

Loretti said WHO had helped to establish a skeleton early warning system using cellphones for disease surveillance in Indonesia's Aceh province and that so far there had been no major outbreaks.

The tsunami disaster has underscored the importance of having sound pre-existing health and population information to prevent outbreaks of disease and food shortages, and to help disaster-hit regions get back on the road to recovery, Boerma said.

Mapping or compiling detailed geographic information about the population, health facilities and services and other key public health information is essential for this, he said.

A global effort is under way with the help of WHO's Health Mapper software to build these geographic information systems.

Sri Lanka is a good example of a country where post-tsunami reconstruction efforts are now benefiting from such information, Boerma said.

Furthermore, he said that if vital registration systems are also in place, it is much easier to count the dead, missing and displaced, and plan the response after disaster strikes. The Health Metrics Network is an initiative by WHO and its international partners to help countries establish such reliable information systems.

About 20 million people across the globe live in crisis conditions due to war, conflict or natural disaster while about two billion people are at risk of crisis conditions and face some threat to their health. Crises can be caused by:

- catastrophic events: natural disasters like floods, earthquakes, hurricanes and tsunamis that often affect several countries or regions, and man-made disasters, for example, toxic spills.
- complex and continuing emergencies: violent conflicts and wars that often trigger displacement of communities.
- gradual breakdown of a country's social institutions due to economic decline; for example, the impact of high levels of a fatal disease, such as HIV/AIDS in sub-Saharan Africa; or widespread arsenic poisoning in the Ganges delta.

Sri Lanka and the Maldives, which were also badly hit by the tsunami, have vital registration systems but reporting of births, deaths and causes of death is incomplete and delayed. Indonesia has no registration system at all, Boerma said.

"Most developing countries don't have good vital registration systems: you're not counted when you are born and you're not counted when you die," Boerma told the *Bulletin*. ■

Fiona Fleck, *Geneva*

WHO in the tsunami crisis

- On **26 December**, the fourth most powerful earthquake ever recorded occurred under the seabed off the coast of Indonesia. The magnitude, 9.0 on the Richter scale, triggered a series of giant waves that wrought destruction in 12 countries from south-east Asia to the Horn of Africa, killed more than 150 000 people and left at least half a million people injured and as many as five million homeless with little or no clean water, food or health services.
- Within days, a team from WHO's Health Action in Crises department started collaborating with WHO's Regional Office for South-East Asia in New Delhi, India, to collate information on the death toll and injured, coordinate relief work and monitor any disease outbreaks.
- WHO started sending water purification tablets and health emergency kits with basic medical supplies for more than two million people, surgical equipment for more than 10 000 operations and emergency treatment of diarrhoeal diseases for more than 15 000 people.
- On **30 December**, WHO warned that between three and five million people in the tsunami-hit region were unable to access basic requirements to stay alive: clean water, adequate shelter, food, sanitation and health care.
- On **4 January**, WHO Director-General Dr LEE Jong-wook visited Jakarta, Indonesia, and the following day flew to the province of Aceh, large swathes of which were devastated by the combined impact of the earthquake and waves. He joined WHO Regional Director for South-East Asia, Dr Samlee Plianbangchang there to help assess the damage, evaluate relief efforts and see what further help WHO could provide.
- On **5 January**, WHO said much of the aid it had sent was reaching disaster-hit locations but warned that access to safe drinking-water remained inadequate, particularly in the Indonesian province of Aceh and on the eastern coast of Sri Lanka.
- Lee visited Sri Lanka from **6 to 8 January** where he met Health Minister Nirmal Siripala de Silva and WHO Representative in Sri Lanka Dr Kan Tun. Lee witnessed the devastation wrought by the tsunami in the coastal regions of the island, and praised the efforts of the people there to rebuild their shattered lives.
- On **6 January**, WHO appealed to donors for US\$ 66 million to implement its public health strategy in the disaster-hit region. WHO started working with the Ministry of Health and other agencies in Sri Lanka to provide supplies to reduce the risk of disease outbreaks and to help rebuild vital health infrastructure, such as hospitals, clinics, pharmacies and medical stores that were washed away or badly damaged when the waves struck. A World Bank/WHO team started to assess the damage wrought by the tsunami in Sri Lanka and the resources needed to rebuild communities.
- On **11 January**, donor countries pledged US\$ 717 million in immediate cash in response to a United Nations appeal for nearly US\$ 1 billion to help countries devastated by the tsunami to provide relief, food, shelter and medicines, for their people and help with reconstruction.
- On **14 January**, a joint Indonesia–United Nations team of 20 started a series of daily missions to isolated areas on the coast of Aceh to do rapid health assessments of survivors to gauge what kind of humanitarian relief is needed. In teams of four they flew by helicopter from their base on the Abraham Lincoln, a U.S. aircraft carrier anchored off the Indonesian coast, to see whether any medicines or vaccines were needed and whether survivors were injured, had enough food, and had access to safe water and sanitation.

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