Dear Readers,

The poet Maya Angelou once wrote, "Nature has no mercy at all." And indeed, our Region is testimony to that. We have faced two terrible cyclones within a short span of six months: Cyclone Sidr in Bangladesh in November 2007 and Cyclone Nargis in Myanmar in May 2008. When I visited Myanmar in May this year I saw first-hand the devastating aftermath of Cyclone Nargis and was determined that we should do all we can to tip that fragile balance between life and death in our favour.

Our priority in WHO is always to work in the best possible manner to save the lives of the people. We have ample experience - South-East Asia, particularly the Bay of Bengal region, is a "cyclone hotspot", which has suffered some of the world's worst tropical cyclones.

We have learnt from our experiences that there are some common needs after such terrible events: the need for clean drinking water, for example, is crucial. In both Cyclone Sidr and in Cyclone Nargis, water from the sea rushed inland, contaminating sources of clean water for the community. In such circumstances, water-borne diseases such as diarrhoea are likely to occur. A large number of people get injured. They are at greater risk of diseases due to being huddled together closely in relief camps.

Saving lives, therefore, means anticipating and effectively meeting all these needs. It means trying to ensure that medical care is immediately available to those in need. It means a responsive health system. It means being able to make essential medicines and equipment available. It means providing clean water to as many people as possible - to drink, cook, clean and bathe. It means managing resources, both material and human, so that everything we can offer is utilized in the most efficient manner. It also means helping people to help themselves, by building greater awareness of little acts of personal health and hygiene, such as washing their hands or boiling water for drinking, which can go a long way towards protecting their health and possibly their lives.
In all Member countries, WHO has built strong working relationships with the Ministry of Health. In both affected countries, Myanmar and Bangladesh, Ministry of Health medical teams gave support in the affected areas, and WHO provided all possible support.

Realizing the importance of funding in the initial phase of the disaster, WHO and the Member countries of the South-East Asia Region, had established the South-East Asia Regional Health Emergency Fund (SEARHEF), which can provide funds up to US$ 350 000. This fund was launched on 1 January 2008. The first emergency where it proved its utility was Nargis: funds were released within six hours of receiving a request from the WHO Myanmar office, and were used to buy essential medicines and items such as antibiotics, oral rehydration salts (ORS), surgical masks, gauze and chlorine tablets for water purification.

The response to the cyclones has also revealed the importance of working together. It’s a lesson we learnt from our experience with the Tsunami of 2004. We are now seeing the benefits of the “Health Cluster” approach. International NGOs working in the health field coordinated their work according to their resources and strengths in Cyclone Nargis. The result was no duplication of work, and more effective delivery of help to people in need.

While focusing on the recent cyclones in our Region, this issue of FOCUS tells the story of how human determination can meet the challenge of nature. I hope we can all learn from their courage, and build on their work for the future.

Dr Poonam Khetrapal Singh
Deputy Regional Director
For centuries, the rich fertile soil of the Irrawady river delta had symbolized life and hope for Myanmar. In a single day on 2-3 May this year, it was transformed into a zone of death and destruction by Cyclone Nargis. The cyclone arrived in full fury on a pitch dark night, the wind shrieking and howling at 160 km/hour, sheets of rain battering the earth relentlessly for 15 hours. It swept across the Ayeyarwady and Yangon divisions and parts of other divisions. Giant trees fell like matchsticks, concrete houses had roofs flying away like kites. When the cyclone finally blew away, it left behind a vast landscape of rotting carcasses, destroyed houses and ruined livelihoods. By June, the official estimate was 84,537 dead with 53,836 missing and about 20,000 injured - one of the worst disasters the country has ever faced.

For stunned survivors streaming into camps or monasteries for shelter, or hanging on to the remnants of their homes in the villages, there was further danger - of injuries that needed treatment, the threat of respiratory diseases and gastroenteritic diseases that frequently occur after such events. Three-fourths of hospitals in the area suffered some form of damage, affecting health services initially. The greatest need, however, was for clean water. The storm had caused the sea to surge into the delta, so
the main source of water for most people - the village pond - had become contaminated with sea water, or with carcasses of animals that had died.

The Ministry of Health mobilized medical teams from Yangon and other parts of the country, and sent assessment teams immediately. Following its mandate WHO assisted the Ministry of Health and 17 national staff, the Regional Surveillance Officers, were sent to the affected areas on deputation from the government.

Along with clean water, there was an urgent need for basic medicines and equipment to treat the sick and injured, and prepare for other potential health problems. For example, malaria and dengue are common in Myanmar, and mosquitoes breeding in the stagnant pools of water were expected to make the situation worse for a large vulnerable population.

WHO Myanmar’s priority was saving lives. It could quickly procure and stock hundreds of tons of medicines such as antibiotics, emergency medical kits, chlorine tablets and bleaching powder to clean the water, fogging machines and other equipment, thanks to the rapid release of funds up to $350 000 from the South-East Asia Regional Health Emergency Fund (SEARHEF). This fund, launched on 1 January 2008, was established by the 11 SEARO Member countries to allow financial support to countries within 24 hours of an emergency. Cyclone Nargis was the first emergency it supported. WHO’s experience in emergencies - the most recent being Cyclone Sidr in Bangladesh in November 2007 - was used, through regular videoconferences between the country and Regional offices and headquarters. International staff with the required skills went to support the efforts in Myanmar as soon as they were allowed to.

The health sector activities were coordinated through the Health Cluster, led by WHO. This ensured that all available resources were used in the most efficient manner without duplication. WHO also worked with partners to set up an Early Warning, Alert and Response (EWARS) system of disease surveillance, which tracks and analyses all reports and rumours of disease cases, in order to anticipate and tackle diseases before they break out into epidemics.

As the emergency moved to the recovery phase, WHO opened sub-offices in the delta to meet the needs at the local level. Revitalizing the health systems is now the priority, so that people have a strong health system in the future. The Organization is working closely with the local people. The cyclone may have devastated their lives, but it could not break their spirit.
When did you learn about the extent of the disaster, and what was your reaction?

My office informed me on Sunday 4th May that a cyclone had hit Myanmar. By that time, the cyclone was breaking news on TV, so the information was supplemented by what I saw on TV. By Monday, we got some more information from our office in Myanmar. We realized it would be a serious situation. However, as is usual in such disasters, we learnt of the extent of the disaster only later.

What were the main issues, priorities and challenges for WHO?

Our mandate and goal is to save lives. Our priorities were the public health priorities -- although there was no information we knew from past experience that the key issues would be injuries, clean water, sanitation, safe food and nutrition, communicable disease outbreaks, and later, mental health.

Our national staff members were sent to the field to assist. But in the initial days, information from the field was limited, so we had to chart out the health cluster priorities based on what information we had.

How do you think our experiences from previous disasters helped in our response to this one?

Shortly before, in November 2007, we faced a severe cyclone, Sidr, in Bangladesh. Lessons from that experience guided our staff in fulfilling their responsibilities effectively in cyclone Nargis. Most of our staff had the experience so they knew exactly what to do. A control room was set up immediately in the Regional Office and the Country Office. We set up a Task Force of key and experienced people from different departments to coordinate the response. The Task Force had daily video conferences with all three levels of the organization - country level, Regional level and headquarters level. So WHO’s global skills and resources were available to assist in the emergency. Internal communications flow was very smooth. Recruitment for the emergency was faster, the logistics of supplies was faster.

At the country level, coordination of all health-related agencies, through the cluster approach, helped. The EWAr system for surveillance was successfully set up. We had guidelines ready for distribution.

What is your future vision and course, on WHO response for Nargis, and for other disasters, and how is that work evolving?

Restoring the destroyed health system is now our priority as we move to the recovery phase. Our policy remains, “Build Back Better.” This includes more training support for health personnel in the affected areas.

In the recovery process, we will also attempt to ensure that the systems meet our 12 benchmarks for emergency preparedness, which were established in consultation with the Member countries in 2006, in order to ensure that all countries in our Region achieve a reasonable level of preparedness.
Cyclone Nargis

Interview with Dr Adik Wibowo, WHO Representative to Myanmar

Q When and how did you realize the extent of the disaster?

Well, I had three clues.

First, before Nargis happened, we got information from the internet that the cyclone could pass through several places in Myanmar including Yangon and the delta area. The delta area was also hit by the tsunami in 2004. It is also in a flood prone area. So it is a vulnerable region.

My second clue came during the cyclone. I was in Yangon and experienced first had the entire 15 hours with the monstrous velocity of the wind. Even part of the roof of my house flew off, it was frightening! I kept thinking it must be worse in the delta.

The third clue was after the cyclone when we witnessed how badly Yangon had been hit. Regular briefings were given by three Ministers - the Ministers of Planning, Health and Social Welfare. All of them were involved in the National Disaster Management Committee, which was established on Day 2 after Nargis. They gave the figures for death and damage, and we concluded that the disaster was gigantic.

Q What were the initial priorities for WHO? What was WHO’s role in the disaster? How did we respond?

Our initial priority was saving lives and preventing deaths. In fact out motto was ‘working together to protect health and save lives.’ In the first few days, it didn’t matter how we achieved that.

Within only a few hours of Nargis, we knew that the effect was massive in terms of damage and lives lost. Since Yangon was also hit, my first priority was to know of the safety of our staff. We compiled all the information about the country staff and five field staff (two in the Ayeyarwady area: Regional Surveillance Officer, Driver and three in Yangon area: Regional Surveillance Officer, Administrative Assistant, Driver). We learnt a few days later that our field staff were safe.
In Yangon, our staff and their families were physically safe but many had damage to their homes. The next step for me was to think of how we can save the lives of the people. I immediately contacted the Ministry of Health to see how we can work together. HE Minister of Health was very supportive. We were allowed to send our national staff directly to the affected areas. Our first aim was to help the injured, the trauma cases, so we sent emergency medical kits with our staff. Thanks to donations which were channeled through we received emergency medical kits which each could cater to 10,000 people for 3 months. We also bought whatever we could locally. Thanks to SEARO for the SEAREF (South East Asia relief Emergency Fund) funds which enables us to carry out immediate relief response.

