohol tests are sometimes performed at hospitals when drivers are injured in accidents. Hospitals often use a different method of testing for blood alcohol than forensic laboratories. The hospital method yields elevated results that must be adjusted when used as evidence in a drunk driving case.

Forensic laboratories usually analyze whole blood for alcohol. Whole blood is blood without any separation of blood cells or without any clotting done to the blood. The primary reason forensic laboratories test whole blood is that the law prohibits driving with a certain amount of alcohol in the blood. Blood is uniformly interpreted to mean whole blood.

Hospital and clinical laboratories may test the alcohol content of plasma or the serum portion of the blood sample instead of whole blood. If a plasma or serum sample is analyzed, it must be converted to a whole blood value.

The main reason hospitals perform alcohol analysis on plasma and serum samples is that it allows for a testing method that is quicker and easier to perform than the method used by forensic laboratories. Hospitals have greater time concerns than crime laboratories and they need quick methods of analysis.



Hospitals often use a different method of testing for blood alcohol than forensic laboratories. The hospital method yields elevated results that must be adjusted when used as evidence in a drunk driving case.

B. Plasma and Serum Alcohol Values Are Higher Than Whole Blood

Plasma and serum alcohol values are almost always higher than the alcohol values in the same sample of whole blood. To obtain a plasma sample, whole blood is spun in a centrifuge. This causes the blood cells (which are heavier than the fluid portion of the blood) to separate from the rest of the sample leaving plasma. A serum sample is obtained by letting the blood clot. The serum is the remaining fluid portion of the sample.

Alcohol dissolves in water. Consequently, the concentration of alcohol in a person is highest wherever the water content is highest. Serum and plasma have higher water content than whole blood. The ratio of serum to whole blood alcohol ranges from 0.88 to 1, to as high as 1.59 to 1, with the average being 1.16 to 1.

C. Conversion to Whole Blood Alcohol Values Are an Estimate Only

To convert a serum or plasma blood value to a whole blood value, the serum or plasma value is divided by a whole blood value. Usually, this means dividing the whole blood value by an average number, such as 1.16, or a range of possible values. Either way, when cross-examined by the defense attorney, the prosecution's expert should admit that the true value of a person's blood alcohol level cannot be known if the test was run on serum or plasma.

At lower alcohol levels, this may be all that you need to get under a per se limit. For example, if you had a serum alcohol level of .12%, the actual range may be from a high of .136% (dividing .12% by .88) to a low of .075% (dividing .12% by 1.59). Even if using the outside high ratio factor of 1.59 does not get you under the applicable per se limit, the fact that averages have to be employed to get an approximated blood alcohol value can still be used by your attorney to great advantage. No one can know whether you are "average."

VIII. BLOOD DRAW TIMING ISSUES

A. Test Does Not Measure Alcohol Concentration at the Time of Driving

Time is another critical issue in blood analysis. Drunk driving laws typically prohibit driving or operating a vehicle with a blood alcohol concentration of .08 percent or more. Blood is drawn after driving, sometimes hours after driving.

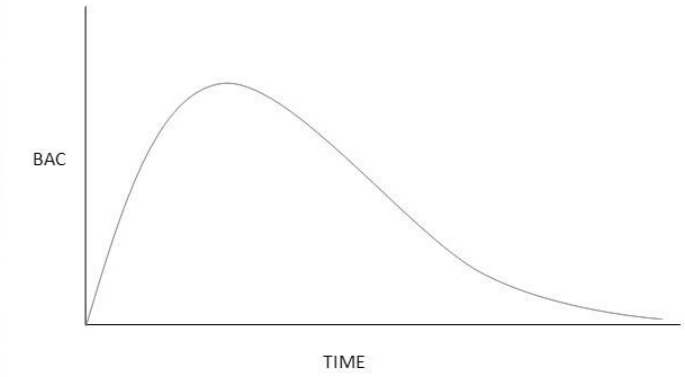
A person's blood-alcohol level does not rise to its maximum level immediately after consuming alcohol. A person's blood-alcohol level rises over time, reaches a peak, and then declines. Factors such as how quickly the alcohol was consumed, how much and when was food last eaten, a person's size, and their sex can affect the rate at which alcohol is absorbed into the bloodstream. See the alcohol curve in the next section.

