Dynamic Chiropractic

Writing Rebuttals to the Reports of Auto Crash Reconstructionists and Biomechanical Engineers

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Most practitioners have observed the slow hemorrhage of personal injury taking place in recent years. This article will provide the reader not only with hope, but also a concrete plan for staunching the flow. This article concerns the whys and wherefores of writing rebuttal reports. At the end of this article, I provide a fully redacted example of a recent report I wrote which illustrates this rebuttal process.

This is easier to do than most would imagine. I'd be happy to provide other examples at no charge. Simply e-mail your request to info@srisd.com and ask for more auto crash reconstructionist (ACR) rebuttal examples.

Before I begin, I would like to acknowledge that there are many honest and ethical ACRs and biomechanists, and this paper deals only with those whose moral compasses have been partially degaussed or who are genuinely unfamiliar with traumatology and risk analysis. I hope my fellow ACRs and biomechanists will not be offended by some honest whistle-blowing. It is also clear that some baseline level of fraud in insurance claims requires auto insurers to do their best to prevent unreasonable losses. Physicians and their legitimate patients, however, often feel overwhelmed and outmaneuvered in this hostile environment.

In the 1980s, it seemed as though patients with injuries usually managed to get the care they needed and it was usually paid for. In a dispute, a lawsuit was filed. Back then, the chief arguments on either side of the case were made by physicians and concerned issues of diagnosis and causation, injury severity, and prognosis. But, over the years, these ever-resourceful auto insurers, keen on limiting their losses in personal injury lawsuits, have resorted to a variety of constantly evolving strategies and tactics. The once medically dominated medicolegal system began to admit chiropractors into the club when the defense experienced credibility problems through the use of medical neurologists and orthopedists dictating what care should be provided by chiropractors. Soon, the medical defense medical exams (DMEs) were conducted by chiropractors in cases in which primary care was delivered by another chiropractor.

Another defense approach that became popular was to hire utilization review companies that examined medical bills and generally restructured them to the fiscal benefit of insurers. Like the DME report, this tactic provided a necessary pretext for refusing to pay bills and thus limited the insurer's exposure to bad faith claims. Twice in California, insurers have attempted to abnegate some of their liability by sponsoring no-fault legislation; twice, voters have rejected these measures. In other states, such legislation has passed. In one case, using a nationally recognized accounting firm, the insurance and banking commission managed to create a series of algorithms for treatment that physicians were then held to. These algorithms, which sharply limited a patient's access to medical care, were developed chiefly by non-physicians and were not evidence-based. Most recently, some insurers have resorted to direct harassment of DCs and MDs by demanding unannounced clinic "inspections." Of two cases in Colorado that I am very familiar with, in both,

the insurers lost handily in subsequent lawsuits. In one, the judge gave a directed verdict and wouldn't even let the insurer bring the case to trial. He simply told them, "Pay the doctor, you have no case."

Another tactic is wide-scale industrial brainwashing. One of the larger auto insurers developed some exquisitely biased and wholly unbalanced videotape training materials that it shows to all its claims adjustors. The tapes are very entertaining, but unfortunately, for the intended audiences who view them without the benefit of balanced scientific information, they appear believable, and would leave little doubt in the minds of these adjustors that injuries in crashes in which there is little or no property damage are virtually 100-percent fraudulent. The unmistakable impression the claims adjustor is left with is this: When a case comes to you in which injuries are claimed and property damage is minimal, it is very likely that fraud is afoot, and you should immediately do one of two things: (1) alert the special (fraud) investigation unit; or (2) hire an auto crash reconstructionist or biomechanical engineer (or both). The reports of ACRs and biomechanists have the ability to turn plaintiff lawyers' knees to rubber and to virtually hypnotize jurors into believing every gilded word. As a result, over the years, the insurers have virtually inculcated most of the U.S. bar into actually believing (or at least accepting) the lie that injuries are not possible in these crashes.

