News from here and there

Pollution and risk of early deaths in India

The increasing pollution across India is a matter of alarming concern. The report 'Source apportionment, health effects and potential reduction of fine particulate matter ($PM_{2.5}$) in India' published in May 2018 by the Air–Weather–Climate (AWC) Research Group of Louisiana State University, with contributions from Greenpeace India, correlates the health risks faced by the citizens of India based on predicted $PM_{2.5}$ concentrations and the benefits that can be accrued with policy interventions.

The study applied the following models: Community Multi-scale Air Quality (CMAQ) model, anthropogenic emissions from the Emissions Database for Global Atmospheric Research (EDGAR), biogenic emissions from the Model for Emissions of Gases and Aerosols from Nature (MEGAN) v2.1, and meteorology from the Weather Research and Forecasting (WRF) Model, to compute the impacts of 8 different source types to fine particulate matter and its major constituents including primary particulate matter (PPM) and secondary inorganic aerosols (SIA) in India for the year 2015.

The source types studied were energy, industry, residential, on-road, off-road, agriculture, open burning and dust. The health risks were then projected on the basis of the anticipated $PM_{2.5}$ concentrations and an analysis was done of benefits for air quality, based on prospective policy interventions.

In the Indo-Gangetic region, which includes northern and eastern India, $PM_{2.5}$ concentrations were highest, especially during the winter. The winter nitrate concentrations were 160% to 230% more than the annual average. The fraction of sulphate in the total $PM_{2.5}$ concentrations was maximum during the monsoons due to decreased temperature. The primary organic aerosol (POA) fraction in $PM_{2.5}$ was highest across all regions of India, except in southern India, where sulphate was the major component.

The chief causes for premature mortality due to $PM_{2.5}$ exposure were cerebrovascular disease (0.44 million), ischaemic heart disease (0.40 million), chronic obstructive pulmonary disease (0.18 million) and lung cancer (0.01 million), totalling to 1.03 million deaths. Premature mortality was maximally seen in Uttar Pradesh (0.23 million), Bihar (0.12 million) and West Bengal (0.10 million).

The study showed that in the most polluted areas in the country, the chief contributors were residential activities, energy, industry and agriculture.

The bulk of premature mortality in all the states that were studied was due to residential sources, indicative of the fact that many households continue to use solid fuels for cooking. Industrial sources were responsible for most premature deaths in Delhi, while mortality due to emissions from energy production was maximum in Chhattisgarh, which is rich in minerals. Agricultural emissions resulting in premature mortality was maximum in Arunachal Pradesh and the other northeastern states.

The study also shows that with full implementation of potential emission control schemes, the average $PM_{2.5}$ levels will be reduced by 40% across the nation, and 858 900 deaths can be prevented annually.

This reduction in $PM_{2.5}$ levels can be achieved by reducing residential emission from combustion of solid fuels, power sector emissions and diesel generator sets. There is a pressing need to bring in new emission standards for the power and industrial sectors.

The famous French explorer and conservationist Jacques Yves Cousteau once said: 'Water and air, the two essential fluids on which all life depends, have become global garbage cans.' It is time that the government and the citizens of India recognized this problem and worked towards a solution.

P.M. NISCHAL, *Bengaluru, Karnataka*

NIPAH virus outbreak in Kerala

An infectious disease outbreak with symptoms of acute respiratory distress syndrome and encephalitis was observed in 3 members of a family, who later succumbed to the disease. Subsequently, the nurse who attended to them in a subdistrict hospital in Kozikode, Kerala caught the same infection and died.

This Nipah Virus Outbreak, the third in India, struck Kozikode and Malappuram in the state of Kerala in May–June 2018. India has had 2 earlier outbreaks in 2001 and 2007 in West Bengal. Siliguri Nipah virus outbreak was the first in India in 2001.

As per the International Health Regulations (IHR 2005), the Kerala event was notified to WHO on 23 May 2018 and WHO published a Disease Outbreak News on 31 May 2018. Kerala has been on 'All time Alert' after 17 patients died, so as to limit the spread of infection. That Kerala, a state with very good health facilities, was hit by the epidemic is a warning that spread of infection is multifactorial and that the best of health facilities are no guarantee of total protection from emerging zoonotics.

India's National Centre for Disease Control estimated that the current outbreak began when locals drew water from a bat-infested well. Laboratory testing of throat swabs, urine and blood samples collected from 4 suspected patients was conducted at the National Institute of Virology in Pune. Three were confirmed positive for Nipah virus (NiV) by real-time polymerase chain reaction (RT-PCR) and IgM ELISA for NiV.

Preventive measures have been implemented with greater efficiency. The state's Director of Health Services, R.L. Saritha, said that there had been no new cases reported since 1 June 2018.

The Nipah virus is believed to be transmitted from animals to humans. According to WHO, the *Pteropus giganteus* fruit bat (reservoir of NiV) is the natural host of the disease. Nipah virus was first recognized in the late 1990s, when an outbreak in pigs in Malaysia and Singapore moved to humans, killing more than 100 people. Bangladesh suffers annual Nipah attacks, owing to exposure to virus in the sap of date palm trees contaminated by infected bats. Alarmingly, Nipah virus transmission from human to human through droplet infection came to light with this episode of Nipah virus attack in Kerala.

