INSIDE THE MINDS

Understanding DUI Scientific Evidence

Leading Lawyers and Scientists on Recent Developments in Forensic Science, Understanding Chemical and Field Sobriety Testing Procedures, and Analyzing the Validity of Test Results

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Using the Diagnostic and Statistical Manual to Raise the NHTSA-Created Low Threshold for Diagnosing Alcohol Intoxication

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Introduction

Every police officer in the United States has gone through the National Highway Traffic Safety Administration's (NHTSA) training on DWI Detection and Standardized Field Sobriety Testing. The information gathered during this brief training is used to stop, test, and arrest. Often times, prosecutors will use this training during direct and re-direct examination to give the impression to the trier of fact that the officer is an expert in DWI detection when, in fact, an officer is a layperson giving his or her opinion. This chapter begins by giving the basics in lay versus expert testimony and will then break down the contents of the NHTSA manual, see from where the data came and show the incredibly low threshold it sets for diagnosing alcohol intoxication.

Because of the low threshold set by the officer's training, it is important to understand how the medical industry, those who have trained for years and years, diagnose alcohol intoxication and how they are truly experts in this field. This will be done by comparing the *Diagnostic and Statistical Manual of Mental Disorders*, a highly regarded tool used by the medical industry, which sets a high threshold for diagnosing alcohol intoxication, to the NHTSA manual. Lastly, the chapter will discuss a non-exclusive list of alternate explanations for what may manifest itself as a sign of intoxication or provide false-positives leading to an improper arrest for driving under the influence.

Rules of Evidence

The Rules of Evidence give leeway to non-experts, also known as laypeople, to give opinions as to whether someone appeared to be intoxicated. For purposes of this chapter and the Rules of Evidence, "laypeople" is synonymous with "police officers." Thus, police officers are able to tell the judge or jury about the observations they made prior to making an arrest for driving under the influence (DUI) and the opinion they formed as to whether the arrested was intoxicated.

Along with being able to give their lay opinion as to an individual's intoxication, officers nationwide go through seventy-two hours of training on driving while intoxicated (DWI) detection and standardized field sobriety testing. They learn to observe everything from the way a person stops the car

and exits the vehicle, to the individual's eyes, odor, and speech, as well as the person's performance on the field sobriety tests. This training makes the officers highly sensitive to these observations and any sign of one or all equals an arrest for DUI. Unfortunately, this high sensitivity creates a low threshold of suspicion and, in turn, a high false positive rate. The officers are, in effect, reversing Blackstone's Formulation, which says, "It is better that ten guilty persons escape than that one innocent suffer."[1]

Because of the high false positive rate, it is left to the court system to separate the rightly accused from the wrongly accused. Defense attorneys have long used experts to assist the court in doing this. It is the goal of this chapter to assist defense attorneys in shedding light for the court on the reason for the high false positive rate, and offer the medical field's use of the *Diagnostic and Statistical Manual* to create a high threshold for diagnosing alcohol intoxication and the manner in which this information is to be used so that the false positive rate is low.

The Federal Rules of Evidence, if not adopted in their entirety by your state, have provided a guideline. They provide the basis for what is admissible in a court of law and what is not. Many rules of evidence will come into play throughout a DUI case, but the focus of this section is the rules regarding lay witness and expert witness testimony.

Rule 701

Rule 701 of the Federal Rules of Evidence deals with the admissible testimony from lay witnesses. In short, opinion testimony of a lay witness is admissible if it is rationally based on the perception of the witness, helpful to the trier of fact, and not based on scientific, technical, or other specialized knowledge.[2] Commonly, things like someone's general appearance, emotional state, scent, voice, vehicle speed, and whether someone appears to be under the influence fall into this category.

[1] WILLIAM BLACKSTONE, COMMENTARIES ON THE LAWS OF ENGLAND (1765-1769).

[2] If a witness is not testifying as an expert, testimony in the form of an opinion is limited to one that is: (a) rationally based on the witness's perception; (b) helpful to clearly understanding the witness's testimony or to determining a fact in issue; and (c) not based on scientific, technical, or other specialized knowledge within the scope of Rule 702. *See* FED. R. CIV. P. 701 (2011).

It is this rule that gives police officers the opportunity to testify to what they observed during arrests for DUI.

For example, after requesting discovery, you receive the police report, in which you read the officer's account of what occurred that evening:

> I pulled the operator over on Yes Street for running the red light at the intersection of Yes Street and No Way. I approached the driver's side door and immediately detected an odor of alcoholic beverage. The operator looked up at me with bloodshot and glassy eyes and handed me his license and registration. He apologized for running the red light. I also noticed he spoke with slurred speech.

When the officer takes the stand, he will be able to testify under Rule 701 as to the above observations (odor of alcohol, bloodshot and glassy eyes, and slurred speech) and how these observations allowed him, possibly along with field sobriety tests, to form the opinion that the driver was intoxicated.

Often, the state's attorney will try to bolster the officer's testimony, meaning he will ask questions of the officer to elicit responses that would insinuate to the trier of fact that he is a more reliable witness than a layperson. However, the officer is not an expert as he currently sits, and if the state intends to use him as an expert, he will have to abide by the guidelines of Rule 702.

Rule 702

Rule 702 of the Federal Rules of Evidence provides for the capacity in which an expert may testify, as follows:

> A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:
>
> (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;

(b) the testimony is based on sufficient facts or data;
(c) the testimony is the product of reliable principles and methods; and
(d) the expert has reliably applied the principles and methods to the facts of the case.[3]

The standards vary from state to state—some states follow *Frye,*[4] most follow *Daubert.*[5] Regardless, this rule allows an individual to hire an expert to testify on his or her behalf. This expert will use his scientific, technical, or other specialized knowledge to undermine the lay opinion given by the officer and offer an alternative.