There was so much work, we were under great pressure. And I had a major surgery only two weeks before the Nargis!

**WHO's Role**

WHO's role in responding to this disaster is the same as its role in any other functions. We work under our mandate, which says that WHO in the country has to support the Ministry of Health to bring better health to the people. In disasters, I think we have to stick to that mandate in all aspects: disaster preparedness, response in relief, recovery, rehabilitation, resettlement and community preparedness.

**What were the main challenges? Was there anything unique about this cyclone in your opinion?**

In most countries, after a disaster, all possible resources and international people immediately fly in to the country to support the relief response. But here there were restrictions. The only way was to act with whatever we have by assigning additional responsibilities to the existing staff. Then slowly we got additional staff from SEARO and from HQs.

The second challenge was to set up the cluster approach. To us in Myanmar it was a totally new approach and none of us had had any training in it. So it was a ‘trial and error’ experience. Moreover WHO was made leader of the health cluster. So our team got together to see what we could do. We came up with the strategy that WHO would, in practice, be the facilitator. One INGO was to be co-chair, and one member of the donor organizations would help with taking the notes for the record. Since then there have been no complaints. There have been 20 meetings and it is still stable with high numbers of participants, about 40-70 people regularly. It makes me happy that the government always sends high-level officials to attend.

The third challenge was access to information. Take the case of disease surveillance for example. We developed the disease surveillance system for the affected areas and gathered information from health cluster partners. But we need the government to confirm this, which we didn't get in the first few weeks. We advocate the MOH on the health cluster and the need for a single early warning system. Now after 12 weeks, we have come up with a single surveillance report which is accepted by the MOH.

The fourth challenge was to maintain good relations in order to work in a cooperative manner with everyone. The cluster approach seems to work—though we can still improve—and having different partners (MOH, INGOs, UN agencies), coordination and cooperation is indeed a challenge.
**What did we do well and where could we improve?**

I think we did some things very well:

1. **constant communication to get advice, between the country office, Regional Office and headquarters.** As a result we came up with good decisions.

2. **maintaining a good relationship with the government (att: MOH).** That helped us to get access to the fields where the goods from WHO went to the beneficiaries, to maintain open and honest discussion with our MOH partners and to carry out activities in support to the MOH activities.

3. **we succeeded in establishing the EWAR (Early Warning, Alert and Response) system for disease surveillance for the Nargis affected areas.**

4. **we got the blessings of the government for opening three WHO field in the affected areas, which each is manned by one national staff, one and administrative assistant.** These are our ‘extended hands.’

4. **we also worked well in maintaining collaboration with the health cluster partners (the UN agencies, INGOs, MOH. Some partners approached us for training, for guidelines and for support in medicines.** The trust is there. There is more openness now than ever before.

**How do you see the future?**

We will do what is needed with time. We have to thank PONJA (Post-Nargis Joint Assessment) and the effectiveness of ASEAN. Due to PONJA findings, we have more information and detailed knowledge on what is needed.

However we still need more elaborate data, and may conduct more specific assessments. For example, we were part of a team that traced specific TB cases in the delta area. We will be looking deeper into the more specific aspects of health. The assessment on psycho social and mental health in 6 townships in the delta area was just finished.

Now we are into recovery and rehabilitation, and the victims have gone back to their villages or to new settlements. So we have to focus on field operations. We have to strengthen the township level downward now.

We will also look at a list of potential issues that may come up with time at different places. In the affected villages today, clean water is the main demand. The village pond was the main reservoir of water. The storm surge it got contaminated with salt water and sometimes with carcasses of animals. Therefore, the UN agencies and INGOS will help the government in cleaning and desalinating ponds to get clean water supply. We will also help provide better water supply to health centres.

Revitalizing health cares services is on the way, where WHO is working on provision of Basic Health Care kits for the rural and sub rural health centers.

In the process of recovery and rehabilitation I see opportunities - to work to that in coordinative and collaborative manner, and all the effort hopefully will lead to improving the overall health system.
The most comprehensive assessment of the impact of the cyclone began - the Post-Nargis Joint Assessment (PoNJA) - about a month after cyclone Nargis struck. This assessment was unique in two ways. The first is in its sheer scale: more than 200 people from various organizations surveyed more than 6000 villages in the 25 most affected districts. It involved 24 helicopter flights, more than 200 boat and car trips, and more than 30 computers. The survey covered every aspect of the disaster, covering the wide gamut from shelter to health. The second significant achievement was the magnitude of coordination involved: PoNJA was led jointly by the “Tripartite Core Group” consisting of the Government of Myanmar, ASEAN and the United Nations. Consequently it gave a clear picture of the situation on the ground, providing the basis for a more effective response.

Some key health findings from PoNJA include:

- Two-thirds of health facilities suffered some damage; one out of five was totally destroyed.
- Before the cyclone 80% of the people lived within an hours travel to a health facility. Disrupted supply and destroyed facilities have decreased access, especially to preventive health services.
- 60% of people report that access to clean water is inadequate and are depending on rainwater because ponds, the traditional sources of water in villages, have become contaminated with sea-water following the cyclone.
- Poor sanitation due to the destruction unleashed by the cyclone was a major problem. The proportion of people with latrines decreased from 77% to 60% after the cyclone while those without access to any kind of sanitary waste disposal doubled from 8% to 16%.
- The most common current health problems reported are diarrhoea (34%), fever (37%), cold (39%) and respiratory problems (22%). Trauma and injury accounted for 8% of complaints.
- Women were much more likely than men to have died in the cyclone and its aftermath; 3% of adult men and 6% of adult women died in the affected areas surveyed.
- Following so much destruction and death, the most important health need is psychological support: 23% of people reported psychological problems since the cyclone while only 11% of them reported receiving any care.
On receiving the news that Cyclone Nargis had hit Myanmar, WHO, at all three levels – national, Regional and Global – worked day and night with one primary objective: to utilize its experience and resources to save as many lives as possible. This chronology of the day-to-day response provides a glimpse of the Organization’s response in the first three weeks after the disaster.