The time between the arrest and when the blood is drawn can be an issue for two reasons.

1) **The driver's blood alcohol could be rising.** A blood sample taken after driving could test .08 or higher. However, the driver's blood-alcohol level may have been less than .08 when the person was driving. This is because alcohol may not have been absorbed into the bloodstream until after the arrest. Sources agree that it typically takes a minimum of thirty minutes after consumption for alcohol to be absorbed into the bloodstream, and in some instances, the absorption can take several hours.
2) **The driver's blood alcohol could be falling.** On the other end of the spectrum, a blood sample taken after driving may test less than .08, but the person's alcohol level was higher when the person was driving. This is because after alcohol reaches its peak level, the blood-alcohol level starts to decline. The prosecution may want to make this argument by using a calculation known as retrograde extrapolation to establish a numerical blood alcohol value for the time covered by the per se law. Retrograde extrapolation is discussed below.

B. Alcohol Metabolism Graph

After drinking alcohol, blood alcohol concentration gradually rises as the alcohol is absorbed into the blood stream (the absorptive phase). Eventually, BAC reaches a peak and begins to fall as the alcohol is metabolized and leaves the body (the elimination phase). Below is a diagram of the alcohol curve illustrating this phenomenon.



This graph depicts a short drinking period. The longer the drinking event, the farther out the peak time is stretched. What is almost always unknown is exactly where the person was on the curve at the time of driving. The state will usually attempt to convince the jury that the defendant was in the elimination or falling phase so the reported blood test result is lower than the actual BAC at the time of driving. The defense attorney will point out that the state does not know where the defendant was on the alcohol curve when driving. It is almost impossible to determine whether a person is in the absorption phase or elimination phase without a series of BAC measurements over time.

C. Falsely High Reading during Absorptive Phase (Rising Alcohol Defense)

In the right case, it is possible to show that the driver was under the legal limit while driving, even though the test results were .08 or higher. This is known as the rising alcohol defense.

How long it takes for someone to reach peak absorption at the top of the alcohol curve depends on many factors including the person's weight and body composition; gender; quantity, time, and type of food eaten; type or proof of alcohol consumed; rate of drinking; and medications and drugs taken. Since it can take up to several hours for alcohol to be fully absorbed into the blood stream, an individual's BAC may continue to rise for a while after he or she is stopped and arrested. The closer in time the person finished drinking before the blood test, the more likely he or she will be in the absorptive or rising state.

Therefore, to determine whether the rising alcohol defense is appropriate for your case, your attorney will need to know what time you started to drink and when you stopped; how much you had to drink and eat; what time you began to drive and when you stopped; and what time you provided a sample for testing. Receipts from the bar or restaurant where you were drinking are helpful evidence.

As a general rule, the rising alcohol defense works best when your test results are at or not much over the legal limit, you were arrested very soon after you finished drinking, you were not weaving all over the road, and you performed well on field sobriety tests. This defense usually requires your attorney to hire an expert toxicologist to testify on your behalf.

Some states make it unlawful to have .08 percent alcohol in the system for a period of time after driving or operating a motor vehicle. This means a crime may be committed in the comfort of one's home— well after the car has been put in the garage. A typical example is a law that prohibits having a .08 percent alcohol concentration within three (or sometimes two) hours after driving unless the alcohol was consumed after driving. In these states, the rising alcohol defense will generally not be effective. However, the prosecution will have a hole in its case that the defense can exploit if the blood test was done outside the two or three-hour window. See Retrograde Extrapolation by the Prosecution below.

D. Consumption of Alcohol after Driving

A lapse of time between driving and administration of the test may allow the introduction of evidence you consumed alcohol after you were driving, not before or during the period you were operating a car. For example, assume a car goes off the road and hits a sign in a remote area. The car is damaged and cannot be driven. Four hours later a trooper finds the driver sitting by the car and detects alcohol. The trooper assumes the driver was intoxicated at the time of the

accident, but then again, maybe the driver consumed alcohol after the accident. Sitting beside the road in a wrecked car and drinking may not be smart. However, if you are not operating the car, it may not be illegal. Furthermore, your attorney can question the police officer as to how the officer knows you were intoxicated while driving. The answer is since the police officer was not present when you were driving, the officer does not know when the alcohol was consumed.