DWI Detection: NHTSA Manual

Police officers nationwide go through the same training on DWI detection. Training lasts approximately seventy-two hours, and the information provided during this training comes from the US Department of Transportation's National Highway Traffic Safety Administration (NHTSA) manual titled *DWI Detection and Standardized Field Sobriety Testing.* According to the manual, the ultimate goal in training officers in DWI detection is to increase deterrence of DWI violations and thereby reduce the number of crashes, deaths, and injuries caused by impaired drivers.[6] The manual provides that because of this training, participants will become significantly better able to recognize and interpret evidence of DWI violations, as well as administer and interpret standardized field sobriety tests (SFSTs).[7]

While no one wants to deter police officers from doing their jobs, and certainly no one wants drunk drivers on the road, it is the job of the defense attorney to show why officers are highly sensitive to the DWI issue, why there is a high false positive rate, and how the medical field addresses it. To do this, it is first important to understand how the officer is trained, what the field sobriety tests are, and where they come from.

[3] FED. R. CIV. P. 702 (2011).
[4] *Frye v. United States,* 293 F. 1013 (D.C. Cir. 1923).
[5] *Daubert v. Merrell Dow Pharmaceuticals,* 509 U.S. 579 (1993).
[6] NHTSA Manual (HS 178 R2/06), I-1 (2006).
[7] *Id.*

Basics of DWI Detection

Detection is both the most difficult task in the DWI enforcement effort and the most important.[8] DWI detection is defined as "the entire process of identifying and gathering evidence to determine whether or not a suspect should be arrested for a DWI violation."[9] The detection process ends when the decision is made either to arrest or not to arrest the individual for DWI.[10] Officers are taught to break down detection into three phases:

1. Vehicle in motion
2. Personal contact
3. Pre-arrest screening

Vehicle in Motion

In phase one, referred to as vehicle in motion, the officer's first task is to observe the vehicle's operation and, based on this observation, decide whether there is sufficient cause to command the driver to stop.[11] The second task is to observe the way the operator stops the car in response to the officer's signal to stop. This is called the "stopping sequence," and the cues may include:

- An attempt to flee
- No response
- Slow response
- An abrupt swerve
- Sudden stops
- Striking the curb or another object[12]

Personal Contact

In phase two, known as personal contact, the officer's first task is to observe and interview the driver face to face and, based on this observation, decide whether there is sufficient cause to instruct the driver to step from the vehicle

[8] *Id.* at IV-1.
[9] *Id.*
[10] *Id.*
[11] *Id.* at IV-4.
[12] NHTSA at V-10.

for further investigation.[13] The officer will look for indicators such as odor of alcohol, bloodshot and glassy eyes, and slurred speech. The officer may also administer pre-exit tests, such as reciting the ABCs or counting backwards. The ABC test requires the suspect to say the alphabet without singing it. The counting backwards test requires the officer to pick two randomized numbers and ask the driver to count backwards between them—for example, counting backwards between seventy-seven and sixty-two.

Failure to do well on these tests may result in the officer asking the driver to exit the vehicle. The exit sequence is the officer's second task in the personal contact phase. The officer is taught that the manner in which the driver steps and walks from the vehicle and actions or behavior during what is referred to as the "exit sequence" may provide important evidence of impairment.[14] The cues the officer may look for in the exit sequence are:

- Shows angry or unusual reactions
- Cannot follow instructions
- Cannot open the door
- Leaves the vehicle in gear
- "Climbs" out of vehicle
- Leans against vehicle
- Keeps hands on vehicle for balance[15]

Pre-Arrest Screening

The officer's first task in phase three is to administer "structured, formal psychophysical tests" and decide, based on those tests, whether there is sufficient probable cause to arrest the driver for DWI. The three structured, formal psychophysical tests, referred to as standardized field sobriety tests that are "NHTSA-approved," are the horizontal gaze nystagmus, walk and turn, and one leg stand tests. They will be discussed in detail in the next section.

The second task in phase three is to do a preliminary breath test (PBT). The PBT is an additional way to determine probable cause to arrest for DWI.

[13] *Id.* at IV-4.
[14] *Id.* at VI-6.
[15] *Id.*

The PBT is not a calibrated device and, thus, is an arbitrary number, which is why many states do not even administer PBTs. Even if states do use them, most states will not admit them into evidence for the same reasons the other states do not even use them.

Standardized Field Sobriety Tests

As previously mentioned, the pre-arrest screening involves the officer administering three SFSTs. The officer may choose to administer other tests; however, the three listed are the ones NHTSA has approved and thus, will be the ones discussed.

Prior to administering SFSTs, the officer is supposed to ask whether the individual has any medical issues that would interfere with his or her ability to do well on the tests. The individual, however, has not been told what the tests are, so how can he or she know what might interfere?

After giving instructions to the operator and demonstrating when necessary, the officer is taught to look for specific clues as indicators of intoxication.

Horizontal Gaze Nystagmus[16]

Nystagmus is defined as an involuntary jerking of the eyes. The horizontal gaze nystagmus (HGN) test is done on individuals thought to be driving under the influence.

Test instructions:

- I am going to check your eyes.
- Keep your head still and follow the stimulus with your eyes only.
- Keep following the stimulus with your eyes until I tell you to stop.

The officer is to look for and do the following:

- Check for eyeglasses (glasses should not be worn during the test).
- Give verbal instructions.

[16] NHTSA at VIII-6-8.

- Position stimulus twelve to fifteen inches from the suspect's nose, slightly above eye level.
- Check for equal pupils.
- Check for resting nystagmus.
- Check for equal tracking.