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<td>28 April (2008)</td>
<td>Cyclone Nargis formation observed in Bay of Bengal; predicted to go towards West Bengal and Orissa states of India. SEARO Emergency and Humanitarian Action (EHA) units sends message to WHO India for alert and preparedness.</td>
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<td>29 April</td>
<td>Cyclone Nargis intensifies and is now predicted to head for Bangladesh. SEARO EHA sends communications to WHO Bangladesh Country Office.</td>
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<td>30 April</td>
<td>Cyclone Nargis, now classified as Category 2, changes course and heads for Myanmar. SEARO EHA sends alert emails to WHO Myanmar Country Office.</td>
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<td>1 May</td>
<td>The Myanmar UN Country Team (UNCT) calls for a half day due to the cyclone’s arrival; there were heavy rains in Yangon.</td>
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<td>2-3 May</td>
<td>Cyclone Nargis hits land at the Ayeyarwady Delta and cuts through to Yangon wreaking havoc in its path.</td>
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<td>4 May</td>
<td>All communication lines in Yangon are down. SEARO EHA and Field Security Officer (FSO) as well as other colleagues try to get information from Myanmar.</td>
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<td>5 May</td>
<td>SEARO EHA convenes EHA Task Force for the Cyclone comprising of various technical units. No information at ground level but the group plans for next steps.</td>
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<td>First contact with WHO Representative (WR) to Myanmar made in the evening. Inputs received:</td>
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<td>• All staff safe; some of their homes damaged.</td>
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<td>• No electricity and communications in Yangon; city is badly damaged.</td>
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<td>• First UNCT meeting convened and the cluster approach will be activated.</td>
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<td>National health staff have been redeployed to the affected areas to support the work of health facilities in the affected townships.</td>
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<td>6 May</td>
<td>SEARO Deputy Regional Director (DRD) holds videoconference with EHA Task Force Members and WR Myanmar and her team. A separate videoconference was conducted with WHO Director-General, and the Assistant Director General of Health Action in Crises (HAC) at Headquarters in Geneva, EHA Task Force with DRD in SEARO, and WR Myanmar with Nargis Task Force to discuss response modalities.</td>
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| 7 May  | Information becomes available and first WHO situation report released. Highlights:  
|        | • From state media: 22 464 deaths and 41 054 missing  
|        | • Total number of townships affected: 47  
|        | • Delta Division: 7 townships (badly affected)  
|        | • Yangon area: 40 townships  
|        | • Scarcity of drinking water, lack of electricity and petrol is aggravating the situation.  
|        | • Extent of damage and the number of injured are still being assessed.  
|        | • Risk to water and vector borne diseases are being monitored.  
|        | SEARO begins to coordinate daily videoconferences between WHO Myanmar, SEARO and HAC at 15:30 hours Delhi time.                                                                                   |
| 8 May  | Health Cluster activated in Myanmar and Bangkok.  
|        | WHO mobilized initial stocks of 10 interagency emergency health kits, 100 body bags, 35 000 chlorine tablets and five tents.  
|        | HAC-HQ staff with a standing visa to Myanmar deployed to WHO MMR as Health Cluster Coordinator.                                                                                              |
| 9 May  | Agencies are relying heavily on national workers to deliver support.  
|        | Movement of international aid workers within and to Myanmar is still limited.  
|        | WR Myanmar and Ministry of Health Myanmar hold daily meetings to coordinate health response.                                                                                                  |
|        | A Joint UN Flash Appeal for US$108 million will be launched regionally in a few days in Bangkok. WHO has requested US$ 5 million within this initial appeal to cover projected needs for the next six months. This will be revised within 30 days. |
|        | Joint CERF proposals developed.  
|        | Ten interagency emergency health kits including malaria supplies arrive in Myanmar.  
|        | WHO mobilizes teams of regional surveillance officers to the district to assess the health situation in the area.                                                                                  |
| 10 May | The Government of Myanmar places the toll at 23 325 with another 37 019 missing.  
|        | With the government’s agreement, international supplies enter Yangon. Six World Food Programme flights land in Yangon. The cargo includes eight inter agency emergency health kits from WHO. |
| 11 May | The CERF has allocated US$ 4 million for health cluster activities in Myanmar.  
<p>|        | A UN Joint Flash Appeal for US$ 187 million was launched on 10 May 2008. The Government of Myanmar has assigned geographical areas to different ministries (twelve townships per ministry) to monitor funds received under the Appeal. |
|        | The Health Cluster comprises 22 INGOs, UN agencies and International Organization for Migration (IOM). The importance of collaboration among clusters was highlighted in the recent meeting of Cluster Leads. Regular meetings are already being held between the Shelter, Water Sanitation and Hygiene (WASH), Nutrition and other clusters. |
|        | Seven WHO Regional Surveillance Officers (RSOs) reach the affected areas where they assess the damage and assist in coordinating relief efforts. WHO arranges for the redeployment of the remaining 10 RSOs who are currently working in the non-affected areas. |</p>
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<td>Two of the eight international emergency health kits that arrived on 10 May have been forwarded to Labutta and Bogale. The supply chain is underway and supplies arrive on time. WHO purchases additional supplies locally and internationally, including a fogging machine and bed nets, in preparation for possible malaria outbreaks.</td>
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<td>12 May</td>
<td>WHO and other agencies prepare for potential outbreaks by pre-positioning drugs and rapid test kits, and distributing insecticide-treated bed-nets. Health partners on the ground use the WHO Surveillance Form and share information with the WHO Myanmar Office on a daily basis.</td>
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<td>13 May</td>
<td>Aid supplies reach Myanmar more easily. Many NGOs including Medecins du Monde have received supplies in the last 48 hours. WHO has received and distributed additional interagency emergency health kits and diarrhoeal disease kits. The UN launches its global Flash Appeal. The Appeal includes health cluster projects for a total of US$ 15 million. The United Nations Central Emergency Response Fund (CERF) has earmarked US$ 4 million for health cluster operations. WHO and its partners have finalized the grant proposal to be submitted to the CERF today. Emergency health efforts are continuing in the affected areas. Seventeen WHO Regional Surveillance Officers have been deployed to the affected areas to support the Ministry of Health in assessing needs and implementing relief activities. UNFPA and other partners are delivering Reproductive Health kits and Clean Delivery kits to pregnant women. Fogging machines and more bleaching powder have been procured and dispatched to the affected areas to prevent possible outbreaks of malaria and other water and vector borne diseases. Funding support provided by the UK Department for International Development (DFID) and the Italian government has enabled WHO to intensify health sector interventions in the affected areas. The joint health cluster proposal for the Central Emergency Response Fund was submitted on 12 May 2008, in Myanmar amounting to US$ 4 million for health, out of which US$250 000 has been earmarked for health sector activities by various health partners under the cluster leadership of WHO.</td>
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<td>14 May</td>
<td>According to information from the Myanmar state media, the death toll from Cyclone Nargis is now 77 738 with 19 359 injured. Another 55 917 people are still reported missing. Five out of six station hospitals in Ngaputaw township are reported to have been destroyed. The township hospital is however functional. Referral cases are being sent to Pathein township’s hospital. There are adequate stocks in the country to deal with potential outbreaks of severe diarrhoea.</td>
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<td>16 May</td>
<td>An additional 125 fogging machines have arrived in Myanmar and will be used in Yangon division. Supplies of viper anti-venom made available by WHO in central stores for distribution. More than 20 NGOs are currently participating in the health cluster in Myanmar. Accessibility to a number of peripherally located villages is still difficult, however the efforts of the health agencies have been to reach them at the earliest.</td>
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<td>Health cluster coordination meetings are now being held at the township level, in both Labutta and Bogale. The longstanding presence of international NGOs, such as Merlin, in the affected areas allows close collaboration between the health cluster and local and national health officials.</td>
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<td>18 May</td>
<td>The latest report from Myanmar state media inform that the numbers of those dead or missing after Cyclone Nargis have exceeded 132 000. The Health Cluster is supporting, with medical supplies, 200 extended first-aid posts run by doctors from the Myanmar Ministry of Health and Myanmar Red Cross volunteers in the cyclone-affected areas. The Health Cluster partners procured more than 350 metric tonnes of medical supplies and equipment for the cyclone-affected regions of Myanmar to this date. These include three million water purification sachets, 90 000 water containers, more than 50 000 insecticide-treated mosquito nets, shelter equipment, emergency health kits and essential medicines requested by the national and local health authorities. The health partners (eg WHO, UNICEF) are supplying 80 basic health units to the health centres in rural areas. This is in addition to the basic malaria treatment module which is also being supplied. The Myanmar health authorities are striving to provide daily reports on disease cases from the affected townships. These are being shared by the Divisional Health Director’s office with the Central Epidemiological Unit (CEU). UNAIDS reports that in spite of the cyclone, all anti-retroviral therapy (ART) services are functioning and providing the necessary services to the HIV-positive community in the affected areas. Most service points delivering ART are taking special measures to track and assess patients’ needs and drug supplies.</td>
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| 20 May | WHO has sent seven additional interagency emergency health kits. They are being flown from Dubai to Yangon. UNICEF distributed 3000 family kits and essential drugs to treat 2500 children with common diseases, in nine cyclone-affected townships in Yangon. UNICEF is preparing to distribute additional medicines and ORS, Zinc, lactate Ringer and Doxycycline, sufficient to treat 100 000 diarrhoea cases including 15 000 severe cases. An INGO rapid assessment on Water and Sanitation identified the following needs:  
- The water supply in Bogale is mainly from community ponds and open wells containing untreated water.  
- Salt water intrusion has affected community wells, compromising the quality of water.  
- There is a need for water storage containers, basic hygiene material such as soap and cooking sets. An INGO reports psychological distress among the affected communities as survivors could not find the bodies of their loved ones and therefore conduct the usual cultural practices for burial and mourning. Young children, particularly those who have lost key caregivers, have been traumatized. Provision of safe water and psychosocial interventions are increasing priorities. The Health Cluster is advancing with a joint draft plan that encompasses the relief and recovery phase as well as readiness for major health contingencies. |
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<td>WHO continues to advocate with the donors to mobilize stronger support for the health sector. Till 18 May 2008, US$ 6.2 million has been mobilized. The Flash Appeal will be revised and readjusted after assessments. The Acting Regional Advisor, EHA SEARO, deployed to Myanmar to support country operations and attend the Pledging Conference.</td>
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<td>23 May</td>
<td>Five C-130 planes from the United States of America (USA) carrying blankets, nylon ropes, plastic sheets, water buckets, nails, water bottles, foodstuff weighing over 42 tons arrived at Yangon International Airport. Thai Medical team arrive in Yangon and are immediately deployed to Labutta to provide healthcare services. Relief supplies are being dispatched to the affected people in Ayeyarwady Division by helicopter, by ship and by road. Vehicles loaded with relief supplies also leave Yangon for Bogale, Labutta, Pyapon, Ngaputaw and Hainggyikyun Townships. No disease outbreaks are reported. The international media reports that Myanmar agrees to allow all international aid workers into the country for relief work, following discussions between the UN Secretary-General and the Myanmar government. WHO and seven health partners establish a working group to focus on disease surveillance for early warning and response to outbreaks. To support this group, WHO Myanmar team is strengthened with an epidemiologist. Health partners have agreed that disease surveillance will be based on both formal systems and informal methods of rumour verification for an Early Warning system. HQ Logistician and CSR SEARO Sub-unit Bangkok epidemiologist also deployed to Myanmar.</td>
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<td>24 May</td>
<td>150 000 people are reported to be in 120 formal and informal and temporary shelters. More than 2000 medical experts from the Government and NGOs, plus 39 000 Red Cross and private health workers have been deployed in the affected area since the beginning of the emergency. ASEAN is setting in place a coordination structure for their support to Myanmar, which could involve a Task Force comprising of the Government of Myanmar, ASEAN and the UN.</td>
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<tr>
<td>25 May</td>
<td>UN Secretary General, representatives from UN agencies, international NGOs and major donors attend the ASEAN-UN International Pledging Conference in Yangon. The conference discussed the Myanmar Government’s requirements for rebuilding, which is estimated to cost US$ 11 billion. ASEAN is presented the Tripartite Core Group (TCG) as the framework for coordination. The Tripartite Core Group will be chaired by the Government of Myanmar and have representatives from the Government, ASEAN and the UN. This group will deal with the receipt, movement, delivery and monitoring of international assistance. More than US$50 million has been pledged at the International Conference held on 25 May 2008. Several pledges of support of Medical Teams and in-kind donations were also pledged by the various countries. A joint assessment will be conducted by all clusters, ASEAN, and the Myanmar Government by the first week of June.</td>
</tr>
<tr>
<td>June-July</td>
<td>• Post-Nargis Joint Assessment conducted results released. • UN Consolidated Appeals Process (CAP) concluded. • WHO field offices established.</td>
</tr>
</tbody>
</table>
Notes from the Field

WHO staff working on the ground in Myanmar share their personal experiences of Cyclone Nargis

Margareta Skold
Public Health Administrator

We were warned about the cyclone on TV several days before it happened but didn’t really know how seriously to take those warnings, as we were not sure whether the cyclone would hit Yangon or not. At that point we were thinking of Yangon, and the delta was not on our minds. Initially I did not take it too seriously. Having never experienced a cyclone, I didn’t know what to expect and I suppose I thought we were protected by being in Yangon, a big city, inside our brick buildings. As a result, I didn’t actually stock up on food or candles and other necessities.

