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The Drug Evaluation and Classification (DEC) Program

Saving Lives and Preventing Crashes

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— DEDICATION —

This monograph is dedicated to the victims of impaired driving and their families.

This monograph is further dedicated to the Drug Recognition Expert officers who payed the ultimate price in service to our nation. May they rest in peace and may their families, friends and co-workers find solace in knowing they accomplished the greatest service possible with their selfless dedication.

Name	Agency	State	DRE No.	Date of Death
Trooper Jimmie White	Arkansas State Police	AR	#5416	June 2 2002
Sergeant Mike Crowe	Arizona DPS	AZ	#129	July 5 1995
Officer Beryl Wayne Scott Jr.	Phoenix PD	AZ	#4402	Sept 10 2002
Officer Robert Targosz	Gilbert PD	AZ	#8077	April 29 2006
Officer Kevin Weeks	Tempe PD	AZ	#11043	Sept 28 2006
Officer Jair Cabrera	Salt River PD	AZ	#20352	May 24 2014
Officer David Payne	Chandler PD	AZ	#18797	Oct 31 2014
Officer Noreen Vargas	California Highway Patrol	CA	#4951	Nov 8 1996
Deputy Michael Hoenig	LA Co. S.O.	CA	#4677	Oct 30 1997
Officer Ricky Stovall	California Highway Patrol	CA	#1274	Feb 24 1998
Officer Sean Nava	California Highway Patrol	CA	#6553	Oct 28 2000
Officer Daniel Clark	San Bernardino PD	CA	#3125	Nov 3 2011
Trooper Joseph Ynostroza	Colorado State Patrol	CO	#036	Dec 6 1989
Acting Chief Dan Dalley	Fruita PD	CO	#4724	June 4 2001
Officer Anthony Simms	D.C. Metro Police	DC	#1837	June 3 1996
Officer Ruben Jones	Miami Dade PD	FL	#1949	Oct 5 1998
Deputy Kipton Hayward	Polk Co. S.O.	IA	#3144	Oct 9 1993
Sgt. Shawn Miller	West Des Moines PD	IA	#5850	Aug 3 2016
Deputy Craig Blann	Newton Co. S.O.	IN	#11015	Sept 6 2004
Lieutenant Gary Dudley	Indiana State Police	IN	#1858	Aug 22 2006
Officer David Moore	Indianapolis Police	IN	#15780	Jan 26 2011
Trooper Jonathan Leonard	Kentucky State Police	KY	#13332	Dec 19 2006
Trooper Marc Castellano	New Jersey SP	NJ	#16923	June 6 2010
Investigator Ricky Parisian	New York State Police	NY	#3022	May 20 1994
Sr. Trooper Maria Mignano	Oregon State Police	OR	#7293	Sept 4 2001
Trooper Joshua D. Miller	Pennsylvania SP	PA	#16242	June 7 2009
Cpl. Bryon K. Dickson	Pennsylvania SP	PA	#18823	Sept 12 2014
Officer Darren Medlin	Grapevine PD	TX	#9719	June 12 2004
Deputy Franco Aguilar	Sevier Co. S.O.	UT	#14805	April 29 2010
Officer Patrick Maher	Federal Way PD	WA	#9111	Aug 2 2003

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ACKNOWLEDGEMENTS

This monograph was a team effort.

This monograph would not be possible without the efforts of Chuck Hayes, Project Manager of the DEC Program, Western Region, International Association of Chiefs of Police, and attorney and former National Traffic Law Center Director, Steve Talpins. These two were intrinsically involved in updating much of what they wrote together in the original Drug Evaluation and Classification Program monograph published by the American Prosecutors Research Institute (APRI) in 2004. We would also like to acknowledge and thank former Los Angeles Police Department Sergeant Tom Page for his thoughtful suggestions and review of this publication. Each of these individuals is nationally renowned for their skills and expertise in drugged driving issues.

Much has changed since this monograph was originally published in 2004. At that time, much of the case law section revolved around *Daubert*, *Frye* and Rule 702 hearings to persuade courts of the admissibility of DRE testimony. Today, drug recognition testimony is readily accepted in almost all courts in America and Canada. As a result, the case law section of the original monograph is now reduced to a footnote to contact the National Traffic Law Center if such a challenge is issued. This monograph reflects other changes that have also occurred since the original publication.

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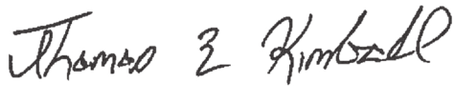
This document was produced thanks to the financial contribution from The Foundation for Advancing Alcohol Responsibility (Responsibility.org). Responsibility.org is a national not-for-profit organization and a leader in the fight to eliminate drunk driving and underage drinking. Funded by leading distilled spirits companies including Bacardi U.S.A., Inc.; Beam Suntory; Brown-Forman; Constellation Brands, Inc.; DIAGEO; Edrington; Mast-Jägermeister US, Inc.; and Pernod Ricard USA, Responsibility.org has transformed countless lives through programs that bring individuals, families, and communities together to guide a lifetime of conversation around alcohol responsibility and by offering proven strategies to stop impaired driving. Its support in assisting local prosecutors' fight against impaired driving is greatly acknowledged.



Thomas E Kimball
Director, National Traffic Law Center

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INTRODUCTION

Millions of Americans use and/or abuse drugs.[1] According to the 2016 National Survey of Drug Use and Health (NSDUH), an estimated 28.6 million Americans aged 12 or older were current (*e.g.*, past month) illicit drug users. It is no surprise, therefore, that drugs—in addition to alcohol—play a role in many fatal crashes.

The number and prevalence of drugged drivers has increased over the years, with predictable results. Since the 1970's, the National Highway Traffic Safety Administration (NHTSA) and/or the Insurance Institute for Highway Safety has conducted the National Roadside Survey (NRS).[2] In 2007 for the first time, researchers tested drivers for drugs in addition to alcohol. That year, 16.3 percent of weekend, nighttime drivers tested positive for drugs other than alcohol.[3] During the 2013-2014 NRS, 22.5 percent of weekend, nighttime drivers tested positive for drugs.[4] The increasing number of drugged drivers resulted in a corresponding increase in the number of drugged driving fatalities. In 2005, for drivers with known test results, 28 percent of those killed in a crash tested positive for drugs; by 2016, over 43 percent of fatally-injured drivers with known drug test results were drug-positive and over 50 percent were positive for two or more drugs.[5]

Traditionally, police officers and prosecutors have had difficulty identifying and prosecuting drug impaired drivers.[6] Fortunately, law enforcement developed a solution: the Drug Evaluation and Classification (DEC) Program. By combining basic medical knowledge about drug pharmacodynamics with validated psychomotor tests, the Program enables a police officer certified as a Drug Recognition Expert (DRE)[7] to deter-

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mine whether a suspect is under the influence of alcohol and/or drugs and, if so, by what category of drugs.

The drug evaluation and classification process is systematic and standardized. It utilizes a variety of readily observable signs and symptoms that are accepted in the medical community as reliable indicators of drug influence. During a DRE examination, the DRE takes the suspect's brief medical history and assesses the suspect's pulse, blood pressure, body temperature, pupil size and reaction to light, and psychomotor function. The DRE also examines the suspect's ocular tracking, smooth pursuit, and Horizontal and Vertical Gaze Nystagmus (HGN and VGN).

The Program is employed by thousands of law enforcement agencies at the local, state, and federal levels in the United States and Canada. In addition, the Program is endorsed by numerous civilian associations and organizations including, most notably, the National Safety Council Committee on Alcohol, Drugs and Impairment Division, the American Bar Association, the American Optometric Association, and the American Civil Liberties Union, for use in detecting workplace drug impairment.

To successfully explain the evidence and issues to jurors in drug-impaired driving and DRE cases, a prosecutor must understand the basics of the DEC Program. This publication is designed to provide prosecutors with a basic understanding of the drug evaluation and classification process.

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THE DRUG EVALUATION AND CLASSIFICATION PROGRAM

I. HISTORY AND DEVELOPMENT

A DRE is a police officer who is trained to recognize impairment in drivers who are under the influence of drugs other than, or in addition to, alcohol. The International Association of Chiefs of Police (IACP) coordinates the Drug Evaluation and Classification (DEC) Program and is supported and funded by the National Highway Traffic Safety Administration (NHTSA).

The Los Angeles Police Department (LAPD) originated the Program.[8] In the early 1970's, LAPD officers noticed that many of the individuals they arrested for alcohol-impaired driving cases registered very low or zero alcohol concentration readings. The officers reasonably suspected that the arrestees were under the influence of drugs but lacked the knowledge and skills to support their suspicions. In response, two LAPD sergeants collaborated with various medical doctors, research psychologists, and other medical professionals to develop a simple, standardized procedure for recognizing drug influence and impairment. Their efforts culminated in the development of a 12-step process and the first DRE Program. The LAPD formally recognized the Program in 1979.[9]

The LAPD's DRE Program attracted NHTSA's attention in the early 1980's. NHTSA worked with the LAPD to develop a standardized methodology, which led to the development of the DEC Program. During the ensuing years, NHTSA, along with other agencies and research groups, examined the DEC Program. These studies demonstrated that a properly trained DRE can successfully identify drug impairment and accurately determine the category of drugs causing such impairment.[10]

In 1987, NHTSA started DEC pilot programs in Arizona, Colorado, New York, and Virginia, and added Utah, California, and Indiana in 1988. Commencing in 1989, IACP and NHTSA expanded the DEC Program across the country. Currently, all 50 states, the District of Columbia, various branches of the military, and several countries around the world employ the DEC Program.

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II. DRE TRAINING AND CERTIFICATION

Police departments typically "hand-pick" its DRE candidates or utilize an application or selection process. The process often includes a recommendation or endorsement from a trial court prosecutor. A DRE candidate must be trained in, and proficient in, the administration and interpretation of the standardized field sobriety tests (SFSTs), including the HGN test, *prior* to his acceptance into the DRE pre-school. A DRE candidate undergoes approximately 100 hours of intensive classroom instruction and formal training, including a basic overview of field sobriety tests, human physiology and drug pharmacology, and an internship period during which the DRE candidate conducts actual drug evaluations under the tutelage of a certified DRE instructor.

Volunteer Victoria Rangel is given a sobriety test from officers during the Fullerton PD's Wet Lab program. Photo by Steven Georges/Behind the Badge OC

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At the DRE pre-school and school, a DRE candidate receives nine days of specialized DRE training about the effects of alcohol and other drugs on the human body. He also participates in several alcohol workshops and must pass a final exam before graduation.[11] After graduation, a DRE undergoes a lengthy certification process. During this process, a prospective DRE must perform a minimum of 12 supervised evaluations. To achieve certification as a DRE, the candidate's opinions must be confirmed by a laboratory analysis of the biological specimens collected during the field training examinations. The laboratory must corroborate his opinion 75 percent of the time before he can be certified.

Many DREs supplement their training by attending other specialized courses and conferences and/or by reading articles and scientific studies relating to alcohol and drug impairment. Beginning in 1995, the IACP began an annual training conference to enhance DRE education.

Green Labs

With the emergence of legal cannabis in a multitude of states, many agencies are looking for ways to improve officers' ability to identify cannabis impaired drivers. Colorado's former Traffic Safety Resource Prosecutor (TSRP) developed the nation's first "Green Lab." Green Labs function like the traditional "wet labs" used to train officers on alcohol impairment. In a Green Lab, an officer watches volunteers smoke, ingest, or consume different types of cannabis (*e.g.*, bud/flower, oil concentrates, wax, edibles, etc.) and examine the volunteers after ingestion. This allows the officer to witness a subject's use and impairment from start to finish. The program is controversial since cannabis remains illegal at the Federal level, but there is no denying its utility.[12]

III. THE DRE PROCESS

The DRE process is a systematic and standardized method of examining an individual suspected of drug-impaired driving to determine: "(1) Whether the suspect is impaired; and if so, (2) Whether the impairment relates to drugs or a medical condition; and if drugs, (3) The category or combination of categories of drugs that is the likely cause of the impairment."[13] The process is systematic "because it is based on a complete set of observable signs and symptoms that are known to be reliable indicators of drug impairment. It's also systematic in that it's an efficient and safe way to evaluate the individual. A drug recognition expert never reaches a conclusion based on any one element of the examination, but instead on the totality of facts

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that emerge."[14] The DRE evaluation is standardized because "it is conducted in the same way, by every drug recognition expert, for every suspect" whenever possible.[15] Standardization is important because it makes an officer a better observer, helps to avoid errors, allows for easy comparison of DRE evaluations, and promotes professionalism.

A. Medical Rule Outs

As part of his training, a DRE is taught to recognize whether the individual he is examining is affected by some other medical issue mimicking impairment. The value of determining that someone is not impaired by drugs but is instead suffering from a medical condition sometimes puts a DRE in a situation where a person could suffer great harm or die but for the intervention of the DRE.

DREs IN THE REAL WORLD

Anthony Marks served as a DRE with the Los Angeles Police Department as an auxiliary officer; his full-time job was in pharmaceutical sales. With his pharmaceutical sales job, he travelled to many physicians' offices. Soon, doctors and nurses learned of his drug recognition expertise. On a visit to a medical office in Panorama City, a doctor approached him and asked him for help. Concerned parents brought their 16-year-old son to the doctor believing their son was using drugs. They noticed several changes in his behavior, and they had been to the emergency room once already. The doctor and his assistant performed several tests and took blood samples, but none of the tests indicated drug use. The doctor asked Anthony to perform his 12-step DRE exam. At the end of the evaluation, Anthony told the doctor and the parents the child was not on drugs. Based upon Anthony's assessment, the doctor directed the parents to take the child to the emergency room for a scan of his brain.

The next time Anthony visited the doctor's office, he learned the rest of the story. The CT scan of the brain indicated the child was suffering from a brain bleed. The 16-year-old was a soccer player and hit his head while playing. If the child arrived at the hospital 20 minutes later, he would have died. Several medical doctors missed the diagnosis, but the DRE was able to rule out drugs as the cause of the suspected impairment and, instead, deemed it a medical problem.

B. The 12-Step Process[16]

A DRE utilizes a 12-step process to assess his suspect:

1. Breath Alcohol Test

The arresting officer reviews the subject's breath alcohol concentration (BrAC) test results and determines whether the subject's apparent impairment is consistent with the subject's

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BrAC. In the majority of operations, an officer does not call for a DRE or conduct a DRE evaluation if a subject provides a breath sample at or above the illegal 0.08 grams of alcohol per 100 ml of blood.[17] If a subject provides a breath sample below the illegal limit and the impairment *is not* explained by the BrAC, the officer should perform or request a DRE evaluation. In addition, if the impairment observed by an officer is not consistent with the alcohol level, even if it is above .08, a DRE evaluation is well advised to determine drug impairment or a medical issue mimicking impairment. In some jurisdictions a lab will test for drugs, regardless of the BrAC level. Many labs, however, have limited resources and for financial reasons, discontinue testing beyond alcohol testing.

