

Physician Health Programs: Polygraph Testing

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Being referred to a Physician Health Program (PHP)/Evaluation and Treatment Center is often a very stressful and traumatic experience. Most physicians likely have no idea what to expect.

Even physicians who have no history of alcohol or substance abuse will routinely be subjected to drug and alcohol testing. Physicians who may have a single glass of wine with dinner may be shocked to learn that they have been labeled as having an alcohol use disorder based on alcohol metabolite testing. A single episode of low-level drinking may take one to two weeks for phosphatidyl ethanol (PEth) to clear from a person's blood.¹ This false diagnosis of alcohol use disorder is then used by the treatment center to justify extended and expensive in-patient treatment, long-term monitoring, and periodic reevaluations, thus securing a generous revenue stream to the treatment center for years to come.

The participant is typically told he must submit to all of the PHP testing and requirements under threat of an adverse report that will lead to further adverse consequences (loss of medical license, loss of hospital privileges, loss of student or resident status). Once entangled in the PHP system, it becomes a "pay or you don't play" trap.

The PHP "preferred" treatment center, in turn, contributes money to support PHP organization conferences and other educational activities. This bilateral conflict of interest is typically not disclosed to the referred participant.

Increasingly, PHP/treatment centers are using polygraph testing in their assessments and fitness for duty determinations. Like the PHP preferred treatment center arrangement, treatment centers have adopted "preferred" polygraph testing companies.

Imagine the extreme anxiety that emerges when the PHP participant is led to a room and hooked up to what he is told is a "lie detector" machine. PHPs have an inherent bias toward suspecting all referred physicians of having a drug or alcohol problem, and polygraph testing is typically focused on exposing those who seek to conceal their alleged addiction.

At the 2023 Federation of State Physician Health Programs (FSPHP) Annual Education Conference, a presentation highlighted the use of polygraph testing in addiction medicine evaluations.² Recent calls to our AAPS Sham Peer Review Hotline have revealed that not only is polygraph testing being used by PHPs, but hospitals are increasingly using polygraph testing in their investigations.

The information presented below is not intended as legal advice or opinion. Physicians should consult their own attorneys for legal advice and opinion.

History of Polygraph Testing

Polygraph testing has been around for a little over 100 years. A number of individuals contributed to the development and technological evolution of the polygraph.

William Moulton Marston, who was a psychologist, was a

pioneer in the early concepts that led to the development of the polygraph machine. Interestingly, he was also the creator of the comic book character Wonder Woman. When Wonder Woman lassoed a suspect with her golden lasso, the subject was compelled to tell the truth.³

In the early 20th century, British cardiologist Dr. James Mackenzie created the first ink-writing polygraph, which tracked the pattern of a person's heartbeat. This was prior to the development of the EKG machine. MacKenzie's machine consisted of a rubber tambour attached to a vein in the neck and another tambour attached to the wrist. Rubber tubes coming from the tambours would convey pulsations, which would be recorded with attached recording arms and needles.⁴

In 1921, drawing upon earlier theories proposed by Marston, a police officer, John A. Larson, is generally credited with developing the first polygraph machine that measured heart rate and blood pressure.⁵

An Italian psychologist, Vittorio Benussi, explored how changes in respiration might be used to detect deception.⁵

In 1935, Leonarde Keeler added galvanic skin response (GSR) to the polygraph machine. Galvanic skin response was proposed to reflect emotional arousal.⁵

In 1991, Professors John C. Kircher and David C. Raskin created the first computerized polygraph.⁵

Today, the modern-day polygraph measures heart rate, respiration, blood pressure, and galvanic skin response (sweat gland activity). "A spike in these measures during questioning is said to reveal stress, and therefore, potential deception."³

One review noted the potential for misuse and abuse of polygraph testing. An examinee, for example, could be subject to unwarranted scrutiny based on flawed interpretation. The review noted that the stress of having to undergo polygraph testing can not only affect the interpretation of results but could also negatively affect the subject's long-term mental wellbeing.⁵