The officer is taught that should he see unequal pupils, nystagmus when the eyes are not supposed to be moving, or the eyes not tracking equally, this could be an indicator of a medical disorder or injury causing nystagmus, so the test should not be done on this individual.

Next, the officer is taught to move his pen two seconds out and two seconds back for each eye, looking for the clues listed below. He should look for each clue individually and for each eye, which means he is looking for six possible clues in total:

- Lack of smooth pursuit
- Distinct and sustained nystagmus at maximum deviation
- Onset of nystagmus prior to 45°

Walk and Turn[17]

The walk and turn test is a divided attention test requiring the individual to follow instructions in two stages: the instruction stage and the walking stage. The test requires a designated straight line—per instructions, this line can be real or imaginary—and should be conducted on a reasonably dry, hard, level, non-slippery surface, although it is noted that recent field validation studies have indicated that varying environmental conditions have not affected a suspect's ability to perform the test.

Instruction stage:

- Place your left foot on the line (real or imaginary). Demonstrate.
- Place your right foot on the line ahead of your left foot, with the heel of the right foot against the toe of the left foot. Demonstrate.

[17] NHTSA at VIII-9-11.

- Place your arms down by your sides. Demonstrate.
- Maintain this position until I have completed the instructions. Do not start to walk until told to do so.
- Do you understand the instructions so far? (Make sure suspect indicates understanding.)

After the subject is in the instruction stance, the officer is to explain the walking stage and demonstrate where necessary:

Walking stage instructions:

- When I tell you to start, take nine heel-to-toe steps; turn, and take nine heel-to-toe steps back. (Demonstrate three heel-to-toe steps.)
- When you turn, keep the front foot on the line, and turn by taking a series of small steps with the other foot, like this. (Demonstrate.)
- While you are walking, keep your arms at your sides; watch your feet at all times; and count your steps out loud.
- Once you start walking, do not stop until you have completed the test.
- Do you understand the instructions? (Make sure suspect understands.)
- Begin, and count your first steps from the heel-to-toe positions as "One."

Throughout both the instruction stage and the walking stage, the officer will be looking for the following clues:

- Cannot keep balance while listening to the instructions
- Starts before the instructions are finished
- Stops while walking
- Does not touch heel-to-toe
- Steps off the line
- Uses arms to balance
- Makes improper turn
- Takes incorrect number of steps

Original research indicated that individuals over sixty-five years of age or with back, leg, or inner ear problems had difficulty performing this test.

Someone wearing two-inch heels or higher should be asked if he or she wants to take the shoes off to perform the test.

One Leg Stand[18]

The one leg stand is another divided attention test requiring the individual to follow instructions in two stages: the instruction stage and the balance and counting stage.

Instruction stage:

- Please stand with your feet together and your arms down at the sides, like this. (Demonstrate.)
- Do not start to perform the test until I tell you to do so.
- Do you understand the instructions so far? (Make sure the suspect indicates understanding.)

After the suspect understands the instructions, the officer is taught to give the following instructions for the balance and counting stage:

Balance and counting stage:

- When I tell you to start, raise one leg, either leg, with the foot approximately six inches off the ground, keeping your raised foot parallel to the ground. (Demonstrate one leg stance.)
- You must keep both legs straight, arms at your side.
- While holding that position, count out loud in the following manner: "one thousand one, one thousand two, one thousand three," until told to stop. (Demonstrate a count as follows: "one thousand one, one thousand two, one thousand three," etc. Officer should not look at his foot while conducting the demonstration—*officer safety*)
- Keep your arms at your sides at all times, and keep watching the raised foot.
- Do you understand? (Make sure the suspect indicates understanding.)
- Go ahead and perform the test. (Officer should always time the thirty seconds. Test should be discontinued after thirty seconds.)

[18] NHTSA VIII-12-14.

When ready, the suspect will begin the test. The officer is trained to look for a combination of clues:

- Sways while balancing
- Uses arms for balance
- Hops
- Puts foot down

The officer is trained to allow the individual to pick up his or her foot and keep counting if he or she puts it down at any time during the test.

Just like the walk and turn test, the one leg stand should be conducted on a reasonably dry, hard, level, non-slippery surface, and individuals over sixty-five years of age or those with back, leg, or inner ear problems will have difficulty performing this test. Additionally, those who are fifty pounds or more overweight had difficulty performing this test. Last, someone wearing two-inch heels or higher should be asked whether he or she wants to take the shoes off to perform the test.

NHTSA Manual Sensitivities

The vehicle in motion, personal contact, and pre-arrest screening stages provide the officer with a general basis for whether he or she wants to arrest the operator for DUI. Based on the officer's training, it would appear that the arrest decision would be a no-brainer if the operator exhibits the required clues on the SFSTs, smells of alcohol, has bloodshot, glassy eyes and slurred speech, and exhibits possibly questionable driving, based on the officer's training. But is it?

It is a defense attorney's job to explore every aspect of the case, looking for ways the officer may have made a mistake when testing and arresting his or her client. As previously discussed, every officer is trained on the same manual, whether they admit to it or not. Thus, one of the first ways to do this is to look at and analyze the officer's training, which comes directly from the NHTSA manual. In doing so, it may be uncovered that the way in which the officer was trained can lead to a high false positive rate in DUI cases.

