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REVIEW ARTICLE

An internet based expert system to control workers compensation costs documented by outcome studies

Nelson Hendler, MD, MS

Former Assistant Professor Neurosurgery, Johns Hopkins University School of Medicine,

Past president, American Academy of Pain Management

Correspondence: Dr. Nelson Hendler, 2145 East Tahquitz Canyon Way, suite 4, Palm Springs, California, 92262, USA, DocNelse@aol.com, 443-277-0306.

ABSTRACT

This article reviews the current approaches to evaluating chronic pain patients involved in litigation, which have proven to be neither cost effective, nor accurate. It addresses the need to utilize physiological testing, such as root blocks, facet blocks, and peripheral nerve blocks, rather than the standard anatomical tests, which lead to a misdiagnosis rate of 40%-67%. The author offers alternative methods to evaluate these patients, using an Internet based expert system, with documented cost savings, based on published outcome studies from a leading medical school.

Key words: Fraud; Chronic pain; Misdiagnosis; Workers' compensation; Cost savings; Return to work; Outcome studies; Expert system

OVERVIEW

The insurance industry is plagued with rising cost of workers' compensation. Many insurance industry publications attribute this to fraudulent claims from workers. Estimates of fraudulent claims range from 1% to 80% depending on unsubstantiated reports in the insurance literature.[1-4] However, after an extensive search on PubMed from the National Library of Medicine, there are no published articles in the medical literature documenting the incidence [number of new cases a year] or prevalence [number of outstanding cases at a given point in time] of workers compensation claimant fraud. Officials and insurance companies in a number of states report 20 percent or more of claims might be exaggerated or fraudulent.[4] Often, reports are anecdotal, describing a single flagrant case, but not providing incidence or prevalence of workers' comp claimant fraud.[5] Interestingly, the major cost of workers' compensation fraud is the result

of employers trying to avoid paying premiums, rather than the worker filing fraudulent claims.[6] Recently, Quest and LabCorp settled with the state of California for $241 million and $49.5 million, respectively, for overbilling, and the US Senate requested Quest Diagnostics and Laboratory Corporation of America, along with Aetna, Cigna, and United Healthcare to produce their records in what could document billions of dollars worth of overpayments from Medicare and Medicaid, in what is known as a "pull-through scheme". In this kickback game, a clinical laboratory testing company offers contracts for discounted or below-cost pricing to an insurance carrier, in exchange for the in-network physicians of that insurance carrier sending referrals for other laboratory testing business, including testing for Medicare beneficiaries.[7] Essentially, the insurance company gets a large discount on tests for which they pay, in exchange for getting referred many other tests, which they might not have seen, which are paid for by Medicare. So it seems the major financial source of insurance fraud may be the insurance carriers themselves, not the insignificant dollar amounts gleaned by multiple fraudulent workers.

Current methods of workers' compensation fraud detection involve surveillance, Special Investigation Units (SIU), all-claims data base, Independent Medical Evaluations (IME), Minnesota Multiphasic Personality Inventory (MMPI), and Functional Capacity Evaluation (FCE). However Feeler, St. James and Schapmire report that in 120,000 patients, the FCE is a totally subjective test, with no objective basis for determining fraud, compared to the lever arm measurement.[8] Other insurance company attempts to 'document' fraud have used the Fake Bad Scale on the MMPI, but this scale has been discredited by Butcher and his colleagues at University of Minnesota.[9] The Fake Bad Scale of the MMPI has been disallowed in a number of court cases.[10] Hendler and his colleagues at Johns Hopkins Hospital have documented that not one single scale of the MMPI can predict the presence or absence of organic pathology in a claimant.[11-13]

Not surprisingly, Elaine Howle, state auditor of the State of California, reported the $30,000,000 spent on trying to detect workers comp fraud by the state, using the methods mentioned above, was not cost effective.[14]

What alternatives are available? Using complex methods of "predictive analytics," based on retrospective analysis of 10,000 charts, Hendler and his colleagues from the Department of Neurosurgery at Johns Hopkins Hospital developed a test to predict the presence or absence of organic pathology, with a high degree of accuracy [15]. They developed the Internet version of the Pain Validity Test[16] ,which divides patients into either objective or exaggerating pain patients [16]. The test predicts which patients will have moderate or severe abnormalities on objective medical testing with 95% accuracy (objective pain patients), and predicts which patients will not have abnormalities on objective testing with 85% accuracy (exaggerating or subjective pain patients).[16]

When the Pain Validity Test, at a cost of $300, was use on 52 Long Term Disability (LTD) patients, it predicted which patients did not have abnormal medical testing with 85% accuracy. When compared to the costs of fraud detection typically used, the $300 Pain Validity Test would have saved an average of $1,654 a case.[17] The Pain Validity Test has been used in over 30 legal cases in 8 states, and has always been admitted as evidence.[18]