Indeed, the current PHP model invites not only abuse of polygraph testing but abuse of the entire PHP testing and treating paradigm as well. PHP/treatment centers often establish a "preferred" relationship with companies that administer polygraph tests. This exclusive monopoly relationship with polygraph testing companies incentivizes the polygraph vendor to interpret test results in a way that will generate more revenue for the treatment center (e.g., expensive in-patient treatment and long-term monitoring for alleged addiction) as well as helping to insure their own revenue stream based on further referrals from the PHP/treatment center. In return for this lucrative monopoly arrangement, treatment centers frequently donate/contribute to support PHP or PHP organization's educational conferences.

The entire PHP/evaluation and treatment center system is steeped in conflicts of interest. PHPs typically establish "preferred" evaluation and treatment centers and will not allow subjects to choose any treatment center outside of their preferred center. And there is no mechanism to challenge a false diagnosis. Physicians are coerced to submit to this scandalous system, including

mandatory polygraph testing, under threat of being reported as being noncompliant. This designation predictably could lead to loss of medical license or other adverse consequences.

In addition to PHPs, the FBI, CIA and NSA use polygraphs to screen for potential employees or to investigate information leaks. Federal, State and local law enforcement agencies also use polygraph testing. Certain television shows also use polygraphs to heighten drama (e.g., have you ever had an affair outside of marriage?).⁶

Abuse of polygraph testing by private employers was addressed in legislation in 1988. Between 1981 and 1988, approximately one million polygraph tests were administered per year by private employers for their employees or job applicants. In 1988, the Employee Polygraph Protection Act was passed, which prohibits the use of polygraphs by private employers for their employees or job applicants. There is an exception for federal, state and local governments and for private businesses that provide security or manage controlled substances.³

Emerging Technologies

Emerging “lie detector” technologies abound. Perhaps inspired by the 1975 hit “Lynin’ Eyes” by the Eagles,⁷ detailing the story of a woman who married for money and found herself in a loveless marriage and sought consolation in an extra-marital affair, a new eye scanning technology called EyeDetect⁸ was developed. The song warns: “There ain’t no way to hide your lyin’ eyes.”⁷

Billed as a next generation lie detector, EyeDetect uses a computer algorithm that employs machine learning to analyze the data and to generate a determination of truthfulness. Although the company, Converus, claims 86% accuracy, a National Security Agency Study in 2013 found “the test accuracy identified just 50 percent of those guilty of the mistake [taking a cellphone into a secure area] (the same as you would expect from chance).” The review concluded: “While the polygraph may be shockingly unreliable century-old technology, at least critics can reinterpret and discuss test results out in the open. EyeDetect is a closed system using a proprietary algorithm, whose results can effectively be altered at the operator’s discretion.”⁸

Other emerging “lie detector” technologies include functional MRI (fMRI), EEG-based methods, thermal imaging, voice stress analysis and artificial intelligence (AI) and Machine Learning methods.⁶ Some have suggested combining different tests in the hope of improving accuracy.⁵ Some have even suggested using a technique to detect deception based on facial expressions.⁹

Accuracy/Reliability

At the core of polygraph testing is the question of accuracy and reliability. The polygraph, which measures physiologic changes, is actually a stress detector.¹⁰ “There is no evidence that these physiologic changes uniquely correlate with lying.”¹⁰ This was also the conclusion of Dr. Leonard Saxe, a professor specializing in deception detection: “There is no unique physiological reaction to deception.”⁶

Indeed, various factors can affect these physiologic changes including nervousness about taking the test,¹¹ anxiety,¹¹ being asked loaded questions so as to achieve a desired result,¹¹ feeling confused by the whole process,¹⁰ feeling tired and afraid of not being believed,¹⁰ being uncomfortable with a full bladder,⁶ or thinking about bad or embarrassing things you may have done as a child.⁶ Various medical conditions (heart and respiratory conditions) and certain medication can also affect physiologic changes.⁶