2. Interview of the Arresting Officer

The DRE commences his investigation by reviewing the BrAC test results, if any, and discussing the circumstances of the arrest with the arresting officer(s). The DRE enquires about the subject's behavior, appearance, and driving pattern. The DRE also asks whether the subject made any statements and whether the arresting officer(s) found any other relevant evidence (*e.g.*, a small pipe or a baggie) during the arrest contact.

3. Preliminary Examination and First Pulse

The DRE conducts a preliminary examination, in large part to ascertain whether the subject may be suffering from an injury or other condition unrelated to drugs. Accordingly, the DRE asks the subject a series of standard questions relating to the subject's health and recent ingestion of food, alcohol, and drugs, including prescribed medications. The DRE observes the subject's attitude, coordination, speech, breath, and face. The DRE also determines whether the subject's pupils are of equal size and whether the subject's eyes can follow a moving stimulus and track equally. If the tracking difference in the suspect's eyes is greater than 0.05 millimeters, he may be suffering from a neurological disorder, disease, or brain injury.

The DRE also looks for HGN and takes the subject's pulse for the first of three times (see below). The DRE takes each subject's pulse three times to account for nervousness, check for consistency, and determine if the subject's condition may be changing. If the DRE believes that the subject *may* be suffering from a significant medical condition, he must seek assistance immediately. If the DRE believes that the subject's condition is drug-related, the evaluation continues.

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4. Eye Examination

The DRE examines the subject for horizontal gaze nystagmus (HGN), vertical gaze nystagmus (VGN), and a lack of ocular convergence. A subject lacks convergence if his eyes are unable to converge toward the bridge of his nose when a stimulus is moved in. Certain drug categories, such as depressants, inhalants, and dissociative anesthetics, may cause HGN and, in higher doses, VGN.

Videotaping Eye Tests

Except for the eye examinations, most jurors have no difficulty understanding a DRE's testimony about the various tests and exercises he administers. Some DREs and prosecutors are, therefore, videotaping the eye examination using a video recorder adapted for this purpose. The recorder uses an infrared light source that is invisible to the naked eye and provides close-up images that make it easy for viewers to see the eyes' movements.

5. Divided Attention Psychophysical Tests

The DRE administers four psychophysical tests: the Modified Romberg Balance, the Walk and Turn, the One Leg Stand, and the Finger to Nose tests. The DRE can accurately determine whether a subject's psychomotor and/or divided attention skills are impaired by administering these tests.

6. Vital Signs and Second Pulse

The DRE takes the subject's blood pressure, temperature, and pulse. Some drug categories may elevate the vital signs while others may lower them. Vital signs thus provide valuable evidence of the presence and influence of a variety of drugs.

7. Dark Room Examinations

Using a pupillometer to determine whether the pupils are dilated, constricted, or within a normal range, the DRE estimates the subject's pupil sizes under three different lighting conditions. Some drugs increase pupil size while others may decrease pupil size or have no effect on pupil size. The DRE also checks for the eyes'reactions to light. Certain drugs may slow the pupils' reactions to light. Finally, the DRE examines the subject's nasal and oral cavities for signs of drug ingestion.

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8. Examination for Muscle Tone

The DRE examines the subject's skeletal muscle tone. Certain categories of drugs may cause the muscles to become rigid. Other categories, however, may cause the muscles to become very loose and flaccid or not affect muscle tone. In part, an individual's muscle tone is assessed by observing the person walk and move his arms.

9. Check for Injection Sites and Third Pulse

The DRE examines the subject for injection sites, which may indicate recent use of certain types of drugs. The DRE also takes the subject's pulse for the third and final time.

10. Subject's Statements and Other Observations

If not provided previously, the DRE typically provides *Miranda* warnings to the subject and asks the subject a series of questions regarding the subject's drug use.

Trooper Dustin Payne, the drug recognition expert for the Ohio State Highway Patrol Marietta Post, demonstrates how he takes vital signs and fills out a 12-step form to identify whether an individual is under the influence of drugs. Photo Illustration by Janelle Patterson, courtesy of The Marietta Times

11. Analysis and Opinion of the Evaluator

Based on the totality of the evaluation, the DRE forms an opinion as to whether the subject is impaired. If the DRE determines that the subject is impaired, the DRE indicates what category or categories of drugs have caused the subject's impairment. The DRE bases these conclusions on his training and experience and the Drug Symptomatology Matrix (see Appendix 1). The Matrix's value should not be overstated; it is nothing more than a tool. A DRE relies heavily on his general training and experience to reach his conclusion.

12. Toxicological Examination

If not already obtained, the DRE requests a urine, blood, and/or oral fluid sample from

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the subject and sends the sample to the toxicology lab for analysis.

Nothing in or about the DRE protocol is new or novel. The DRE protocol is a compilation of tests that medical professionals have used for decades to identify and assess alcohol- and/or drug-induced impairment.[18]

C. Vital Signs

Alcohol and other drugs can affect a person's pulse, blood pressure, and body temperature.[19] The relationship between foreign substances and vital signs is well documented in the medical literature.[20] Different classes of drugs affect a person's vital signs differently. For example, central nervous system (CNS) depressants may slow a person's heart rate and blood pressure, while CNS stimulants may increase them.[21]

A DRE assesses his subject's vital signs using the same instruments and methods medical professionals have used for decades: thermometers, sphygmomanometers, and stethoscopes.[22] Although a defense attorney may claim that a DRE is not qualified to conduct vital sign examinations, the tests are easy to conduct, and the data is simple to interpret.

D. HGN and VGN

"Nystagmus" is the involuntary jerking of the eye. Alcohol consumption causes distinct nystagmus in the "horizontal" or "lateral" gaze.[23] Scientists demonstrated the phenomenon in animals as early as 1842 and in human beings in the early 1900's.[24] Physicians have recognized the nystagmus as an accurate and reliable indicator of alcohol and/or drug influence and impairment for a long time.[25] There is a direct linear relationship between blood alcohol concentration (BAC), BrAC, and the point where nystagmus starts (referred to as the angle of onset of nystagmus): a person's BAC or BrAC may be *estimated* by subtracting the angle of onset from 50.[26] The margin of error for the test is approximately 0.02.[27] Thus, a person with an angle of onset of 35 degrees should have a BAC or BrAC of approximately .15 (or between .13-.17). Depressants, inhalants, and dissociative anesthetics also can cause distinct HGN.[28] Drugs other than alcohol, however, do not have a linear relationship with nystagmus. Drugs that cause HGN may cause vertical gaze nystagmus (VGN) when consumed in large doses for that individual. No known drug causes vertical gaze nystagmus without first causing horizontal gaze nystagmus. VGN without HGN may be an indicator of a serious medical condition.

The HGN test used by a DRE is easy to perform and objective. Researchers have con-

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ducted numerous scientific studies on the HGN test. Virtually every study clearly demonstrates that properly trained police officers can use the test to accurately and reliably identify and assess alcohol and/or drug impairment. For more information concerning the admissibility of the horizontal gaze nystagmus test, contact the National Traffic Law Center for case and statutory law.

E. Psychophysical Tests

Alcohol and other drugs can impair a person's motor skills, including a person's ability to drive. A DRE assesses his subject's motor skills by utilizing a battery of four "psychophysical" or "psychomotor" tests: the Modified Romberg balance, Walk and Turn, One Leg Stand, and Finger to Nose tests. A DRE "scores" each subject's performance on these tests according to clearly defined standards.

The DREs did not invent these tests. Most of the procedures are "modifications of those performed by neurologists in diagnosing illness and by pharmacologists in assessing the psychomotor effects of drugs."[29] Although the individual tests are non-specific to alcohol and drugs, physicians have relied on these and/or similar tests or test batteries for almost 100 years to identify impairment.[30] Indeed, Professor E. M. P. Widmark, using a test battery remarkably similar to the DRE protocol, correlated quantitative analyses of body fluids with measures of behavioral impairment in 1914.[31]

IV. CATEGORIZATION (CLASSIFICATION) OF DRUG TYPES

Various experts from multiple disciplines have long recognized that different types of drugs affect people differently. Nonetheless, drugs may be categorized or classified according to certain shared symptomatologies or effects. The DRE categorization process is premised on these long-standing, medically-accepted facts.[32]

A DRE classifies drugs in one of seven categories: central nervous system (CNS) depressants, CNS stimulants, hallucinogens, dissociative anesthetics, narcotic analgesics, inhalants, and cannabis. Drugs from each of these categories can affect a person's central nervous system and impair a person's normal faculties, including a person's ability to safely operate a motor vehicle.[33] All the drugs of abuse affect the central nervous system. Without effects on the brain, the drug may be misused, such as taking an antibiotic for a viral condition, but will rarely if ever become a drug of abuse.

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DRE officer tests a volunteer for horizontal gaze nystagmus. Photo by Sean Dewit courtesy of Haligonia Editors.

A. Categories

1. CNS Depressants

CNS depressants "slow" down a person's brain and central nervous system. Alcohol is the most prominent CNS depressant. Other popular CNS depressants include anti-anxiety tranquilizers, anti-depressants, anti-psychotic tranquilizers, and various derivatives of barbituric acid. It seems anomalous to classify "anti-depressants" as depressants; however, medical doctors, toxicologists, and DREs generally classify drugs according to their effect on the brain and body, not their effect on mood. Specific drugs include alprazolam, clonazepam, diazepam, lorazepam, and zolpidem.

2. CNS Stimulants

CNS stimulants "speed up" a person's mind and central nervous system. Cocaine and methamphetamine are the two most commonly abused stimulants. Ritalin, Cylert, ephedrine, and caffeine are other well-known stimulants.

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3. Hallucinogens

Hallucinogens impair a user's ability to perceive reality by distorting perceptions of sight, sound, touch, and odors. They may even cause "synesthesia," a phenomenon where a person "mixes" the senses. For example, the person may "see" sounds or "hear" colors. This category includes natural substances like peyote, psilocybin, and morning glory seeds, as well as synthetic substances like lysergic acid (LSD) and Ecstasy (MDMA).

4. Dissociative Anesthetics

This category of unique drugs includes phencyclidine (PCP) and its analogs, ketamine and dextromethorphan, which are used in many over-the counter (OTC) substances.

5. Narcotic Analgesics

Narcotic analgesics include opiate class drugs and similar synthetic drugs commonly referred to as opioids. Most prescription painkillers are narcotic analgesics. This category includes heroin, morphine, codeine, methadone, oxycodone, hydrocodone, fentanyl and suboxone. Narcotic analgesics are the only drugs that routinely constrict a person's pupils.

6. Inhalants

Named for their primary method of ingestion, inhalants are breathable chemicals, including volatile solvents, propellant gases or aerosols, and some anesthetic gases. This group includes glue, gasoline, paint thinner, hair spray, insecticides, nitrous oxide ("laughing gas"), amyl nitrite, and ether. Some solvents, like aerosols and anesthetic gases, are extremely fast acting, short duration substances, while others, including volatile solvents, may produce effects for several hours.

7. Cannabis

Cannabis is the scientific name for marijuana and its various forms. The active ingredient in cannabis is delta-9 tetrahydrocannabinol, or THC. This category includes cannabinoids and synthetics like dronabinol.

B. The DRE Symptomatology Matrix

As noted previously, a DRE classifies each subject's impairment according to the relevant signs and symptoms, the DREs' training and experience, and the DRE Symptomatology Matrix. The

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matrix contains a synopsis of the signs and symptoms one would expect to see if someone was under the influence of a particular class of drugs (see Appendix 1).

C. Poly Drug Use

Studies and research demonstrate that drug users often take multiple drugs at one time. This so-called "poly drug use" complicates the DRE's categorization task.[34] The drug categories affect the users or "work together" in one of four ways:

1. The Null Effect: "Nothing Plus Nothing Equals Nothing"

The "null effect" is a misnomer. When a person takes two drugs that do not cause a particular effect or effects, the combination will not cause the effect(s). For example, if a person takes a stimulant and a hallucinogen, neither of which causes nystagmus, the combination will not cause nystagmus. Null effect does *not* mean that a drug taken from one category eliminates the effect of a drug from another category.

2. Additive Effect: "Something Plus Something Equals a Lot More of Something"

When a person ingests two substances that cause the same effect or effects, the combination will cause an enhanced effect(s). If a person ingests a stimulant and dissociate anesthetic, both of which increase pulse rate, the combination will increase the person's pulse rate.

3. Antagonistic Effect: "Something Plus its Opposite Equals Anything"

When someone ingests two drugs that cause opposite effects, the result is unpredictable; it is dependent on numerous factors including dose, method of ingestion, duration of effect, and tolerance. For example, if a person consumes a "speedball" (a stimulant, usually cocaine, which dilates the pupils), simultaneously with a narcotic analgesic (typically heroin, which constricts the pupils), the effects will vary.

4. Overlapping Effect: "Something Plus Nothing Equals Something"

When an individual takes two drugs, one of which causes an effect that the other does not cause, the combination will cause the effect. If a person takes a depressant, which causes nystagmus, and a stimulant, which does not, the person will have nystagmus.

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V. THE DRE'S CORROBORATION AND RELIABILITY

The medical literature is replete with articles and scientific studies that support the DEC Program's underlying theories and procedures.[35] During the past 30 years, researchers and medical professionals have examined and studied the DEC Program and/or one or more of its components.[36] Many of these studies are readily available (contact the National Traffic Law Center for copies). Additionally, several agencies evaluated local DEC Programs (see below for examples).[37] The DRE's corroboration rates varied. Such rates are dependent on toxicology results. As previously discussed, some labs are limited by budget constraints, some are not able to test for newer synthetic drugs, and some labs have higher cut off levels than others. Most Programs have documented corroboration rates based on toxicological confirmation near 90 percent. This is particularly impressive given that some laboratories lack the resources to test for many types of drugs (particularly the newest synthetics). Still, the examinations, studies, and evaluations conclusively demonstrated that: (1) the protocol and its components, including the psychomotor and HGN tests, provide an accurate and reliable means for identifying alcohol and drug impairment; and (2) DREs can accurately and reliably identify drug-impaired drivers.

The DRE will examine the driver for any evidence of intravenous drug use (needle marks, scabs, bruising, etc). Photo by Sean Dewit courtesy of Haligonia Editors.

The DEC Program incorporates numerous safeguards to ensure the accuracy of DRE opinions and conclusions. First, the DEC Program is designed to err in favor of the subject. If a DRE is not certain that a subject is impaired by drugs, then he must find that a subject is not under the influence of drugs. Second, a DRE asks his subject if he has any medical conditions that may contribute to his perceived impairment. Third, because a DRE records all his observations in his reports, the observations (and resulting conclusions) are subject to peer review. Fourth, a DRE collects urine, blood, or oral fluid samples for toxicological testing during the evaluation process. Finally, a subject is, of course, able to challenge a DRE's opinion in court.