E. Retrograde Extrapolation by the Prosecution

When the prosecution uses test results from a blood sample that was taken awhile after the arrest, the defense can argue that the result is too remote in time to prove the driver was in violation of the law when driving. To counter this argument, the state may offer an expert who has performed a retrograde extrapolation on the test results. A retrograde extrapolation means the expert tries to figure out what your blood alcohol measurement was when you were driving based on what it was when you were tested.

Scientists have developed a formula for calculating a person's BAC at an earlier time from the person's later test results. The formula uses the amount of alcohol consumed, the time when it was consumed, the blood alcohol concentration from a breath or blood test, and the time when the test was administered.

A retrograde extrapolation assumes that alcohol leaves the body at a particular rate and therefore, it is possible to determine what a person's blood-alcohol level was at an earlier time.

The prosecution will argue that retrograde extrapolation is about science and numbers; therefore, the expert who presents the retrograde analysis must be correct. However, the elimination rate is an average. An average means the "typical" person eliminates alcohol at a particular rate. Elimination rates vary considerably among individuals and are affected by things like food, exercise, and stress.

Retrograde extrapolation usually requires the state's expert to make many guesses:

- Was the person tested in the rising or falling phase of the alcohol curve? The prosecution will typically assume the person was in the falling phase, although it is not possible to know.
- Does the person metabolize alcohol at an average rate, or at some other value?
- Does the expert know for sure what the person had to drink and eat and when?
- What effect does any recently eaten food have on the absorption time?
- How much did the person weigh when the test was administered?

Because of the many guesses, some judges will keep the results out of evidence. Even if the judge lets the results in, a defense attorney can point out all the flaws in the calculation during cross-examination of the expert.

The weight jurors are likely to give to the prosecution's retrograde analysis depends on how high the projected blood-alcohol level was and the amount of time that passed between when a person was driving and when the blood was drawn. For example, a retrograde analysis based on a blood sample drawn three hours after a person was driving will not be as convincing as one that is based on a lapse of one hour. Similarly, a blood-alcohol retrograde analysis that

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indicates a person's blood-alcohol level was .08 at the relevant time will not be as convincing as a retrograde analysis that indicates the defendant's blood-alcohol level was .12.

IX. FOURTH AMENDMENT CONSTITUTIONAL VIOLATIONS

A. Police Need Consent, a Warrant, or Exigent Circumstances

A person cannot be physically compelled to take a breathalyzer test because the police cannot force a person to provide a deep lung breath of air. In contrast, a person who does not consent to a blood test can be physically restrained long enough to take a blood draw.

The United States Supreme Court has decided that a search warrant is usually required before a person can be compelled to provide a blood sample. Missouri v. McNeely, 569 U.S. 133 S. Ct. 1552 (2013). The Court observed that drawing blood is a search because it is an invasive procedure that requires piercing of the skin. Furthermore, so much more information than blood alcohol content can be gained from a blood draw.

However, police do not always need a warrant to conduct a search. The law has long permitted warrantless searches in "exigent circumstances" that require immediate action. For example, police are allowed to make a warrantless search if they have reason to believe evidence is being destroyed or will be destroyed and there is no time to obtain a warrant.

The Supreme Court has ruled that the police may take a blood sample from a drunk driving suspect without a warrant or the suspect's permission in exigent circumstances. The Court has not spelled out exactly what exigent circumstances would permit a warrantless blood draw. But the Court made clear that the fact that blood alcohol dissipates over time is not sufficient, by itself, to excuse the need for a warrant to take a blood sample.

According to the Court, each case must be examined individually to determine if a warrant is required. Arrests and accidents do not fall into a particular fact pattern; for that reason, the courts cannot provide a set rule for when the police must obtain a warrant before compelling a blood draw.

To get a warrant, the officer will have to present evidence to a judge or magistrate that probable cause exists that you were intoxicated while driving. If the officer does not believe there is time to get a warrant, or if the officer is unable to contact a judge or magistrate to issue one, the officer may compel you to submit to a blood draw without a warrant. The court would then need to determine, after the fact, if the officer had the right to force you to submit to the blood draw.