SFST Research and Development

Beginning in 1975, because of the wide variety of tests used by officers nationwide, NHTSA, through a contract with the Southern California Research Institute (SCRI), sponsored studies to determine which field sobriety tests were the most accurate.[19] Laboratory research indicated that the horizontal gaze nystagmus, walk and turn, and one leg stand tests, when administered in a standardized manner, were a highly accurate and reliable battery of tests for distinguishing BACs above 0.10.[20]

NHTSA analyzed the laboratory data from the first study in 1977 and found:

- Horizontal gaze nystagmus (HGN): 77 percent accurate
- Walk and turn: 68 percent accurate
- One leg stand: 65 percent accurate
- By combining HGN and walk and turn, an 80 percent accuracy can be achieved.

In addressing these numbers only, the HGN was 23 percent inaccurate; the walk and turn was 32 percent inaccurate; and the one leg stand was 35 percent inaccurate. And where does this 80 percent come from for the HGN and walk and turn combination? It is a seemingly impossible number when looking at the results of the study. None of the 1977 information was obtained from the field; all of it was collected in a controlled lab, and there was no baseline used for any of the subjects tested.

Nonetheless, the research and development from the three studies determined that if four clues were seen on the HGN or two clues on the walk and turn or one leg stand, it was demonstrative of an individual with a BAC above 0.10.

Because the studies were done in controlled laboratory conditions, which are less variable and therefore may be less challenging than the highly varied conditions officers routinely encounter in the field,[21] three validation studies

[19] NHTSA at VIII-1.
[20] NHTSA at VIII-1.
[21] Marcelline Burns & Ellen W. Anderson, *A Colorado Validation Study of the Standardized Field Sobriety Test (SFST) Battery,* Colorado Department of Transportation (1995) *available at*

were conducted—the first in 1995 in Colorado,[22] the second in 1997 in Florida,[23] and the third in 1998 in San Diego.[24] These studies brought the SFSTs into the field to see whether they would have the same success they did in the lab.

The Colorado study determined that the use of SFSTs could be compared with findings from the lab setting.[25] Of the 286 people whose information was taken, only 234 of them were analyzed. Of the 234 test subjects whose results were analyzed, 85.8 percent of overall decisions to arrest or release were correct based on the three-test battery measured by blood alcohol content (BAC) (BAC of 0.05 or greater equaled under the influence).[26] However, these tests were done in the field, so the motorists were being stopped for other reasons than just to take field sobriety tests whether for a traffic stop or, most likely, for impaired driving, so it could not all be based on the three-test battery. Also, of the 286 people reported in the study, 205 people, or 71.6 percent, were between the ages of twenty-one and forty[27]—the results were skewed. Of the 205 people between twenty-one and forty, 164 were male.[28]

The Florida study claimed that it validated the results of the Colorado study. Of the 379 people whose information was taken, only 256 people were analyzed; of the 256 people analyzed, the decision to arrest or release based on confirmed BAC (0.08 baseline) was correctly made 92.9 percent of the time based on the three-test battery.[29] This percentage includes both the decision to arrest and the decision to release. However, the decision to arrest was also based on the vehicle in motion and personal contact stages, so the arrest decision was not 100 percent based on a combination of the horizontal gaze nystagmus, walk

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http://www.chesapeakeduilawyer.us/uploads/1/2/0/1/12016444/_____1995_colorado_validation_study_-_final_report.pdf

[22] *Id.*

[23] Marcelline Burns & Teresa Dioquino, *A Florida Validation Study of the Standardized Field Sobriety Test (SFST) Battery* (1997) *available at* http://www.duianswer.com/library/1997_Florida_Validation_Study_of_SFST___Burns___Dioquino.pdf

[24] Jack Stuster & Marcelline Burns, *Validation of the Standardized Field Sobriety Test Battery at BACs below 0.10,* US Department of Transportation, National Highway Traffic Safety Administration, DOT-HS-808-839 (1998) *available at* http://ntl.bts.gov/lib/25000/25900/25935/DOT-HS-808-839.pdf.

[25] *Colorado* at 36.

[26] *Colorado* at 21.

[27] *Colorado* at 31.

[28] *Colorado* at 31.

[29] NHTSA at VIII-2.

and turn, and one leg stand tests. Ages were not recorded for all 379 subjects, but for the 343 reported ages, 245 subjects, or 71.4 percent, were between the ages of twenty-one and forty.[30] Of those 245 subjects, 193 were male.[31] As a matter of fact, only seventy-one of the 343 ages reported were women[32]—again, skewed results. Nonetheless, the study determined there was little basis for continuing a legal challenge.[33]

However, in 1998, another study was done. The San Diego validation study reduced the BAC level for SFSTs from realizing an individual had over 0.10 BAC to an individual with over 0.08 BAC if the appropriate number of clues was observed on a properly administrated SFST.[34] They determined the officers' decisions, whether to arrest or release, were correct 90.5 percent of the time based on the three-test battery, as validated by BACs.[35] Yet again, the study failed to give credit to the vehicle in motion and personal contact stages. And, of the 297 people tested, 261, or 87.8 percent, were male. The ages were broken down into only two categories: adults (273) and youths (twenty-four). Without specified data, how could it be properly validated?

SFST Validation

Beyond the numbers and where they come from, it is important to make sure the officer is administering the SFSTs in the correct manner so that the tests live up to their description of "standardized," meaning they are given the same way to every person every time. The following clarification is given at the end of the pre-arrest screening section of the manual and appears in all caps:

> IT IS NECESSARY TO EMPHASIZE THIS VALIDATION APPLIES ONLY WHEN:
>
> - THE TESTS ARE ADMINISTERED IN THE PRESCRIBED, STANDARDIZED MANNER

[30] *Florida* at 31.
[31] *Id.*
[32] *Id.*
[33] *Florida* at 38.
[34] *See supra* note 24 at iii.
[35] *Id.*

- THE STANDARDIZED CLUES ARE USED TO ASSESS THE SUSPECT'S PERFORMANCE
- THE STANDARDIZED CRITERIA ARE EMPLOYED TO INTERPRET THAT PERFORMANCE

IF ANY ONE OF THE STANDARDIZED FIELD SOBRIETY TEST ELEMENTS IS CHANGED, THE VALIDITY IS COMPROMISED.[36]

An officer should be able to recite each of the test's instructions exactly as he did on the day of the arrest. Did he write them in the police report? Did he previously testify to them at a motions hearing? Compare his writing and testimony with the instructions in the NHTSA manual. Do they differ? If so, per the officer's training, the test results should not be counted against the client, as an improperly administered test invalidates the results.