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DREs IN THE REAL WORLD

Miami-Dade SFST/DRE Study

In 1994, the Miami-Dade County State Attorney's Office (SAO) collaborated with some local officers to conduct a retrospective study of the county's DUI/DRE Program. The SAO reviewed the arrest logs and DRE evaluations of Miami-Dade County's three largest police departments for 1991 through 1993. The SAO examined 25,129 total DUI arrests, including 1,181 DRE cases. The SAO examined DUI alcohol cases and looked at DUI alcohol arrests efficacy because DRE's utilize the same SFSTs as other Miami-Dade County police officers (the SFSTs are used to identify impairment but are not specific to alcohol or drugs).

Among the 25,129 arrests, the SAO found that 88.5 percent of the arrestees who provided breath alcohol samples blew a 0.08 or above. 0.08 is the "legal limit"[38] in the United States. 91 percent of the drivers blew 0.08 or above or refused to provide a breath sample. The refusals are significant because Florida law requires DUI arrestees to provide breath samples upon request. In the early 1990's, a person who refused to provide a breath sample forfeited his driver's license for one year for a first refusal or 18 months for a second or subsequent refusal.

Nine percent of the drivers blew below 0.08. This figure, of course, does not represent a false arrest rate for two reasons. First, the figure does not account for those people who were under the influence of drugs. As the review showed, most of the arrestees who blew below the legal limit were under the influence of drugs other than alcohol. Second, there is no truly "safe" BAC at which people can drive.[39] Studies demonstrate that impairment begins at the lowest recordable levels.[40] Indeed, the American Medical Association's (AMA) Council on Scientific Affairs recognizes that, "significant alcohol involvement in injury-causing road crashes begins at a driver BAC of 0.05 percent."[41] Thus, the AMA,[42] the American College of Emergency Physicians (ACEP),[43] and the National Transportation Safety Board (NTSB)[44] advocate a legal limit of 0.05. The State of Utah has been the first state to adopt a .05 percent BAC level.[45] 93.8 percent of the drivers who provided breath samples blew at or above the AMA recommended 0.05 percent limit. 95 percent blew 0.05 percent or above or refused to provide a breath sample.[46]

Among the 1,181 DRE cases, the SAO found that Miami-Dade County's DREs correctly identified drug

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impairment 92.3 percent of the time. This figure likely underestimates the DREs' ability to identify drug use and impairment because the Miami-Dade County's Forensic Toxicology Laboratory was able to test for only a handful of the most commonly used drugs in the early 1990's. Of the cases where the DREs correctly identified drug impairment, they correctly identified the impairing drug category 98 percent of the time. Excluding alcohol, they correctly identified the drug category in 93.9 percent of the cases.

Finally, the SAO reviewed two of the most experienced officers' HGN logs, comprising 568 cases. The SAO found that the officers correctly determined that arrestees were under the influence of alcohol and/or drugs over 97 percent of the time.

Nebraska SFST/DRE Study

In 2005, Hall County (Nebraska) Attorney's Office and the National Traffic Law Center collaborated with state and local agencies to conduct a retrospective study of the state's DUI/DRE Program.

They reviewed breath test logs for arrests occurring between January 1, 2002, and December 31, 2004, in and around Grand Island, Nebraska. They examined 1,499 total DUI arrests and found that approximately 78.9 percent of the subjects provided a sample of 0.08 or above, 89.8 percent either had a 0.08 or above or refused to provide a breath sample, and 94.7 percent blew at or above 0.05 or refused to provide a sample. As in Florida, the refusals are significant because a person who refused to provide a breath sample forfeited his driver's license and may have been subjected to additional charges.

They also reviewed 711 DRE arrests by the Nebraska State Patrol (NSP). They found that approximately 92.2 percent of the subjects tested positive.

Commentary

Miami-Dade County, Florida, and Nebraska involve different environments and populations. Miami-Dade County is much more densely populated, urbanized, and diverse than Nebraska. Yet, the officers and DREs obtained very similar results employing the SFSTs and DRE protocol, thus demonstrating the accuracy, reliability, and consistency of the process.

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Using a pupilometer to determine whether the pupils are dilated, constricted, or within a normal range, the DRE estimates the subject's pupil sizes under three different lighting conditions. Photo by Sean Dewit, courtesy of Haligonia Editors.

VI. THE ADMISSIBILITY OF DRE TESTIMONY AND EVIDENCE

The DRE process is not a test. Rather, it is a method for collecting and interpreting evidence based on a compilation of accepted medical theories and practices, as noted above. Nevertheless, creative defense attorneys challenge the admissibility of DRE testimony and evidence, including the psychomotor and HGN tests, on several grounds.

A. The Admissibility of Scientific Evidence: *Frye, Daubert,* and Federal Rules of Evidence, Rule 702

The DRE process is widely accepted in American courts. The National Traffic Law Center collects all court decisions that concern the admissibility of DRE evidence. If acceptance is challenged in a local or state court, a prosecutor may contact the NTLC to receive the compilation of DRE court admissibility decisions.

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B. DRE Qualifications Accepted by Courts or Legislation

In multiple cases, courts have found a DRE is qualified to testify because of his specialized training and knowledge. For example, an Arkansas court found a law enforcement officer trained in DRE qualifies as an expert under Arkansas Rules of Evidence, Rule 702, because the officer has specialized training and knowledge of the cause of the defendant's impairment.[47] Maine, on the other hand, has provided in its Revised Statutes that "[i]f a law enforcement officer certified as a drug recognition expert by the Maine Criminal Justice Academy conducts a drug impairment assessment, the officer's testimony about that assessment is admissible in court as evidence of operating under the influence of intoxicants."[48]

C. Cases Concerning the Failure to Administer the Entire Protocol

Sometimes DREs are unable to complete the process because a defendant is physically incapable of performing or refuses to perform some of the tests. Generally, a DRE's failure to complete all the tests or do them properly goes to the weight of the evidence, not the admissibility.[49]

In a sample case, the driver was physically disabled and could not perform the walk and turn or one leg stand tests. The driver refused to give a urine sample. A DRE examination was conducted, and a conclusion was reached without the urine sample or tests requiring walking or raising a leg in the air. The DRE concluded the driver was under the influence of stimulants and, consequently, unsafe to operate a motor vehicle. Even though the entire DRE evaluation was incomplete, the court permitted the DRE's testimony and affirmed the jury's finding of guilt.[50]

D. Nature and Extent of the DRE's Opinions

Courts that admit DRE testimony and evidence routinely allow a DRE to offer his opinion about a subject's impairment and the category of drugs causing the subject's impairment. Based on the knowledge he possesses, a DRE may offer additional helpful information in a case as well.

In *Barnes v. State*, 2017 Md. App. LEXIS 493, 3-4 (Md. Ct. Spec. App. May 9, 2017), for example, the court ruled that a DRE was properly allowed to testify that cannabis use can "cause body tremors, eyelid tremors, general disorientation" and can impair a user's perception of time and distance; heroin can depress a user's central nervous system, impair physical motor skills, depress reflexes, cause a user to exhibit slow and lethargic movements, and cause drowsiness;

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and a person metabolizes heroin in four to six hours.

E. Opinions that a Subject was on the Downside of a Drug

When a person ingests impairing drugs, the body releases hormones and chemicals to regain normal homeostasis. When the drug wears off, the person may suffer the effects of withdrawal. Thus, the person arguably remains "under the influence" of the substance and accountable under a state's DUI laws.

F. Language of DREs in Court

Most courts allow prosecutors to refer to DREs as such in court. However, at least some courts prohibit prosecutors from referring to DREs as "Drug Recognition Experts" or "experts" until they lay a proper predicate establishing the DREs qualifications.[52]

G. A Defendant's Alternative Explanation for the DRE's Observations go to Weight of the Evidence, Not Admissibility

A defendant is free to offer alternative explanations for a DRE's observations and/or about his performance on the standardized field sobriety tests. This type of evidence raises an issue of credibility and goes to the weight of the evidence, not the admissibility of a DRE's opinion.[53]

H. DRE Case Law from Canada

In 2017, the Supreme Court of Canada issued a landmark opinion supporting the admissibility of DRE testimony and evidence in *R. v. Bingley*, 2017 SCC 12. The Court applied the *Mohan* test, which, like the American *Daubert* test, requires a judge to act as a gatekeeper. Under *Mohan*, a judge considers four factors to determine admissibility of evidence: relevance, necessity, absence of an exclusionary rule, and special expertise. The issue in *Bingley* was whether a constable had sufficient expertise under the fourth factor. The Court determined that "all DREs undoubtedly possess expertise on determining drug impairment that is outside the experience and knowledge of the trier of fact" and concluded that the constable was qualified to render an opinion on drug impairment.

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DRE RECONSTRUCTION

In crash cases involving serious bodily injury or death, a DRE may be called upon to collect, analyze, and interpret evidence days or more after the crash to determine a driver's condition at the time of the crash. The process, referred to as a "DRE reconstruction," can be quite challenging. For a DRE, the driver *is* the "crime scene." Evidence of impairment is fleeting. Thus, a DRE reconstructionist must rely on evidence collected by others and routinely works with less information than he may obtain during a drug influence evaluation. Nonetheless, a DRE is often able to render a reliable and admissible opinion if he conducts a thorough investigation.

During a DRE reconstruction, a DRE typically reviews and/or takes statements from witnesses with knowledge of the subject's alcohol and drug use, eating, driving pattern, and behavior. These witnesses may include civilians, law enforcement officers, rescue personnel, nurses, and doctors. The value of "civilian" witnesses should not be underestimated. Most adults can determine that someone acted out of the ordinary or was impaired by something. Further, many civilian witnesses (*e.g.*, doctors and nurses, former police or military personnel, bartenders, etc.) have special knowledge or experience that permits them to render opinions. A DRE may also review available records, including the police reports, crash reconstructions, rescue reports, hospital records, and toxicology reports. The rescue and medical reports usually contain critical information about the subject's pulse, blood pressure, body temperature, skin coloring, pupil size and reaction to light, and orientation (though it should be noted that rescue and hospital personnel have a very low threshold for determining that people are "oriented").

A DRE also reviews the physical evidence, including direct and indirect evidence of drug use including drugs, drug residue, prescription indicators (*e.g.*, prescriptions, pharmacy receipts, doctor appointment cards, etc.), storage devices (*e.g.*, baggies, balloons, pill bottles, paper bindles, nitrous oxide containers, etc.), cutting agents (*e.g.*, milk sugar, Novocain, loose tobacco, etc.), implements of administration (*e.g.*, syringes, matches, pipes, rolling papers, straws, cans, etc.), and other drug paraphernalia (*e.g.*, scales, razor blades, pacifiers, glow sticks, packaging materials, etc.).

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VII. DRUG RECOGNITION AND COMMERCIAL VEHICLES

A study of 168 over the road truck drivers killed while driving in 1993 indicated that one third of the drivers had drugs other than alcohol in their bloodstream at the time of death. Comprehensive drug screens were performed on blood specimens collected from 168 fatally injured drivers. One or more drugs were detected in 67% of the drivers and 33% of the drivers had detectable blood concentrations of psychoactive drugs or alcohol. The most prevalent drugs were cannabinoids and ethanol, each found in 13% of the drivers. Cocaine or benzoylecgonine was found in 8% of the cases. Seven percent of the driver's blood specimens contained amphetamine or methamphetamine and 7% contained phenylpropanolamine, ephedrine, or pseudoephedrine. A panel of toxicologists reviewed the accident investigation report and the toxicology findings for each case and determined that impairment due to marijuana use was a factor in all cases where the delta-9-tetrahydrocannabinol concentration exceeded 1.0 ng/mL and that alcohol impairment contributed to all accidents where the blood alcohol concentration was 0.04% wt/vol or greater. In 50 of 56 cases where psychoactive drugs or alcohol were found, impairment due to substance use contributed to the fatal accident[54]. Another study by the Transportation Research Board of the National Academies in 2010 indicated that sixty-five thousand truck drivers had caused crashes, who had drugs in their system and that prescription drug use was the number one cause of truck crashes[55].

In a survey conducted by Occupational Environmental Medicine one third of truckers admitted to using amphetamines while driving[56].

Large truck and Bus Drivers are prohibited by rule from reporting for duty while using any controlled substance, unless sanctioned by a medical doctor. C.F.R. 382.213.

In response to the issue some state DRE programs have been established to assign DRE's to weigh stations or scales, so they can take a look at drivers during vehicle inspections to see if a DRE investigation of the driver is needed.

One such program, Operation Trucker Check was organized in Oregon and was conducted sixteen times prior to 2010. In one seventy-two-hour period in 2009 DRE's had 362 contacts with

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commercial drivers. Five drivers were arrested for driving under the influence of drugs. Thirteen more were arrested for transporting drugs[57].

Operations of this type have been conducted in several States and may be very beneficial to traffic safety.

VIII. COMMON DEFENSE CHALLENGES TO THE PROTOCOL

A. CLAIM: DRE Procedures are "Experimental" ("New or Novel")

RESPONSE: The DRE procedures are not new or novel; as noted above, law enforcement borrowed the Program's underlying theories and practices from the medical profession. A medical principle or method does not become "new" or "novel" simply because a non-physician employs it. The laws of physics, biology, and chemistry are not suspended in a courtroom; they do not change simply because a police officer testifies about them. Further, DREs have been employing the procedures for decades.

B. CLAIM: DREs Cannot Properly Apply the Protocol Because They Do Not Understand the Underlying Science

RESPONSE: A defense attorney may claim that a DRE cannot introduce examination results or testify to his opinions because he cannot fully explain why people react to drugs as they do. As the Supreme Court of Canada recognized in *R. v. Bingley*, 2017 SCC 12, this misses the point: "The scope of a DRE's expertise is in the application of the prescribed 12-step evaluation, not its scientific foundation." A DRE does not have to know exactly why or how a narcotic analgesic causes a person's pupils to constrict to observe the sign or understand what it means in the context of drug impairment. Prescribing physicians frequently do not know how various medications work. Finding the right combination of medications for a patient is an experiment that sometimes takes years to perfect.

