

Risk of infection after the Nepal earthquake

The earthquake in Nepal has disrupted the country's health infrastructure, magnifying the increased risk of infectious diseases as a result of the disaster. Sanjeet Bagchhi reports.

For the WHO situation report see <http://www.searo.who.int/entity/emergencies/crises/nepal/who-sitrep19-26-may-2015.pdf>

In Nepal, earthquakes on April 25 and May 12, 2015 greatly damaged provision of health-care services. A May 26 WHO report about Nepal's post-earthquake situation said that the devastating earthquakes have affected 4.2 million people, killing 8659 and causing injury to a further 21 925. The quakes have also damaged nearly 1085 health-care facilities across the country.

In the aftermath of the earthquakes, WHO has raised concerns about the transmission of infectious diseases across Nepal. As it pointed out in its May 26 report, "population displacement, crowding, limited quantities of safe water, inadequate hygiene and toilet facilities, and unsafe practices in handling and preparing food are all associated with disease transmission. There is a risk of an increase in communicable diseases, including diarrhoea, respiratory infections, and mosquito-borne diseases, particularly with the rainy season approaching soon".

Other experts have also expressed to *The Lancet Infectious Diseases* their views on the possibility of infectious disease outbreaks in Nepal and the country's preparedness for tackling such events. Thekkekara Jacob John, an infectious disease specialist and Chairman of the Child Health Foundation (New Delhi,

India) said that after earthquakes and the subsequent damage to both housing and sanitary installations, various infectious diseases can spread. If water becomes contaminated with human faeces, several pathogens can proliferate, he noted, such as cholera, typhoid fever, dysenteries, and jaundice caused by hepatitis E and A viruses. He

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explains that the risks of direct person-to-person disease transmission increase because of overcrowding and delays in immunisation as a result of service disruption; the consequences of which can be outbreaks of measles in children and many other infections, including seasonal influenza. He adds that where mosquitoes are common (ie, Nepal's Terai region), vector-borne diseases, such as Japanese encephalitis, will spread.

Speaking to *The Lancet Infectious Diseases*, UNICEF spokesperson in Nepal, Mariana Palavra, discussed how specific factors put the country at particular risk of serious infectious disease outbreaks. She explained that the earthquakes have disrupted access to safe water because most houses in the earthquake-affected areas were destroyed and the water supply damaged. People are forced to drink water from alternative sources, such as rivers and groundwater. Similarly, the sanitation system has also been disrupted; and in some areas, the dead bodies, of both human beings and animals, have still not been removed, increasing the risk of diseases such as typhoid and diarrhoeal illnesses. The curative and preventive health services have also been interrupted, she added, which have increased the

risk of outbreaks, especially in children, pregnant women, and elderly citizens. She warns that "the upcoming monsoon will further aggravate the situation especially for vector-borne diseases such as malaria, dengue, chikungunya, and Japanese encephalitis since Nepal and the earthquake-affected districts are already at risk for these diseases".

Poonam Khetrapal Singh, Regional Director for the WHO South-East Asia Region, told *The Lancet Infectious Diseases* that so far in Nepal no unusual increase in the number of infectious diseases has been reported. However, she explained how natural disasters change the ecology and the systems that prevent or control infectious diseases. "Interruptions in provisions of safe water, poor sanitation, and overcrowding of people in shelters after an earthquake predispose transmission of infections. Under these circumstances, the diseases which are usually endemic (at low levels of transmissions) have a potential to manifest in bigger numbers. Disruptions in public health services can also aggravate transmission."

If an infectious disease outbreak occurs in earthquake-hit Nepal, it could be worrying, according to Palavra, "since the curative and preventive health services are disrupted, and the poor living conditions of the affected population is undermining their capacity to resist diseases". She explained: "We are concerned that [an infectious] disease outbreak in such a situation will increase morbidity and mortality, especially among children, pregnant women, and the elderly population".

"Outbreaks and insufficient health-care services are a bad combination", said Jacob John. In Nepal, he recommended immediate campaigns for vaccination against diseases such



Aftermath of the earthquake in Nepal

as cholera, measles, and Japanese encephalitis (in case of vulnerability). "Safe and sufficient water supply would be a more difficult challenge but these days bottled water should be widely distributed", he added.

