Dynamic Chiropractic

LoSRICs: Epidemiological Analysis

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How many people are injured each year in relatively low-speed rear impact collisions (LoSRICs)? You know the kind I am referring to -- the kind that the auto insurers and their medicolegal lackeys claim cannot produce injuries lasting more than a few weeks.

I've just finished writing the chapter on epidemiology in my forthcoming book, Understanding Low Speed Rear Impact Collisions. I thought the readers of DC might be interested in the very latest statistics on whiplash injuries, particularly since we have been bombarded this year with bad science: first the RAND-sponsored report on the high incidence of fraud in personal injury; then the "Scientific monograph of the Quebec Task Force on whiplash-associated disorders: redefining 'whiplash' and its management." I have previously addressed the RAND-sponsored and QTF reports in "DC" earlier this year. The report sponsored by RAND was seriously flawed. The QTF report is problematic in a number of ways. I address these in more detail my new book. However the QTF clearly did not "redefine whiplash" nor did they give us anything tangible in terms of management.

I reviewed data from a number of government sources, including the National Accident Sampling System; General Estimates System; Crashworthiness Data System; Fatal Accident Reporting System; National Highway and Traffic Safety Administration's special report on whiplash; National Safety Council; U.S. Public Health Service, and the Federal Highway Administration. From this data I have derived what I believe are the most accurate current figures for the incidence of whiplash (actual number of new injuries each year) and the prevalence of chronic residuals from whiplash injuries in the U.S. population. I did this several years ago, but it is such a tremendous headache that I resisted doing it again until just recently. The following is an excerpt from the summary section of chapter one of my new book:

Summary

NASS/CDS

1. Only about 28 percent of crashed vehicles are towed from the scene.

2. Rear impacts account for about 7.2 percent of these crashes.

3. Seventy-three percent occur at speeds between 11 and 20 mph; 12.9 percent at speeds below 11 mph.

4. Eighty-one percent of all injuries occur at speeds below 30 mph.

5. Three and a half million persons are involved in tow-away crashes each year. Of these, 45 percent are injured.

6. The greatest proportion of injuries falls in the AIS=1 category (AIS=Abbreviated Injury Scale; 1 is the most minor classification). This includes 94.4 percent of all neck injuries and 77.3 percent of all back injuries.

7. Neither the AIS nor the IIS (Injury Impairment Scale developed by the Association for the Advancement of Automotive Medicine) systems are useful for classifying or characterizing whiplash injuries.

8. Seat belts and shoulder harnesses increase the risk of AIS=1 injury.

9. The estimated cost of for soft tissue injuries in the U.S. each year is $19.1 billion.

10. The NHTSA's estimate for "harm" (a figure encompassing pain and suffering costs) for AIS=1 injuries is $28 billion annually.

    FARS/GES

11. In 1993 there were an estimated 2,005,000 injury-associated crashes involving 3,125,000 injured persons.

12. More than 10.5 million persons are subjected to crashes each year.

13. Males are 1.5 to 1.7 times more likely to be involved in motor vehicle accidents than females.

14. Males account for 65 percent of all miles driven.

15. Rear impact collisions comprise 25.3 percent of all collisions.

    NSC

16. The total cost of motor vehicle accidents in 1993 exceeded $167 billion dollars.

17. The National Health Interview Survey indicated that 5.158 million Americans were injured in motor vehicle accidents in 1992. Two million of these were disabled.

18. NSC statistics for 1993 indicated 11.9 million motor vehicle accidents occurred, involving 21.1 million drivers.

19. About 2.75 million of the 11.9 million motor vehicle accidents were the rear impact type.

    NHTSA Special Report

20. In 1990 there were an estimated 1.513 million rear impact collisions with 1,026,000 injuries.

21. Occupants of striking vehicles were injured only slightly less frequently (1.2 percent less) than occupants of struck vehicles, thus shattering one of the popular myths of whiplash.

22. The estimated number of non-(police) reported accidents each year is 7.66 million.

You should not be confused by the seeming ambiguity of these figures. They are the results of different government estimating systems, designed to assess the extent of the problem. They don't always agree with each other. Only by carefully analyzing all of these data, can we derive an accurate set of values for incidence and prevalence. In the interest of parsimony, I've omitted the calculations.

However, I have calculated that there are two million rear impact accident related injuries in the U.S. each year, giving us an incidence of 770/100,000. These accidents account for 38.7 percent of all motor vehicle accident injuries. Based on my calculations, the various estimating systems currently in place may be underestimating the problem of whiplash by more than 40 percent.

Most rear impact collisions occur during daylight hours; most happen during rush hour traffic, on straight, flat, dry sections of road. Driver inattention and recognition delays has been cited as the leading cause of rear impact collision (93 percent). Younger persons are more frequently involved as the drivers of the striking vehicle, with males and females equally represented in this role. However, females are significantly overrepresented in the struck driver role for reasons not entirely clear to me at this point.

Outcome/prognostic studies suggest that from 12 percent to 86 percent of whiplash victims will continue to be symptomatic for years after the injury. (Again, in the interest of brevity I've omitted much of these derivations.) Rear impact injuries have a worse prognosis than side or frontal impact injuries. On average about 46 percent of the patients in these studies had not recovered completely at follow-up -- about 10 percent rating their problems as disabling or severe. Using these outcome studies, in conjunction with the incidence figure derived earlier, I estimated the following prevalence figures:

a. Assuming a conservative 25 percent nonresolution of symptoms; after 25 cumulative years of whiplash, the prevalence of chronic pain in the U.S. would be 6,731/100,000, or 6.7 percent of the population.

b. Assuming 50 percent nonresolution of symptoms, after 25 cumulative years of whiplash; the prevalence of chronic pain in the U.S. would be a remarkable 9,615/100,000, or 9.6 percent of the population.

LoSRICs comprise a large proportion of all rear impact collision injuries. Most modern passenger vehicles can withstand crash speeds of up to eight or nine mph, and sometimes higher, without sustaining visible damage. The reported threshold for soft tissue injury of the neck in healthy adult

males is five mph. Therefore, modern passenger vehicles can crash at nearly twice this injury threshold, yet appear undamaged. There is no scientific basis for estimating or calculating the probability of soft tissue injury to the occupants of vehicles based on property damage to the vehicles.

Finally, there are three ways that we can attempt to reduce the size of the problem:

a. Reduce the number of collisions through high technology crash avoidance countermeasures, such as the Intelligent Vehicle Highway System currently under research.

b. Make all passenger vehicles more crashworthy through the use of improved restraint systems, improved head restraints and seat backs, and enhanced bumper designs.

c. Improve treatment and management strategies through physician continuing education, particularly targeting portal of entry practitioners, such as emergency room physicians.

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NOVEMBER 1995