The American Polygraph Association (2011) has claimed an accuracy rate for polygraphs of around 90%.¹² However, a review article noted that the study allegedly supporting this statistic was not peer reviewed and not conducted by independent researchers.¹² Another review article stated: “Scientific evidence for the accuracy of polygraphs is weak, with studies showing they perform only slightly better than chance (at best).”⁶

In the 1980s and 1990s, Dr. Leonard Saxe conducted extensive research on polygraph testing. He found the error rate to be “significant.”¹¹ Reflecting upon this significant error rate, one review article stated: “Imagine being told that your parachute only has a 60% chance of opening up when you go skydiving—you wouldn’t take those odds, would you?”⁶ Another review article also noted a high error rate associated with polygraph testing.¹²

According to a review article, the National Research Council (NRC) published a comprehensive report called “The Polygraph and Lie Detection” in 2003.¹¹ The Department of Energy had requested the study. The NRC concluded that the accuracy of polygraph testing was not sufficient to rely on its use to detect security threats.⁹ Another review article reported: “A 2019 review of the scientific literature has changed little in the years since the [NRC] report was released, and that report’s conclusions still stood (Iacono & Ben-Shakhar, 2019).”¹² Another review article noted that polygraphs are “not a valid tool to track mental health recovery (which presumably would include substance use disorders).”¹³

Major failures have occurred due to the unreliability of polygraph testing. In 1986, Bill Wegerle, who at the time was the prime suspect in the murder of his wife (the infamous BTK killer), failed two polygraph tests. About 20 years later, DNA testing revealed that another individual, Dennis Rader, was the actual BTK killer.⁶

In 1984, Gary Ridgway, the Green River Killer, passed a polygraph test, while another individual who was also under investigation failed the test. But 20 years later, Ridgway confessed after DNA evidence came forth, proving that he was the killer.⁶ Thus, another factor which can affect polygraph results is the condition of being a psychopath.

The subject’s lack of knowledge about the lack of accuracy and reliability of polygraphs can also affect the ultimate outcome. In some instances, the polygraph has been used as an intimidation tool. The subject, believing that the machine may, in fact, be able to tell with certainty when someone is lying, may conclude that he might as well confess.^{10,11} The 5th Amendment of the U.S. Constitution prohibits compelled self-incrimination in criminal cases. Unfortunately, with respect to PHP/treatment centers, no such prohibition exists.

A review article summed up the situation this way: “...the polygraph’s biggest deception might be our continued faith in it.”¹⁰ And, “Ironically, the core principle underpinning the technology turned out to be little more than a lie itself.”¹⁰

Admissibility

Given the poor accuracy and reliability of polygraph testing, it is not surprising that polygraphs are inadmissible in federal court and most state courts.¹⁰ In fourteen states, including Alabama, Arkansas, Delaware, Idaho, Indiana, Iowa, Kansas, New Jersey, New Mexico, North Dakota, Ohio, Utah, Washington and Wyoming, polygraphs are admissible.¹⁴ In five states, including Arizona, California, Florida, Georgia, and Nevada, polygraphs are admissible only if both parties agree to its admissibility (stipulated admission).¹⁴

The first legal challenge to the admissibility of polygraphs occurred in 1923: *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). The defendant, James Alphonzo Frye, was appealing

his conviction on murder in the second degree. During trial, Frye's attorney sought to introduce an expert witness to testify concerning a deception test (systolic blood pressure deception test) he had administered to Frye. Counsel for the government objected, and the Court sustained the objection.¹⁵

On appeal, the court ruled that the systolic blood pressure test had not gained general acceptance among physiological and psychological authorities and thus was not admissible.¹⁵

Later, the Daubert standard was established as the test for admissibility in federal court.

An excellent summary of the Frye and Daubert standards has been provided by the LegalClarity Team.¹⁶

Polygraph evidence requires that an expert witness testify concerning his opinion of what the results mean (truth or deception). Expert testimony is subject to either the Frye standard or the Daubert standard (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993)), depending on the jurisdiction.¹⁶ The judge, of course, ultimately decides what is and what is not admissible.