At the end of each test, the officer will mentally or physically record how many clues he witnessed. Review the noted clues in the police report, field notes, or previously given testimony. Does the officer know the clues? Ask him to list them. Seeing two or more clues on the walk and turn or one leg stand or four or more clues on the horizontal gaze nystagmus denotes a failed test. However, it does not matter if one clue appeared several times—it constitutes only one clue.[37] Thus, if a police officer testified that the one leg stand test was failed because the suspect put his foot down seven times, but that was the only clue he exhibited, the individual passed the one leg stand test.

Alcohol Intoxication: Diagnostic and Statistical Manual of Mental Disorders

For studies to be accepted in the medical field, they need to be randomized, double-blind, placebo controlled, prospective studies that are analyzed statistically. Some of the statistical parameters looked at are as follows:

[36] NHTSA at VIII-19.
[37] *Id.*

- Objectivity and subjectivity
- Sensitivity and specificity
- Accuracy and precision
- Standard deviations
- Mean, median, and mode

The NHTSA manual fails on all counts. Who is the author? Yes, it is published by the National Highway Traffic Safety Administration, but who actually wrote the manual? Was it copyrighted? Who should be given recognition? Yes, there are studies in the manual, but was the manual distributed for notice and comment? No. And 2006 was the last time the manual was published, and aside from a few wording changes, it has been the same since its inception. Unfortunately, non-physicians translated medicine into law, and they got it wrong. Thus, the officer, through no fault of his own, has been trained on incorrect information resulting in a low threshold for diagnosing alcohol intoxication with high sensitivity and high false positives.

It is the ultimate goal of this chapter to help defense attorneys offer the *Diagnostic and Statistical Manual* (DSM) as an alternative for diagnosing alcohol intoxication and providing alternatives for what the manual defines as signs of intoxication. Remember, the officer is testifying as a lay witness. The defense's witness will be testifying in an expert capacity to medically sound information. Using the DSM will allow the expert to focus on the "who" (the client), as opposed to the "how" (the NHTSA manual). It will provide a high threshold for diagnosing alcohol intoxication, low sensitivity, high specificity, and a low false positive rate.

The DSM will focus on making a differential diagnosis, rather than a pre-determined conclusion. It will provide confirmatory testing instead of a conclusory chemical test. It will be exclusionary as opposed to accusatory. While law enforcement and the state's attorney will focus on admissions, observations, and SFSTs to make a conclusion, the medical field takes a patient's history, does passive and active physical exams, and makes a differential diagnosis using confirmatory testing.

Because of the way they have been trained, law enforcement officers are making a pre-determined conclusion. They have become biased examiners, taught to take a minimal history, do a limited physical examination, and not to take into account conflicting information, and they do not make a differential diagnosis. This leads to a misdiagnosis—again, they are trying to

make it look like medical decision-making, and they are getting it wrong. Training an officer using the NHTSA manual, in effect, is causing the officer to practice bad medicine without a license. If a doctor did this, he or she would face a medical malpractice suit.

Using an expert with knowledge of the DSM to undermine the officer's testimony and offer the trier of fact an alternative is like bringing a gun to a knife fight.

Just like elements of a crime, the DSM provides elements of alcohol intoxication. And just as each element of a crime can be broken down, so can each element of alcohol intoxication. The DSM, as well as each aspect of alcohol intoxication, will be discussed in full in this section.

Diagnostic and Statistical Manual of Mental Disorders

The DSM is published by the American Psychiatric Association (APA). The APA first published a predecessor of the DSM in 1844. It is an official nosology. The creation of the fifth edition was a 12-year process by a task force of 35 individuals and 13 work groups. While the number of people involved is too numerous to mention, there are 250 named individuals. The DSM is accepted and utilized by the World Health Organization (WHO), the US government, the insurance industry, and medical professions. The diagnostic codes are harmonized with the Internal Classification of Diseases (ICD).

DSM criteria are "…intended to summarize the characteristic syndromes of signs and symptoms that point to an underlying disorder."[38] Application of the criteria "require[s] clinical judgment."[39] Diagnostic criteria are offered as guidelines for making diagnoses and their use should be informed by clinical judgment.[40] DSM-5 is useful as a reference for courts and attorneys, and can assist in legal decision making as well as the legal decision makers' understanding of the relevant characteristics of mental disorders. However, use of the DSM-5 to assess for the presence of a mental disorder by non-clinical, non-medical, or otherwise insufficiently trained individuals is not advised."[41]

[38] AMERICAN PSYCHIATRIC ASSOCIATION, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 19 (5th ed. 2013) ("DSM-5")
[39] *Id.*
[40] *See* DSM-5 *supra* n. 38 at 21.
[41] *See* DSM-5 *supra* n. 38 at 25.

