

Repetitive stress injuries

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The manufacturer places a warning against improper use on the underside of my keyboard. The warning begins "Continuous use of a keyboard may cause Repetitive Stress Injuries or related injuries." Later it says, "If you feel any aching, numbing or tingling in your arms, wrists or hands, consult a qualified health professional."

This is serious stuff. The potential health problems can be painful, worrisome, and costly. Carpal tunnel syndrome, the repetitive stress injury receiving the most publicity, can cripple. Other related ailments should get immediate medical attention. By most accounts, the most vulnerable workers include journalists, typists, and computer programmers. Most observers blame the recent epidemic of RSIs on the diffusion of PCs into the workplace.

Just below the surface of these medical issues lie confusion and some tragedy. Serious injuries go untreated as the medical system bounces sufferers around. Some of the afflicted cannot raise the money to pay for care. Large employers of typists and programmers fear major medical expenses. Manufacturers feel the need to place bland warnings on their equipment.

Though RSIs connect all these events, they also have another thing in common. The confusion and uncertainty accompanying RSIs stems from the peculiar way insurance works in our market-oriented society.

To start, we observe that human beings are biologically geared toward handling a wide variety of muscular tasks, not the same one all day. For this simple reason, RSIs have been around ever since Western countries industrialized (and probably before that too). In the past, RSIs afflicted workers on assembly lines and violinists on the road to Carnegie Hall. Today's RSIs trouble programmers under the pressure of a release deadline.

Throughout the years, these same industrialized countries have treated RSIs in a variety of ways. In the past, a sufferer's family paid for

medical care and lived with the tragedy. Today, an insurance company often pays at least some of the time—which is where things get sticky.

For insurance purposes, there are basically two types of situations: those with known risks and those with unknown risks. For example, some RSIs have been around long enough so that somebody (usually an actuary) can predict with reasonable confidence what fraction of a population will experience a problem. For example, carpal tunnel syndrome is becoming a known risk. On the other hand, other types of risk catch everyone off guard because a new technology creates a new situation. For example, it appears now that doctors can trace certain RSIs to (surprise!) the improper location or shape of a computer mouse. This is an example of an unknown risk because it is still unclear how many mouse users will need medical attention. Today's RSIs are partly known risks and partly unknown risks.

For several reasons, insurance markets have not established particularly good ways of handling unknown risks. To appreciate why, it is best to discuss how markets handle the known risks.

To begin with, think sailing ships, not computers. The western form of insurance contract began hundreds of years ago when some London-based shipping agents noticed that each year a predictable fraction of sailing ships sank at sea on the way to and from the New World. In exchange for bearing the risk over hundreds of ships, insurers agreed to reimburse the losses to shippers. On average, insurers did well, and ship owners slept easier. Soon these London firms (ever heard of Lloyd's of London?) carried the same principles into the modern world. Other firms began to imitate them. Today, individuals can reduce their risk of financial loss in the event of a rare and unfortunate event. A big company bets that only a fraction of a particular group will suffer this problem and agrees to reimburse

unlucky few. We observe this in auto, catastrophic health, and tornado insurance, and so on.

Insurance contracts get a bit more complex for work-related injuries, but the same historic principles apply. For example, firemen, policemen, miners, steelworkers, and construction workers risk physical injury. Not surprisingly, these jobs come with insurance.

However, in the modern working world, the finer points of work-related insurance are often a bargaining point between employer and employee. This is not as odd as it sounds. Firemen and miners negotiate the insurance arrangements for all known risks with their employers ahead of time. Thus, when tragedy happens, as it does occasionally, everyone handles it and life moves on. Such an arrangement is never pretty, but it keeps society going.

All this machinery for handling known risks comes to a halt when something unanticipated occurs. Who pays for unanticipated injuries? Was this particular RSI part of the original insurance contract or not? In a nutshell, this is the key reason that RSIs associated with computer keyboards have everyone in such a frenzy. How does anyone take out an insurance contract against something that was never anticipated?

Until about a decade ago, RSIs were confined to typists. The entire insurance system knew what to expect among this small and generally select work group. It consisted mostly of secretaries, administrative assistants, and editors—workers generally trained in good typing habits. Insurance companies did not anticipate that so many programmers, journalists, and other administrative workers would do their own typing on PCs. Neither did they anticipate that many such workers would be poorly matched to their equipment.

Matters are worse because the medical profession is still not 100% certain what causes every RSI, nor does the insurance industry know what alternative equipment to recommend. Advising programmers to adopt better typing habits and more ergonomic equipment is sound advice (as far as it goes) but hardly a panacea.

Many of the injured are going to

court to figure out who is legally liable. In our litigious society, this is basically a fight over the insurance arrangement in the labor contract. The fighting is nasty because many people can lose big. Physically disabled employees need to pay for their medical care. Insurance companies need to estimate their future liabilities. Large employers of administrative help fear insurance rate hikes.

Once we understand this confusion as an insurance market problem, it becomes clear that the situation can only resolve itself in one of a few ways.

One possibility is for courts to hold keyboard manufacturers liable for RSIs. My keyboard manufacturer's warning is a hedge against this possibility. Such an outcome, however, seems unlikely. Though the law is never settled definitively, it appears (as of this writing) that US courts will not hold keyboard manufacturers liable for RSIs contracted while typing.

Another possibility is that courts will hold employers responsible for all RSIs and for the insurance costs. The US has already partly moved in this direction. Workman's compensation plans at many firms have (effectively) assumed the expenses associated with RSIs. Simultaneously, these same firms have watched their insurance bills increase dramatically. Clearly, this is not the whole answer. Too many employers do not carry this type of insurance, so it does not cover all US workers.

A third possibility is that the US government will mandate universal health care coverage, and thus these insurance coverage problems would no longer exist. It is possible to have an interesting debate over whether this solution will really solve the issue or reshuffle the problems to another part of the US health care system. However, such a debate seems pointless, since the US Congress will not pass a universal health coverage bill anytime soon.

A fourth possibility is that the computer industry will find a technical fix to the problem. We are not there yet, but recent advances keep hope alive. For instance, today's voice recognition software does replace keyboards for the

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severely disabled. Handwriting recognition software seems a bit less developed, but shows promise for simple writing tasks. New keyboard redesigns are also emerging each day, though the market is far from settling on an alternative. For most people it appears that these technical fixes are still too expensive, weird, or inconvenient. (Perhaps that is too harsh. I concede that, after experimenting with several experimental keyboard designs, I found one that eliminates my particular RSI 95% of the time.)

Most likely, everything will continue to muddle through. This outcome really scares me, because so many people are at risk for uncovered injuries. Many employees cannot get their employers to pay for insurance and effectively become liable for the expenses associated with their injuries. Freelance programmers already assume this risk, as do many of the self-employed.

I anxiously await the day when this epidemic ends, but it will probably not end soon. Meanwhile, heed this advice: Educate yourself in proper typing habits and make certain that you have the appropriate insurance.

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