Additionally, the Pain Validity Test was used in 794 patients as reported in multiple articles in the medical literature.[11-16,19,20] These data show that only 6% of non-litigant patient population are exaggerating pain patients, while only 10% of an LTD patient population were exaggerating patients, and 13% of patients involved in workers' compensation or automobile accident litigation were exaggerating.[21] Other authors have reported that workers' compensation insurance claimant fraud occurs only 1% to 2% of the time.[1,2] In California, worker fraud is less than 3 tenths of 1 percent (0.003) of all claims; and in Wisconsin, it is less than 1 tenth of 1 percent of all claims.[3]

So even if cost saving efforts were directed at fraud detection, this would address only 13% of the claimants. However, since, at most, 13% of the claimants are exaggerating, that means 87% have a valid complaint of pain.[11-13,15,16,19,20] Yet, the insurance industry reports that as many as 80%-85% of patients are malingering, based on their protracted treatment, failure to return to work, and abnormalities on the 'Fake Bad' scale of the MMPI.[9,10] Peat Marwick, in a study of fraud occurring at the Canadian Workers' Compensation Board, reported that 36% of the "randomly chosen claims they surveyed were 'irregular' (unproven fraud).[22] Aetna did a study, in 1997, in Canada, and reported that 20% of the 600

claims studied had enough suspicious indicators to be considered irregular.[22] The editor of the Workers' Compensation Newsletter recommended 'stopping payments to injured workers currently residing in jails and penitentiaries', and estimated that forensic accountants, internal computer auditors, and police detectives could get back the $8,000,000,000 of liability dollars 'stolen over the past 20 years'.[22]

However, there is another explanation for the protracted treatment, high expense, and low return to work rate. Fraud is not the major cause of failure to return to work. Misdiagnosis is! Fraud is not the major cause of source of increased medical expenses. Misdiagnosis is! Insurance carriers are barking up the wrong tree. The following studies/articles substantiate this statement.

Johns Hopkins Hospital physicians reported that 40% to 67% of chronic pain patients are misdiagnosed.[23,24] For special chronic pain conditions like Complex Regional Pain Syndrome (CRPS), which carries a reserve of $1,000,000 in most instances, two teams of physicians from Johns Hopkins Hospital found that 71%-80% of claimants told they have this disorder really have nerve entrapments,[25,26] which carry a reserve of $50,000. So, a proper diagnosis for this group of patients would reduce reserves by $950,000 a case.

For more common cases, such as sprains or strains, the figures are equally compelling. Dick Goff, the former president of the Self Insurance Institute of America and managing director of Taft and Company, a Bermuda based captive manager, reviewed workers' compensation cases for a large bus operation and leasing company with 90,000 employees.[27] Of the 260 case summaries of workers compensation claims sent for evaluation, all cases were open for more than 6 months. Of these 260 cases, 126 were of sprains or strains. This represented 48% of all of the open, long term, workers compensation cases. To understand the implications of this finding, it is important to understand what a sprain or strain is! A sprain refers to over-stretching of a ligament, which is the sinew in the body holding bones together. A strain is overstretching of muscle.[28] In medical textbooks, and in government publications from the Department of Health and Human Services, a sprain or strain is defined as a self-limiting disease, with 7.5 days of restricted activities, 2 days of bed disability, and 2.5 days of work loss.[28,29] Therefore, all of these 6 month old or older sprain or strain cases were misdiagnosed, since a sprain or strain can't last for 6 months. These claims represented at least 48% of the open workers compensation claims of the company.

The 126 cases of 'strain', or 'sprain' (which were workers compensation cases 6 months older), cost a total of $12,365,366 with the average cost being $98,137.82.[27] Yet, with proper diagnosis, these lumbar sprain and strain cases could be converted into diagnoses of facet syndrome, or disc disruption, which could be definitely diagnosed and treated, often with surgery, for $15,000 to $45,000 per case.[18,21,24,30]

What is the reason for these misdiagnoses? Most physicians do not spend enough time with patients taking a thorough history to help establish proper diagnoses.[31] Yet, every physician knows that a complete history is the most important aspect of making a proper diagnosis.[32-34] Additionally, physicians order the wrong tests to confirm diagnoses. Most people with neck or back injuries typically receive X-rays, MRIs, and CT. These are incorrect tests to evaluate an injured worker, for the reasons shown below.

Peterson et al studied 180 patients, with a mean age of 49.[35] Patients rated pain on visual analogue scale (VAS 0-10 scale) and Neck Disability Index. The neck pain was divided into three groups: (1) no injury but pain, (2) injury causing pain (40.6%) and (3) those with litigation and neck injury with pain (5.1%). There was no correlation between levels of degeneration, or severity, and self-rated pain or disability ratings. Patients with injury had more pain and disability than the patients without injury. However, there was no difference in patients with litigation and those with injury but without litigation.