In the afternoon on Friday 2 May, there was an emergency meeting of the UN Country Team and we were asked to leave the office early. That was when I realized that this could be a potentially serious situation. Initially I did not take it too seriously. Having never experienced a cyclone, I didn’t know what to expect and I suppose I thought we were protected by being in Yangon, a big city, inside our brick buildings. As a result, I didn’t actually stock up on food or candles and other necessities.

In the middle of the night I was woken up by the sound of windows banging loudly all over the house. The electricity was disconnected and it was pitch dark. Luckily I had a torch. I could not find any tape to tie the windows with so I tied them with gift-wrapping string. I live in an old house and the windows would not shut completely. Rainwater was dripping in many places inside the house. I kept moving buckets around to collect the water and soon concluded that it was a losing battle; I simply did not have enough buckets and the dripping intensified. I moved what furniture I could to a dry spot and covered them with plastic sheets.

It took time for the storm calm down the next morning. I didn’t dare go out straightaway as gusty winds were still blowing. Large old trees had been uprooted and were strewn across my garden, and I couldn’t even get to my gate. My gardener tried to clear the path by chopping these gigantic trees and branches with a machete. It took some time. Eventually we were...
able to climb over the fallen trees and got to the gate, and we felt we could now at least walk out of the house. Little did we realize that the entire street was blocked with fallen trees. Driving out was impossible.

There was no telephone or mobile connection, no way to reach out to anybody. I decided to focus on getting food for ourselves and for my staff who could not get home to their families since no buses were running. We made our way to the local market about three kilometers away. It was of course closed but we did manage to pick up some eggs, rice and a few tomatoes eventually from a makeshift market that had sprung up at the site. It was strange to see that even busiest roads had no cars on them that day. The landscape of Yangon had completely changed and I did not even recognize roads that I take every day to go to work. Everyone was walking like us, climbing over branches and helping each other—it created a feeling of solidarity.

Once we had the food issue sorted out I tried to contact the WHO Representative in the country. I wanted to get to the office but couldn’t.

At that point, I wondered, if it’s like this in Yangon what would other places be like? We’d seen on the Internet what path the cyclone might take. The delta area was totally unknown to me at that time, but having been in northern Sri Lanka after the tsunami of 2004 I knew how devastating it can be for local communities. It was a frightening thought, and one that made me anxious to find out the extent of the damage from the cyclone and to see how we could assist the people.

I finally managed to reach the office. On hearing that the cyclone had officially been classified as a "disaster" we started worrying about our staff and started contacting every one of them. We also tried contacting the UN Country Office and SEARO. With no email and no electricity in Yangon communication was very difficult. Fortunately the WHO office was in a hotel that had a generator.

Even in the first week people were talking about at least 10 000 people being killed; so it gave us an idea of the scale of the disaster. Soon UN agencies and NGOs with bases in the delta area started giving us a picture of the extent of the emergency and we realized that it was much more serious than we could ever have imagined. The Ministry of Health responded quickly, sending high level assessment teams immediately after the event. We supported their requests, which initially focused on essentials such as water, food and medicines and especially trauma kits as there were many trauma cases.

After the confusion of the first few days we managed to set up a structure in the office, including a core team for the emergency and a functional operations room, even though we still did not have access to the Internet or email. We purchased some of the medicines locally with funds provided by SEARHEF, and started sending our cars to deliver them.

It took a little time to coordinate with other UN agencies and NGOs. After a meeting of the UN Inter-agency Standing Committee, the focus shifted to funding and a cluster approach. We started having
health cluster meetings straight away. There were many NGOs but most were confused about the extent of the damage. We began by trying to map who was working in which areas prior to the cyclone and who could do what in order to have an idea of what resources (financial and technical) were available to NGOs and how best to use them. Then the logistics cluster began to manage the delivery of supplies. Access was a problem and it did not take long to realize that we had to take the river route as many roads and bridges had been destroyed.

Internationals were not allowed to go to the delta in the initial days, and I first went to the field in the second week of June. The overarching impression that remains in my mind is that of inaccessibility. We didn’t even attempt to reach the outlying villages but could manage only those around towns such as Mawlamyinegyun and Ngapudaw. Even those took around four hours to reach, the journey being made partly by car and then by boat in pouring rain.

The villages tend to be rows of houses along the river, with each house appearing to have direct access to the river. Everyone we met had a story of suffering to tell. They spoke about how dark it was that night, so dark that they could not see anything, only hear the sounds of water and the terrified cries of other people and children in the village who were clinging onto the trees for life, battered constantly by the rain and the wind. One villager told us that the worse part of the experience was not being able to help each other because they could not see or reach each other. Everyone was on their own. We saw one brick health centre which had been completely flattened. A flag, made from a curtain in the health centre, had been placed in honour of the midwife who had died. In the same village, the three pillars of the village community who held the moral edifice of—the health worker, school head-teacher and the monk—died, leaving villagers feeling orphaned.

In another village a woman told us that she had lost 20 members of her family. She was alone and felt completely drained of strength. She did not need to say anything more—the hegubrious look in her eyes told her story. That look stayed with me, reminding me constantly of my mission.

I saw so much suffering but was also impressed by the dissemination of the people and how quickly they started rebuilding their lives. Many bamboo houses have been rebuilt. The resilience of the people is impressive and inspiring.
Establishing Disease Surveillance

Nihal Singh
Medical Officer (EPI)

When I got back to Yangon after a long conference on 1 May I was looking forward to the weekend. We knew, of course, that a cyclone might hit Myanmar—the radio and TV had warned us for many days. But we thought it would come and go, I don’t think any of us realized just how severely it would affect us all.

On the night of 2 May I did not notice anything particularly wrong when I went to bed. But at 4.30 a.m., I was woken up by a terrible noise and the sound of the howling wind. I looked out of my window, and it was like being in a Harry Potter movie. Heavy rain was lashing down in sheets, roofs were flying off houses... Huge big trees were being uprooted. I could see water everywhere. I live in a multistoreyed building, and I remember thinking how terrifying it must be for those living in singlestoreyed houses.

By now the electricity and telephone were cut off all across the city, and there was no way of communicating. These were not restored for the next two or three days. I was worried about how to inform my family in India that I was safe.

People had started stocking food, water and candles and the prices just shot up.

On Sunday I went to the office for a short while as it was situated at a walking distance from my house. The WR and a few others were already there. We tried to contact staff and ensure that they were safe. In addition to the national staff in our Yangon office, we have 47 field people in the unit, many of whom were in the area that we heard had been worst affected. We learned that the houses of two of our office drivers had been totally destroyed.

For two weeks we tried to contact people. One of our RSOs in the Ayeyarwady had her house totally washed away. By 10th May we had contacted all RSOs. Many of them had moved to hotels or registered hospitals such as the one in Pathein.

We were not allowed in the field as international staff, but of course the government health workers and the Myanmar Red Cross had begun work immediately.

Most of the monasteries survived the onslaught of water with little damage and people poured into them for shelter. They also had enough food for people for two or three weeks.

We were permitted to go to the worst-affected townships two weeks later. I went by helicopter, and saw houses still under water and many people in tents. There was a strange quietness; a stillness born out of deep grief and shock. Others went to areas where they saw corpses floating.

We heard so many stories of personal tragedies. One health worker described how she lost her young son who was on the same tree as her. For six hours both of them clung together to the tree waiting for the water to recede. Her son just did not have the strength to hold on longer and she could not help him. As she watched helplessly her son fell into the water and disappear before her eyes.

Back in the office, we focused on coordination, setting up the Health Cluster and involving INGOs. My job was surveillance and establishing the EWARS (early warning, alert, response system). We were getting information from the government but decided to set up a system to include the data from NGOs providing medical care in the field. So we started designing the
standard operating procedures such as how we would get the data and how it would be reported (weekly bulletin). Convincing the NGOs to report the data was not initially easy. Many of them did not want to invite attention to their activities in the field. We persuaded them that their identity would remain confidential and only the data they provided would be reported. They agreed and I believe the system is working very well.

The data began to provide us with a clearer picture of the health situation in the field. Initially we found that most cases were of injuries and acute respiratory infections. Then there were cases of measles and dengue, and we could monitor what was happening. Now the government data was also included and it became one system for all.

There were many challenges. For example, initially children were vaccinated for measles only up to five years. But from the surveillance data we found that older children were getting measles and this could cause a problem. So we discussed this with the government and now children are being vaccinated up to the age of 15 years, which will help ease the situation.

I went to the field quite late, about three weeks after the cyclone, as internationals were initially not allowed to go to the delta areas. It looked very different: of the original 16 000 people only a few hundred were left. There were no roads the only access was through the river by boat. Sometimes we went by a small boat in the pouring rain; rocked by a swollen river, hanging to our lifejackets. One colleague had a very narrow escape. We took supplies with us such as ORS, bleaching powder, insecticide-treated bednets and medicines.

It was heartening to see that there were NGOs everywhere, even in the remote areas. I must have seen 50 NGOs/INGOs in the field, with supplies. It was quite strange to suddenly find plenty of bottled water in remote rural areas! In other places, NGOs had established very good water purification plants in rural areas.

This is not my first experience of a major emergency. I was in the Andaman and Nicobar islands during the tsunami; I have handled many floods in Assam. But I feel my work here has been fruitful and I am happy that I could contribute.
About 2-3 days before that fateful night, all of us received an email about a cyclone heading our way. On Friday, we were told the cyclone would be strong, and were advised to leave the office early. But I’m from the Philippines, we have typhoons every year. I looked out the window and saw no evidence of a strong cyclone, so I just ignored the warning and continued to work. I went home late from work that evening, and still saw no signs of any impending calamity.