Alcohol Intoxication: The Elements

The DSM identifies alcohol intoxication as classification 303.00 and defines its criteria as follows:

> A. Recent ingestion of alcohol.
> B. Clinically significant maladaptive behavioral or psychological changes (e.g., inappropriate sexual or aggressive behavior, mood lability, impaired judgment, impaired social or occupational functioning) that developed during, or shortly after, alcohol ingestion.
> C. One (or more) of the following signs, developing during, or shortly after, alcohol use:
>
> (1) slurred speech
> (2) incoordination
> (3) unsteady gait
> (4) nystagmus
> (5) impairment in attention or memory
> (6) stupor or coma
>
> D. The symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.[42]

These criteria are the ones that should be used to diagnose patients. These criteria should be provided to the trier of fact as an alternative to the NHTSA manual. It is time to shift the paradigm.

> The essential feature of Alcohol Intoxication is the presence of clinically significant maladaptive behavioral or psychological changes (e.g., inappropriate sexual or aggressive behavior, mood lability, impaired judgment, impaired social or occupational functioning) that develop during, or shortly after, the ingestion of alcohol (Criteria A and B). These changes are accompanied by evidence of slurred speech, incoordination, unsteady gait, nystagmus,

[42] *See* DSM-5 *supra* n. 38 at 497.

> impairment in attention or memory, or stupor or coma (Criterion C). The symptoms must not be due to a general medical condition and are not better accounted for by another mental disorder (Criterion D).[43]

Diagnostic criteria A, B, and C are accusatory, while criterion D can negate, or exclude, A, B, and/or C. After providing the DSM's criteria for alcohol intoxication and showing why these should be the only criteria for alcohol intoxication, the expert should offer other reasons a person may be exhibiting signs of alcohol use. The following subsections will dissect the criteria and give medical alternatives.

Criterion A

Criterion A is defined as the recent ingestion of alcohol. A physician will look to admissions of the patients. Did he admit to ingesting two alcoholic beverages? Did she deny drinking? The best way to get to the bottom of something is to ask directly.

A way to confirm the patient's admission or denial is to use a chemical test. The chemical test will measure BAC using a breath or blood test. A urine test could be used to determine the presence of controlled substances. More often than not, a doctor will use a blood test. Detectors vary in sensitivity and specificity and are qualitative, not quantitative.

In comparison, the officer will first ask a person whether she has had anything to drink after claiming to smell an odor of alcoholic beverage. The odor of an alcohol beverage is primarily due to congeners. Congeners include fuel oils, which are alcohols. Furthermore, the odor of alcohol on the breath is only qualitative, not quantitative. The presence of such an odor does not equate to intoxication: "…even under optimum laboratory conditions, breath odor detection is unreliable…."[44] In other words, the nose does not know. It may be a detector, but it is certainly not a measuring tool.

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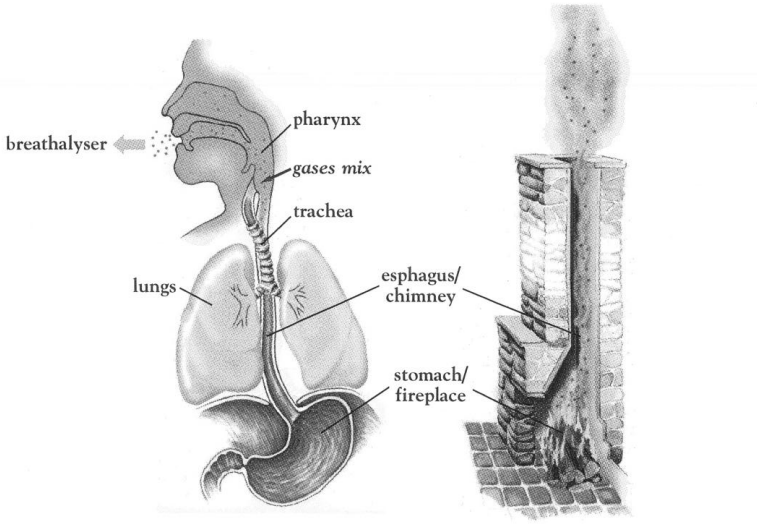
[43] AMERICAN PSYCHIATRIC ASSOCIATION, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS (4th ed., 2000).

[44] Herbert Moskowitz, Marcelline Burns, & Susan Ferguson, *Police Officers' Detection Of Breath Odors From Alcohol Ingestion,* 31 ACCIDENT ANALYSIS PREVENTION 175, 175-180 (1999).

Additionally, the odor may indicate the presence of gastroesophageal reflux disease (GERD). GERD concerns the incompetence of the sphincter or valve between the esophagus and the stomach. With GERD, stomach contents, whether they are solid, liquid, or gas, tend to rise from the stomach back up into the esophagus, pharynx, and even the mouth. When the stomach contains alcohol, gases expressed from the patient's mouth include alcohol from the stomach. This contamination is a form of pre-analytic error. It is like the aroma of a newly uncorked bottle of fine wine or the smell when you open the flue on a fireplace.



Fireplace Analogy

Thus, a "strong" odor may indicate the presence of GERD. Note: The effects of GERD would be worse after bariatric surgery.

Dental apparatuses, (e.g., dentures, braces, bridges) serve as locations for sequestration of small particles of food, which become saturated with alcohol. During forced expiration, the alcohol or the particles themselves can become dislodged, contaminating the breath specimen. The manufacturer of evidentiary breath testing equipment recommends that a dental apparatus be removed prior to evidentiary breath testing.[45]

[45] E-mail from Hansueli Ryser, vice president of Dräger Safety Diagnostics Inc., indicates that a dental apparatus should be removed prior to the beginning of the observation period (July 26, 2009) (on file with author).