In the years after *Daubert*, two other Supreme Court cases clarified and expanded *Daubert* in what has become known as the Daubert trilogy.¹⁶ In 1977, the case of *General Electric Co. v. Joiner* (522 U.S. 136), the court decided how appeals to a judge's decision to exclude expert testimony should be handled. The court decided that the appeals court can only review the judge's decision to exclude expert testimony based on abuse of discretion (clearly unreasonable decision), not based on how the matter would have been decided by the appeals court.¹⁶

In 1999, the U.S. Supreme Court ruled in *Kumho v. Carmichael* (526 U.S. 137) that the gatekeeping role of judges with regard to expert testimony would also apply to experts whose area of expertise was not strictly scientific. Daubert applies to scientific testimony. Experts such as forensic accountants and engineers, for instance, have specialized knowledge that is technical and based on experience. These are sometimes referred to as experiential witnesses of the *Kumho* type. In those cases, the judge can adjust the Daubert factors or decide to use different criteria altogether, "whatever makes sense for the discipline in question."¹⁶ An expert in the area of sham peer review, for instance, would be considered to be an experiential witness of the *Kumho* type (personal experience).

The federal rule of evidence, Rule 702, which governs admissibility of expert witness testimony in federal court, incorporates the Daubert structure. In 2023, Rule 702 was amended to require that the proponent of expert testimony demonstrate, by a preponderance of the evidence (more likely than not), that each of the Rule's admissibility requirements have been met.¹⁶

Under the amended Rule, it must be shown that the expert's testimony will assist the trier of fact (judge or jury) to understand the evidence so that the trier of fact can determine the facts of the matter. The proponent must also show that the expert's opinion is based on sufficient facts or data, is based on reliable principles and methods, and that the expert applied these methods reliably to the facts of the case.¹⁶

To make matters even more complex, some states like California use a variant of Frye called *Kelly/Frye*, and about a dozen other states use what can best be described as a hybrid approach where the Frye standard is given more weight, while still applying Daubert-like factors. Still other states developed their own standard based on case law or statute.¹⁶

Coercion and Abuse of Polygraph Testing

In an article written by a former associate director of a PHP program, the author describes polygraph testing at PHPs as

"appalling."¹⁷ He notes that if a physician refuses to submit to a polygraph, the evaluation and treatment center takes that as evidence that the physician is likely hiding something. The consequences of refusing a polygraph can be dire. If the physician refuses the test, the evaluation and treatment center will report to the PHP that the physician is noncompliant with recommendations. The PHP, in turn, will report this noncompliance to the medical board, which will then predictably take adverse action against the physician's medical license.¹⁷

The former PHP associate director goes on to say: "Does the board of medicine care that polygraphs played a key role in the report of noncompliance from the state PHP? Not at all, because boards of medicine generally defer any and all questions of physician impairment to their state PHP, not knowing—or perhaps not even caring—that the PHP has financial ties to the evaluation and treatment centers they use."¹⁷

Abuse of polygraph testing is all about the money. As stated by the former PHP associate director:

One of these evaluation centers charges physicians \$400 per polygraph, and if a physician doesn't pass on the first or second try, they can keep paying \$400 per test until they finally pass. Once they pass, all is forgiven about the failed tests, as long as the check clears for all of the tests.¹⁷

One physician who contacted me disputed this idea that "all is forgiven once a physician passes a polygraph." A physician's first polygraph was ruled inconclusive. The physician passed the polygraph the second time. At a subsequent medical board hearing, the physician was asked about his "failed" polygraph (personal communication). The medical board wrongly concluded that an inconclusive test result was the same as a failed polygraph test.