C. CLAIM: The Psychophysical Tests are "Irrelevant" Because they Measure "Abnormal Faculties"

RESPONSE: Although people normally do not stand at attention and touch their noses or stand on one leg for 30 seconds, they normally can do so. Additionally, drivers often are required (lawfully and otherwise) to respond to "abnormal" or unusual situations, such as emergencies,

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and their abilities to handle emergency situations are impaired at very low alcohol and/or drug dosages.[58]

D. CLAIM: The Psychophysical Tests are "Subjective" and Subject to Error

RESPONSE: As noted earlier, the current standardized field sobriety test battery and the DRE protocol are standardized, systematic, and objective.[59] Police officers perform the tests the same way every time whenever possible. Further, the fact that a scientific test needs to be interpreted or is subject to error if not properly conducted is not a reason for rejecting evidence adduced by such a test. Indeed, the persuasiveness of scientific evidence "is, in large measure, dependent upon the expertise of the witness who conducted it, which in the final analysis is to be determined by the jury."[60]

E. CLAIM: The Psychophysical Tests are "Unreliable;" Sober People Can Easily "Fail" the Tests[61]

RESPONSE: As discussed above, virtually all the credible studies, reviews, and surveys demonstrate that DREs accurately and reliably identify drug impaired drivers.

F. CLAIM: The Psychophysical Tests are Not "Sensitive"

RESPONSE: A defense attorney may claim, "Studies of policemen, bartenders, and social drinkers indicate that they usually cannot identify subjects with blood alcohol concentrations of about 0.10 percent, frequently mistaking them for sober subjects or underestimating their blood alcohol concentrations."[62] This argument contradicts the defense attorney's claim that sober people regularly "fail" the tests and misses the point: a prosecutor does not introduce psychomotor test results to prove that a subject is or was sober. The prosecution introduces test results to prove that the defendant who performed the tests poorly was impaired. Consequently, any "false negative" rate enhances, rather than detracts from, the conclusion that a person's failure of field sobriety tests indicates alcohol or drug impairment.

G. CLAIM: The "Eye Tests" Have Nothing to do with Impairment

RESPONSE: A defense attorney may argue that the "eye tests" are irrelevant because they have nothing to do with driving or impairment. This simply is not the case. Stimulants, hallucinogens, and cannabis, for example, may cause dilated pupils, which "...can interfere with certain aspects of driving and vision performance (*e.g.*, trouble seeing in light that is too bright) …."[63]

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HGN, the most commonly attacked test, also is not just an indicator of impairment; it is impairment.[64] Nystagmus impairs the eye's ability to track a moving object. Thus, a driver with pronounced nystagmus observes significantly fewer "traffic aspects" than a driver without nystagmus.[65]

H. CLAIM: HGN Appears at Low BrACs or BACs and Remains After a Person "Sobers Up"

RESPONSE: A defense attorney may cite articles and studies pertaining to "positional alcohol nystagmus" (PAN), rather than HGN. Unfortunately, several courts, most notably the Kansas Supreme Court,[66] accepted this argument. This claim is misplaced.[67] Unlike HGN, PAN only is visible when a person turns his or her head to the side.[68] A police officer, however, requires his subject to face forward. Thus, "when the HGN test is performed correctly, PAN is not, and can never be, a factor."[69]

I. CLAIM: The DRE's Opinion is Meaningless Because the DRE Failed to Perform a Portion of the Protocol According to NHTSA or IACP Standards

RESPONSE: A defense attorney may recognize the futility of attacking the DRE protocol and attempt a different tack. He may argue, pursuant to *Ohio v. Homan*, 732 N.E.2d 952 (Ohio 2002), that the court should suppress the DRE evidence in his client's case because the officer failed to administer the tests correctly. In fact, *Homan* was superseded by the Legislature with the passage of ORC § 4511.19(D)(4)(b), which changed the standard to substantial compliance.

As a general rule, scientific evidence is admissible despite minor variations in protocol, including the failure to follow administrative rules, manufacturer recommendations, or scientific protocols.[70] Omissions and errors typically affect "only the weight to be given the tests."[71] Thus, a DRE's opinion is admissible *even if the DRE fails to complete the entire protocol* as long as there is sufficient admissible evidence supporting the opinion.[72] See *supra* for some sample cases regarding this issue.

J. CLAIM: DRE Results are Inadmissible Unless the Laboratory Conducts a Quantitative Analysis

RESPONSE: Unlike alcohol, there is no clearly established link between blood levels and impairment for drugs. Regardless, blood levels are not required to corroborate a DRE's opinion.[73] Large truck and bus drivers are prohibited by rule from reporting for duty while using any controlled substance, unless sanctioned by a medical doctor. C.F.R. 382.213.

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CONCLUSION

Drug impaired drivers are killing and maiming people at an unconscionable rate. Stopping the increase in drug impaired driving is a significant challenge for the traffic safety community. W. Clement Stone wrote, "When you discover your mission, you will feel its demand. It will fill you with enthusiasm and a burning desire to get to work on it ." While DREs cannot prevent the carnage of drug impaired driving they can work passionately to determine which drivers are under the influence of drugs. Prosecutors should recognize the expertise of DRE officers and examine carefully every case to find just outcomes and take into account all possible solutions that can save lives. On our streets and highways and in our communities, the DREs play an important role in the fight against drugged driving. It is vital that the killing and maiming comes to an end.

[1] Substance Abuse and Mental Health Services Administration. (2017). *Key substance use and mental health indicators in the United States: Results from the 2016 National Survey on Drug Use and Health* (HHS Publication No. SMA 17-5044, NSDUH Series H-52). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/. NSDUH researchers survey a representative sample of the United States population aged 12 and older. In 2016, researchers interviewed 67,942 people. *Id*. at 5.

[2] Berning, A., Compton, R., and Wochinger, K., *Results of the 2013-2014 National Roadside Survey of Alcohol and Drug Use by Drivers* (NHTSA February 2015).

[3] *See Compton*, R. and Berning, A., *Results of the 2007 National Roadside Survey of Alcohol and Drug Use by Drivers* (NHTSA July 2009).

[4] *See* Berning, A., Compton, R., and Wochinger, K., *Results of the 2013-2014 National Roadside Survey of Alcohol and Drug Use by Drivers*, Traffic Safety Facts (NHTSA February 2015).

[5] *See Drug Involvement of Fatally Injured Drivers*, Traffic Safety Facts (NHTSA November 2010), Berning, A. and Smither, D., *Understanding the Limitations of Drug Test Information, Reporting, and Testing Practices in Fatal Crashes*, Traffic Safety Facts (NHTSA November 2014), and Hedlund, J., *Drug-Impaired Driving, Marijuana and Opioids Raise Critical Issues for States*, (Governors Highway Safety Association and Responsibility.org, May 2018).

[6] The majority of states do not have "per se" laws or legislatively proscribed amounts for drugs as they do for alcohol.

[7] Some courts require the DRE to be referred to a Drug Recognition Evaluators.

[8] *Drug Recognition Expert 7-Day School Course, Participant Manual*, (NHTSA, TSI, and IACP), Revised 10/2015, Session 3, Development and Effectiveness of the Drug Evaluation and Classification Program; hereinafter, referred to as DRE Manual.

[9] *Id*.

[10] *See e.g*. Compton, R., *Field Evaluation of the Los Angeles Police Department Drug Detection Program*, U.S. D.O.T. H.S. 807 012 (Feb. 1986); Bigelow, G., Bickel, W., Roache, J., Liebson, I., and Nowowieski, W., *Identifying Types of Drug Intoxication: A Laboratory Evaluation of a Subjection-Examination Procedure*, U.S. D.O.T. H.S. 806 753 (May 1985).

The DRE Protocol

[11] The use of the term "he," as opposed to "he or she," is used throughout this document for economy and includes all genders.

[12] For a good article discussing the Colorado Green Lab, see Harvey, S., *Green Lab Teaches Cops How to Know When a Driver is Stoned*, http://www.westword.com/news/green-lab-teaches-cops-how-to-know-when-a-driver-is-stoned-8544803 (Westword, November 29, 2016).

[13] DRE Manual, Session 4, Overview of Drug Recognition Expert Procedures, *supra*.

[14] *Id*.

[15] *Id*.

[16] This section is based upon the DRE Manual, Session 4, Overview of Drug Recognition Expert Procedures.

[17] An alcohol level of .08 refers to .08 grams of alcohol per 100 milligrams of blood. It is a standardized measure referred to hereafter as .08.

[18] *See e.g*. Prockop, L., *Specific Neurological Evaluation of Inhalant Abusers: Clinical and Laboratory*, Review of Inhalants, Euphoria to

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Dysfunction http://www.drugabuse.gov/pdf/monographs/download15.html, (NIDA Research Monograph 15, Oct. 1977). In 1994, Dr. Prockop, formerly Professor of Medicine and Chief of the Neurology Section of the College of Medicine at the University of South Florida, testified in a hearing to determine the admissibility of DRE testimony and evidence that the DRE protocol is virtually identical to the method he himself uses and espouses.

[19] Borkenstein, R., *Historical Perspective: North American Traditional and Experimental Response*, Proceedings of the North American Conference on Alcohol and Highway Safety, Baltimore, Md., June 1984, J. STUD. ALC. Supp. No. 10, 5 (1985).

[20] *See e.g. Goodman and Gilman's The Pharmacological Basis of Therapeutics* (Pergamon 8th ed. 1990); R. O'Brien and S. Cohen, *The Encyclopedia of Drug Abuse* (Facts on File, Inc. 1984); Giannini, A.J. and Slaby, A., *Drugs of Abuse* (Medical Economics Books 1989); *The Merck Manual of Diagnosis and Therapy* (Berkow, R., ed., Merck Research Laboratories 16th ed. 1992); Bell, K., *Identifying the Substance Abuser in Clinical Practice*, Orthopaedic Nursing, Mar./Ap. 1992, at 29; *Nursing '93 Drug Handbook* (Springhouse Publishing 1993); Kaye, S., *Handbook of Emergency Toxicology* (Charles Thomas 4th ed. 1980); Drugs of Abuse (United States Department of Justice 1988).

[21] *Id*.

[22] Borkenstein, R., *Historical Perspective: North American Traditional and Experimental Response*, Proceedings of the North American Conference on Alcohol and Highway Safety, Baltimore, Md., June 1984, J. STUD. ALC. Supp. No. 10, 5 (1985).

[23] *See* Forkiotis, C.J., *Optometric Expertise: The Scientific Basis for Alcohol Gaze Nystagmus*, 59 Curriculum II 1, 3 (April 1987); Nystagmus, 72 POISINDEX (R) Toxicologic Management (Micromedex, Inc. 1974-1992); R. Adams, and M. Victor, PRINCIPLES OF NEUROLOGY (4th Ed. 1991); Burns, M., *The Use of Horizontal Gaze Nystagmus as a Field Sobriety Test*, presented at the 35th International Congress on Alcoholism and Drug Dependence, Oslo, Norway (July 31 to August 6, 1988); Fregly, A., Bergstedt, M., and Graybiel, A., *Relationships between Blood Alcohol, Positive Alcohol Nystagmus and Postural Equilibrium*, 28 Q. J. Stud. Alc. 11 (1967).

[24] Murphee, H.B., Price, L., and Greenberg, L., *Effect of Congeners in Alcoholic Beverages on the Incidence of Nystagmus*, 27 Q. J. Stud. Alc. 201 (1996).

[25] *See e.g.* Wilkinson, I.M.S., Kime, R., and Purnell, M., *Alcohol and Human Eye Movement*, 97 Brain 785 (1974); Nystagmus, 72 Poisindex® Toxicologic Management (Micromedex, Inc. 1974-1992); Adams, R. and Victor, M., PRINCIPLES OF NEUROLOGY (4th ed. 1991); Goding, G. and Dobie, R., *Gaze Nystagmus and Blood Alcohol*, 96 Laryngoscope 713, 716 (July 1986). *See also* 64 J. Am. Optometric Assoc. 653 (Sept. 1993) (endorsing the use of horizontal gaze nystagmus testing as a field sobriety test).

[26] *See* Tharp, V., *Gaze Nystagmus as a Roadside Sobriety Test*; Forrest, T., *The rapid eye test to detect drug abuse*, 84 Postgraduate Med. 108 (July 1988). *See also State v. Superior Court of the County of Cochise*, 149 Ariz. 269, 718 P.2d 171, 180-181 (1986)("*the professionals who have investigated the subject do not dispute the strong correlation between BAC and the different types of nystagmus*")(emphasis added); *Williams v. State*, 710 So. 2d 24 (Fla. 3d DCA 1998), *rehearing denied*, 725 So. 2d 1111 (Fla. 1998).

[27] *Id*.

[28] *See Id*.; Stomberg, C., Seppaa, T., and Mattila, M.J., *Acute Effects of Maprotiline, Doxepin and Zimeldine with Alcohol in Healthy Volunteers*, 291 Arch. Int. Pharmacodyn 217 (Jan/Feb. 1988) (pharmacologists relying on "objective tests of performance" including horizontal gaze nystagmus and "tracking" to measure the combined effect of alcohol and certain drugs); Stapleton, J., Guthrie, S., and Linnoila, M., *Effects of Alcohol and Other Psychotropic Drugs on Eye Movements: Relevance to Traffic Safety*, 47 J. Stud. Alc. 426 (Sept. 1986); Rashbass, C., *The Relationship Between Saccadic and Smooth Tracking Eye Movements*, 159 J. Physiology 326 (1961) (nystagmus is indicative of barbiturate use); Annotation, *Horizontal Gaze Nystagmus Test: Use in Impaired Driving Prosecution* , 60 A.L.R. 4th 1129, at Section 2(a), page 1131 (the HGN test "is useful in detecting both alcohol and drugs")(citing Los Angeles Times, February 17, 1985m Sunday Home Edition, metro part 2, Page 12, Column 1 and United Press International, April 25, 1984, Wednesday, AM Cycle, Louisiana Regional News).

[29] Cowan, J., and Jaffee, S., *Proof and Disproof of Alcohol-Induced Driving Impairment Through Evidence of Observable Intoxication and Coordination Testing*, 9 Am. Jur. Proof of Facts 3d 459, Section 9, at 488.

[30] *See e.g.* Goldberg, L., *Quantitative Studies on Alcohol Tolerance in Man*, 5 Acta Physiologica Scand. Supp. XVL (1943); M. Hebbelinck, *The Effects of a Small Dose of Ethyl Alcohol on Certain Basic Components of Human Physical Performance*, 143 Arch. Int. Pharmacodyn. 143 (1963); Borkenstein, R., *Historical Perspective: North American Traditional and Experimental Response*, Proceedings of the North American Conference on Alcohol and Highway Safety, Baltimore, Md., June 1984, J. STUD. ALC. Supp. No. 10, 5 (1985); Fornazzari, L., *Clinical Recognition and Management of Solvent Abusers*, 9 IM—Internal Med. for the Specialist 99 (June 1988).

[31] Professor Widmark relied on factors such as pupils' reactions to light, signs of ataxia including insecure turning and the Romberg test, finger to finger test, picking up small objects, and others. Borkenstein, R., *Historical Perspective: North American Traditional and Experimental Response*, Proceedings of the North American Conference on Alcohol and Highway Safety, Baltimore, Md., June 1984, J. Stud Alc. Supp. No. 10, 5 (1985).

