

The certificate, meanwhile, goes to the Ministry of Health. One copy goes to Mexico's National Institute of Statistics and Geographical Information (INEGI) and the other stays in the civil registry office. The Ministry of Health's forms are coded monthly by doctors assigned for just that purpose according to International Classification of Disease rules, and for its part, INEGI compiles monthly statistics.

Later on, Ministry of Health officials classify the data by cause of death and other factors, Lozano says.

Two types of families don't report: those who can not afford to call a doctor

and those who live too far away from an administrative centre.

"This lack of reporting is most frequent in a rural environment," says Lozano, adding that the Ministry of Health can not force people by law to report.

Mexico's Ministry of Health has tried to educate people in hospitals and other facilities in some parts of the country about the need to report every death. Lozano says that the non-reporters represent a small number of people and that, overall, figures are accurate.

Mexico's mortality data has, among other things, helped to highlight the gaping disparities between poor and

affluent in this middle-income country.

Although average life expectancy in Mexico is 75 years for men and 77 for women, there is a wide range of disparity between rich and poor. For adults the main causes of death tend to be chronic diseases, such as diabetes, heart disease and stroke. For children pneumonia is still a leading cause of death, while perinatal problems are a big killer of newborns.

"The problem ... is the gaps within the country," Lozano says. "The difference [in life expectancy] between the poorest and the richest states in Mexico is something like 11 years." ■

Theresa Braine, *Mexico City*

Counting the dead in China

In China, home to 1.3 billion people, or one-fifth of the world's population, complete registration and medical certification of every single death is, at present, logistically and financially unattainable. As part of a major revamp of its health information system, China is merging two systems for collecting mortality data to gain a more accurate picture of how many people die and why.

Cause-of-death data are playing an increasingly important role in the public health policy of China.

"When we have this kind of information, we can see how patterns have changed," says Dr Wu Fan, Director of the National Center for Chronic and Noncommunicable Disease Control and Prevention, China's Center for Disease Control and Prevention (CDC). Recently, CDC took part in a research

project led by the Center for Statistics of the Ministry of Health on the disease burden and long-term health problems in China; the results were dramatic.

"Now we know that infectious diseases are lower, and noncommunicable diseases are greater, and that in rural areas injuries are increasing. We can know which population has major problems and so we can target them, and we can know which diseases will have a long-term impact. This helps us to understand what our priorities should be."

Cause-of-death data have led to a better understanding of changing disease patterns in China, but public health officials are still forced to hazard a guess at disease patterns in the less-developed west, where mortality data are scant to non-existent.

China has two systems to count deaths: the Ministry of Health (MOH) vital registration system and

the disease surveillance point (DSP) system, which is monitored by the country's CDC.

In 2003, there was a growing concern that the DSP system was not reflecting the true situation across the whole country. "The problem with the DSP system is that currently it's not completely representative of China," says Dr Wu. "They [disease surveillance points] tend to be in developed areas and cities along the more prosperous east coast, and less in the rural areas in the less-developed west."

Furthermore, at that time the DSP system was being used only in

areas with a population range of 20 000 to 100 000, and nationwide covered just 1% of the population. "That was a very obvious weakness," Dr Wu says, adding that because of the small sample base, the numbers for rare diseases were not stable, and changed every year.

Since it was launched in 1989, the DSP system has reported on causes of death through a mix of verbal autopsy and medical certification. Many indicators were not reliable, and the

system needed to be readjusted.

Over the last two years, adjustments have been made to the DSP system. The number of sample sites has risen

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Yang Yankang

Two boys stand in front of their grandfather's coffin in Sanyuan county, Shaanxi Province in 1998. The boys are wearing gifts given to them by family members who have come to attend the funeral, a local custom. A hooded mourner is dressed in white, the colour of mourning in China. People in cities are usually cremated, but rural residents prefer to be buried.

slightly to 160 all over China from the initial 145. This makes the DSP system more representative because sites are selected on the basis of the census data to make them better reflect the entire population.

“We are now trying to make the system more representative of the whole of China and add more sites in the north and west, and especially in poor areas,” Dr Wu says. She says that China has extended the DSP coverage of the population to 6% of the nation. In addition, Dr Wu says that if government departments collaborated more closely, gathering such data would be easier.

The Chinese Government is planning to merge the DSP and vital registration systems — which are already complementary — to reduce running costs and increase efficiency; last year, unified guidelines were drafted to do this and software was created.

The two systems will continue to run for several more years before being merged, according to Wu Xiaoling, Director, Division of Statistics, Center for Statistics Information at the Ministry of Health. Ms Wu says that the delay is due to the need to train more doctors to certify deaths. The merger will also depend on when the DSP system is able to provide data that can be converted into usable statistics, Ms Wu says.

Ms Wu says that in a large country such as China, it was often difficult to gather statistics. “In western China there are not enough personnel, and infrastructure may be lacking,” says Ms Wu. “Or there may be snow in the winter, and it is difficult to get the information you need.”

Before 1950, the only causes of death reported were tuberculosis, measles, acute infectious diseases, “infant disease”, respiratory disease, heart disease, “urinary disease”, digestive disease, stroke and ill-defined causes and these data covered only Beijing and Nanjing. Cancer was not listed.

In 1957, death registration was expanded to other major cities, including Shanghai, Tianjin, Harbin and Wuhan, according to a study by Yang et al. published in *Population health metrics* (available at: <http://www.pophealthmetrics.com/content/3/1/3>). 1. China’s vital registration system started to record the fact and cause of death in 1987,

classifying by ICD-9 (International statistical classification of diseases and related health problems). In 2002, the vital registration system started reporting according to the ICD-10 rules. This system now covers 41 cities and 85 counties and roughly 8% of the national population.

There are many challenges to obtaining a more complete picture of the number of people who die and why in China. About 70% of people die at home, and this can make it difficult for a local doctor to determine the cause of each death and make an accurate report due to distances and unfamiliarity with each case. And there are not enough doctors who are adequately trained to do this. In southern China, especially in rural areas, access to hospitals is difficult and for cultural reasons people don’t always want to die in hospitals, preferring to stay at home.

There are two types of doctors in China: one is trained in a similar way to doctors in developed countries and the other — the village doctors — have basic education from a junior college. “We have to rely on them, or we could not do our work,” says Dr Wu referring to the village doctors, adding that the current system “is better than nothing.” But she says that these personnel need to be trained and retrained.

One challenge to gathering meaningful statistics via the DSP system is that the sites are included on a voluntary basis. That means communities volunteer to collect data on their populations and these communities tend to be in more affluent areas.

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Another problem is that when a person dies at home in rural areas, a village doctor visits the family and asks about the person’s symptoms before he or she passed away as part of a verbal autopsy and write their findings based on those symptoms. Formal death certification — the most reliable method for ascertaining cause of death — has been introduced in such areas, but the quality needs further improvement, Dr Wu says.

“Using these symptoms, we can later speculate on the cause of death,” says Dr Wu, referring to the findings of these verbal autopsy reports. The village doctor’s report is sent to the local Centers for Disease Control and Prevention, where it will be checked. If any problems arise, they will refer back to the village doctor for clarification.

One or two medical personnel then do the coding and enter the data into a computer for input into the national computer system. Local Centers report to the provincial and national Centers for Disease Control and Prevention once every three months, up from the previous once a year. “At every level, we have quality control measures,” says Dr Wu. ■

Paul Mooney, Beijing



Yang Yankang

A funeral procession winds its way through the snow-covered fields of Jingbian county, Shaanxi Province, carrying large funeral wreaths in 1998. As is the custom in China, family members carry portraits of the deceased at the head of the procession.