I think it was around 2 am that night that I was woken up by the sounds of a furious storm, of pelting rain and very strong winds, of windows banging. I didn’t get out of bed but could not go back to sleep. Finally I got up at 5 am and went to check the damage. I thought the windows that were banging were my neighbour’s - now I discovered they were mine! My kitchen was totally flooded. Water was seeping everywhere. I went back to my room only to find that my bed had become wet too. I noticed the strong wind changed direction and opened the windows in my bedroom. I could not imagine what the situation must have been like for people living in less solid houses.

Later when the rain stopped my driver and guard went to their homes to check on their families. It turned out their houses had been blown away so later they moved to my house.

I decided to move out of my house to a hotel, since there was no water, electricity or food at home and I lived alone. The nearest hotel, usually 12 - 15 minutes away, took 1 1/2 hours by taxi, and was full. So I moved to Traders Hotel, which is also where our office is based. It took another hour or so to reach there. There were so much debris that blocked the roads.

On Sunday and Monday, one of our priorities in office was communicating with our colleagues and staff and ensuring they are safe. Since the telephone was not working, our office drivers were sent to check on all our staff. Food and water was still a problem. Most of the bigger stores were closed. I looked for bottled water but they were simply not available.

It was perhaps only by late Monday evening that we began to get the news of the scale of death and destruction in the delta area. Because of lack of proper information, it was hard to imagine and therefore know how best to respond. I realized things would be serious because the person from the government with whom I have been discussing work on malaria and dengue was supposed to attend a meeting in Singapore that day but cancelled his trip.

Since my work is about vector-borne diseases, I knew malaria and dengue were likely to be problems - these diseases are endemic in Myanmar. Even in my house there was lots of water, potential breeding grounds for mosquitoes. I heard stories of the surge of sea water inland, and my first thought was that it will increase the number of breeding sites. After all, a mixture of salt and fresh water is ideal for the mosquito Anopheles sundaicus. The vectors will recover, and as many large animals which they normally bite have died, the mosquitoes will turn to people for their blood meals.
Apprehending this scenario, I thought the best thing would be to sort out the logistics early and have everything ready. So I quickly requested for bednets, insecticides, diagnostics, and drugs. I also expected dengue to increase due to the early onset of rains. Destruction of houses meant that more humans were exposed and therefore likely to be bitten by these mosquitoes.

Our major limitation was that we were not allowed to go to the field in the first few weeks. So our great challenge was having all these ideas about how things could be done but not being able to do so ourselves. I personally found that very frustrating, as I really wanted to help in the field and I knew my skills would be useful. We made the best of the situation by work closer with the Ministry of Health and by collaborating with NGOs that were working in the field.

I did get information on the situation there from the Ministry of Health and from NGOs. The government programme manager for vector borne diseases was sent to the field, but I was in constant touch with his assistant.

Regular videoconferences with SEARO and headquarters meant we could coordinate our activities and ask for what we needed including technical support. Some staff from HQs, SEARO and from Bangkok came over to help in our overall response, including prevention of outbreaks.

We got a clearer picture after detailed discussion with people in the field and comparison with detailed data on morbidity and mortality in the field for the past several years, including the dengue situation. Also, our national consultant was sent to the field several times to assess the situation. Even without being physically present in affected areas, based on that data and the literature we developed a joint plan of action for dengue prevention and control and a framework for malaria prevention and control in cyclone affected areas.

Acceptance of the plan was easy, as it was based on sound data. But naturally it needed a lot of work, so we would be in the office burning the midnight oil. When we finally presented it to the Health Ministry, they agreed to implement it and did a wonderful job of microplanning i.e. in every town, chart out the details of who will do what where, how many people, the responsibilities and each person, the exact day of action. Because of their excellent microplans, in two days, 89130 households were covered for preventive measures, and it was all technically sound!

Thanks to money from SEARHEF and CERF, and to the support from colleagues at the country office, SEARO and HQs, we were able to immediately provide the essential supplies, equipment and drugs. Logistics experts who joined our team did an excellent job of organizing the procurement and transport of material to the field. We also negotiated with UNICEF which has a very good logistics system so insecticides from other partners could be delivered to sites immediately.

There was good coordination among the agencies. They work within the context of "cluster approach" and at least for malaria and dengue, they used the technical guidelines we provided.

Together with WR and a colleague from WHO/Thailand, I finally got to go to the field several weeks after the disaster. The main road to Pathein was good but to other townships was difficult. We traveled by boat to reach some villages and health facilities. Security was tight, we had to go through three checkpoints. Once we got to the camp and saw the orphans who told their stories I could not hold back my tears. In one town with a jute factory that was used as temporarily shelter, everyone was expressionless. It was hot, humid, crowded with flies everywhere, all the faces looked so sad but no one would speak out, vent their feelings. In the camps we visited, some tents had three or more families. But they had shelter, food, water, latrines, medical services, and the camps looked well managed. I kept thinking of those in the villages, who lost everything. I could see so much destruction in some villages and others are flooded. There was so much surface water yet clean water for household use was a serious concern. I saw people getting water from canals near their house. Most water containers being used for rainwater collection were full of mosquito larvae, an indication of imminent outbreak of dengue if larval control is not done.

We visited hospitals and health centers, and had meetings with local authorities and the health staff. One thing very commendable was their dedication, resilience and hard work. Medical supplies seemed adequate.

My professional frustration kept haunting me, the feeling that I could have done so much more to contribute if only we had been allowed to visit earlier.

As a human being, I feel this disaster was in some ways worse than the tsunami. I kept imagining how people must have died in a few hours. My thoughts also kept going back to my home province, which is near the sea - something like this could easily happen there too. Yet life must go on.

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Bangladesh Moves towards Recovery after Cyclone SIDR

by KAH Akram and Z Rahim

At 7.30 p.m. on 15 November 2007, pouring rain and the pounding sound of winds rushing in at 220 kmph heralded the arrival of Cyclone Sidr to the coastal land in Bangladesh. A Category IV cyclone, among the most powerful, it swept across 21 of the country’s 64 districts, leaving in its wake 3363 people dead, 871 missing and 55 282 injured. According to the Government of Bangladesh, almost nine million people were affected. More than half a million houses were fully destroyed and another million partially damaged. Four million trees were uprooted and crops grown in over 740 000 acres of land were destroyed. The public health system was severely damaged and with thousands of kilometers of roads washed away, access was made even more difficult.

A low-lying country with most areas less than 12 metres above sea level, Bangladesh regularly faces cyclones and floods - the world’s most devastating cyclone occurred here in 1970, killing between 300 000 and 500 000 people. Sidr was considered the worst cyclone since 1991. However, compared to previous cyclones of this scale, the death toll in 2007 was relatively lower. With its vast experience in such emergencies, the Government of Bangladesh had successfully activated its early warning and preparedness systems prior to the cyclone making landfall.

Preparedness and needs assessments

Before the cyclone struck, WHO sent two medical teams to those districts most likely to be affected to assist the Government health sector’s preparedness work. Within two days of the cyclone, UN agencies, including WHO, carried out intensive needs assessment. This was followed by a comprehensive health sector needs assessment carried out by Merlin on behalf of WHO and the Government.

Response: Coordination, Surveillance and Capacity-building

All agencies working in the health sector coordinated their work through regular Health Cluster
meetings led by WHO, in Dhaka and nine priority districts that were worst affected.

Disease surveillance and early warning systems put in place by WHO Field Operation staff for nine priority diseases in the Sidr-affected districts helped prevent outbreaks and assisted in proper case management. NGOs’ activities were mapped and listed, and a new disease surveillance format was used to observe the morbidity trend more accurately.

To build capacity on post-cyclone health management at the local level, senior health managers in the Sidr-affected districts were provided training on post-Sidr disease surveillance, management of nutrition, reproductive health, health education and psychosocial health.

To build awareness on health issues and risks among the affected population, the Director-General of Health Services (DGHS) strengthened health promotional activities with technical support from WHO.

Challenges that remain

A number of challenges remain on the health front. Primary health-care workers need more training, particularly in emergency health management, maternal and child health, treatment of common illnesses and health education. At the district and upazilla level, more skilled birth attendants are also needed to assist with deliveries.

There are gaps in health services. Improved referral services are needed to respond to surgical emergencies and perform cardiopulmonary resuscitation. So are more efficient delivery mechanisms to provide essential drugs, equipment and supplies.

Health messages promoting service availability, improving health seeking behaviour and behavioural change need to reach the targeted population.

WHO’s activities in the Recovery Phase

WHO’s principle, while moving to the recovery phase after any disaster, is “Build Back Better”. Based on this concept, WHO has undertaken several initiatives in Bangladesh post-Cyclone Sidr.

One such important initiative is the establishment of an Emergency Medical Services (EMS) system in Sidr-affected areas to strengthen the public health capacity of the country to rapidly detect, assess, respond to and contain public health risks resulting from natural disasters and trauma and medical emergencies and mass casualty disaster. The first steps were introducing and implementing “training on Principles on Emergency health care in EPR” and implementation of the pilot EMS system in the affected areas to replicate the successful interventions in other part of the country.

EMS-related activities aim to achieve the following:

- Improved health systems preparedness for rapid emergency response.
- Enhanced capacity of the health systems for disaster and emergency pre-hospital care.
- Enhanced capacity of health partners (INGOs, NGOs and health-related organizations) in preparation, response and mitigation of mortality.

Recovery-related activities after the disaster includes work to strengthen public health programme delivery, planning and coordination capacity.

A particularly important safe in the aftermath of a disaster is mental health psychosocial support. WHO, with the Ministry of Health, is conducting training of caregivers on grief counselling, so that they can provide psychosocial for traumatized people through counselling and proper referral system in Sidr-affected areas.
Tropical cyclones produce extremely powerful winds and torrential rain. Often they trigger high waves which move in land, called storm surge. Heavy rains can produce significant flooding inland, and storm surges can produce extensive coastal flooding up to 40 kilometers from the coastline. The strong winds add to the damage by blowing away roofs and other parts of buildings and even uprooting trees.