Categorization (Classification) of Drug Types

[32] Note that DREs categorize drug effects according to class. DREs generally do not, and cannot, opine that a person is under the influence of a *specific* drug without an admission, physical evidence, a toxicological test result or other drug specific evidence.

[33] The categories and their descriptions are based upon the DRE Manual, *supra*.

The DREs' Accuracy and Reliability

[34] This section is based upon the DRE Manual, *supra*.

[35] *See* DRE Manual, *supra*, and *Williams v. State*, 710 So. 2d 24 (Fla. 3d DCA 1998), *rehearing denied*, 725 So. 2d 1111 (Fla. 1998). In *Williams*, the State provided the court with over 2,000 pages of medical literature.

[36] *See e.g.* Hartman, R., Richman, J., Hayes, C., Huestis, M., *Drug Recognition Expert (DRE) examination characteristics of cannabis impairment*, 92 Accident Analysis & Prevention 219 (2016); Compton, R., Shinar, Schechtman, Laboratory Identification of Drug Use Based on Observable Signs and Symptoms (2000) http://www.vv.se/traf_sak/t2000/205.pdf; Stuster, J. and Burns, M., Validation of the Standardized Field Sobriety Test Battery at BACs Below 0.10 Percent, (Anacapa Sciences, Inc. 1998) http://www.nhtsa.dot.gov/people/injury/alcohol/Archive/Limit.0

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8/!SFSTREP.PDF; Burns, M. and Anderson, A Colorado Validation Study of the Standardized Field Sobriety Test (SFST) Battery (Colo. Dept. Transp. November 1995) http://publicsafety.tamu.edu/docs2/1995.pdf; Burns, M., et al, A Florida Validation Study of the Standardized Field Sobriety Test (S.F.S.T.) Battery (1995) http://www.sheriff.co.st-clair.il.us/duival.asp; *Impact of the Drug Evaluation and Classification Program on Enforcement and Adjudication*, 58 TRAFFIC TECH 1 (Dec. 1993); Kiger, S., Lestina, D. and Lund, A., *Passive Alcohol Sensors in Law Enforcement Screening for Alcohol Impaired Drivers*, 9 Alc., Drugs, and Driv. 7 (Jan./Mar. 1993); Hedlund, J. and Fell, J., *United States Impaired Driving Policies and Practices*, presented at the International Conference on Alcohol, Drugs and Traffic Safety, Cologne, Germany (1992); Compton, R., FIELD EVALUATION OF THE LOS ANGELES POLICE DEPARTMENT DRUG DETECTION PROGRAM, U.S. D.O.T. H.S. 807 012 (Feb. 1986); Good, G. and Augsburger, A., *Use of Horizontal Gaze Nystagmus as a Part of Roadside Sobriety Testing*, 63 Am. J. Optometry & Physiological Optics 467 (June 1986); Goding, G. and Dobie, R., *Gaze Nystagmus and Blood Alcohol*, 96 LARYNGOSCOPE 713 (July 1986)(Presented at the Meeting of the Western Section of the American Laryngological, Rhinological and Otological Society, Inc., San Francisco, Cal., January 11, 1986); G. Bigelow, W. Bickel, J. Roache, I. Liebson and P. Nowowieski, IDENTIFYING TYPES OF DRUG INTOXICATION: LABORATORY EVALUATION OF A SUBJECT-EXAMINATION PROCEDURE, U.S. D.O.T. H.S. 806 753 (May 1985); Anderson, T., Schweitz, R., and Snyder, M., FIELD EVALUATION OF A BEHAVIORAL TEST BATTERY FOR DWI, U.S. D.O.T. H.S. 806 475 (Sept. 1983); Tharp, V., Burns, M., and Moskowitz, H., DEVELOPMENT AND FIELD TEST OF PSYCHOPHYSICAL TESTS FOR DWI ARREST, U.S. D.O.T. H.S. 805 865 (Mar. 1981); Burns, M. and Moskowitz, H., PSYCHOPHYSICAL TESTS FOR DWI ARREST, U.S. D.O.T. H.S. 802 424 (June 1977). *But see* Jackson, P., Tunbridge R., and Rowe, D., *Drug Recognition and Field Impairment Testing: Evaluation of Trials*, http://www.vv.se/traf_sak/t2000/222.pdf (2000); Heishman, S., et al, *Laboratory Validation Study of Drug Evaluation and Classification Program: Ethanol, Cocaine, and Marijuana*, 20 J. Anal. Tox. 468, 480 (October 1996); Heishman, S., et al, *Laboratory Validation Study of Drug Evaluation and Classification Program: Alprazolam, d-Amphetamine, Codeine, and Marijuana*, 22 J. Anal. Tox. 468-483 (October 1998). Officers participating in the Jackson study had high error rates. However, the study has little value for several reasons. First, the study assessed the still developing United Kingdom's (UK) program. UK officers use a modified protocol. The report does not indicate whether the officers examined the participants' vital signs or checked for nystagmus. Second, the officers were very inexperienced. Third, it is unclear what scoring methods, if any, they used. DREs participating in Heisman's studies also had high error rates. However, the studies' utility is dubious because the researchers mislead the officers as to what drugs the subjects may have taken and the DREs administered only a portion of the protocol. *See e.g. State v. Sampson*, 6 P.3d 543 (Or. App. 2000).

Note that even many defense-oriented commentators concede that the current test battery does "a fairly good job at picking out those subjects with alcohol concentrations above 0.10 percent." *See e.g.* Cowen, J. and Jaffee, S., *Proof and Disproof of Alcohol-Induced Driving Impairment Through Evidence of Observable Intoxication and Coordination Testing*, 9 Am. Jur. Proof of Facts 3d 459, Section 12, page 494.

[37] *See e.g.* Adler, G. and Bourland, Arizona's DRE Program: A Comparison of DRE Opinions to Toxicology Results (Unpublished manuscript available through the Arizona Department of Public Safety); Mesa (Arizona) Police Department Traffic Section, http://www.ci.mesa.az.us/police/traffic/default.asp; Harbey, *DRE Confirmation and Drug Classification Trends*, 5 DRE 9 (Summer 1993); Ricca, Drug Evaluation and Classification Program in Louisiana, 4 DRE 9 (Oct./Nov. 1992); Minnesota Drug Evaluation and Classification Program: 2003 Annual Report, Oregon Drug Evaluation and Classification Program Annual Report, http://osp.state.or.us/html/1997_annual_report.html.; Hardin, Meyer and Juejurikar, Minnesota Corroboration Study: DRE Opinions and Toxicology Evaluations (Minn Bureau of Crim. Apprehension 1993);Oregon Drug Evaluation and Classification Program Annual Report, http://osp.state.or.us/html/1997_annual_report.html; Louie, *Report on the Drug Recognition Evaluation (DRE) Program in Harris County, Texas*, DRE I (May/June 1990).

[38] The term "legal limit" is a misnomer. In Florida, as in many other states, an *impaired* driver is guilty of DUI even if the driver's blood or breath alcohol is below 0.08. *See e.g.* Fla. Stat. 316.193 (1993).

[39] Valaske, M., *A Safe-Driving Level of Blood Alcohol*, 39 Pathologist 36 (Mar. 1985)(advocating a zero tolerance DUI law). *See also* Peterson, J. Rothfleisch, J., Zelazo, P., and Pihl, R.O., *Acute Alcohol Intoxication and Cognitive Functioning*, 51 J. Stud. Alc. 114 (1990).

[40] *See e.g.* Drew, G.C., Colquhoun, W.P., Long, H.A., *Effect of Small Doses of Alcohol on a Skill Resembling Driving*, 1958 Brit. Med. J. 993 (Oct. 25, 1958)(researchers finding that "there is a measurable increase in mean error [on a driving simulator] as soon as there is a measurable quantity of alcohol in the blood"); Moskowitz, H., and Burns, M., *Effects of Alcohol on Driving Performance*, 14 Alc., Health & Res. World 12 (1990)("[certain skills important for driving are impaired at 0.01 and 0.02 percent BAC or, in other words, at the lowest levels that can be measured reliably"). *See also* Valask, M., *A Safe-Driving Level of Blood Alcohol*, 39 Pathologist 36 (Mar. 1985)(advocating a zero tolerance DUI law)

[41] Council on Scientific Affairs, *Council Report: Alcohol and the Driver*, 255 J. A.M.A. 522 (Jan. 24/31, 1986). *See also Medical Conditions Affecting Drivers* (T. Doege and A. Engleberg, ed., A.M.A. 1986)(drivers with blood alcohol concentrations of 60mg% are twice as likely to be involved in a fatal crash as a sober driver"); Council on Scientific Affairs, *Council Report: Automobile-Related Injuries*, 249 J. A.M.A. 3216 (June 17, 1983)("most authorities agree [that BAC's of 0.05 or greater] cause impairment of physical and mental functioning and interfere with the task of driving vehicles safely"); Moskowitz, H., and Robinson, C., EFFECTS OF LOW DOSES OF ALCOHOL ON DRIVING-RELATED SKILLS: A REVIEW OF THE EVIDENCE, U.S. D.O.T. H.S. 807 280 (July 1988).

[42] Council on Scientific Affairs, *Council Report: Alcohol and the Driver*, 255 J. A.M.A. 522 (Jan. 24/31, 1986).

[43] *Blood Alcohol Concentration and Driving*, 17 Annals Emerg. Med. 1252 (November 1988)

[44] "End Alcohol and Other Drug Impairment in Transportation," NTSB 2017-2018 Most Wanted List of Transportation Safety Improvements (NTSB 2018).

[45] Utah Code Ann. Sec. 41-6a-502, effective December 30, 2018

[46] In 2004, an identical review of the three police departments' DUI arrests from 1999-2001 was conducted. The sample was much smaller; however, the results were remarkably similar to the 1990's survey.

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[47] *Weisenfels v. State*, 283 S.W.3d 622 (2008).

[48] 29-A MRS § 2525(2).

[49] *See Georgia v. Pastorini*, 474 S.E.2d 122 (Ga. Ct. App. 1996); *Iowa v. Sappingfield*, 873 N.W.2d 551 (Iowa 2015); *State v. Atkins*, 129 A.3d 952 (Me. 2015); *Minnesota v. Cammack*, 1997 Minn. App. LEXIS 278, 1997 WL 104913 (Minn. Ct. App. 1997); *State v. Pulliam*, 348 P.3d 670 (Mont. 2015); *State v. Aleman*, 194 P.3d 110 (N.M. 2008). But see *State v. Aman*, 95 P.3d 244 (2004)(ruling the DRE testimony is not admissible as scientific evidence in the absence of corroborating toxicological test results). The failure to complete the entire process is not preferred. In the cases cited, the full process was not used due to the medical condition of the drivers. In late 2017, a controversy erupted in Cobb County, Georgia, when a DRE-trained officer was accused of arresting drivers for driving under the influence of drugs based on his training and experience. The officer did not use the DRE process. The validity of DRE program was called into question because of the failure of the officer to follow the process. See https://www.mdjonline.com/news/cobb-county-police-department-facing-lawsuit-for-alleged-false-drug/article_a3f81848-a25e-11e7-bbc4-cb3f89cf46b7.html.

[50] *See Iowa v Sappingfield*, 873 N.W.2d 551 (2015).

[51] *See e.g.*, *State v. Dilboy*, 999 A.2d 1092 (N.H. 2010)(holding that "the element of being 'under the influence' of a controlled drug may be proved by evidence that the defendant was suffering symptoms of withdrawal from drug usage"); *State v. Franchetta*, 394 N.J. Super. 200 (App.Div. 2007)(upholding a defendant's conviction for DUI even though the cocaine he ingested was "not pharmacologically active" since he was suffering the "rebound" or "hangover effect").

[52] *See e.g.*, *State v. Klawitter*, 518 N.W.2d 577 (Minn. 1994) and *Williams v. State*, 710 So. 2d 24, fn 23 (Fla. 3d DCA 1998).

[53] *See e.g.*, *State v. Lesley*, 133 Idaho 23 (Id. 1999).

[54] Journal of Forensic Sciences 38(6):1342-53 · December 1993

[55] *Trucking 101*, Transportation Research Circular No. E-C146, December 2010, Transportation Research Board of the National Academies, relying on data captured in the *Large Truck Crash Causation Study*, a study funded by the US Department of Transportation to collect data from a nationally representative sample of fatal and injury-producing large-truck crashes investigated from 2001-2003.

[56] Girotto E, Mesas AE, de Andrade SM, et al., *Psychoactive substance use by truck drivers: a systematic review*. Occup Environ Med 71:71-76 (2014).

[57] E. Sether, Sgt. Oregon State Police Electronic Message June 7, 2018

[58] Moskowitz, H. and Robinson, C., *Driving-Related Skills Impairment at Low Blood Alcohol Level, the Proceedings of the Tenth International Conference on Alcohol, Drugs and Traffic Safety*, Amsterdam, Holland (Sept. 9-12, 1986) (researchers consistently find that breath alcohol levels as low as 0.04 impair people's ability to handle emergency situations); Moskowitz, H. and Robinson, C., EFFECTS OF LOW DOSES OF ALCOHOL ON DRIVING-RELATED SKILLS: A REVIEW OF THE EVIDENCE, U.S. D.O.T. H.S. 807 280 (July 1988), at 61; United States Department of Transportation, *Alcohol Impairment and its Effects on Driving: An Informational Booklet.*

[59] *See* Bigelow, G., Bickel, W., Roche, J., Liebson, I., and Nowowieski, P., IDENTIFYING TYPES OF DRUG INTOXICATION: LABORATORY EVALUATION OF A SUBJECT-EXAMINATION PROCEDURE, U.S. D.O.T. H.S. 806 753 (May 1985); Compton, R., FIELD EVALUATION OF THE LOS ANGELES POLICE DEPARTMENT DRUG DETECTION PROGRAM, U.S. D.O.T. H.S. 807 012 (Feb. 1986); Anderson, T., Schweitz, R., and Snyder, M., FIELD EVALUATION OF A BEHAVIORAL TEST BATTERY FOR DWI, U.S. D.O.T. H.S. 806 475 (Sept. 1983); Tharp, V., Burns, M., and Moskowitz, H., DEVELOPMENT AND FIELD TEST OF PSYCHOPHYSICAL TESTS FOR DWI ARREST, U.S. D.O.T. H.S. 805 864 (Mar. 1981).

[60] *See Reid v. State*, 372 N.E.2 1149, 1152 (Ind. 1978).

[61] *See* DRE Manual, *supra*. Defense attorneys typically cite the work of Dr. Spurgeon Cole to "support" the proposition that the psychomotor tests are unreliable. However, Dr. Cole's study is of questionable value. *See State v. Adams*, No. 93-39271-MM (Fla. County Ct. Nov. 24, 1993) and *State v. Rodil*, No. 60349WG (Fla. County Ct. Nov. 22, 1993)(unpublished opinion). For further information, contact the NTLC.