Also, the presence of jewelry in the mouth violates the requirement that the oral cavity be empty to properly perform evidentiary breath testing. Foreign objects can contain alcohol, sequester alcohol, or contain small amounts of particulate matter that contains alcohol, and be dislodged with the forced expiration required of evidentiary breath testing. The alcohol or particulate matter containing alcohol when dislodged contaminates the breath specimen so that the results are falsely elevated. Mouth jewelry must be removed prior to evidentiary breath testing. Also, any non-familiar item pierced into the body will bring about inflammation. With inflammation comes blood to the surface, and with that blood comes alcohol.

Poor dentition can also produce locations for sequestration of small particles of food that may become saturated with alcohol. During forced expiration, the alcohol or the particles themselves may become dislodged, contaminating the breath specimen. Additionally, poor dentition can produce inflammation with its concomitant increase in temperature and blood flow to the mouth. This increase in blood flow would bring with it an increased flow of alcohol to this area—a further additional possible source of contamination to the breath.

This contamination of the breath specimen would lead to an erroneous elevation on evidentiary breath testing. It is important to note that it would take only a minute amount of alcohol to cause an elevation on evidentiary breath testing, as the machine multiplies the amount of alcohol it receives 2,100 times because of the 2,100-to-1 breath-to-blood ratio.

Criterion B

Criterion B is defined as clinically significant maladaptive behavioral or psychological changes (e.g., inappropriate sexual or aggressive behavior, mood lability, impaired judgment, impaired social or occupational functioning) that developed during, or shortly after, alcohol ingestion.[46] The DSM defines this as the essential feature of alcohol intoxication.

In applying this criterion, the defense expert will look at the individual's everyday habits, career, medical records, etc., to determine whether the aggressive behavior, mood lability, impaired judgment, and/or impaired social or occupational functioning were there prior to the alleged alcohol ingestion.

[46] *See* DSM-5 *supra* n. 38 at 497.

For example, when an individual was arrested for allegedly operating under the influence, he exhibited loud and boisterous responses to all questions and demanded to be given his Miranda rights. Is this a response to alcohol intoxication, or could it be that he is a medical malpractice litigation attorney, who under the most normal conditions is loud and boisterous? His law background, while not criminal, made him believe that because he was in handcuffs, he was entitled to Miranda. He was forgetting that Miranda is required only during times of custodial interrogation. While he was in the wrong in terms of Miranda, his mannerisms and behavior can be attributed to his legal background, not that he was under the influence.

Criterion C

The DSM's criterion C for Alcohol intoxication is as follows:

> One (or more) of the following signs, developing during, or shortly after, alcohol use:
>
> (1) slurred speech
> (2) incoordination
> (3) unsteady gait
> (4) nystagmus
> (5) impairment in attention or memory
> (6) stupor or coma

The signs can be broken down into three groups: incoordination, impairment in attention or memory, and stupor or coma.

Incoordination

Incoordination applies to the first four signs of alcohol use as listed above: slurred speech (dysarthria), incoordination, unsteady gait (ataxia), and nystagmus. Incoordination, generally speaking, is the inability to make a smooth, efficient, purposeful movement or movements toward a goal. This can be looked at from many aspects, but for our purposes, speech, gait, or nystagmus.

Both the NHTSA and the DSM associate slurred speech with alcohol intoxication. Note that neither odor of alcohol nor bloodshot or glassy eyes

are listed in the DSM as signs of alcohol use, and these are most common in police reports for those charged with DUI. Regardless, as previously stated, the DSM, as opposed to NHTSA, is not to be used as a cookbook. An expert will interpret medical records or make other assessments to determine whether the slurred speech or dysarthria was due to alcohol use or whether it could be attributed to a speech impediment or domestic or foreign accent. It could also be attributed to tiredness or even stroke.

Unsteady gait, another form of incoordination, is also a sign of alcohol use per the DSM. As any doctor will attest to, there are hundreds of other reasons a person may have unsteady gait aside from alcohol use. Asking the right questions, reviewing medical records, as well as consulting the client's physician or other medical specialists or having an expert review the medical records may uncover reasons for unsteady gait that have nothing to do with alcohol use.

Remember that per the NHTSA manual, prior to administering field sobriety tests, an officer is supposed to ask whether the suspect has any medical issues that would prevent her from being able to do the tests; if so, the suspect may not be a candidate for the tests. Often, the suspect says "no" when asked because she has not been told what the tests are, so she cannot accurately assess whether she is a candidate for the tests. Point this out while the officer is on the stand. On top of that, remember that the officer is not supposed to administer the one leg stand test if the suspect is fifty or more pounds overweight. Finally, if the suspect is sixty-five years of age or older, has back, leg, or inner ear problems, neither the one leg stand nor the walk and turn test should be administered because the original study showed difficulty in performing the tests.

In terms of nystagmus, many factors can cause it, from atmospheric conditions to changes in biorhythms. Normal medical conditions, as well as pathological medical conditions and medications, can cause nystagmus. Beyond that, climate changes such as changes in atmospheric pressure, including barometric pressure, as well as temperature and other weather changes can result in nystagmus.

For example, irrigation of the ears with water of varying temperatures is utilized as a diagnostic test by a neurologist. Biorhythms, such as the circadian rhythm can be associated with nystagmus. Pathological conditions, including infections, both bacterial, such as streptococcus, and viral, such as measles, influenza, or

the common cold, can cause nystagmus. Other infections, such as syphilis, can also cause nystagmus, primarily because of their effect on the labyrinth in the inner ear. Deficiency of vitamins, such as Thiamine or vitamin B1, causes what is known as Wernicke's encephalopathy or Wernicke-Korsakoff syndrome, which can include nystagmus. Neurologic disorders, such as multiple sclerosis and epilepsy, as well as psychogenetic factors are associated with nystagmus.

