



Research Study

Title: Evaluation of the scientific validity of forensic medical evaluations

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Introduction

Forensic medical evaluations can produce misleading findings and these evaluations can be used as a basis for denial of future medical care to patients.

Physicians who perform these forensic exams have a responsibility to do so with integrity and adherence to ethics and generally accepted medical standards.

Objectives

This study will evaluate the validity of forensic medical evaluations.

It will compare the findings that medical examiners are *reporting* to the *video recordings* of these exams.

The intent of his study is to use this comparison to shed light on the reliability and validity of these exams.

Design

Twenty consecutive neuromusculoskeletal medical examinations were reviewed in cases that I had been asked to review in my role as a forensic medical consultant. These covered a 6-month time period (May-Oct 2019.)

The examining doctors that I reviewed had submitted hard copy reports of their findings and those same exams had been recorded by video.

Video exams that had served as the basis for the doctor's reports were analyzed to determine whether the examination techniques and findings which were *reported* could be objectively confirmed in the video *recordings*

I was able to compare, side by side, the exam report and the exam video to check the accuracy and validity of the examiners' reports.

Components that were analyzed included:

- a. Medical exam gown worn by examinee for the forensic exam.

Visualization of the body part being examined is an integral part of the neuromusculoskeletal exam. Use of a medical exam gown is necessary for allowing this adequate visualization of the body part being examined.¹

- b. Spine range of motion tested in all planes with use of scientific measuring tool, ie, goniometer or inclinometer.

Measuring range of motion is an objective scientific test used to detect the motion the spine when a standard technique is utilized.² Guessing whether a range of motion is “normal” or “full” is unreliable and inaccurate.³

- c. Strength assessment for thoroughness and accuracy.

Examination of the strength component of the neurologic examination requires use of a standardized technique and a universally recognized grading scale.⁴

- d. Atrophy evaluation performed using a measuring tape for a side-to-side comparison.

Use of standardized technique, measuring limb circumference with a tape measure, is how a medical scientist determines if atrophy (loss of muscle bulk) is present within a forensic evaluation.⁵

- e. Sensation tested comprehensively and correctly using standard technique.

¹ Ed: Harris, N. Examination Techniques in Orthopaedics, Second Edition. Cambridge University Press. 2014. p 1-6.

² Cocchiarella, L et al. AMA Guides to the Evaluation of Permanent Impairment, Fifth Edition. American Medical Association, 2001. p 400

³ Improving Visual Estimates of Cervical Spine Range of Motion. Am J Orthop. 2014 October;43(10):E261-E265. Authors: Hirsch BP Webb ML Bohl DD Fu M Buerba RA Gruskay JA Grauer JN.

⁴ <http://neuroexam.med.utoronto.ca/> Motor examination.

⁵ page 382, Box 15-1, Chapter 15, The Spine, AMA Guides 5th Edition, AMA Press, 2004.

Use of standardized sensory evaluation techniques are necessary to provide support for the conclusions of forensic neurologic examinations.⁶

- f. Reflex evaluation performed comprehensively including DTR's and long tract sign testing, ie, Babinski and Hoffman's reflexes.

Use of standardized reflex evaluation techniques are necessary providing support for the conclusions of forensic neurologic examinations.^{7 8}

- g. Gait evaluation adequate and accurate.

Careful observation and documentation are critical to an accurate evaluation of gait.⁹

- h. Cranial nerves evaluation performed thoroughly using standard methodology.

Cranial nerve evaluation is complete and reliable only when performed in a standardized manner for each cranial nerve.¹⁰

- i. Limb range of motion tested for all planes of the joint being examined, using a scientific measuring tool, ie, goniometer or inclinometer.

Limb range of motion is an objective scientific analysis of the motion of a body part when a standard technique is utilized.¹¹ Use of a scientific measuring instrument is standard of practice for forensic orthopedic examinations.¹²

⁶ <http://neuroexam.med.utoronto.ca/> Sensory examination.

⁷ <http://neuroexam.med.utoronto.ca/> Reflex examination.

⁸ <https://www.ncbi.nlm.nih.gov/books/NBK545156/> Hoffmann Sign. Eric Whitney; Sunil Munakomi. 8.6.19 9

⁹ <http://neuroexam.med.utoronto.ca/> Station and Gait examination.

¹⁰ <http://neuroexam.med.utoronto.ca/> Cranial Nerve examination.

¹¹ Rondinelli et al. Guides to the Evaluation of Permanent Impairment. Sixth Edition. American Medical Association, 2011. p 464.

¹² Ed: Harris, N. Examination Techniques in Orthopaedics, Second Edition. Cambridge University Press. 2014. P 1-6.

Results

Use of medical exam gown:

In this analysis, the examining physician performed the physical examination with the patient wearing a medical examination gown in only 6 out of the 20 examinations. The other patients were examined through their clothing.

Range of motion:

Spine range of motion

Spine range of motion was measured in only 1 out of 18 examinations where spine range of motion was evaluated.