Why have insurers worked so hard? The simple answer is money. The total comprehensive cost of whiplash in the U.S. each year is $42.9 billion.[7] Much of this is for medical costs, which is amortized across a small number of insurers. My research has shown that perhaps 40 percent to 60 percent of all whiplash claims occur in zero or low property damage crashes. I'll not insult the reader by offering to do the math here. This no crash - no cash game happens to be one of the most successful duplicities ever foisted on the American public and legal system by big business. Again, there clearly are dishonest plaintiffs who either fake their injuries or exaggerate them in hopes of winning a quick cash settlement, and there are even organized crime networks in the business of faking crashes or causing real ones. One can't begrudge insurers for their efforts to fight this kind of fraud. However, it is also true that insurers save billions of dollars every year by "proving" injuries are not possible and conning jurors into returning egregious defense verdicts in valid claims. These tactics are policy-based and nondiscriminating, so many valid claims are denied. For more than two decades they have been sending plaintiff lawyers running for cover. But how can this be, you ask? They get away with it because most of the time, neither the plaintiff lawyer nor his or her expert has a clue how to contend with this set of tactics. The fraud in personal injury cases can be found on both sides of the table.

Lastly, there has also been a concerted attempt to influence policy through research. It works this way: An insurer or group of insurers funds a research project. The results, not coincidentally, turn out to be beneficial to the insurers in one or another way. (The fact that this would be roughly the equivalent of a study funded by tobacco companies that found cigarette smoking is not harmful seems to escape notice.) They then use the results of this research to develop training programs or to support their oftentimes draconian treatment end-point algorithms. If this sounds a bit too Orwellian, just take a gander up to our neighbors to the north. The Quebec Task Force on Whiplash-Associated Disorders (QTF-WAD) was funded by a supplemental auto insurer. The QTF-WAD determined that whiplash injuries did not require more than short-term treatment.[6]

Not long afterward, the Insurance Corporation of British Columbia, the government auto insurer in that province, began using this document in support of their *BC Whiplash Initiative* - essentially an "educational" tool used to strong-arm the physicians in the province. A recent series of studies on traumatic brain injury was funded by the Saskatchewan Government Insurance (the chief auto insurer for that province), the Insurance Corporation of British Columbia, and La Societe de

l'Assurance Automobile du Quebec - the same insurer that funded the QTF-WAD study. I can't say which group approached the other, but it seems likely that the World Health Organization was approached first. With the WHO stamp, the panel would then be assured of valuable, marketable cache using the lofty-sounding name of the WHO Collaborating Centre Task Force on Mild Traumatic Brain Injury.

By the way, what did they actually report? They speak in surprisingly vague terms, telling us no more than, for example, "Most seem to recover," or "They were largely recovered."[8] Convenient sound bites for the media or the legislature, but hardly the stuff of a scientific investigation or best-evidence synthesis. After all, "most" covers the gamut from 51-99 percent, but that is a pretty broad range. This is very much reminiscent of the QTF-WAD, which had at least one author in common. Readers may recall that the QTF-WAD used "return to usual activities" as a very unorthodox proxy for "recovery," which resulted in widespread misunderstanding of the findings. The told us that after a year, only 3 percent had not recovered, but, in fact, they had no information about who was still symptomatic or in treatment. In the end, rather than evidence-based policy-making, this maneuvering is more aptly called policy-based evidence-making.

All of this may sound depressing, but the good news is that you can very definitely learn how to deflect tactics designed to interfere with the delivery of necessary and reasonable health care. Bear in mind, 3 million people are injured this way in the U.S. every year and the numbers are actually growing, not shrinking. Who should care for these people? Studies show that chiropractic care may be the best answer.[9]

This article simply relates the general mechanics of the process of rebutting and encourages the reader to explore the other sources of information mentioned as to the specifics of the process. ACRs and biomechanical engineers have a well-developed strategy that is fairly consistent from case to case and is supported by a limited literature of junk science, and often by a series of dubious assumptions and occasionally mind-numbing misapplications of Newtonian physics. I have exposed these tactics[1-3] and we have debunked this literature.[5] (This is an ongoing process, of course, since new research - real and junk - is published each month and is the primary reason for our annual SRISD scientific conferences.) But, to a naive jury, it all looks and sounds rather convincing.

