

# News from here and there

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## Billions of people still lack safe drinking water, sanitation facilities and basic hygiene

In June 2019, WHO and United Nations Children's Fund (Unicef) Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) published its report entitled 'Progress on drinking water, sanitation and hygiene: 2000–2017'. This report highlights the inequalities faced by people globally in accessing water, sanitation and hygiene; it also underscores that half the world's population does not have access to safe sanitation services.

The JMP generates globally comparable estimates of the progress done on drinking water, sanitation and hygiene (WASH). It is also responsible for the monitoring of the Sustainable Development Goal (SDG) targets related to WASH.

The numbers tell their own story: Of the current world population of nearly 7.7 billion, about 2.2 billion people lack safely managed drinking water supplies while 4.2 billion people lack access to safely managed sanitation services, and as many as 3 billion do not have basic handwashing facilities with soap and water at home.

Safely managed drinking water and sanitation services refers to drinking water from sources that are located in the premises and free of contamination, and are available when needed; as well as the use of hygienic toilets from which waste is treated and disposed of safely.

Basic services indicate a protected drinking water source from which water can be collected in less than 30 minutes, use of an improved toilet or latrine that is not shared with other households, and availability of handwashing facilities with soap and water in the house.

The report shows that since the year 2000, 1.8 billion people have gained access to basic drinking water services, but there are still huge inequalities in the availability, access and quality of these services. An estimated 1 in every 10 persons (i.e. 785 million) still do not have basic services; this includes 144 million people dependent on untreated surface water. In rural areas, the situation is far worse, with 8 in 10 people lacking access to these services.

The proportion of population practising open defaecation has halved since 2000, from 21% to 9%. Near-elimination has been achieved in 23 countries, which indicates that open defaecation is practised by less than 1% of the population. However, 673 million people still practise open defaecation, and they are mainly concentrated in 'high burden' countries such as Cambodia, China, India, Nepal, Indonesia, Pakistan and the Philippines in Asia. In 39 of these 'high burden' countries, there was an increase in the numbers of people practising open defaecation, with the majority of people in sub-Saharan Africa where there has been a strong population growth in the same period.

Diarrhoeal diseases, cholera, dysentery, typhoid and polio are transmitted by contaminated water. Each year, 485 000 diarrhoeal deaths occur as a result of contaminated drinking water. Additionally, by the year 2025, half of the world's population will live in water-stressed areas.

Poor sanitation not only reduces the well-being of humans, but also lessens their social and economic development because of impact such as anxiety, risk of sexual assault and lost educational opportunities. Poor sanitation is also a major factor for malnutrition and tropical diseases such as intestinal worms, schistosomiasis and trachoma.

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## London and Dusseldorf patients: A ray of hope for HIV cure?

Ten years after Timothy Ray Brown, popularly known as the 'Berlin patient' was declared free of human immunodeficiency virus (HIV), two successive patients named as the 'London' and 'Dusseldorf patients' (as they wished their identities to be concealed) were declared free of HIV in March 2019. When Ray Brown was declared HIV-free, it was considered a rare happening but the news of these two patients having been declared free of HIV infection within a span of a month has generated great interest in the communities suffering from HIV and those treating HIV, about the possible use of bone marrow transplant for HIV.

While Ray Brown and the Dusseldorf patient had acute myeloid leukaemia, the London patient had Hodgkin lymphoma. All three patients had HIV infection. They underwent stem cell transplants for their haematological malignancies and received bone marrow transplants from patients with a rare homozygous mutation in HIV cofactor CCR5 called delta 32 mutation. It causes a 32-base-pair deletion and prevents CCR5 expression. As a result, these cells become resistant to HIV-variants interacting with CCR5 co-receptor. All the patients underwent total body irradiation. The London patient had been free of disease for 18 months and the Dusseldorf patient for three and a half months by April 2019.

