Reliable Mortality Data:
A powerful tool for public health

Reliable, routine, low-cost and long term mortality measurement is the key to monitoring trends in health conditions of the population, detecting new epidemics (such as HIV/AIDS), evaluating the success of control programmes, and improving accountability for expenditures on disease control. Public health in western countries was transformed when vital statistics on age, sex and socio-economic distribution of births and deaths became available in the late nineteenth and early twentieth century. Death registration began in England about 1837, and even earlier in Sweden. Death by social class was recorded in England from 1921.¹

Vital statistics have demonstrated major trends in fertility, child survival and mortality. They have shown good news, such as the large declines in tuberculosis and under-5 mortality during the twentieth century. They have also sounded the alarm, such as the dramatic increase in lung cancer deaths in English and American men around World War II (which led to much work on smoking). Two decades ago, mortality data from San Francisco revealed an alarming increase in immune-related deaths among young men which signalled the start of the American HIV epidemic. In each case, routinely collected data have helped to spur further research and much public health action. Vital statistics have been crucial for the knowledge of disease, including individual knowledge of the risks of disease (such as the hazards of smoking). This, in turn, has been a major contributor to the unprecedented health gains of the twentieth century.²

India faces considerable challenge in the vital registration and cause of death (COD) reporting. India is home to about 25 million births (and 1 in 3 of unrecorded births worldwide) and about 9 million deaths (about 1 in 6 of all deaths worldwide). India also has a large variation in the recording of births and deaths. Some places have very good registration. Mumbai provides death registration data as far back as 1848,³ whereas some of the larger states, such as Uttar Pradesh and Bihar, lag behind. Overall, about 1 in 2 of all births and deaths are registered in India. Cause of death data are available in about 1 in 3 of all deaths but this often merely subdivides deaths as due to accident, violence and disease, without further details. More reliable medically certified COD are available in only about 1 in 30 of all deaths.⁴

In this issue of the Journal, Mahapatra and Chalapati Rao (Natl Med J India 2001;14:154–62) provide an important and timely examination of the coverage and quality of COD reporting in the now defunct Survey of Causes of Death (Rural) and the Medically Certified Causes of Death (MCCD) which covers mainly urban centres. They extend the criteria for quality of COD data developed by Ruzicka and Lopez² with some novel additions. They conclude that the chief weaknesses in the current COD reporting system are:

1. poor coverage of COD data stemming from total non-reporting from certain areas and under-reporting from others;
2. high incidence of unclassifiable deaths at around 1 in 5 in rural areas and 1 in 6 in urban areas;
3. long delay and irregular publication of data; and
4. lack of systematic screening.

Their recommendations include a major effort to improve the training of medical staff, decentralization of some data analyses to the state level, and enforcement of fines for non-compliance.

Several of their suggestions are worth taking up directly, particularly decentralization of analyses to the state level (although, given the squeezed state budgets, continued Central finance would be required). Several issues from their analyses prompt worthwhile debate. First, sentinel studies of high quality might be much more practicable and useful than attempts to improve the quality of routine COD data everywhere in India. A unique opportunity exists with the Sample Registration System (SRS) which will be expanded in number from the current level of 6700 blocks covering about 6 million people. The SRS will add a new verbal autopsy instrument that requires early pilot testing and ongoing evaluation. For example, collection of broad symptoms and signs including a checklist of specific conditions for central review by a medical doctor might be more useful than asking a larger number of enumerators to directly assign COD data based on an algorithm. Such an approach would also add an element of systematic screening. Similar verbal autopsy instruments are being used successfully in large prospective studies of tobacco and mortality in Chennai.

The suggestion to medically certify all deaths is likely to be implausible for some time, given that 7 in 10 deaths occur at home and most deaths occur in rural areas where registration of the act of death, let alone the cause, is rare. Awareness and training of health providers to correctly complete the death certificates may not be very effective, given that doctors are notorious for responding mainly to financial incentives or steep fines for non-compliance. Extrapolation of age- and sex-specific COD data from the SRS onto age- and sex-specific mortality data might prompt state-level analyses. In addition to valid SRS-COD data, this would require strengthening the civil registration of the act of death, particularly in the 5 major states (Andhra Pradesh, Assam, Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh). Practical steps might well emphasize improving urban COD reporting by ensuring that burials and cremations do not take place without a correctly completed death certificate.

Modern vital statistics need to keep up with modern patterns of diseases. Recorded deaths from communicable diseases or injuries generally correspond to their causes (e.g. malaria deaths are caused by malaria), but non-communicable diseases can have multiple causes (e.g. a heart attack could be caused by smoking, elevated blood pressure, high lipids or other factors). Thus, as India moves through the epidemiological transition, reliable information on the diseases leading to death and their measurable causes are required. The Registrar General of India has shown global leadership in placing a simple question on past smoking or chewing of tobacco on death certificates. This should permit reliable estimation of the annual number of tobacco-related deaths.

Mahapatra and Chalapathi Rao appropriately stress the importance of direct data on mortality and COD. Indirect methods to estimate COD, such as the econometric models used by the global burden of disease (GBD) are useful to overall policy debates. However, as emphasized by the authors themselves, they are only as good as their underlying data and have not been well tested in the presence of HIV/AIDS growth. For India, the GBD has shown considerable variation in specific causes, depending on the assumptions used. The 1994 version of GBD estimated 0.78 million cancer deaths in 1990 but registry data suggested 0.43 million deaths. The 1996 version of GBD estimated 0.95 million tuberculosis deaths for 2000, whereas the 1999 version halved this to 0.42 million for 1998. The difference was due to changes in the model specifications based on independent estimates by other researchers.

The importance of high-quality vital statistics and COD data cannot be underestimated either scientifically or politically. Reliable vital statistics could well contribute to health policy what central banks contribute to monetary policy. Central bank independence and transparency (such as explicit inflation target setting) may
improve economic performance. Similarly, reliable, independent and transparent data on mortality is likely to be a powerful twenty-first century information tool to improve health in countries with a low income. Independence is the key, given that there may be incentives for users of data, such as officials of disease control programmes, to over- or under-report the disease of their own interest (for example, until recently, the World Health Organization had three substantively different estimates of global malaria mortality, with the malaria programme estimates being higher than that from other departments). Transparency and access to reliable data by civil society, non-governmental organizations, and researchers can often spur governments into public health action.

REFERENCES


PRABHAT JHA
Senior Health Specialist
World Bank
Washington D.C.
USA
Pjha@worldbank.org

Tobacco Products Bill 2001: An aid to public health

Smoking causes diseases that could lead to death. The scientific evidence is so overwhelming that after disputing it for several decades, cigarette companies are now forced to acknowledge it. To quote from the website of British American Tobacco, of which the India Tobacco Company (ITC) is a subsidiary: '... with ... cigarette smoking come real risks of serious diseases such as lung cancer, respiratory disease and heart disease ... also, for many people, it is difficult to quit smoking.' Similar statements can be found on the websites of other major cigarette companies.