Fortunately, truth can be a great equalizer. I have seen well-pedigreed PhDs from prestigious institutions like MIT and Stanford struck from cases. It is more common than not that after looking at their work product, we can make one of three things happen: (1) After filing a *motion in limine*, outlining the reasons why they should not be allowed to express the opinions they intend to express, they are struck from testifying by the presiding judge; or (2) The judge allows them to testify about forces and loads, but not to opine as to the probability of injury; or (3) They are allowed to testify relatively unrestricted, but the material we have already provided in the motion is, essentially, the plaintiff lawyer's cross-examination strategy, and the "expert" often regrets coming to court if they cannot support their opinions with hard science. Believe me, they have nothing to stand on when their testimony is based on fiction, fabrication, and deception; but this is true only if it is exposed. The purveyors of deception are simply counting on the fact that, in most cases, the odds are against them being exposed because most plaintiff lawyers and their experts don't understand these issues well enough.

Now, there are a number of fears and misconceptions that I should address here. Many doctors will say, "No way. I'm not an engineer, physicist, or ACR. I'm not going to butt heads with those guys." But have faith, gentle reader; you very well can. In fact, you must if you believe that your care is medically necessary and appropriate, and that the opinions expressed by opposing experts may

become the baseless pretext for denials of coverage. Rebuttal is precisely what this article is encouraging. It may be comforting to know that most of the rebuttal does not involve physics, mathematics, or engineering issues. And even if you choose not to argue the actual calculations of crash metrics, there will still be plenty you can rebut.

This slow hemorrhaging I earlier alluded to is aided in a very significant way by these so-called experts claiming to disprove injury. If you allow it to go on unchallenged, you do a grave disservice to your patients. And consider this: The very reason that so many lawyers today will not represent honestly injured individuals (whose only crime was being hit in a crash with little property damage) is because they have acceded to the lie foisted upon them. Granted, many actually do recognize that their clients are genuinely injured, but the cases are simply too difficult to try, in their estimation. And since most lawyers don't know how to put these cases together, it would seem that their assessment is correct. If they knew how to properly handle such a case, it would be a very different story. What I am saying here is that for the past decade or so, insurers have effectively dictated to lawyers how the personal injury business would evolve. This situation should and can change, but to do so is to reverse the current evolution, and that takes some re-engineering.

What Am I Suggesting You Do?

First, understand that getting up to speed on all things whiplash is crucial. Fortunately, there are training programs and other materials to help to get you there. There are textbooks that discuss current issues in ACR and biomechanics.[4] Become a student again. Make lifelong learning your *modus vivendi*. Remember, the best weapon against authority is more authority. Take a half-hour a day of quiet time and start becoming one. In a very short time, you will know more relevant information than most of the people who call themselves experts. Start writing rebuttals reports - not only in response to outrageous IME/DME reports, but to the ACR or biomechanical reports that require it as well. Stop being passive and become aggressive.

I will end with an anecdote. One of my students called from North Carolina a couple of months back. He was having problems with a certain PhD engineer who was of the opinion that his patient could not have been injured in the subject car crash - the usual fare. The student mentioned the engineer's name and I recalled having written a rebuttal to another of his reports a few years earlier. I sent the doctor a copy. He recently informed me that they used the rebuttal to develop the *voir dire* of this "expert" and, after a brief time on the stand, the judge actually asked him to step down and leave the courtroom because his opinions were completely discredited and deemed untrustworthy.

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Biomechanist/ACR rebuttal

I completed the following redacted rebuttal in the recent past. It is fully redacted with false names. I should also point out that, as is the usual scenario, I did not need to get much into physics or mathematics. Any of my graduate doctors could have done this.

This is a review of a report from "PDQ Forensic Sciences," signed by William T. Markmann, MS, PE, It is dated xxxxx, xxxx and is addressed to xxxxxx concerning claim # 34884844SD (Clearwater v. XYZ, Inc.).