Cyclones develop over large bodies of warm water, and lose their strength when they move over land. So while coastal areas can suffer significant damage from a tropical cyclone, inland regions are relatively safe.

Tropical cyclones can also have a positive impact. They relieve drought conditions; and carry heat and energy away from the tropics and transport it toward temperate latitudes, which makes them an important part of the global atmospheric circulation mechanism. As a result, tropical cyclones help to maintain equilibrium in the earth’s troposphere and maintain a relatively stable and warm temperature worldwide.
Who are most vulnerable to cyclone?
- People in settlements located in low-lying coastal areas (direct impact).
- People living in poorly designed or constructed buildings.
- Those in areas with inadequate cyclone shelters.
- Those who do not have sufficient lead time for warning and evacuation.
- Those who do not comply with evacuation procedures.

What are main causes of death, injuries and disease in a cyclone?
- **Direct impact**
  
  Injuries, trauma, drowning during sea surge and asphyxiation due to entrapment can result from building collapse and wind-strewn debris. Electrocution or drowning can occur while securing property such as television antennas or boats. Survivors are likely to suffer short- and long-term mental health effects.
  
  Could result in food shortages and interruption of basic public health services (water, etc) to an already vulnerable population.
- In case of floods and sea surges, risks of drowning and water-borne and vector-borne disease increase.

Example of cyclone deaths and injuries

<table>
<thead>
<tr>
<th>CYCLONE EVENT</th>
<th>DEATHS</th>
<th>INJURIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991 Bangladesh</td>
<td>1 38 882</td>
<td>1 39 054</td>
</tr>
<tr>
<td>2007 Bangladesh</td>
<td>Over 5 000</td>
<td>12 979</td>
</tr>
<tr>
<td>2008 Myanmar as on 19 May 08, after two weeks of occurrence.</td>
<td>77 738, with another 55 917 missing</td>
<td>19 359</td>
</tr>
</tbody>
</table>

- **Indirect impact**
  
  Unsafe drinking water, inadequate/improper sanitation facilities, improper human waste and household waste disposal systems and overcrowding in camps can lead to an increased risk of water-borne and other communicable diseases. This risk is reduced by taking extensive preventive measures, for example chlorinating or boiling water, regular and effective disease surveillance and treatment.
  
  The cyclone can severely affect health infrastructures and all “lifeline” systems which could result in food shortages and interruption of basic public health services (water, etc) to an already vulnerable population.

Example 1:
- 2007 Bangladesh cyclone (Sidr): A six day disease profile of nine cyclone-affected districts (1-6 December 2007), three weeks after the disaster, indicated:
  - overall high prevalence of (suspected) typhoid fever, skin diseases, diarrhoea and ARI/pneumonia cases;
  - the highest number of cases of diarrhoea, ARI/pneumonia, skin and eye infections, as well as suspected typhoid cases was reported from one of the worst-affected districts, Bagerhat; and
thirty-eight jaundice cases were reported from five districts.

Example 2:
2008 Myanmar cyclone (Nargis): Disease profile highlights during 29 weeks of cyclone aftermath from the affected Ayeyarwady division indicated:

**What measures can be undertaken to prevent mortality and morbidity?**

**Mitigation measures:**
- Building cyclone shelters
- Appropriate land-use planning
- Buildings designed and constructed to withstand cyclones.

**Preventive and risk reduction measures:**
- Identification of the vulnerable populations
- Identification of potential disease risks so that appropriate measures can be taken such as stockpiling of basic medicines and equipment

**Preparedness measures:**
- Community preparedness and participation in the planning process, training and simulation exercises
- Health system and services preparedness including pre-positioning of emergency and life-saving supplies and required manpower
- Training and capacity building of health personnel and other people involved in essential services
- Cyclone forecasting systems in place
- Advance early warning to the vulnerable communities.

**Response measures:**
- Evacuation, search and rescue
- Timely treatment for the injured
- Provision of safe drinking water, sanitation and waste-disposal facilities.
- Ensuring food security
- Setting up an early warning system to forecast disease outbreaks and improved health-sector response capacity
- Provision of support to other essential health needs: psycho-social and mental health, reproductive, adolescent and child health needs
- Restoration of the health system leading to recovery
- Establishing linkages between recovery, rehabilitation and long-term development plan.

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>TYPES OF DISEASES</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>29th week after cyclone</td>
<td>Measles</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Malaria confirmed</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>Suspected dengue fever</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>Dengue heemorrhagic fever</td>
<td>43</td>
</tr>
</tbody>
</table>
The ten deadliest tropical cyclones in the last 100 years

There are several explanations for the origin of the term ‘cyclone’. One is that it is derived from the Greek meaning of “turning wind with one eye” and refers to Cyclops, the one-eyed Greek mythical creature. Another theory is that it is derived from the Greek word ‘kyklos’ meaning coil of snakes. It was first coined by British meteorologist Henry Piddington to represent the whirling nature of these storms.

For a mere storm to transform into a deadly cyclone requires several conditions: a warm ocean (surface temperature 27°C), high humidity in the middle troposphere, 5-15 degrees latitude from the equator, and a low air pressure system. Water vapour from the heated ocean forms clouds. The low pressure pulls the clouds in, and they begin to rotate. This eventually can lead to a cyclone.

Seven of the 10 deadliest cyclones in the world, in recorded history in terms of the magnitude of death and destruction caused, in the last 100 years, have occurred in the Bay of Bengal. Cyclone Nargis ranks fourth in this global list of destruction. Here is a list of some of the worst cyclones that have occurred in the Bay of Bengal:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name of cyclone</th>
<th>Year</th>
<th>Country</th>
<th>Ocean Area</th>
<th>Deaths, including missing (approximate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Great Bhola</td>
<td>1970</td>
<td>Bangladesh</td>
<td>Bay of Bengal</td>
<td>550 000</td>
</tr>
<tr>
<td>2.</td>
<td>Super Typhoon Nina</td>
<td>1975</td>
<td>China</td>
<td>Western Pacific</td>
<td>171 000</td>
</tr>
<tr>
<td>3.</td>
<td>Cyclone Gorky (02b)</td>
<td>1991</td>
<td>Bangladesh</td>
<td>Bay of Bengal</td>
<td>140 000</td>
</tr>
<tr>
<td>4.</td>
<td>Nargis</td>
<td>2008</td>
<td>Myanmar</td>
<td>Bay of Bengal</td>
<td>138 000</td>
</tr>
<tr>
<td>5.</td>
<td>Swatlow</td>
<td>1922</td>
<td>China</td>
<td>Western Pacific</td>
<td>60 000</td>
</tr>
<tr>
<td>6.</td>
<td>Bengal Calcutta Cyclone</td>
<td>1942</td>
<td>India</td>
<td>Bay of Bengal</td>
<td>40 000</td>
</tr>
<tr>
<td>7.</td>
<td>Barisal cyclone</td>
<td>1965</td>
<td>Bangladesh</td>
<td>Bay of Bengal</td>
<td>20 000</td>
</tr>
<tr>
<td>8.</td>
<td>Devi Taluk (Andhra Pradesh)</td>
<td>1977</td>
<td>South-east India</td>
<td>Bay of Bengal</td>
<td>20 000</td>
</tr>
<tr>
<td>9.</td>
<td>Hurricane Mitch</td>
<td>1988</td>
<td>Honduras, Nicaragua, El Salvador, Guatemala and Belize</td>
<td>Atlantic Basin</td>
<td>11 000</td>
</tr>
<tr>
<td>10.</td>
<td>Orissa Supercyclone</td>
<td>1999</td>
<td>India</td>
<td>Bay of Bengal</td>
<td>10 000</td>
</tr>
</tbody>
</table>

Source: Myanmar official media for Nargis; BBC; US National Climatic Data Center; SAARC Disaster Management Centre; and various Internet sources
It hasn’t been “born” yet, but the next cyclone in South or South-East Asia already has a name: “Abe”. It’s a name chosen by Sri Lanka, although the cyclone may not be anywhere near that island nation.

How does a cyclone get its name? In this part of the world, it’s from a list prepared by eight countries that the World Meteorological Organization calls “The Cyclone ESCAP Panel Countries”. These countries—namely Bangladesh, India, Maldives, Myanmar, Oman, Pakistan, Sri Lanka and Thailand—have chosen 64 names for cyclones that occur in this Region between 2004-2009. The countries take turns in naming the cyclone according to their alphabetical order. Sidr was the name given by Oman, Nargis was chosen by Pakistan. After Abe, the Sri Lankan choice, will be Khai-Muk, named by Thailand.

The tradition of naming cyclones began in this Region in 2004. Worldwide the Caribbean Islands had a tendency to name hurricanes after their saints, but otherwise these storms were identified by dry numbers. The current tradition of proper names for tropical cyclones was started by an Australian meteorologist in the early 20th century, who named them after political figures he disliked. Apparently, he could then legitimately describe them as “causing great distress” or “wandering aimlessly”.

During World War II, US Air Force weathermen named hurricanes after their wives and girlfriends. By 1953, the US weather bureau began the system of using women’s names to refer to cyclones. Only in 1979 was this gender disparity rectified, and men’s names were also included in the World Meteorological Organization (WMO).

By 1 January 2000, a fresh roster of names was created for the Pacific. These had two major differences: they were named after flowers, animals, birds, but rarely people; and names were allotted by the alphabetical order of the contributing countries.

It’s practical need that has led to all cyclones having proper names: short, distinctive names are quicker and less subject to error than the older more cumbersome identification methods. This increased accuracy is particularly significant when exchanging detailed storm information between hundreds of widely scattered stations, coastal bases and ships at sea. In the process, it allows a little bit of colour and romance to be injected into a hard scientific field.