Jensen et al did lumbar MRIs on 98 patients with no back pain, and found that 27 had protruding disc (28% false positive rate).[36] Additionally, Simmons and his group studied 164 patients with complaints of pain at various levels, requiring examination of several discs within a patient. They performed both MRI and provocative discograms (injection of a disc, while a patient is awake, and determining if the injection reproduces the pain the patient normally feels) on

multiple discs in each patient. They found that for discs with negative discograms, 37% were reports as abnormal on MRI.[37]

Conversely, Braithwaite studied 90 patients using both MRI and provocative discograms. In the patients with positive provocative discograms, only 23% had Modic changes on MRI and 77% had no changes in MRI.[38] Therefore, he found a 77% false negative rate for MRI. Sandhu, and his group at Cornell, studied 53 patients with severe neck pain using both MRI and provocative discograms. Of these patients, 79.5% with concordant pain on provocative discograms had no endplate changes (Modic) on T1 and T2 MRI images.[39] Therefore, in this study, the MRI has a 79.5% false negative rate.

These studies confirm that MRI is of little use in determining which cervical or lumbar disc is damaged, since MRI has a 28%-37% false positive rate (28%-37% of the time the MRI tells you something is wrong when there is nothing wrong), and a 77%-79.5% false negative rate (77%-79.5% of the time, the MRI reports nothing is wrong, when there is something wrong).

Physicians at Johns Hopkins Hospital studied 100 patients with back pain, who had not undergone any previous surgeries, and who had negative direct axial CT or 2-D multiplanar CT reconstructions. The physicians then did 3D-CT reconstruction of the normal CT scans. The 3D-CT images are generated by a computer manipulation of the original CT data. When 3D-CT reconstructions of the negative CT images were performed, they found bone pathology 56% of time, which had been missed by routine CT. This previously missed bone pathology consisted of neural foraminal stenosis, spinal stenosis, and breaks of pars interarticularis, facets, and transverse process. They then studied 100 patients, with chronic pain after a previous fusion, who had negative direct axial CT or 2-D multiplanar CT reconstructions. When 3D-CT reconstructions were performed, they found occult pathology 76% of time which had been missed by CT.[40] Therefore a routine CT misses bone pathology 56% of the time in claimants who have not had surgery, and 76% of the time in patients who do have surgery.

The best way to determine the value of an accurate diagnosis, proper testing and treatment is examining outcome studies. This is the ultimate 'evidence based medicine'. Good outcome studies prove that a particular technique is valuable. Three groups of physicians from Johns Hopkins Hospital have published outcome studies with documented cost savings and high return to work rates.

The neurosurgical team at Johns Hopkins Hospital relied on 3D-CT, facet blocks, root blocks and provocative discograms to determine if a 'cervical sprain' or 'headache' patient was a candidate for surgery. When using these diagnostic tests, the Hopkins team converted unsuccessfully managed 'cervical sprain' and 'headache' cases into cervical fusion cases, with 85% of the patients who received surgery reporting good to marked improvement [30]. Cost savings ranged from $30,000 to $125,000 a case for just these cervical cases.[18]

Edward Bernacki, associate professor of medicine, and director of the Division of Occupational Medicine of the Johns Hopkins University and Hospital, designed a workers' compensation claims management system.[41]Using his system, there was a reduction in the number of temporary/total cases of 61% (from $0.18 to $0.07), permanent/partial cases of 63% (from $0.19 to $0.07) and administrative costs of 48% ($0.16 to $0.09).[41] Most importantly, Johns Hopkins Hospital, a self-insured hospital, was able to achieve total savings of 54%, with a reduction in medical costs per $100 of payroll of 44% (from $0.27 to $0.15).[41]

One of the most important factors allowing Johns Hopkins Hospital system to achieve the 54% savings on their workers' compensation costs was requiring that all workers injured at Johns Hopkins Hospital 'to use a small network of clinically skilled health care providers' instead of less qualified physicians in the community.[41]

Another clinic, staffed by Johns Hopkins Hospital staff members, use an internet based test 'Diagnostic Paradigm', which has a 96% correlation with the diagnoses of Johns Hopkins Hospital staff members.[42] The 'Diagnostic Paradigm' also provides a list of the proper tests, (such as facet blocks, root blocks, peripheral nerve blocks, 3D-CT, and

provocative discograms, to name a few) and treatments for each of the now correct diagnoses, (the Treatment Algorithm).[24,30,40] When this clinic used these technique, they published their outcome studies, which showed reduced use of medication 90%, and reduced doctor visits 45% while increasing return to work rates from the typical 1% for 2 year old cases to 19% for workers' compensation cases, and 62% for auto accident cases.[19] The resulting cost savings ranged from $20,000 to $175,000.[18] As Bernacki says "The most notable influence on claims severity is related to the way medical care is delivered to treat occupational injuries and illnesses".[43]

CONCLUSION

The outcome studies discussed in this review provide real "evidence based medicine" demonstrating that an accurate diagnosis and proper diagnosis leads to the correct testing and treatment. This approach produced far more cost savings and higher return to work rates than efforts directed at detecting fraud. Hopefully this paper will offer an insight into a productive method of medical care delivery.

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