[62] *See* Cowan, J. and Jafee, S., *Proof and Disproof of Alcohol-Induced Driving Impairment Through Evidence of Observable Intoxication and Coordination Testing*, 9 Am. Jur. Proof of Facts 3d 459, Section 8, at 485.

[63] *See e.g.* Hartman, R., Richman, J., Hayes, C., and Huestis, M., *Drug Recognition Expert (DRE) examination characteristics of cannabis impairment*, 92 Accident Analysis & Prevention 219 (2016).

[64] *See* Stapleton, J., Guthrie, S., and Linnoila, M., *Effects of Alcohol and Other Psychotropic Drugs on Eye Movements: Relevance to Traffic Safety*, 47 J. Stud. Alc. 426 (Sept. 1986).

[65] Buikhuisen, W., and Jongman, R.W., *Traffic Perception Under the Influence of Alcohol*, 33 Q. J. STUD. ALC. 800 (Sept. 1972).

[66] *See State v. Witte*, 251 Kan. 313, 836 P.2d 1110 (Kan. 1992).

[67] For an excellent analysis of this particular claim, see Whiting, D., *State v. Witte: Questioning HGN's Frye General Acceptance Under Blake*, 5 DRE 7 (Spring 1993).

[68] Citek, K. and Yolton, Y., *Positional Alcohol Nystagmus—What is it and How do You Avoid it at Roadside?*, Optometry — Journal of the American Optometric Association 74(11):695-710 · December 2003

[69] *Id*.

[70] *See Georgia v. Pastorini*, 474 S.E.2d 122 (Ga. Ct. App. 1996); I*owa v. Sappingfield*, 873 N.W.2d 551 (Iowa 2015); *State v. Atkins*, 129 A.3d 952 (Me. 2015); *Minnesota v. Cammack*, 1997 Minn. App. LEXIS 278, 1997 WL 104913 (Minn. Ct. App. 1997); *State v. Pulliam*, 348 P.3d 670 (Mont. 2015); *State v. Aleman*, 194 P.3d 110 (N.M. 2008). But see *State v. Aman*, 95 P.3d 244 (2004)(ruling the DRE testimony is not admissible as scientific evidence in the absence of corroborating toxicological test results).

[71] *Georgia v. Pastorini*, 474 S.E.2d 122 (Ga. Ct. App. 1996).

[72] *Minnesota v. Cammack*, 1997 Minn. App. LEXIS 278, 1997 WL 104913 (Minn. Ct. App. 1997). *See also Drug recognition expert evaluations made using limited data*, 130 Forensic Science International 167 (2002).

[73] *See e.g. State v. Fong*, 226 Ore. App. 493 (2009).

[74] *The Success System Never Fails*, W Clement Stone Copyright 2012 by Start Publishing LLC.

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APPENDIX 1

2018 DRE DRUG MATRIX—INDICATORS CONSISTENT WITH DRUG CATEGORIES

	CNS Depressants	CNS Stimulants	Hallucinogens	Dissociative Anesthetics	Narcotic Analgesics	Inhalants	Cannabis
HGN	Present	None	None	Present	None	Present	None
Vertical Gaze Nystagmus	Present (High Dose)	None	None	Present	None	Present (High Dose)	None
Lack of Convergence	Present	None	None	Present	None	Present	Present
Pupil Size	Normal (1)	Dilated	Dilated	Normal	Constricted	Normal (4)	Dilated (6)
Reaction to Light	Slow	Slow	Normal (3)	Normal	Little or None Visible	Slow	Normal
Pulse Rate	Down (2)	Up	Up	Up	Down	Up	Up
Blood Pressure	Down	Up	Up	Up	Down	Up/Down (5)	Up
Body Temperature	Normal	Up	Up	Up	Down	Up/Down/ Normal	Normal
Muscle Tone	Flaccid	Rigid	Rigid	Rigid	Flaccid	Normal or Flaccid	Normal
General Indicators	• Disorientation • Droopy eyelids • Drowsiness • Drunk-like behavior • Slow, sluggish reactions • Thick, slurred speech • Uncoordinated • Unsteady walk	• Anxiety • Body tremors • Dry mouth • Euphoria • Exaggerated reflexes • Excited • Eyelid tremors • Grinding teeth • Increased alertness • Insomnia • Irritability • Redness to the nasal area • Restlessness • Runny nose • Talkative	• Body tremors • Dazed appearance • Difficulty with speech • Flashbacks • Hallucinations • Memory loss •Nausea •Paranoia •Perspiring •Poor perception of time and distance • Synesthesia • Uncoordinated ***Note:*** *With LSD, Piloerection may be observed (goose bumps, hair standing on end)*	• Blank stare • Confusion • Chemical odor (PCP) • Cyclic behavior • Difficulty with speech • Disoriented • Early HGN Onset • Hallucinations • Incomplete verbal responses • Increased pain threshold • "Moon Walking" • Non-communicative • Perspiring (PCP) • Possibly violent • Sensory distortions •Slow, slurred speech • Slowed responses • Warm to touch (PCP)	• Depressed reflexes • Droopy eyelids • Drowsiness • Dry mouth • Euphoria • Facial itching • Inability to concentrate • Nausea • "On the Nod" • Puncture marks • Slow, low, raspy speech • Slow breathing • Slow deliberate movements ***Note:*** *Tolerant users exhibit relatively little psychomotor impairment.*	• Bloodshot eyes • Confusion • Disoriented • Flushed face • Intense headaches • Lack of muscle control • Non-communicative • Odor of substance • Possible nausea • Residue of substance • Slow, thick, slurred speech • Watery eyes	• Altered time/distance perception • Alteration in thought formation • Body tremors • Bloodshot eyes • Disoriented • Drowsiness • Eyelid tremors • Euphoria • Impaired memory • Increased appetite • Lack of concentration • Mood changes • Odor of Marijuana • Rebound Dilation • Relaxed inhibitions • Sedation
Duration of Effects	• Ultra-Short: A few minutes • Short: Up to 5 hours • Intermediate: 6–8 hours • Long: 8–14 hours	• Cocaine: 5-90 minutes • Methamphetamine: Up to 12 hours	• Duration varies widely from one hallucinogen to another: • LSD: 10–12 hours • Psilocybin: 2–3 hours	• PCP Onset: 1–5 minutes • Peak Effects: 15–30 minutes • Exhibits effects up to 4–6 hours • DXM: Onset 15–30 min. • Effects 3–6 hours	• Heroin: 4–6 hours • Methadone: Up to 24 hours • Others: Vary	• 6–8 hours for most volatile solvents • Anesthetic gases and aerosols — very short duration	• 2–3 hours — exhibit and feel effects • (Impairment may last up to 24 hours, without awareness of effects)
Usual Methods of Administration	• Injected (occasionally) • Insufflation Oral	• Insufflation • Injected • Oral • Smoked	• Insufflation • Oral Smoked • Transdermal	• Injected • Insufflation • Oral Smoked • Transdermal	• Injected • Insufflation • Oral Smoked • Transdermal	• Inhalation	• Oral Smoked • Transdermal
Overdose Signs	• Clammy skin • Coma • Rapid, weak pulse • Shallow breathing	• Agitation • Hallucinations	• Intense bad "trip" • Hyperthermia • Convulsions	• Deep coma • Seizures and convulsions	• Cold, clammy skin • Coma • Convulsions • Slow, shallow breathing	• Cardiac arrhythmia • Possible psychosis • Respiration ceases • Severe nausea/vomiting • Risk of death	• Excessive vomiting • Fatigue • Acute anxiety attacks • Paranoia • Possible psychosis

Footnote: These indicators are the most consistent with the category, keep in mind that there may be variations due to individual reaction, dose taken and drug interactions.

1) Soma, Quaaludes and some antidepressants usually dilate pupils
2) Quaaludes, ETOH and some antidepressants may elevate
3) Certain psychedelic amphetamines may cause slowing
4) Normal, but may be dilated
5) Down with anesthetic gases, up with volatile solvents and aerosols
6) Pupil size possibly normal

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APPENDIX 2

SAMPLE DRE EXAMINATION

I. Experience, Training and General Background

Officer _____, before we discuss today's case, I'd like to take a few minutes to introduce you to the court and the members of the jury.

1. Please introduce yourself.

2. How are you employed?

3. How long have you worked for the _____ (police or sheriff's department/state police/highway patrol, etc.)?

4. What prior law enforcement experience do you have?

5. What special training and/or experiences, if any, have you had in the field of detecting and apprehending drivers impaired by alcohol or drugs?

_____ Police Academy
_____ College courses/formal degrees
_____ Books read
_____ Narcotics training
_____ DRE Course/certification
_____ DRE Instructor Development Course
_____ Specialized conferences
_____ Published articles/classes taught (by the DRE)
_____ Prior Work Experience

6. Have you ever participated in a "drinking lab"?

7. How many times?

8. What is the purpose of a drinking lab?

9. During the lab(s), did you have an opportunity to administer the Standardized Field Sobriety Tests to people and then compare your opinions regarding their levels of impairment to their actual breath alcohol levels?

10. Were you able to accurately and reliably discern their alcohol impairment?

11. Have you participated in any labs where subjects were provided cannabis or products with THC?

12. During the lab(s), did you have an opportunity to administer the Standardized Field Sobriety Tests to people and then compare your opinions regarding their levels of impairment to their consumption of THC?

13. Have you participated in any labs where subjects were provided controlled substances or illegal drugs?

14. Why not?

**It would be illegal and dangerous.*

15. Approximately how many people have you stopped for traffic violations in the last month?

16. About how many of those stops resulted in an investigation for Driving under the influence?

17. Approximately how many of those investigations resulted in an arrest for DWI?

18. Why were some drivers investigated for DUI not arrested?

**If a person passes the Standardized Field Sobriety Tests, I do not arrest him or her.*

16. How many times have you administered the Standardized Field Sobriety Tests?

17. How many people have you arrested for DUI?

18. After you arrested them, did you have an opportunity to give them breath tests?

19. Did you compare your opinions regarding the arrestees' levels of impairment to their actual breath alcohol levels?

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20. Based on that comparison, could you tell us whether you were able to make good arrest decisions using the Standardized Field Sobriety Tests?

II. The Instant Case

21. Calling your attention to _____ (date of arrest). Were you working on that date?

22. Where were you at approximately _____?

23. On that date and at that time, did you perform a Drug Influence Evaluation on someone who later became known to you as _____?

24. Do you see that person in the courtroom today?

25. Please point at that person and identify him/her by a unique article of clothing that he/she is wearing.

LET THE RECORD REFLECT THAT OFFICER _____ HAS IDENTIFIED THE DEFENDANT, _____.

III. DRE Testimony

26. Are you familiar with the Drug Evaluation and Classification Program, also referred to as the DEC Program?

**Yes.*

27. What is the DEC Program?

**The Drug Evaluation and Classification Program allows specially trained law enforcement officers, called Drug Recognition Experts (Evaluators), or DREs, to accurately and reliably determine whether a person is under the influence of drugs, and, if so, what category of drugs. The program is administered by the International Association of Chiefs of Police (IACP) and funded in large part by NHTSA.*

28. What is NHTSA?

**NHTSA is the National Highway Traffic Safety Administration. It is a federal agency which operates under the auspices of the United States Department of Transportation, a cabinet level agency.*

29. How many states participate in the DEC Program?

**All 50 states, plus the District of Columbia.*

30. How do the IACP and NHTSA provide for the education and training of DREs?

**They oversee the program and publish the DRE manuals and other materials.*

31. Are you a certified DRE?

Yes.

32. Who certified you?

I was given credentials by the IACP and certified by my State Coordinator after being recommended for certification by two DRE Instructors.

33. Did IACP issue you a certification card?

**Yes.*

34. I'm showing you what has been marked as State's exhibit _____ for identification. Do you recognize this exhibit?

(**WARNING:** Prosecutors should NOT introduce an original card into evidence. If they do, the officer may NOT get the card back [though most judges would grant a motion to substitute a copy for the original]).

**Yes*

35. Can you tell us what it is?

**Yes. It is my certification card.*

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APPENDIX 2

SAMPLE DRE EXAMINATION

36. Is it an original or a photocopy?

**Photocopy.*

37. Is it a true and exact copy of the original?

AT THIS TIME, THE STATE MOVES STATE'S EXHIBIT _____ FOR IDENTIFICATION INTO EVIDENCE AS STATE'S EXHIBIT _____ .

38. When were you certified as a DRE?

39. How does a law enforcement officer achieve certification as a DRE?

**Officers seeking DRE certification, also called DRE candidates, must attend nine days of classroom DRE training. The classroom training includes field sobriety testing and basic human physiology and drug pharmacology. After completion of the nine day course, DRE candidates must take and pass a written certification examination.*

The candidates that pass the written test must participate in and complete an internship period where they conduct actual drug evaluations under the tutelage of a certified DRE instructor. During this period, DRE candidates must conduct and draft a minimum of 12 drug influence evaluations and must be corroborated by laboratory analysis at least 75 percent of the time when they submit samples to the laboratory. They must also correctly identify three different categories of drugs as confirmed by laboratory analysis. Finally, they must be recommended for certification by at least two certified DRE instructors. DRE candidates who comply with all of these requirements may be recommended for certification by their states (IACP issues the certification number and paperwork).

40. What procedures do DREs use to determine whether or not someone is under the influence of drugs?

**We administer a drug influence evaluation.*

41. What is a drug influence evaluation?

**The drug influence evaluation incorporates the DRE protocol. The drug influence evaluation is a systematic and standardized process for identifying drug influence and impairment. It utilizes a variety of readily observable signs and symptoms that medically are accepted as reliable indicators of drug influence. The examination includes a brief medical history, pulse, blood pressure, body temperature, pupil size and reaction to light. The process allows a trained Drug Recognition Expert to determine whether or not someone is under the influence of a drug or drugs and, if so, what category of drugs. The process is systematic because it is based on a complete set of observable signs and symptoms that are known to be reliable indicators of drug impairment. The process is standardized because it generally is conducted in the same way by every DRE for every subject.*

42.Is the DRE Protocol generally accepted to be an accurate and reliable means of identifying drug influence and impairment?

*Yes. In fact, the DEC Program is recognized by the United States Department of Transportation, the national ACLU, the American Bar Association and the International Association of Chiefs of Police. The 1988 Surgeon General's Workshop on Drunk Driving Panel on Law Enforcement also endorsed the program. Miami-Dade County's DRE Program is endorsed by the Dade County Medical Association, the Broward County Medical Association and the Broward County Psychiatric Association.

43. How many people have you evaluated for drug influence and impairment?

44. Approximately how many times have you determined that a DUI suspect was under the influence of drugs?

45. Have you ever confirmed your opinions by collecting urine or blood or oral fluid samples for laboratory analysis?

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APPENDIX 2
SAMPLE DRE EXAMINATION

46. Based on your training and experience, can you accurately and reliably determine whether someone is under the influence of drugs?