Sources: Indian Meteorological Department, Australian Bureau of Meteorology, Atlantic Oceanographic and Meteorological Laboratory and the Internet.
On 31 May 2008, heavy monsoon rains led to flash floods in south-western Sri Lanka, affecting an estimated 400,000 people. Twenty-three people were killed, mainly by drowning and electrocution. The torrential rains continued till 4 June 2008, causing extensive floods and sudden landslides. The districts of Gampaha, Ratnapura, Galle and Kalutara were particularly devastated, with water levels reaching eight feet in some areas.

Kalutara district was the worst hit, with 160,000 people affected and 15 casualties reported. The floods destroyed 265 houses while partially damaging another 1317. Despite the conditions, most people stayed on in the immediate neighbourhood of the affected areas or moved in with friends and relatives. Displaced persons were also relocated to public buildings with adequate space and sanitary facilities.

Relief was promptly organised by government authorities in collaboration with UN agencies, international and local NGOs and community groups. Five UN agencies (WHO, UNHCR, UNICEF, UNDP and OCHA) in cooperation with local authorities and the Disaster Management Centre (DMC) assessed the impact of the floods and identified immediate needs of affected communities. The assessment teams met government officials, Red Cross members, community leaders, and others from the affected population.

Teams were deployed to areas having suffered the maximum devastation within 72 hours of the onset of the floods. Relief activities, including evacuation of individuals to safer locations and the delivery of essential food items, were in place by then. While a few areas were inaccessible due to high levels of water, essential
Responding to Flash Floods in Sri Lanka

services such as clinics, electricity and phone lines were not severely affected.

No major damage to health facilities was reported and the number of injuries was limited. However, health authorities identified an increased risk of outbreak of vector and water-borne diseases. Diseases such as leptospirosis, dengue and chikunguniya were accorded priority. These diseases are associated with receding levels of water when the environment becomes conducive for the prolific breeding of mosquitoes and rats. There were reports of 34 cases of leptospirosis in Galle and at least one person in each household was affected by chikunguniya in Ratnapura. This made it imperative to clear out canals and remove stagnant water.

In response to the emergency situation, the Ministry of Healthcare and Nutrition requested the South-East Asia Region Health Emergency Fund to release US$ 25 000. The funds were used by the Ministry, through the offices of the District Health Services in Galle, Kalutara, Gampaha, Ratnapura and Colombo, to support immediate relief efforts. The speedy launch of vector-control campaigns, health education campaigns for the public, and a "flood awareness programme" to inform communities about health risks associated with floods were key interventions.
Health education campaigns through poster and banner displays and distribution of leaflets were carried out by the District Health Services. They aimed at augmenting public awareness about health risks and safety measures relevant to water-borne diseases such as diarrhoea, leptospirosis, dengue and chikunguniya. District Health Services Offices executed vector-control campaigns by recruiting volunteers to, for instance, clean affected wells and to eliminate vector-breeding locations through spraying operations.

In addition, the District Health Services carried out disease surveillance operations to identify, treat and prevent communicable diseases that arise after floods. Essential drugs were also procured to treat such diseases. Public Health Inspectors assisted in communicable disease surveillance for more than a week.

Lessons learnt from the emergency response to flash floods caused government authorities to rethink and reevaluate the country’s disaster preparedness. Gaps were identified in the overall preparedness, which are, of course, a common phenomenon in the monsoons in Sri Lanka.

Coping mechanisms were in place in areas most prone to flooding. People living in such areas appeared to have stocked food and essential items prior to the floods and evacuated their homes immediately on flooding. But coping mechanisms seemed limited in other regions where floods were not regularly experienced. Kalutara district was a case in point.

Even so, the low number of deaths and injuries point to commendable levels of preparedness and prompt relief response. The impact of future disasters could be minimized by strengthening systemic preparedness and immediate emergency relief response.
How to Build Cyclone-Resistant Construction

1. Choose the location carefully to avoid the full force of the wind or flood.
2. Use building layout with a simple regular shape, to avoid concentration of pressure.
3. Build the roof at an angle of 30° to 45° to prevent it being lifted off by the wind.
4. Avoid wide roof overhangs; separate the veranda structure from the house.
5. Make sure the foundations, walls and roof structure are all firmly fixed together.
6. Reinforce the diagonal bracing in the structure; strengthen walls and joints/junctions to increase stiffness.
7. Make sure the roof covering is firmly attached to the roof structure to prevent it from lifting.
8. If doors and shutters cannot be shut, make sure there are opposing openings to reduce pressure build-up.
9. Use doors and shutters that can be closed.
10. Plant trees around the house as these break the speed of wind and reduce the flow of water, but do not have them not too close to the building.

Source: DEVELOPMENT WORKSHOP/Vietnam
www.vietnamdisasterprevention.org
South-East Asia Health Emergency Fund (SEARHEF) in Action

By T. Gangadharan

Background

The sixth Session of the Regional Committee held in Thimphu, Bhutan, from 31 August to 3 September 2007 passed resolution SEA/RC60/R7 for the establishment of the South-East Asia Regional Health Emergency Fund (SEARHEF). It was meant to provide immediate financial assistance to Member countries for meeting needs and filling in critical gaps following an emergency. The planned corpus of the fund was US$ 2.5 million, with inflows from the Regular Budget as well as Voluntary Contributions.

In keeping with guidelines laid down for the establishment and governance of the SEARHEF, US$ 1.1 million was mobilized for the 2008-2009 biennium. The South-East Asia Region was the first Region of WHO to establish such a mechanism. How the SEARHEF has been useful in meeting the immediate needs of member countries can be seen from two case studies that follow:

1. Cyclone Nargis, Myanmar

Five months after the establishment of the SEARHEF, Cyclone Nargis struck Myanmar on 2-3 May 2008 causing catastrophic devastation and loss of life and property. With SEARHEF in operation, WHO responded to the crisis through the provision of technical support to the Myanmar government in its health response, and providing essential drugs and supplies as per the needs of the Ministry of Health.

During the first post-cyclone week, a request for release of funds from SEARHEF was received from the Country Office to supplement the response through supplies and activities. The Regional Office released US$ 175 000 from SEARHEF.

A second installment was released on 12 May 2008 following the request of WR Myanmar. The fund was used to support activities outlined in the Flash Appeal, mainly for procurement of life-saving supplies and drugs, and rapid health assessment. Over 88% of the money disbursed was used for procurement of essential drugs and health supplies.
Eighty-nine per cent of the fund has been obligated or earmarked so far. The remaining fund will be used for procurement of further supplies and drugs, including several emergency health kits. This will allow WHO to cover the remaining population that was not reachable till recently, especially in the Ayeyarwady Division.

**Impact and lessons learnt**

SEARHEF served the purpose for which it was created: to provide for the immediate needs of an emergency before bulk funding begins.

The fund covered the needs of the Ministry of Health for the affected population way ahead of the bulk funding mechanisms of the UN (such as CERF and Flash Appeal). A great number of needs of the Ministry were thus met.

2. **Flash floods in Sri Lanka, June 2008**

Flash floods triggered by the monsoon hit the southwestern coast of Sri Lanka on 2 June 2008. Five districts were severely affected, with at least 16 people dead and a total of 173 778 displaced or affected. Landslides were reported following the floods in the districts of Kalutara, Ratnapura, Colombo, Galle and Gampaha.

The UN, other international agencies and the Disaster Management Centre (DMC) led by the Sri Lankan government responded to the crisis immediately. For health relief, the Sri Lankan Ministry of Healthcare and Nutrition requested LKR (Lankan rupee) 2 500 000 (around US$ 23 500) from WHO. The funds were used for procurement of essential items as well as fuel for mobile health-care services in the affected districts. WHO released the funds from SEARHEF on 9 June 2008.

**Impact and lessons learnt**

The case of Sri Lanka was a good example of how SEARHEF could provide immediate access to a small sum of money which was not normally donated by donors. The amount of US$ 25 000 is too small to merit a full proposal for a donor; however, it proved crucial for purchasing and providing the essential supplies for health action in the flood-affected areas of Sri Lanka.

The items purchased with this fund did not relate directly to "life-saving" activities. However, these were necessary if one took a longer term view of emergency response, with the goal of rapid recovery. A lesson learnt from the Sri Lanka case is to be clear on reporting and monitoring mechanisms. In the case of Sri Lanka, the fund was given to the Ministry of Healthcare and Nutrition. This allowed for rapid disbursement of the funds at district levels.

Efforts are on to make the SEARHEF a revolving fund as well as to mobilize resources from Voluntary Contributions to enhance the corpus. After two successful experiences, the need and utility for SEARHEF has been strongly reiterated.
December 2004, Indonesia: The tsunami response was going on full steam. A workplan was developed for WHO’s emergency response activities with a tight timeline. However, there were gaps in carrying out the workplan. This was due to delays in supplies that had been procured, and getting the right people at the right time to the right place. In 2004, WHO’s internal system was assessed as not optimally geared to deal with the fast and demanding pace of emergency relief activities.

Fast forward to May 2008, Myanmar: Cyclone Nargis hit Myanmar on 2-3 May 2008. More than 125,000 lives were lost and 2.5 million people were affected. In the face of such catastrophe, WHO mobilized funds, people and supplies within 48 hours. Necessary supplies were listed and procured on the ground and staff was mobilized from around the globe.

So what had changed between 2004 and 2008? The answer lies in WHO’s emergency Standard Operating Procedures (SOP), which went live in SEARO on 1 January 2008.

The emergency SOPs were developed by administrative and operational staff at all three levels of the Organization. The consultative process began with a global workshop in Geneva in August 2006. Participants from headquarters, regional and country offices identified the main impediments to WHO’s work in crises, made recommendations to overcome them, and developed a workplan for putting together of emergency SOPs. The SOPs were drafted, circulated to all working
groups, cleared and adopted between September and October 2006.