Mr. Markmann has indicated that he has ACTAR certification and is a professional engineer. To the extent that he has offered opinions on the basis of biomechanics, injury probabilities based on his biomechanical analyses, and his reconstruction of the crash in question, I will offer the comments that follow. I note that Mr. Markmann is not a physician and did not personally interview or examine Dr. Clearwater. In my opinion, his review of the medical record in this case has exceeded his training, licensure, and qualifications, and thus consists chiefly of speculation and hearsay. Therefore, I will not comment further on those opinions other than to note that, although he did make the standard legalese hedge on page two that his opinions were not "medical" but rather probabilistic, this is a subject of debate since, in the end, he has apparently told us when and where he believed the real shoulder injuries had occurred. I fail to see how such a determination deviates from an actual medical diagnosis. I do offer some contrary opinions concerning his statements about the probability of injury.

Collision Reconstruction

With regard to the reconstruction of the crash, the following features are noteworthy. No examination of the vehicles was performed by Mr. Markmann. Data sources consisted only of copies of color photographs, a repair estimate, and review of deposition transcripts and medical records. The number, quality, and views of the photographs were not noted. The likelihood that critical details can be missed when relying on photographs alone - particularly if they are poor quality reproductions-is highlighted by the comment on page three that the photographs failed to disclose damage that was reported by an investigator. A repair estimate was reviewed, but this was apparently not a final repair bill. Mr. Markmann relied on deposition testimony of both parties to this lawsuit. No calculations were provided anywhere in this report, although it contains estimates for closing velocity, delta V, and peak acceleration. (The subject of that acceleration was not provided: it was apparently the acceleration of the target vehicle of Dr. Clearwater). The source of

the closing velocity was apparently the testimony of the defendant that he was moving at about 7 mph at the time of contact. Logically, one would certainly question the reliability of a speed estimate made under the emergency conditions of a crash that likely was the result of not paying sufficient attention to avoid the collision.

Mr. Markmann also relied on bumper-to-barrier tests involving two exemplar vehicles. These may have been Insurance Institute for Highway Safety tests which are performed on selected vehicles. However, the exact source of these tests wasn't provided so I was unable to verify these data. It is likely that Mr. Markmann's intention was to demonstrate a degree of property damage that approximated the damage reported in this crash which occurred on July 11, 2002 in order to provide some support for his assumptions about speed, which were given as being probably higher than the actual speeds in gracious deference to Dr. Clearwater. This comparison, however, is invalid since vehicles crashing into vehicles behave quite differently from vehicles crashing into barriers.[17,19] Moreover, repair costs can include costs to repair structural failure or cosmetic damage (or both), and extrapolation from repair costs to some quantification of actual crash severity or crash energy is dubious for reasons that would be quite clear to anyone with an engineering background. Moreover, our crash tests, and those of others, have demonstrated vehicle property damage thresholds which ranged from closing velocities from 4.8 mph to 10.1 mph and delta Vs ranging from 8.0 mph to 12.0 mph.[1,4,5,6,18,21,22,23,24] In many cases, multiple collisions are possible in this speed change with zero resulting structural damage.

The fact that there was some structural damage in the subject case (found by the investigator who did inspect the car), suggests, in fact, that the figures for crash speed might have been significantly less charitable for Dr. Clearwater than Mr. Markmann claimed. In any event, low speed rear impact collinear collisions are notoriously difficult to reconstruct with any reliability owing to the assumptions and estimations that are necessary, and, even with visual inspection of fully instrumented crashed vehicles using momentum, energy, and restitution methods under laboratory conditions the level of accuracy is unacceptable.[10] The only validation study published to date on photographic reconstruction of crashes has demonstrated the method to be highly unreliable.[2] Having said that, even if we allow Mr. Markmann his questionable estimated range of speed change for the target vehicle (3.9-6.0 mph) which is a range that I would certainly agree probably exists within the more realistic and broader range of uncertainty, we would then have to conclude that an injury to Dr. Clearwater was possible, as I shall address under the biomechanical assessment below. In the meantime, in my opinion as both a crash test researcher and a collision reconstructionist, I would qualify the crash metrics estimated here as no more credible than an educated guess, and as lacking any formal mathematical or scientific basis.