B. Unconscious Driver

Many states still have laws that allow the police to draw blood from a suspected drunk driver who is unconscious or non-responsive. Essentially, these laws say a person has given consent to a blood draw by driving on the state's roads, and the police can assume the person has not revoked consent because the person is unconscious or non-responsive. These statutes were on the books before the Supreme Court decided McNeely in 2013 and are most probably unconstitutional now. Courts of several states have agreed. If a blood sample is taken from an unconscious driver without a warrant or exigent circumstances, there's a good chance it can be kept out of court.

C. Consent Was Not Voluntary

Consent to a blood test generally requires a knowing and voluntary waiver of rights. In the right case, it may be possible to convince the court that even though the driver permitted the test, he or she did not legally consent. For example, the driver is involved in a serious accident in which she and/or others are injured. She is physically and/or psychologically traumatized and in shock. The police arrive and tell her they need a blood test. The driver is so overwhelmed by the circumstances that she does not fully appreciate that she has the right to say no.

D. Raising the Constitutional Violation with the Court

Whether the police officer had reasonable cause to take a sample of your blood without your permission or a warrant is a question of law. Questions of law are determined by a judge, regardless of whether you have a jury trial or a bench trial where a judge decides the case. Your attorney will probably argue that the police officer had time to get a warrant and simply chose not to do it. The state, of course, will try to persuade the judge that the police officer did not reasonably believe he or she did not have time to get a warrant.

Issues that can affect whether the police officer acted reasonably in ordering a blood draw without a warrant include the following;

- How long did it take to transport the driver to a clinic where a draw could be performed?
- Were other officers available to assist in the investigation and controlling an accident scene?
- How much time elapsed between the time the accident occurred and the police arrived?

- What was the driver's physical and mental state? Was he or she seriously injured or in shock?
- Was a magistrate or judge available to issue the warrant?

Remember, there is no bright-line rule that says precisely when a police officer can order a blood draw against your will and without a warrant. Your attorney will fight this battle when he or she presents your case to the judge. Blood samples that are obtained in violation of the Fourth Amendment will be suppressed. Evidence that is suppressed cannot be used in court.

E. Note: Criminal Penalties Cannot Be Imposed for Refusing a Blood Test

All states impose a penalty when a driver refuses to take a blood-alcohol test when requested to do so by a police officer. However, most states impose a civil penalty such as an automatic suspension of driver's license and/or no limited driving privileges if convicted of driving while impaired.

However, some states, such as North Dakota, Minnesota, Nebraska, California, and others, made it a criminal violation for a driver to refuse a blood draw for the purpose of blood-alcohol analysis when requested to do so a law enforcement officer. The United States Supreme Court ruled that criminal penalties cannot be imposed on a driver who refuses a blood draw for the purpose of alcohol blood analysis. Birchfield v. N. Dakota, 136 S.Ct. 2160 (2016).

The Court reasoned that since Fourth Amendment rights attach when a blood draw is performed, it is unconstitutional to impose a criminal penalty on a person for asserting a constitutional right. Administrative penalties can still be imposed on drivers who refuse a blood test though. For example, if a police officer requests you to take a blood test and you refuse, then your license can be revoked for the refusal, but no criminal penalty such as jail time can be imposed.

The Supreme Court distinguished between breathalyzer tests and blood draws. Fourth Amendment rights do not attach to breathalyzer tests. Therefore, a state can impose a criminal penalty on a driver who refuses to take a breathalyzer.

X. DISCONNECT DEFENSE

The "disconnect defense" can be effective when a defendant's behavior does not match the blood test results. It works best when a videotape of the stop, field sobriety tests, and arrest shows a defendant who looks normal. The defense's argument is that the blood test results must be wrong because the defendant could not possibly have had as much to drink as the results indicate and still function so well. The disconnect defense can be used in combination with one or more of the previously mentioned defenses that cast doubt on the accuracy of blood test results.

XI. SUMMING UP

The state has to prove its case beyond a reasonable doubt. That means do not give up if the state claims to have a blood test that proves you were intoxicated. There are many bridges for the state to cross at trial such as was the sample taken correctly, was it analyzed properly, can the state prove the sample came from you? In addition, did the state have the right to draw the blood on which the test was conducted? Every case is different. Have an attorney evaluate your case to determine the strengths and weaknesses in and how best to defend your legal rights.