However, as Singh emphasised, outbreaks of infectious diseases always need an immediate response for containment, irrespective of any calamity. "From the initial phase of the earthquake", she said, "the Ministry of Health and Population, Nepal, was conscious of this possibility and started taking measures in anticipation".

WHO has provided technical, material, and human expertise support in Nepal, said Singh. She described how preparations for containment of outbreaks, as envisaged in International Health Regulations (2005), have been underway in Nepal for several years, including the designation of trained rapid response teams in each district. "This preparedness is of immense use to Nepal now in immediately investigating

any rumours of outbreaks and taking appropriate steps", she added.

According to Palavra, the steps that Nepal has taken to tackle any potential infectious disease outbreak include: establishment of an early warning and response system for disease surveillance and outbreak control in each affected district; reporting of morbidity data to the central monitoring team on a daily basis; formation of rapid response teams to immediately investigate a disease alert; promotion of awareness to the affected population about the use of safe drinking water (by using water-purifying agents) and about the importance of maintaining good hygiene such as by handwashing and other preventive measures; water testing, treatment, and supply of water-purifying agents to affected households; rebuilding of temporary toilets for sanitation purposes; strengthening of primary health-care services (including immunisation for measles, tetanus, Japanese encephalitis, and typhoid);

removal and safe disposal of dead bodies; and distribution of insecticide-treated bednets and other vector control measures (eg, insecticide spraying).

In terms of controlling a potential outbreak of any infectious disease, as Singh also pointed out, Nepal has initiated specific steps. Safe water and improved sanitation are being prioritised, measles immunisation has been initiated rapidly, and epidemiological investigation teams are in place. Furthermore, WHO guidelines for management of outbreaks have been disseminated throughout the country, and WHO personnel are providing all technical assistance, said Singh. She commented, "control of an outbreak requires early diagnosis and immediate containment by cutting on transmission cycles. With preparations in place, we believe Nepal should be able to respond [to any outbreak] effectively".

Sanjeet Bagcchi

Infectious disease surveillance update

MERS-CoV in South Korea

As of June 8, 87 confirmed MERS-CoV infections, including five deaths, have been reported by the South Korean Ministry of Health, in the largest MERS-CoV outbreak outside the Middle East. The first case reported on May 20 was a 68-year-old man who had fallen ill after returning from travelling around several Middle Eastern countries between April 18 and May 3. The patient was asymptomatic on arrival in South Korea but later sought medical care at various facilities; he was admitted to one of these before being diagnosed with MERS-CoV and was then moved to a national treatment facility. The 87 cases reported so far have been from six hospitals in the Gyeonggi Province, four of which were involved in the care of the first case. The cases include health-care professionals, patients, and visitors. So far, contact tracing activities have

led to more than 1660 people being isolated. Since the index case, there have been three generations of cases, most of which have been nosocomially transmitted, and most have had known exposure to other laboratory-confirmed cases.

Anthrax in Turkey

On June 3 and 4, five people were diagnosed with anthrax in the village of Ortakoy in the Black Sea province of Giresun, Turkey. Of these patients, two were sent to Ankara for further tests and treatment. One other person was diagnosed and immediately admitted to hospital. Authorities are undertaking medical examinations of people in the neighbourhood, especially those who have been in contact with animals. The source of the infection remains unknown; however, authorities suspect that straw from outside the province might be the source.

Meningitis in Niger—update

The meningitis outbreak in Niger continues to gain momentum. Between Jan 1 and April 25, 1543 suspected cases were reported. From April 25 to May 12, this number tripled, bringing the total number of suspected cases from Jan 1 to May 12 to 6179. This is the first large-scale meningitis outbreak caused by *Neisseria meningitidis* serogroup C in a country in Africa's meningitis belt, and vaccines against this strain are in short supply. In response, WHO, on behalf of the International Coordinating Group on Vaccine Provision for Epidemic Meningitis Control, has negotiated for urgent production of multivalent polysaccharide vaccines to be dispatched to Niger in the next few weeks. Vaccine campaigns targeting children aged 2–15 years are ongoing in most of the affected districts.

Ruth Zwizwai

For more on **MERS in South Korea** see <http://www.promedmail.org/direct.php?id=3417452>

For more on **anthrax in Turkey** see <http://www.promedmail.org/direct.php?id=3415967>

For more on **meningitis in Niger** see <http://www.who.int/csr/don/15-may-2015-niger/en/>