In January 2008, the Director-General of WHO decided to activate the emergency SOPs for all emergency and humanitarian projects meeting one or more of the following criteria:

- All CERF grants;
- All projects funded under a Consolidated Appeal, Flash Appeal, Common Humanitarian Action Plan or similar joint humanitarian workplan;
- All humanitarian projects funded by the UNDG Iraq Trust Fund; and
- Other projects to be cleared by the Comptroller on an ad hoc basis.

WHO’s regional and country offices adopted the emergency SOPs chronologically. SEARO adopted them on January 2008. As of 1 January 2008, all countries that fell under the criteria began undertaking activities as per the emergency SOPs. In SEARO, these countries are the Democratic People’s Republic of Korea, Bangladesh, Myanmar and Sri Lanka.

The SOPs were fully activated for the first time in SEARO during the Cyclone Nargis crisis in Myanmar. Here, the SOPs allowed for fast and effective delivery of help by WHO, helping save lives.

The underlying principle of the emergency SOPs is: "When a disaster strikes, those nearest the affected area must have the authority, knowledge and the resources to act." An SOP establishes WHAT should be done in an emergency, WHEN these actions should take place, WHERE the actions are to take place, and BY WHOM the actions should be implemented.

Examples of how emergency SOPs have changed the scope of work for EHA would be illustrative. First, the WHO Representative in a country is automatically delegated the authority to:

- Purchase emergency supplies locally (up to US$ 100 000 per transaction);
- Waive bidding procedures;
- Recruit emergency staff (national and international) for up to six months and waive geographical quotas;
- Open field offices and bank accounts;
- Re-delegate authority to emergency staff; and
- Pay daily stipends to volunteers.

Second, the SOPs detail guidelines on how to develop donor alerts, flash appeals, and CERF grant applications; how to mobilize supplies from pre-positioned locations, as well as how to purchase locally; opening and closing field offices, fleet management, obtaining emergency funds, managing petty cash; and detailed job descriptions of various positions requested in emergency response so as to save time in recruitment.

Although still in the early stages, the emergency SOPs have demonstrated considerable success in speeding up WHO’s response to emergencies. The SOPs are constantly being re-evaluated and modified in accordance with feedback from the field and as per the implementation of the GSM system within WHO.

EHA SEARO will train its staff members on the emergency SOPs during its Regional Public Health Pre-Deployment course in September 2008. As per the discussions and recommendations made, the SOPs will be modified to fit country and regional needs.

The emergency SOPs can be found on the Internet, at http://intranet.who.int/homes/hac/sop/

A CD-Rom version can also be obtained from EHA SEARO

The topics covered in the SOPs are:
1. Crisis response procedures
2. Contact lists
3. Declaration of emergency
4. Emergency delegation of authority
5. Finance
6. Human resources
7. Travel and insurance
8. Logistics and procurement
9. Information and communications technology
10. Security
11. External relations and resource mobilization
12. Budget, planning and project management
13. Media and communications
The tsunami of December 2004 was a watershed event for countries of the WHO South-East Asia Region. Never before had one single event affected such a large number of countries so severely. The Member countries of the Region, and indeed WHO as a whole, learnt important lessons from the impact of this disaster. These lessons revealed a number of gaps in emergency preparedness and response that must be addressed. Likewise, they revealed many opportunities to improve disaster management and risk reduction at the national and regional levels.

Less than one month after the tsunami, at the January 2005 World Conference on Disaster Reduction in Kobe, Japan, 168 nations adopted the Hyogo Framework for Action 2005-2015. Among other challenges, the framework calls on countries to “integrate disaster risk reduction planning into the health sector; promote the goal of hospitals safe from disasters by ensuring that all new hospitals are built with a level of resilience that strengthens their capacity to remain functional in disaster situations and implement mitigation measures to reinforce existing health facilities…”

Later in 2005, disaster health professionals primarily from the SEA Region countries and experts from other sectors that play a role in disaster management and risk reduction took initial steps towards filling the identified gaps and improving the level of disaster preparedness regionwide by developing benchmarks against which to measure progress. One benchmark (Benchmark 11) calls for health facilities to be built or modified to withstand expected risks posed by natural hazards. It is also one of the items proposed by the Ministers of Health to be addressed in the Thimphu Declaration.

The secretariat of the UN International Strategy for Disaster Reduction (UN/ISDR) and the World Health Organization (WHO) together with the World Bank are partnering with governments, international and regional organizations, nongovernmental organizations and individuals worldwide to raise awareness about how and why we must redouble efforts to protect health facilities and ensure they can function during and in the aftermath of disasters.
disasters. The launch of the Global Campaign on Safe Hospitals took place on 25 January 2008 in Davos, Switzerland. The theme of the campaign was hospitals safe from disasters: reduce risk, protect health facilities, save lives.

A regional event with ISDR and WPRO and the WHO Regional Office for the Western Pacific and South-East Asia Regions was also conducted on 25 January 2008 in Bangkok, Thailand.

With global focus on this issue, the Emergency and Humanitarian Action unit in WHO/SEARO organized the Regional Consultation on Hospitals Safe from Disasters in the Regional Office from 15-17 April 2008 to promote the goal of keeping health facilities safe from disasters.

The Consultation was attended by key managers and decision-makers from nine of the 11 Member countries of the South-East Asia Region, experts in the field of emergency preparedness and response, hospital administration, urban development and finance and planning, apart from representatives from other UN Agencies, NGOs and national disaster management authorities.

The specific objectives of the Regional Consultation were:

- To increase awareness and understanding of the issues surrounding “hospitals safe from disasters” (SEARO-EHA Benchmark 11);
- to identify opportunities to strengthen risk reduction, preparedness in health facilities during and beyond the two-year ISDR/WHO World Disaster Reduction Campaign; and,
- to develop a national and regional framework plan of action, including mechanisms to record progress.

Country delegations presented a short overview of where their countries stood in terms of preparedness and mitigation in health facilities, the challenges they face, whether or not a recent disaster has impacted health facilities, and if risk reduction measures are in place to make these critical facilities safer.

During the Consultation participants were busy developing recommendations on steps that countries can and will take to improve the disaster resilience of their health facilities, crafting the outline and components of a national safe hospitals initiative, and consolidating strategies that support the ISDR/WHO (South-East Asia and Western Pacific Regions) Framework of Action for Safe Hospitals.

The participants came up with the following recommendations:

- Adopt the proposed changes to the indicators for Benchmark 11 on safe health facilities.
- Adopt the outline of a national plan of action for safe hospitals.
- Request WHO as the regional health body to place the issue on the agenda of the next Regional Committee meeting.
- Include this topic on the agenda of the sub-regional committee of the ASEAN Secretariat.
- Review immediate steps outlined during the meeting with national counterparts.
- Go beyond the national level to provide support to the Regional Framework of Action by:
  - Supporting the creation of a Regional Task Force on Hospitals Safe from Disasters;
  - collecting information collection and dissemination activities; and
  - advocacy activities such as the World Disaster Reduction Day.
- Incorporate in current activities in national workplans and existing initiatives the issue of safe health facilities.
What is a cyclone, hurricane and typhoon?

A "tropical cyclone" is the generic term for an atmospheric low pressure system over tropical or sub-tropical oceans, with thunderstorm activity and winds at low altitudes, circulating either anti-clockwise or clockwise (in the southern hemisphere). Tropical cyclones with maximum sustained surface winds of less than 39 miles per hour are called tropical depressions. Once the winds around the tropical cyclone reach at least 39 mph it is called a tropical storm and is assigned a name. If winds reach 74 mph, then it is called a:

- **hurricane** in the North Atlantic Ocean and the northeast Pacific Ocean, east of the international dateline;
- **typhoon** in the northwest Pacific Ocean, west of the dateline;
- **tropical cyclone** in other regions, including the Indian Ocean and South Pacific Ocean.

How are cyclones/hurricanes graded?

In many parts of the world the Saffir-Simpson scale is used to grade hurricanes.

- **Category 1** - sustained wind speeds of 74 to 95 mph.
- **Category 2** - sustained wind speeds of 96 to 110 mph.
- **Category 3** - sustained wind speeds of 111 to 130 mph.
- **Category 4** - sustained wind speeds of 131 to 155 mph.
- **Category 5** - sustained wind speeds greater than 155 mph.

While cyclones or hurricanes of the higher categories can cause catastrophic damage due to their wind speed, even weaker storms can cause major problems due to heavy rainfall. The storm surge associated with tropical cyclones can also be very damaging.

Can people be warned of an approaching cyclone?

Predicting a cyclone’s path with total accuracy for more than a few hours is difficult, as they can change direction quickly. However, advances in meteorology have allowed experts to track the formation and the possible path of a cyclone. Early warnings about the possibility of a cyclone approaching a particular area can therefore be sent, to enable people to take the necessary precautions. Early warning and appropriate evacuation measures are important systems that should be in place to prevent deaths in the event of a cyclone.

Who are most vulnerable to cyclones?

- People living in low-lying coastal areas (direct impact)
- People living in poorly designed buildings
- Those in places with inadequate cyclone shelters
- People living in these areas are particularly vulnerable when there is insufficient lead time for warning and evacuation.

What are some of the most common health problems after a cyclone?

- Injuries.
- Acute respiratory infections.
- Water-borne diseases such as diarrhea.
- In many tropical climates, vector-borne diseases such as malaria and dengue.

What are some preventive measures one can take for such health problems?

- Boil water before drinking.
- Wash hands thoroughly before cooking and after visiting the toilet.
- Eat freshly cooked food as far as possible.
- Wear long-sleeved clothes and use mosquito nets at night to protect from mosquitoes.

**Source:** British Meteorological Office website, WHO technical guidelines on cyclones.