Spine motion was evaluated in all planes of motion for the region being tested in 0 out of 18 spine examinations.

In all of the 18 cases, the examiner reported the range of motion as *normal*; however, none of the examiners actually *evaluated* all planes of motion. Thus, *none* of the examiners correctly reported their findings.

Limb range of motion:

When limb range of motion was evaluated in 13 out of 20 of the examinations, *none* of the examiners utilized a goniometer or inclinometer for measuring the motion.

Motor exam:

In all 20 cases the doctor reported the motor exam as *normal*. However, when strength testing of was performed, *none* of the examiners actually tested joints in all planes of motion, and thus *none* of the examiners correctly reported their findings.

Atrophy exam:

When evaluating for atrophy of the limbs in all 20 cases, only one of the examiners utilized a tape measure and compared limb circumference side-to-side.

Sensory exam:

Out of the 17 sensory examinations performed, *none* were performed and reported correctly.

Examination for sensory impairment was performed *through the patient's clothing* (shirt or pants) in 6 of the sensory examinations.

Gait:

When gait evaluation was performed, it was reported incorrectly in 12 out of 19 of the cases. For example, one patient had impaired balance, yet the doctor reported the gait as normal.

Reflex exam:

In 19 of the 20 patients where reflex testing was performed, *none* of the examiners reported the reflex results correctly. For example, all the 19 doctors who claimed that the reflex examination was *normal*, either did *not* check the reflexes or the actual video of the exam revealed the reflexes to be *abnormal*, but they were reported as *normal*.

For example, in spinal injury cases where checking the Babinski or Hoffman's reflex is a standard test in a forensic examination, these reflexes were *not* checked. Therefore, a report of *normal* reflexes, without testing these reflexes, would *not* be a supported conclusion.

Other patients had *diminished* or actually *absent* reflexes and the doctor reported the results as *normal*.

Cranial nerve exam:

Cranial nerves were tested in 7 out of the 20 patients. These cranial nerves evaluations were performed incorrectly in 100% of the 7 cases.

For example, hearing was *not tested* yet the vestibulocochlear CN VIII was reported as *normal*.

In another case, facial sensory evaluation was *not* tested, yet the doctor claimed the trigeminal CN V to be normal.

Misrepresentations

Analysis of the data found that 100% of doctors' reports misrepresented the testing and results of the forensic physical examinations. Misrepresentations included:

- a. Claiming to perform tests *not* actually performed.
- b. Claiming results were normal when they were *not*.
- c. Omission of *abnormal* exam findings from the doctors' written reports.
- d. Performance of forensic physical examinations in a manner that was nonstandard and unscientific.

The average hands-on physical exam took approximately 10 minutes, with some exams as brief as 2.5 minutes.

Exams were performed by orthopedists, neurologists, physiatrists, a psychiatrist, and a neurosurgeon.

Conclusions

Medical examiners consistently failed to follow standard scientific techniques and their medical reports misrepresented examination results *even when they knew* they were being video recorded.

For example, one doctor reported normal vascular exam findings, but did *not* even remove the patient's shoes and socks for the exam and did *not* actually check the pulses of the limbs.

Other reports claimed negative Spurling's maneuver, Lhermitte's sign, Romberg test, and Hoffman's reflex, but these were *not* actually tested. Sensory testing and cranial nerves were reported as normal when they were *not* tested.

This analysis supports the necessity of video recordings of forensic examinations to foster the objectivity and validity of the reports provided by expert medical examiners to the court system.

Video recordings of forensic examinations cause minimal disruption to the performance of these examinations if done with current recording technology. For example, use of a smart phone is integrated into all aspects of our lives and can record the examination without resorting to cumbersome tripods and large video-recording equipment.

The only valid reason for objection to a forensic medical examination to the recording is if the examiner plans to misrepresent what actually occurs behind closed doors.

In light of the fact that 100% of the examinations reviewed clearly showed that the examiner misrepresented what actually happened, even when they *knew they were being recorded*, imagine how much worse the examination could be in the absence of such protection.

Considering the fact that plaintiffs are currently allowed to be *secretly* recorded by the insurance industry, the prohibition on the consensual video recording of defense medical examinations which are *performed in secret* is no longer a reasonable position.

The extensive misrepresentations by examiners noted in this study are screaming for a change in policy which would permit transparency in a process that is currently biased against patients and which is causing them harm.

Unlike a patient who is being evaluated and treated in a typical medical setting, the patient who is undergoing the compulsory medical examination does not have a doctor patient relationship, and does not have the customary protection of being allowed to claim and pursue a claim of malpractice against the examiner if it is warranted.

This can only be countered in a manner that brings transparency to the compulsory defense medical examination process. While some states permit secret video recording, the author is **not** suggesting this.

It is time to allow the consensual use of current video recording technology in the examination room for forensic examinations. Current video recording technology is minimally invasive and has the potential of reigning in the misrepresentations that are a direct result of a system that currently has a prohibition on transparency.