

Save lives by counting the dead

Counting the world's deaths and finding out why people die is one of the most important goals to improve public health. Professor Prabhat Jha tells why he is obsessed with death numbers.

Q: You recently led the “Million Death Study” in India – the first nationally representative study of the effect of tobacco-smoking on health that covered more than one million households and six million people. Why do you think it has taken so long to do this when studies were done in Europe and the United States of America many years ago?

A: It was assumed that smoking risks were widely known because of the studies from Europe and the USA. It had also been assumed that the risks of smoking in India were smaller than in other industrialized nations, as most Indians smoke *bidis*, a locally manufactured small cigarette that contains only one quarter the tobacco of other [commercially manufactured] cigarettes. Also, the age of smoking onset in India is older than in the USA and the daily number per smoker is less. But our study showed, surprisingly, that smoking is as hazardous in India as in the west. Compared to non-smokers, men who smoke *bidis* lose about six years of life, women who smoke *bidis* lose about eight years, and men who smoke cigarettes lose a full 10 years. Sir Richard Peto, who has documented tobacco hazards better than anyone, was also surprised. Smoking appears to turn sub-clinical infection with the tuberculosis (TB) bacillus into active disease, so smoking may well be contributing to the spread of TB in India, and probably elsewhere. Importantly, the leading cause of smoking-related deaths in rural India was TB, and perhaps 40% of all TB deaths in Indian middle-aged males are due to smoking.

Q: How can tobacco control move forward in south-eastern Asia?

A: Cessation and taxes. Any meaningful reduction in deaths over the next few decades needs to focus on cessation by the world's 1.1 billion smokers, well over two-thirds of whom live in south and east Asia. Preventing children from starting is important, but that will not reduce deaths until after 2050.

The key strategy for cessation is higher taxes. We have conservatively estimated that a tripling of the excise



Courtesy of Professor Prabhat Jha

Professor Prabhat Jha

Professor Prabhat Jha has been a key figure in epidemiology and the economics of global health for the past decade. He is currently Canada Research Chair of Health and Development at the Dalla Lana School of Public Health, University of Toronto, and the founding director of the Centre for Global Health Research at St. Michael's Hospital in Toronto. Professor Jha is a co-investigator of the Disease Control Priorities Network and the author of several influential books on tobacco control. His advisory work has included the Government of South Africa on its national health insurance plan, and the United States of America's President Barack Obama on global health. He received his medical degree from the University of Manitoba and a doctorate in philosophy from Oxford University.

tax worldwide would avoid over 115 million premature deaths by getting current smokers to quit. Unfortunately, *bidis* are largely untaxed in India. But I am hopeful that taxes will rise, in part because the huge health toll of tobacco is being taken more seriously, and also because of attention to taxation by the World Health Organization and the Bill & Melinda Gates Foundation, among others.

Some economists argue that higher taxes on tobacco are undesirable because the tax burdens fall more heavily on the poor. But we have shown that, in several countries, tobacco smoking alone causes at least half of the inequalities in adult male mortality associated with lower socioeconomic status. And because the poor quit more in response to price hikes than the rich, it's not necessarily the case that increased tobacco taxes hurt the poor financially.

Q: One of the keys to this tobacco study was the sample registration system established by the Registrar-General of India. How important is routinely collected vital registration data for analytic epidemiology?

A: Epidemiologists are “number crunchers” like accountants, minus the personality [he jokes]. For us, routine death numbers are crucial. Vital statistics have helped identify major trends in fertility, child survival and

child mortality. They have revealed good news, such as the large declines in tuberculosis and under-five mortality in the early twentieth century. They have also sounded alarms, identifying, for example, the dramatic increases in lung cancer deaths in British and American men around the time of the Second World War. Mortality data also revealed the alarming increase in immune-related deaths among young men in San Francisco in the early 1980s, a trend that marked the beginning of the HIV-1 epidemic in the United States.

Rigorous monitoring of the results of health interventions is essential and mortality data are a good basis for monitoring. Good mortality statistics have all sorts of clever uses. For example, we worked backward from AIDS mortality data to estimate that the number of HIV-infected people in India may be 40% less than previous estimates.

As the current Millennium Development Goals end in 2015, I'd like to suggest a new goal for 2030: register all deaths worldwide in 2030 (only about 25 million deaths out of the current 60 million global deaths are currently registered) and ensure that at least half of these deaths have reliable cause-of-death information.

Q: Are those feasible or affordable goals?

A: Getting causes of death may be simpler than achieving full registra-

tion of deaths, because most people who die in poor countries will not have access to an orthodox health-care worker. India has had since 1971 a low-cost sample registration system (SRS) of documenting births and deaths in a few thousand sample areas throughout the country, from which national death and fertility rates have been estimated. Adding information on causes of death to the SRS was highly cost-effective: we spent less than US\$ 1 million for 1 million households. Over the next few years, the SRS can effectively monitor the impact of the Indian government spending an extra 1–2% of gross domestic product (some US\$ 8–16 billion a year) on health. So the correct question might be how can we NOT afford to count the dead? Sample systems are certainly not perfect, but represent a reasonably rapid way of improving information on causes of death. We cannot really measure progress in disease control in Africa, for example, if we don't know the major causes of death reliably in children, but particularly in adults.

Q: You have also studied “missing” female births in India, apparently associated with pre-natal sex determination and selective abortion of female fetuses. On an issue like this, how do you balance scientific objectivity with advocacy?

A: My two young daughters ask me the same question! The best advocacy is serious objectivity. Our study of 135 000 births in 1 million homes found that selective abortion may account for 500 000 missing girls every year – about 10 million missing girls from 1985–2005. This article caused a huge storm in India. I am hopeful that the debate will continue. Selective abortion was recently shown on Indian soap operas, for example.

I am an optimist: I believe that if people – the public at large and decision-makers alike – are given trustworthy information, they will respond appropriately. The scientific community has a responsibility to be rigorous and objective in the information it provides, without resorting to “advocacy numbers”. Getting the numbers right is an area where WHO can play a leading role.

Q: Even without good data, there still has to be priority-setting. How can decision-makers attract attention to less glamorous problems?

A: Governments, research agencies and public health institutions have to focus not only on the dramatic, but the routine. The twentieth century saw 20 to 100 million deaths from pandemic flu and 200 million deaths from wars and famine, but 2 billion deaths from

preventable childhood causes. Today, we've got unprecedented attention to global health, including from the media and pop stars. I'm optimistic that the coming decade could be transformative for health. A concerted effort against a few big diseases globally could transform developing countries. That needs the ruthless discipline that good public health science demands.

Q: Where is this “ruthless discipline” needed?

A: Ruthless discipline in objectivity, measurement and in priority-setting: we need to identify the big problems and approach them seriously. We need to fund only interventions that work (in the case of smoking – taxes, advertisement bans and cessation clinics) and not resort to wishful thinking (for example, anti-smoking messages within school health curricula). Moreover, in this Internet era, even weak or biased research can easily create headlines and force governments to react to what appear to be priorities. To counter some of these flights of fancy, we need to ensure ongoing and sufficient public funding of epidemiological research. Such research keeps political attention focused on the big problems and also helps to keep politicians accountable for better health. ■