Nipah virus infection so far has been limited to countries in south and east Asia, where 600 cases have been reported between 1998 and 2015. Yet, the potential of a pandemic of Nipah

virus disease cannot be overlooked. Currently, there is no cure, vaccine or specific treatment for the disease. Supportive care is all that can be offered to affected individuals. Case fatality can be as high as 75%.

Nipah virus infection has been placed in the 2018 WHO list of priority epidemic threats demanding urgent research and development. This list encompasses Ebola, Zika, MERS, Lassa and Crimean-Congo haemorrhagic fever. Work on the development of biomedical tools including diagnostics, therapeutics and vaccines is in the pipeline. Surveillance infrastructure, better understanding of the ecology of bats and Nipah virus infection, especially outside of outbreak scenarios, strict adherence to infection control protocols and public awareness are essential for disease control.

JYOTI PRIYADARSHINI SHRIVASTAVA
Gwalior, Madhya Pradesh

WHO releases first-ever model list of essential *in vitro* diagnostics

On 16 May 2018, WHO published the first edition of the Model List of Essential In Vitro Diagnostics. This is part of the 3 strategic priorities that WHO has outlined in its Thirteenth General Programme of Work for the period 2019–23. The list is a core component in the plan to extend health coverage across the globe, address health emergencies and promote healthier populations.

The list emphasizes on tests needed to diagnose the most commonly encountered medical conditions as well as a number of global priority diseases. The tests, which will mainly be done on human blood and urine specimens, will have some investigations that will be suitable for use at the primary health-centre level, without the need for electricity or trained medical personnel. Of the 113 investigations in the list, 58 tests are for detection and diagnosis of common conditions which form the basis for screening and management of patients. The remaining 55 tests are designed for the detection, diagnosis and monitoring of 'priority' diseases such as HIV, tuberculosis, malaria, hepatitis B and C, human papillomavirus and syphilis. The list is accompanied by literature guidelines to ensure appropriate and quality-assured supplies, training of healthcare workers and safe use.

Diagnostics included in the list do not recommend specific brands; rather they consist of tests described according to their biological targets. This approach provides information on access to affordable, quality-assured *in vitro* diagnostics to the public while targeting high-burden communicable and non-communicable diseases and diseases of public health importance. The list, which was developed after exhaustive discussions between Member States of WHO, with special attention paid to disease prevalence and public health relevance, will be updated on a regular basis to maintain efficacy and accuracy, and comparative cost-effectiveness.

When asked for his opinion on the subject, Professor Madhukar Pai (Canada Research Chair in Epidemiology and Global Health, Director, McGill Global Health Programs and Director, McGill International TB Centre) said: 'There are many benefits to developing an essential diagnostics list (EDL). These include improving patient care, helping detect outbreaks, increasing affordability of tests, reducing out-of-pocket expenses for tests, reducing antibiotic abuse, improving regulation and quality of diagnostic tests, strengthening accreditation and quality of laboratories, improving supply chain and guiding the R&D of new diagnostic tools. While the WHO EDL is a welcome development, the list, by itself, will not have an impact. To see a meaningful impact, countries will need to adopt and adapt the WHO list, and develop their own national lists. I am happy that India has taken the lead in developing a National EDL. Hopefully, other countries will follow.'

India's national EDL is available at *www.icmr.nic.in/sites/default/files/whats_new/Draft_NEDL.pdf*.

MAHARRA HUSSAIN, *Dubai, United Arab Emirates*

WHO releases ICD-11

WHO released its new International Classification of Diseases, Eleventh Revision (ICD-11) on 18 June 2018 for testing and implementation according to the specific requirements of various countries. The ICD is a system of medical coding created by WHO, for documenting diagnoses, diseases, symptoms and signs and social circumstances. Thus, it forms the basis for identifying health trends and related statistics in the world. There are approximately 55 000 unique codes for injuries, diseases and causes of death.

ICD-11 is due to be presented at the World Health Assembly in May 2019 for adoption by Member States. It will come into effect in its entirety on 1 January 2022. For the first time ever, proposals from healthcare workers were invited and studied before drafting ICD-11.

The current release is an initial step that allows countries to plan its implementation and train health professionals. ICD-11, which has been under preparation for over a decade, is an improvement on previous versions. It is completely electronic, digitalized and user-friendly. The previous version ICD-10 was endorsed by the 43rd World Health Assembly and is currently in use. India adopted the ICD-10 in 2000.

The ICD is used for health insurance reimbursements by national health programme managers and data collection specialists. It helps in tracking the progress in global health and guides the allocation of resources for health. This revision aims to simplify the coding structure. ICD-11 can be used for cancer registration in multiple languages.

ICD-11 also reflects progress in medicine and advances in scientific understanding. The additions in ICD-11 are codes relating to antimicrobial resistance as well as chapters on traditional medicine and on sexual health. Transgender disorder is placed under mental diseases; addictive disorders now has 'Gaming disorder' as a new entity. Immune diseases and sleep disorders have separate sections.

Dr Lubna Alansari, WHO's Assistant Director-General for Health Metrics and Measurement is hopeful that ICD-11 will focus on newer and latest patterns of diseases. WHO is determined to support the countries taking up the implementation of the new ICD-11.

The ICD-11 is currently in the trials and testing stage.

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