Endocrine conditions, like thyroid disease and diabetes mellitus, can present with nystagmus, as can cardiovascular diseases, such as arteriosclerotic cardiovascular disease (ASCVD) and associated hypertension, arrhythmias, and cerebral vascular accidents (CVA) or strokes. Other pathological conditions, including sunstroke, motion sickness, eyestrain, glaucoma, and exposure to relatively innocuous substances, such as caffeine, nicotine, and aspirin, can be associated with nystagmus. Of course, various eye conditions, including strabismus and amblyopia, severely and negatively affect this test.

All of these conditions and many others can result in HGN, which is indistinguishable from that caused by the consumption of alcohol. Therefore, the appreciation of nystagmus in an individual is not a very specific test. There are many false positives when searching for alcohol intoxication with this test. The test for nystagmus is too non-specific, producing a very high error rate when used to determine alcohol intoxication, let alone the degree of alcohol intoxication.

It is impossible to develop a methodology to ascertain nystagmus reliably, short of electronystagmography, and even with that, it is not possible to determine the etiology without more information. With the additional information, the error rate still makes the test much too unreliable to provide a specific diagnosis of alcohol intoxication. It is readily apparent why NHTSA's HGN test is not generally an accepted test: it is not conclusive; it is not specific; it is insensitive; and the methodology that is commonly used has not been systematically validated. In addition, without recorded electronystagmography, the test itself and its interpretation can be "fudged"—that is, it is subject to fraud.

Impairment in Attention or Memory

The fifth sign of alcohol use, or second group, per criterion D, is impairment in attention or memory. While this may be a sign of alcohol use, there may be

many other reasons for it. For example, a head injury or concussion of the head can result in neurologic changes that totally invalidate any psychophysical testing. Therefore, psychophysical testing in such an individual is of no use in determining state of intoxication. A head injury with resultant brain damage negates the ability of an individual to provide a knowing and voluntary consent or waiver.

Another explanation for impairment in attention or memory is sleep deprivation, which leads to tiredness and fatigue affecting appearance, as well as performance on psychophysical tests. The tests have not been validated in people who are tired, so no correlation can be drawn with alcohol intoxication or impairment. It is believed that lack of sleep results in deactivation of certain brain areas concerned with mediating attention and supervision.[47] Postural control is determined by the interplay of visual, proprioceptive, and vestibular inputs, which are dynamically weighed to determine body position and maintain equilibrium.[48]

Aside from head injury and sleep deprivation, disorders such as attention deficit disorder (ADD) or attention deficit hyperactive disorder (ADHD) should not be left out when exploring other reasons for impairment in attention or memory, aside from alcohol use.

Stupor or Coma

The sixth sign of alcohol use, or third group, per criterion D, is stupor or coma. This is a severe sign of alcohol use, but it also could be attributed to a number of other things, such as diabetes, head injury, or seizure.

Diabetes mellitus affects the evaluation for DWI in a variety of ways: It is difficult to evaluate a diabetic for DWI because many of the indicia of intoxication are common to diabetes mellitus and complications that arise from diabetes. Normal metabolism and blood sugar levels are affected by the disease. Normal metabolism and blood sugar levels are also affected by oral and parenteral hypoglycemic agents. This can affect demeanor; it can result in behavior that ranges from excitability and seizure to frank coma.

[47] Marco Fabbri et al, *Postural control after a night without sleep,* 44 J. NEUROPSYCHOLOGIA 2520, 2520-2525 (2006).
[48] *Id.*

The mental changes affect the ability to provide a truly knowledgeable and voluntary consent.

Just as with impairment in attention or memory, a head injury or concussion of the head can result in neurologic changes that totally invalidate any psychophysical testing. Epilepsy, or a seizure disorder, completely precludes a psychophysical evaluation for intoxication because all of the signs and symptoms used as indicia of intoxication are most likely due to the seizure and the postictal state.

Criterion D

Criterion D is the exclusionary criterion. It states that the symptoms are not due to a general medical condition and are not better accounted for by another mental disorder.[49] Things to think about regarding criterion D include the following:

- Inflammation
- Congenital anomalies
- Trauma
- Microbial invasion
- Toxic exposures
- Immune responses
- Treatments
- Medications

Conclusion

DWI detection and deterrence is of high importance; however, the NHTSA manual training makes the officer highly sensitive, creating the risk of high false positives. It is up to the court system to weed out the officer's false positives. Using an expert who can look at the facts of the case, watch any available video, review the medical records, testify to the DSM's definition of alcohol intoxication, and interpret medical records to provide other reasons a person performed poorly on SFSTs, had a high breath test reading, smelled of alcohol, or had bloodshot eyes and/or slurred speech

[49] *See* DSM-5 *supra* n. 38 at 497.

may be the difference between hearing "guilty" and "not guilty." It is time to change the paradigm. It is time to raise the level of discourse.

A sample client intake form is included as Appendix D, with a detailed list of questions to ask during the initial client interview to uncover alternatives for what may have appeared to be alcohol intoxication. It can be used as a starting point for undermining the state's case and offering an alternative.

Lance Gooberman, MD, DABAM *has expertise in the areas of the effects of alcohol and other drugs on the human body and the detection of alcohol and other drugs. He has completed twelve years of formal education in science and medicine at the undergraduate, graduate, and post-graduate levels. He has completed a residency in internal medicine and has licenses to practice medicine and surgery in New Jersey and Pennsylvania. He has thirty years of experience and is board certified in addiction medicine. Additionally, Dr. Gooberman has three years of formal education in law and is a member of the bar in both New Jersey and Pennsylvania. He is a certified operator of evidentiary breath testing equipment, has rendered opinions, and has been qualified by courts of many jurisdictions.*

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Dedication: *In memory of Jack Sitzler: a great lawyer, friend, and mentor.*

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