47. Based on your training and experience, assuming a person is impaired, can you accurately and reliably identify the particular drug category or categories causing a person's impairment?

**Yes.*

48. How many different categories do DREs use to classify drugs?

**Seven.*

49. How are the drugs grouped?

**Drugs are grouped according to common or shared effects, known as signs and symptoms.*

50. What are the seven drug categories?

**They are:*

1) *Central Nervous System (CNS) Depressants*
2) *CNS Stimulants*
3) *Hallucinogens*
4) *Dissociative Anesthetics*
5) *Inhalants*
6) *Narcotic Analgesics*
7) *Cannabis*

IV. The DRE Protocol

51. Can you briefly describe how a drug influence evaluation is performed?

**There are 12 components or steps in a drug influence evaluation. They are:*

1) *Breath Alcohol Test*
2) *Interview of the Arresting Officer*
3) *Preliminary Examination and First Pulse*
4) *Eye Examination*
5) *Divided Attention Psychophysical Tests*
6) *Vital Signs and Second Pulse*
7) *Dark Room Examination*
8) *Examination for Muscle Tone*
9) *Check for Injection Sites and Third Pulse*
10) *Suspect's Statements and Other Observations*
11) *Opinions of Evaluator*
12) *Toxicological Examination*

A. Breath Alcohol Test

52. Officer, please describe the first component of the drug influence evaluation?

**During the first component, an officer administers a breath test to the suspect for the purpose of determining the suspect's breath alcohol level (BrAC). Based on the suspect's BrAC, we can determine whether alcohol may be a contributing cause or the sole cause of the suspect's observable impairment.*

53. Was the defendant given a breath test in this particular case?

54. Are you familiar with the defendant's breath test results?

**Yes, I am.*

55. How are you familiar with his or her results?

**I reviewed the breath alcohol test results evidence card that the instrument generated when the defendant blew into it.*

56. What experience, if any, do you have in recognizing alcohol-induced impairment?

57. What did the breath alcohol test results indicate to you as to whether or not alcohol was the sole cause or a contributing factor to the defendant's impairment?

**The test indicated that defendant's breath alcohol test results were inconsistent with the defendant's performance*

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on the Standardized Field Sobriety Tests.

B. Interview of the Arresting Officer(s)

58. Please tell us about the second component of the drug influence examination.

**During the second component, I discuss the circumstances of the arrest with the arresting officer(s). I ask the arresting officer(s) about the suspect's behavior, appearance, and driving pattern. I also ask the arresting officer(s) whether the suspect made any statements and whether the arresting officer(s) found any other relevant evidence of drug use.*

59. Did you interview the arresting officer in this case?

**Yes.*

60. Did the arresting officer tell you how the defendant behaved and what, if anything, he said?

**Yes.*

(If the judge allows the prosecutor to do so, the prosecutor should ask what the defendant's actions or statements meant to the DRE)

C. Preliminary Examination and First Pulse

61. Please describe the third component of the drug influence evaluation.

**During the third component, we ask the suspect a series of standard questions relating to the suspect's health and recent ingestion of food, alcohol and drugs. We make observations regarding the suspect's attitude, coordination, speech, breath and face. We also determine whether the suspect's pupils are equal in size and whether the suspect's eyes can track equally and follow a moving stimulus. Finally, we look for Horizontal Gaze Nystagmus and take the suspect's pulse for the first of three times.*

62. What are the purposes of the preliminary examination?

**There are two main purposes of the preliminary examination. First, we determine whether the suspect may be suffering from an injury or other condition unrelated to drugs. If we believe that this is a possibility, we seek medical assistance immediately. If we believe that the suspect's condition is drug related, we continue with the evaluation. Second, we obtain information and make observations which assist us in coming to a conclusion later on.*

63. Did you conduct a preliminary examination in this case?

**Yes.*

64. Did you ask the defendant some questions?

**Yes.*

65. Please tell us what questions you asked the defendant and what answers the defendant gave.

NOTE: The prosecutor may need to refresh the witness' recollection by having the witness refer to the drug influence evaluation form. If that is the case, the prosecutor can use the following predicate:

1) Would the Drug Influence Evaluation you completed in this case refresh your recollection?

2) I'm showing you what is marked as State's exhibit _____ for identification.

3) Do you recognize it?

4) What is it?

**The Drug Influence Evaluation I completed in this case.*

(The officer should review the paperwork)

5) Is your memory refreshed?

6) Please tell us what questions you asked and the answers the defendant gave.

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APPENDIX 2
SAMPLE DRE EXAMINATION

**What time is it now?*
Defendant's answer:

**When did you last sleep?*
Defendant's answer:

**How long did you steep?*
Defendant's answer:

**Are you sick or injured?*
Defendant's answer:

(NOTE: The questions relating to medical conditions and treatments are important because they allow us to exclude alternate medical explanations for the impairment)

**Are you diabetic?*
Defendant's answer:

**Are you epileptic?*
Defendant's answer:

**Do you suffer from allergies?*
Defendant's answer:

**Do you take insulin?*
Defendant's answer:

**Do you have any physical defects?*
Defendant's answer:

**Are you under the care of a doctor or dentist?*
Defendant's answer:

**Are you taking any medication or drugs?*
Defendant's answer:

66. What observations, if any, did you make of the defendant during the preliminary examination?

_____ Speech

_____ Eyes

_____ Face

_____ Breath

_____ Balance

67. Based upon your training and experience, what did the results of your preliminary examination mean to you?

D. Eye Examinations

68. Please describe the fourth component of the drug influence evaluation.

**During the fourth component, we examine the suspect for horizontal gaze nystagmus, vertical gaze nystagmus, and a lack of convergence.*

1. Horizontal Gaze Nystagmus Test

69. What is the first eye test DREs administer?

**The horizontal gaze nystagmus test, also referred to as the HGN test.*

70. How is the HGN test performed?

**There are three parts to this test. During the first part, we examine the subject's smooth pursuit. We examine the subject's smooth pursuit by moving an object, usually a pen or small flashlight, from a point near the person's nose outwards towards the side of his face so that the eyeball follows it from one side of the eye to the other.*

71. What do you mean by "smooth pursuit?"

**Normally, a person's eyes smoothly track moving objects just as a car's windshield wipers move across a wet windshield. However, if a person is under the influence of depressants, including alcohol, inhalants or a dissociative anesthetic, their eyes may exhibit a jerking or tugging motion to the center as his eyes track a moving object. The motion is similar to windshield wipers moving across a dry windshield.*

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72. Why is this test important?

**It's important because HGN is an impairment of the eyes' ability to track. In the context of driving, it means that a person may have difficulty observing and tracking other cars or pedestrians.*

73. Can you please demonstrate the smooth pursuit portion of the test to the court?

**We hold a pen or other stimulus 12 to 15 inches from the subject's nose. We move the pen from side to side to see and observe whether or not the subject is able to smoothly follow the moving object.*

74. Did you perform this part of the test on the defendant?

75. Did you perform this part of the test on the defendant's left eye?

76. What observations, if any, did you make?

77. Did you perform this part of the test on the defendant's right eye?

78. What observations did you make?

79. What is the second part of the HGN test?

**During the second part of the test, we examine the subject's eye for distinct and sustained nystagmus at maximum deviation. We hold the pen steady and look to see if the subject's eye jerks at that position. Jerking at this deviation is considered an indicator if it is "distinct".*

80. How long do DREs have a subject hold their eye at the outer corner?

**A minimum of four seconds.*

81. Did you perform this portion of the test on the defendant's left eye?

82. What observations did you make?

83. Did you perform this portion of the test on the defendant's right eye?

84. What did you observe?

85. What is the third part of the HGN test?

**During the third part of the test, we determine if and at what angle from the nose the eye begins to jerk.*

86. How is this test performed?

**Again, we place the pen 12 to 15 inches from the subject's nose and slowly move the pen toward the outer corner of his eye. We always start with the left eye. If we see any jerking, we stop moving the pen and hold it steady. We make sure that the eye is really jerking. If it is not, we start moving the pen further towards the outer portion of the eye and again look for jerking. If the eye jerks, we locate the point at which the jerking begins and estimate the angle of onset.*

87. Why do you estimate the angle of onset?

**Research demonstrates that a person's breath or blood alcohol level can be estimated to within 0.02 by subtracting the angle of onset from 50.*

88. Did you perform this portion of the test on the defendant's left eye?

89. What did you observe?

90. Based upon your training and experience, and your familiarity with HGN related research, what, if anything, does this indicate to you?

91. Did you perform this portion of the test on the defendant's right eye?

92. What did you observe?

93. Based upon your training and experience, and your familiarity with HGN related research, what, if anything, did the defendant's performance on the

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HGN test indicate to you?

2. VGN Test

94. What is the second eye test that DREs perform?

**The vertical gaze nystagmus test.*

95. How do DREs perform the VGN test?

**We ask the subject to look at a stimulus and move the stimulus straight up. We check to see whether the subject's eyes jerk while gazing upward.*

96. Did you perform the VGN test in this case?

97. What did you observe?

98. Based upon your training and experience, what did this indicate to you?

3. Convergence Test

99. What is the third eye test that DREs administer?

**The lack of convergence test.*

100. How is this test performed?

**We hold a pen or other stimulus about 15 inches from the subject's face and point the tip of the pen toward the subject's nose. We ask the subject to hold his head still and follow the tip of the pen with his eyes. We then move the pen in a slow circle. Once we determine the subject is following the pen, we bring it in slowly and steadily towards the bridge of the subject's nose. We look to see if the subject's eyes converge. A subject's eyes are said to lack convergence if his eyes are unable to converge on the stimulus.*

101. Did you perform this test in this case?

102. What did you observe?

103. Based upon your training and experience, what did this indicate to you?

E. Divided Attention Psychophysical Tests

104. Please describe the fifth component of the drug influence evaluation.

**During the fifth component of the evaluation, we administer four psychophysical tests: the Modified Romberg Balance; the Walk and Turn; the One Leg Stand; and the Finger to Nose.*

105. Are these tests divided attention tests?

**Yes.*

106. What is a divided attention test?

**A divided attention test is an examination which assesses a subject's ability to perform a mental and a physical task at the same time. For example, on the One Leg Stand, we ask the subject to count out loud while holding one foot approximately six inches off of the ground.*

107. Why are divided attention tests important?

**Driving requires people to perform mental and physical tasks simultaneously all of the time. To divide attention actually refers to the ability to switch between tasks. For example, when a driver approaches a yellow light he needs to consider distance, speed and the traffic at the same time, or shortly afterwards. He or she may need to remove his foot from the accelerator and begin to brake. Thus, examinations that test a driver's divided attention skills tell us a lot about the driver's ability to safely operate a motor vehicle.*

108. Are these psychophysical tests used exclusively by DREs?

**No. DUI officers traditionally rely on some of these same tests to identify alcohol influence and impairment. In addition, medical professionals have relied upon these or similar tests for decades.*

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APPENDIX 2

SAMPLE DRE EXAMINATION

1. Modified Romberg Balance Test

109. What is the first psychophysical test that DREs administer?

**The Romberg Balance Test.*

110. Do DREs instruct each subject how to properly perform the test?

**Yes.*

111. Do DREs demonstrate the test to each subject?

**Yes.*

112. Would you please explain and demonstrate the test for the court in the same manner that DREs do for each subject?

**We ask the subject to stand straight with his feet together and his arms down at his sides. We tell the subject to remain in this position until we tell him to begin. We then ask the subject whether he understands these instructions. This is important because an inability to follow instructions can be indicative of impairment.*

We then tell the subject that when we say to begin, he should tilt his head back slightly and close his eyes. We tell the subject that once he closes his eyes and tilts his head back, he is not to open his eyes until he thinks that 30 seconds have elapsed. We then ask the subject if he understood the directions and tell the subject to begin.

113. What do DREs look for when administering this test?

**We look for:*

_____ *Body tremors*

_____ *Eyelid tremors*

_____ *Sway (distance and direction)*

_____ *Muscle rigidity/flaccidity*

_____ *Statements or sounds*

_____ *The number of seconds that the subject estimates as 30.*

114. Did you administer the Modified Romberg Balance Test in this case?

115. Did you fully explain the test before asking the defendant to perform?

116. In the same manner you described earlier?

117. Did the defendant perform this test?

118. How did the defendant perform?

119. Based upon your training and experience, what did this indicate to you?

2. Walk and Turn Test

120. What is the second psychophysical test that DREs administer?

**The Walk and Turn Test.*

121. Do DREs instruct each subject how to properly perform the test?

**Yes.*

122. Do DREs demonstrate this test to each subject?

**Yes.*

123. Can you please explain and demonstrate the test for the court in the same manner that DREs do for each subject?

**We tell the subject to place his right foot on the line ahead of his left foot with the heel of the right foot against the toe of the left foot. We tell the subject to put his arms down against his sides and keep them there throughout the test.*

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APPENDIX 2
SAMPLE DRE EXAMINATION

We then make sure that the subject understands these directions. We instruct the subject that when we tell him to begin, he is to take nine heel to toe steps up the line. We tell him that, on the ninth step, he is to leave his front or lead foot on the line and turn around, taking a series of small steps with the other foot. We instruct him to take *nine heel to toe steps back after he completes the turn. We instruct him to watch his feet as he walks and to count off the steps out loud. Finally, we tell him that once he begins, he is to keep walking until the test is completed. We then ask him if he understands the instructions.*

124. What do DREs look for when administering the Walk and Turn Test?

**We look for:*

_____ *Keeps balance during the instruction component*

_____ *Starts too soon*

_____ *Steps off of the line*

_____ *Raises arms while walking*

_____ *Misses heel to toe*

_____ *Stops walking*

_____ *Wrong number of steps*

_____ *Improper turn*

_____ *Body tremors*

_____ *Muscle rigidity/flaccidity*

_____ *Statements/sounds*

125. Did you administer the Walk and Turn Test in this case?

126. Did you fully explain and demonstrate the test before asking the defendant to perform?

127. In the same manner you described and demonstrated earlier?

128. Did the defendant perform this test?

129. How did the defendant perform?

130. Based upon your training and experience, what did this indicate to you?

3. One Leg Stand Test

131. What is the third psychophysical test that DREs administer?

**The One Leg Stand.*

132. Do DREs instruct each subject how to properly perform the test?

**Yes.*

133. Do DREs demonstrate this test to each subject?

**Yes.*

134. Can you please explain and demonstrate the test for the court in the same manner that DREs do for each subject?

**We ask the subject to stand straight with his feet together and his arms down at his sides. We tell him to maintain this position while we give him the instructions and emphasize that he is not to start the test until we instruct him to begin. We ask him if he understands.*

We then tell him that when we tell him to begin, he is to raise his right foot and hold the foot about six inches off of the ground and parallel to the ground, with the toes pointed outward. We instruct him to keep his arms at his sides and keep looking directly at his foot while counting out loud for 30 seconds or until told to stop as follows: one thousand and one, one thousand and two, one thousand and three, and so on until told to stop. We then ask him

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once again if he understands. Finally, we tell the subject to begin. After he completes the test while raising his right foot, we then ask him to perform the test again while raising his left foot.