Biomechanical Analysis

In brief, Mr. Markmann was of the opinion that the forces to which Dr. Clearwater would have been exposed to (had his speculative deductions concerning crash metrics been correct) would have been the equivalent of a bumper car collision or amusement park ride. He also stated that it would have been the equivalent of his backing into a barrier at 2.6 to 4.3 mph, although the derivation of these figures was not provided. It is not a particularly enlightening comparison in any event since the average human tolerance for backing into rigid barriers, to the best of my knowledge, is neither known nor has it even been evaluated in large populations.

On page five, Mr. Markmann described Dr. Clearwater's description of bracing for the impact and then moving rearward and forward and, in the process, feeling his shoulders jerked in their sockets. Although I am not clear how Dr. Clearwater's description did so, apparently, Mr.

Markmann felt it was in contravention to the laws of physics (which he put in capitals, apparently for emphasis). Once again, I can safely assure Mr. Markmann that the laws of physics are quite safe for the present and that, in fact, this is precisely what happens to the human body during a rear impact crash. We have conducted more than 70 such tests at my institute in the past half-decade. Specifically, the jerking of the shoulders does occur when subjects grip the steering wheel firmly, as would be likely in the event as described here, in which the driver was aware of the impending impact. In fact, we have high-speed motion pictures of such an event occurring in crashes of 5-7 mph delta V.

It concerns me that Mr. Markmann apparently is laboring under the impression that bumper car collisions and amusement park rides are entirely (or always) benign and, apparently, quite comparable somehow to sitting in a 2858 lb Mazda 626 and being struck from the rear by a Chevrolet pick-up truck weighing approximately 4000 lb. (Mr. Markmann did not provide the model of the pick-up truck, so this weight is only an approximation based on the average of several models.) Although not a single reference is cited in his report to support his conclusions regarding injury risk, I will offer two in the hopes that the readers of this letter might disabuse themselves of this incorrect notion. In reality, injuries can and do occur in bumper car contacts[11] and amusement park rides, including serious injuries requiring surgery and causing paralysis.[14] In my opinion, these remarks about bumper cars and amusement park rides are specious and certainly provide no assistance in understanding the nature of the injuries (or probability of injuries) sustained in a specific motor vehicle crash which is clearly different from either bumper cars or amusement park rides in several critical ways that any engineer should certainly be able to appreciate.

A more meaningful approach at risk assessment is to look at databases of real world crashes in which the true crash speed was known-rather than estimated. In truth, such work has been published and it turns out that the mean crash delta V for rear impact crashes in cars not equipped with whiplash protection systems (and the 2000 Mazda 626 does not have one) is 5.1 mph-a value encompassed in the range allowed for by Mr. Markmann.[15] It has also been demonstrated in an unselected whiplash population that shoulder injuries are actually fairly common.[16] Mr. Markmann claims to have completed a biomechanical analysis of the shoulder, although there is nothing in the report describing it or how it was done. As a board-certified orthopaedist, I would agree that shoulder dislocations more often result from hyperabduction trauma, which would not have occurred in this car crash, but using this as an argument against a cause and effect relationship in this case is problematic. Shoulders are vulnerable to both distraction and compressive loading as would have occurred in this case based on our knowledge of occupant kinematics and experience in human subject crash tests. After 23 years of experience, with an emphasis in motor vehicle trauma, I can safely testify that shoulders are commonly injured in this very type of crash.

In conclusion, Dr. Clearwater's shoulder injuries are fully consistent with the mechanism of injury which is described by him and which was relied upon by Mr. Markmann in his assessment. The crash speed range suggested by Mr. Markmann is likely to be low by 2-4 mph and possibly more as noted, but, even if we accept his speed range as a true an accurate range, it contains the mean value where epidemiological evidence shows us injuries actually occur. Thus, Mr. Markmann's opinions that injury would have been unlikely are scientifically untenable and not even supported by his own speed estimates. The spurious notion that the crash would have been comparable to bumper car or amusement part rides is relatively meaningless since there is no way to compare the two events and since there is clear evidence that such distractions are not always benign and the injuries resulting not always minor. Medical comments concerning when and where injuries occurred or, indeed, what events caused them is based only on a review of selected medical documents and is likely to exceed Mr. Markmann's training, licensure, and expertise and should be

dismissed as mere speculation and hearsay.

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MAY 2005