The former PHP associate director further discussed the financial ramifications of all of these tests and evaluations:

And, mind you, the cost for the polygraphs is on top of the \$6,000–\$10,000 physicians are already spending for these multi-day evaluations, as well as the tens of thousands of dollars those same physicians are likely to spend if the evaluation concludes—as happens very frequently—that they need to stay for up to 90 days for "treatment."¹⁷

Preparation For Polygraph Testing

Given the poor accuracy of polygraphs, a determined person could likely beat the polygraph without doing anything special. Various countermeasures have been described, including the "tack in the shoe trick" to enhance physiologic responses during neutral questions so as make responses during relevant questions seem less by comparison.⁶

Experienced polygraph examiners, however, are reportedly trained to spot these tricks, and the risk of being caught trying to beat the polygraph may be significant.⁶ And, if one is caught trying to deceive the polygraph, that would likely be reflected in the examiner's report to the PHP with adverse consequences to follow. Thus, as the saying goes, honesty is the best policy.

Preparing for a polygraph mainly involves common-sense advice. Getting plenty of sleep the night before, avoiding stimulants (e.g. caffeine, energy drinks) and depressants (e.g. alcohol), avoiding nicotine, staying well-hydrated during the exam and eating a light balanced meal beforehand.¹⁸ Advising someone to "just relax" may seem rather ineffective when facing the stress of a polygraph test, but when the KGB gave this simple advice to Aldrich Ames, the notorious CIA officer working as a Soviet double agent, it worked. He passed the polygraph.⁶

Knowing what to expect is the best way to reduce anxiety associated with polygraph testing. The entire polygraph process takes about two to four hours, and the cost can range from \$450 to \$2,100 for single-issue tests, and more for multi-issue tests.¹⁸

There are three phases of polygraph testing: the pre-test phase, chart (data) collection, and data analysis/post-test interview.¹⁸

The pre-test interview is typically the longest phase, lasting for an hour or more. During this phase, the examiner will review all of the questions that will be asked. The examinee can ask questions during this phase if clarification of any of the questions is needed.¹⁸ The examinee should disclose to the examiner any medical conditions he has which might alter the results (e.g., anxiety, chronic pain, heart/respiratory conditions), and any medications he is taking which could influence the results (e.g. B-blockers, anti-anxiety agents). All of this will enter into the examiner's analysis of the meaning of the results.¹⁸

During the chart/data collection phase, the examinee is hooked up to the polygraph. A blood pressure cuff will be applied, which can also monitor heart rate (or a small plethysmograph sensor applied to a fingertip can be used). Two rubber tubes around the chest are used to monitor respirations and small metal plates will be attached to fingertips to measure galvanic skin response. Some modern machines may also include a motion sensing pad on the examinee's chair. It is important to sit still during the polygraph and not fidget during the exam as movement can affect the responses. The examinee can expect to be asked the same questions multiple times. This is done for the purpose of looking for consistency in responses.¹⁸

There are generally four categories of questions: irrelevant (neutral) questions, relevant questions (pertaining to the issue at hand), comparison/control questions, and concealed information questions. The examinee should listen very carefully to the questions. All questions require a yes or no response, and the examinee should not further elaborate. Responses to comparison/control questions are compared to responses to relevant questions and concealed information questions in assessing deception or truthfulness. Control questions are generally designed to elicit a mild stress response—e.g., have you ever done something wrong in the past? This response will be compared to the response to relevant and concealed information questions (i.e. something only the examinee would know).¹⁸

During the post-test interview, the examinee may be asked to explain why certain questions elicited a deception response. The examinee should be very circumspect about offering additional information at this stage.¹⁸

Conclusions

Polygraphs are not sufficiently accurate or reliable and should not be used at PHP/treatment centers.

Coercing physicians to consent to polygraph testing under threat of reporting non-compliance to the PHP and from there to a medical board with adverse action to follow, is abhorrent and blatantly unethical. Likewise, requiring a physician to pass a polygraph test in order to be cleared to return to work, typifies a PHP culture of abuse for profit.

Conflicts of interest between PHPs and "preferred" treatment centers and between treatment centers and "preferred" polygraph vendors are unacceptable and should be eliminated.

Federal legislation is needed, similar to the Employee Polygraph Protection Act, perhaps called the Physician Polygraph Protection Act, which would prohibit the use of polygraph testing by PHP/treatment centers and hospitals.

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