135. What do DREs look for when administering the One Leg Stand Test?

**We look for:*

_____ *Raises arms*

_____ *Sway*

_____ *Hopping*

____ *Puts foot down*

_____ *Standing still and straight during instructions*

_____ *Body tremors*

_____ *Muscle rigidity/flaccidity*

_____ *Statements/sounds*

136. Did you administer the One Leg Stand in this case?

137. Did you fully explain and demonstrate the test before asking the defendant to perform?

138. In the same manner you described and demonstrated earlier?

139. Did the defendant perform this test?

140. How did the defendant perform?

141. Based upon your training and experience, what did this indicate to you?

4. Finger to Nose Test

142. What is the fourth psychophysical test that DREs administer?

**The Finger to Nose Test.*

143. Do DREs instruct each subject how to properly perform the test?

**Yes.*

144. Do DREs demonstrate this test to each subject?
**Yes.*

145. Can you please explain and demonstrate the test for the court in the same manner that DREs do for each subject?

**We ask the subject to place his feet together and stand straight. We then tell him to put his arms by his sides and close his hands. We instruct him to extend his index fingers and to remain in that position until we tell him to begin. We then tell the subject that when we tell him to begin he is to tilt his head slightly back and close his eyes.*

We instruct the subject that when we tell him to begin, he is to bring the tip of his index finger up to the tip of his nose. We further tell him that as soon as he touches the tip of his nose, he is to return his arm to his side immediately. We tell the subject that we will call out "left" or "right." If we call out "right," he is to bring his right hand index finger forward to his nose; when we tell him "left," he is to move the left hand index finger to his nose. We then ask the subject if he understands the instructions. We then instruct the subject to tilt his head back and close his eyes and to keep them closed until we tell him to open them. We then call out "left ... right ... left ... right … right … left."

146. What do DREs look for when administering the Finger to Nose Test?

**We look for:*

_____ *Fingertips touch nose or other parts of face*

_____ *Sway*

_____ *Body tremors*

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_____ *Eyelid tremors*

_____ *Abnormal muscle tone*

_____ *Statements/sounds*

147. Did you administer the Finger to Nose Test in this case?

148. Did you fully explain and demonstrate the test before asking the defendant to perform?

149. In the same manner you described and demonstrated earlier?

150. Did the defendant perform this test?

151. How did the defendant perform?

152. Based upon your training and experience, what did this indicate to you?

E. Vital Signs and Second Pulse

153. Please describe the sixth component of the DRE examination.

**During the sixth component, we check the suspect's blood pressure, temperature and pulse. Some drug categories may elevate the vital signs. Others may lower them and some may have no effect. Vital signs thus provide considerable evidence of the presence and influence of a variety of drugs.*

1. Pulse

154. What is the first vital sign that DREs check?

**The subject's pulse rate.*

155. How do DREs check a subject's pulse rate?

**We check the pulse by placing our fingers on the subject's skin next to an artery. We press down slightly to feel the artery expand as the blood surges through. Each surge is a pulse. We count the pulses that occur in 30 seconds and multiply by two to give us the pulse rate in beats per minute.*

156. How do DREs know that they are feeling an artery rather than a vein?

**Because you can't feel the surge or pulse in a vein.*

157. How often do DREs take a subject's pulse?

**Three times. We take it during the preliminary examination, we take it following the Finger to Nose Test and we take it again during the vital signs examination.*

158. Is there a normal range in which most peoples' pulse rates fall?

**Yes.*

159. What is the normal range?

**From 60 to 90 beats per minute.*

160. Is this a medically acceptable range of normal?

**Yes.*

161. Did you take the defendant's pulse?

**Yes.*

162. How many times?

**Three.*

163. Did you use the same procedure you just described?

164. What were the results?

165. Based upon your training and experience, what did this indicate to you?

2. Blood Pressure

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APPENDIX 2
SAMPLE DRE EXAMINATION

166. What is the next vital sign that you checked?

**Blood pressure.*

167. What is blood pressure?

**Blood pressure is the force that the circulating blood exerts on the walls of the arteries.*

168. What do DREs use to measure a person's blood pressure?
**An instrument called a sphygmomanometer.*

169. What training, if any, do DREs have in the use of this instrument?

**We are trained how to use the instrument during the classroom instruction components of DRE Pre-School and School.*

170. How do DREs use this device?

**We wrap a special cuff that is attached to the device around the subject's arm. We apply a stethoscope to the subject's brachial artery pulse point and inflate the blood pressure cuff with air. As we pump the air in, the cuff squeezes the subject's arm. When the pressure is high enough, the cuff squeezes the artery completely shut so that no blood flows through it.*

We then slowly release the air in the cuff until we can hear the blood spurting through the artery when the subject's heart contracts. The point at which we can first hear the blood spurting is the systolic level and the pressure that this occurs is called the systolic blood pressure.

We continue to release the air from the cuff until it drops down to the point where the blood flows continuously through the artery. This level is called the diastolic level and the pressure reading at this point is called the diastolic blood pressure.

171. How do DREs know when the blood started to spurt, as opposed to when it was flowing?

**We listen to the spurting blood using the stethoscope. When there is no blood flowing, we can't hear anything through the stethoscope. When we release the air from the cuff, we start hearing a spurting sound when the blood starts to spurt. As we continue allowing the air to escape, the blood surges become steadily longer. When we reach the diastolic pressure, the blood flows steadily and the sounds cease.*

172. Is there a normal range in which most peoples' systolic and diastolic blood pressures fall?

**Yes.*

173. What is the normal range for a person's systolic blood pressure?

**From 120 to 140 mmHg.*

174. What is the normal range for a person's diastolic blood pressure?

**From 70 to 90 mmHg.*

175. Are these medically accepted ranges of normal?

**Yes.*

176. Did you take the defendant's blood pressure?

**Yes.*

177. Using the same procedure you just described?

178. What were the results?

179. Based upon your training and experience, what did this indicate to you?

3. Temperature

180. What is the next vital sign that you checked?

**Body temperature.*

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APPENDIX 2
SAMPLE DRE EXAMINATION

181. How do you determine a subject's body temperature?

**We measure body temperature with a thermometer.*

182. Do DREs rely on a range of normal in which most peoples' body temperature falls?

**Yes.*

183. What is that range?

**Between 97.6 and 99.6 degrees (98.6 plus or minus* one *degree).*

184. Is that a medically accepted range of normal?

**Yes.*

185. Did you take the defendant's body temperature?

**Yes.*

186. Using the same procedure you described earlier?

187. What were the results?

188. Based upon your training and experience, what did this indicate to you?

F. Dark Room Examinations

189. Please describe the seventh component of the drug influence evaluation.

**During the seventh component of the evaluation, we estimate the size of the subject's pupils under three different lighting conditions to determine whether the subject's pupils are dilated, constricted, or normal. Some drugs increase pupil size. Others may decrease pupil size. We also check the eyes' reaction to light. Certain drugs may slow the eyes' reaction to light.*

Finally, we examine the suspect's nasal and oral cavities for signs of drug ingestion.

1. Eye Examinations

190. How do DREs determine the size of a suspect's pupils?

**We estimate pupil size with a pupilometer.*

MARK AND INTRODUCE THE PUPILOMETER

191. How does the pupilometer work?

**The eye gauge has a series of dark circles or semi-circles. The diameters of the circles or semi-circles range from 1.0 mm to 9.0 mm, in half mm increments. We hold the eye gauge alongside the subject's eye and move the gauge up or down until we identify the circle or semi-circle closest in size to the subject's pupil.*

192. Under what lighting conditions do DREs examine a person's eyes?

**We examine each subject's eyes under three different lighting conditions: room light, near total darkness, and direct light.*

a. Room Light

193. How do DREs perform the room light portion of this test?

**We simply estimate the size of the subject's pupils in room light.*

194. Did you perform the room light portion of the test in this case?

195. Using the same procedure you just described?

196. What did you observe?

197. Based upon your training and experience, what did this indicate to you?

b. Near Total Darkness

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APPENDIX 2
SAMPLE DRE EXAMINATION

198. How do DREs perform the near total darkness portion of the eye examinations?

**We take the subject into a room that is almost completely dark. We then wait approximately 90 seconds to allow the subject's eyes to adapt to the dark. We then examine the subject's eyes with a penlight. We cover the tip of the penlight with our finger so that only a reddish glow emerges. We move the glowing tip of the light toward the subject's left eye and estimate it using the pupilometer. We then repeat the process on the right eye.*

199. Did you perform the near total darkness portion of the test in this case?

200. Using the same procedure you just described?

201. What did you observe?

202. Based upon your training and experience, what did this indicate to you?

c. Direct Light

203. How do DREs perform the direct light portion of the test?

**We shine a penlight into the subject's left eye and estimate pupil size, again using the pupilometer. We then repeat the procedure on the right eye.*

204. Did you perform the direct light portion of the test in this case?

205. Using the same procedure you just described?

206. What did you observe?

207. Based upon your training and experience, what did this indicate to you?

2. Nasal and Oral Examination

208. You stated earlier that DREs also check each subject's nasal and oral cavities during the dark room examination. What do you look for?

**We look for various signs that may indicate the subject has been using drugs.*

209. What kinds of things do DREs look for?

** We look for residue in the teeth, gums and nose. We also examine the tongue to see if the taste buds are raised. We check to see if the tongue is coated and what color it is. We also look for nasal irritation and perforation of the septum.*

Different categories of drugs have different effects. For example, certain kinds of drugs will have a distinct odor. Others may cause the nose to run. The existence or absence of any of these signs is helpful in determining what category of drugs may be causing a subject's impairment.

210. Did you examine the defendant's nasal and oral cavities?

211. What did you observe?

212. Based upon your training and experience, what did this signify to you?

G. Examination for Muscle Tone

213. Please describe the eighth component of the drug influence evaluation.

**During the eighth component, we examine the subject's muscle tone. Certain categories of drugs may cause the muscles to become rigid. Other categories may cause the muscles to become very loose and flaccid.*

214. How do DREs examine the subject's muscle tone?

**We examine the subject's arms, legs and neck visually and by touch.*

215. Did you examine the defendant's muscle tone?

216. Using the same procedure you just described?

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APPENDIX 2
SAMPLE DRE EXAMINATION

217. What did you observe?

218. Based upon your training and experience, what did this indicate to you?

H. Check for Injection Sites and Third Pulse

219. What is the ninth component of the drug influence evaluation?

**During the ninth component of the evaluation, we examine the suspect for injection sites. Injection sites may indicate the recent or patterned use of certain types of drugs. We also take the suspect's pulse for the third and final time.*

225. How do DREs examine a subject for injection sites?

**We check the subject's arms and neck. We look for needles marks.*

220. Specifically, what procedure do DREs use?

**We run our hands over the subject's arms and necks and feel for bumps because bumps may indicate needle marks. Once we locate a possible injection site, we verify it by using a lighted magnifying glass to see if the bump is from a needle.*

221. How do DREs determine whether bumps were caused by a needle or other things?

**By using a light and a magnifying lens.*

222. Did you examine the defendant for injection sites?

223. What did you observe?

224. Based upon your training and experience, what did this indicate to you?

I. Suspect's Statements and Other Observations

(**WARNING:** Prosecutors should skip to Section J, Opinions of the Evaluator, if the defendant did not waive *Miranda*)

225. Please describe the tenth component of the drug influence evaluation.

**During the tenth component, we read* Miranda, *if we have not done so previously, and ask the suspect a series of questions. We also confirm our prior observations.*

226. Did you read the defendant his Miranda rights?

227. Did you tell the defendant that he has a right to remain silent?

228. Did you tell the defendant that anything he said could be used against him in court?

229. Did you tell him that he has a right to an attorney?

230. Did you explain to him that if he could not afford a lawyer, one would be appointed for him at no cost?

231. Did you ask him whether or not he understood these rights?

232. What did he say?

233. Did he voluntarily, knowingly, and intelligently waive these rights?

234. Did you ask the defendant a series of questions?

**Yes.*

235. Please tell us what questions you asked the defendant, and what answers the defendant gave.

(NOTE: If the DRE is unable to remember the questions and answers, prosecutors should refresh his or her memory as described under Section C, Preliminary Examination)

**Have you eaten today?*
Defendant's answer:

**When?*
Defendant's answer:

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APPENDIX 2
SAMPLE DRE EXAMINATION

**What have you been drinking?*
Defendant's answer:

**How much?*
Defendant's answer:

**Time of last drink?*
Defendant's answer:

**Time now?*
Defendant's answer:

(Prosecutors should ask the officer what the actual time was)

**When did you last sleep?*
Defendant's answer:

**How long?*
Defendant's answer:

**Were you driving?*
Defendant's answer:

**Do you feel that you are under the influence?*
Defendant's answer:

**What medicine or drug have you been using?*
Defendant's answer:

**How much?*
Defendant's answer:

**Time of use?*
Defendant's answer:

**Where were the drugs used?*
Defendant's answer:

J. Opinions of the Evaluator

236. Please describe the eleventh component of the DRE examination.

**During the eleventh component, we form an opinion, based on the totality of the evaluation, as to whether the suspect is impaired. If we determine that the suspect is impaired, we indicate what category or categories of drugs may explain the suspect's impairment.*

237. Did you form an opinion in this case?

238. What is that opinion?

239. What are you basing that opinion on?

(If there is a positive toxicological result or someone found a particular drug in the defendant's possession or there is other circumstantial evidence as to the specific drug the defendant consumed, the prosecutor should ask the following questions. If not, the prosecutor should proceed to Section K, Toxicological Examination)

240. Officer, are you familiar with the drug _____?

**Yes.*

241. Is that drug within the category of drugs that you believe was influencing the defendant?

NOTE: Prosecutors should pre-try the DRE on the following two questions:

242. How long does it take for that drug to have an effect on an individual, once he has taken it into his body?

243. How long will the effects of that drug last?

K. Toxicological Examination

244. Please describe the twelfth component of the drug influence evaluation.

**During the twelfth component, we request a urine, blood or oral fluid sample from each suspect. We then send the sample to the toxicology lab for analysis.*

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245. Did you request a urine or blood sample in this case?

246. Did you inform the defendant that, if he refused, he would lose his license for _____?

247. Did you obtain a _____ (blood or urine) sample?

(If no, the prosecutor should ask why not and skip the next series of questions)

248. Please describe how you obtained the sample?

249. Did you witness the defendant provide the sample?

250. What did you do with the sample after you obtained it?

251. What happened to the sample after you logged it in?

252. Did this complete your evaluation of the defendant?