This raises the question—whether bone marrow transplant similar to the above cases can offer permanent treatment for HIV patients? This correspondent contacted Dr Savita Pahwa, MD, Director (Professor, Microbiology and Immunology [Pediatrics and Medicine], University of Miami Miller School of Medicine, FL, USA) regarding the significance of these two patients who are claimed to be free of HIV infection. Dr Pahwa explained that these cases are 'important in that they illustrate that HIV cure is possible. However, discontinuation of therapy for prolonged periods without virus rebound and absence of HIV reservoir are the criteria for proving virus eradication. The scientific field is opting for achieving functional cure or permanent remission, i.e. even though the virus is not fully eradicated, there is no evidence of relapse because it is kept in check by the host immune system without the need for antiretroviral therapy.' When asked about the practicality and feasibility/non-feasibility of using bone marrow transplants from such donors for HIV cure of all patients with HIV infection, she added 'it is not practical for all patients as it is expensive and risky but is worth attempting in HIV patients who need a stem cell transplant for

another reason such as a malignancy. To the correspondent's query about the latest research going on in terms of achieving HIV cure, Dr Pahwa stated 'many strategies are being tried in combination. Delivery of potent monoclonal antibodies has proved to be promising'.

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### **AWaRe: A new WHO tool for preventing development of antimicrobial resistance**

Antimicrobial resistance and development of superbugs are already the most common emerging problems in the world and it is estimated that they will result in 50 million deaths worldwide by 2050. In selected low- and middle-income countries, the proportion of resistant infections ranges from 40% to 60% compared to an average of 17% for countries of the Organisation for Economic Co-operation and Development. Stakeholders and world leaders are aware and concerned about the problem but solving it requires altogether different efforts with strict changes from the policy level to the implementation level. To help in combating the current situation, WHO has launched a tool in June 2019—AWaRe (Access, Watch and Reserve), which is developed by the WHO Essential Medicines List to contain rising resistance and make antibiotic use safer and more effective.

The tool revolves around the concept on what kind of antibiotics should be used in which conditions. It classifies antibiotics into three groups:

1. *Access* (antibiotics of choice for each of the 25 most common infections should be available at all times, as well as affordable and of assured quality),
2. *Watch* (includes highest-priority critically important antimicrobials and are recommended only for specific, limited indications) and
3. *Reserve* (antibiotics that should be used only as a last resort when all other antibiotics have failed).

The tool aims to have all countries' antibiotic usage report by 2023 and to increase the proportion of global consumption of antibiotics in the Access group to at least 60%, and to reduce use of the antibiotics most at-risk of resistance from the Watch and Reserve groups. Using Access antibiotics lowers the risk of resistance because they are 'narrow-spectrum' antibiotics (which target a specific microorganism rather than several).

With this new tool, WHO has started a global campaign, the AWaRe campaign: 'Adopt AWaRe, Handle antibiotics with care', urging governments to adopt it to reduce the spread of antimicrobial resistance, adverse events and costs. This categorization, if used accordingly, will guide prescriptions and treatment while monitoring use of antibiotics.

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### **Air pollution: Lung health is at stake**

World Environment Day, which was observed on 5 June 2019, focused on poor air quality and termed it a public health emergency and urged healthcare providers to make efforts to improve air quality. Air pollution is a major global health risk. India is estimated to have some of the worst levels in the world.

Fine particles (PM 2.5; particles smaller than 2.5  $\mu$ ), nitrogen dioxide and ozone are major constituents of air pollution. Exposure to air pollution includes ambient particulate matter pollution and household air pollution. In India, ambient particulate matter pollution is created by the burning of coal for thermal power production, emissions from factories and other industries, building construction work as well as by brick kilns, vehicles, dust, burning of biomass, burning of agricultural stubble, and by diesel generators. Household air pollution is caused mainly by burning of wood, dung, coal and charcoal.

Particulate matter pollution is defined as the annual average concentration of PM 2.5, and household air pollution is defined as percentage of households using solid cooking fuels. The exposure to PM 2.5 and higher was studied across the states of India using accessible data from multiple sources as part of the study: 'A Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2017'. The Indian states were categorized into three sociodemographic index (SDI) levels on the basis of lag-distributed per capita income, mean education in people aged 15 years or older, and total fertility rate in people younger than 25 years. Deaths and disability-adjusted life-years attributable to air pollution exposure, on the basis of exposure-response relationships from the published literature were assessed in GBD 2017. GBD 2017 brought forth alarming results.

Studies indicate that high levels of PM 2.5, nitrogen dioxide and ozone and indoor pollutants lead to exacerbations of lung diseases resulting in an increase in hospitalization and emergency cases. This can occur in those with pre-existing lung disease and lead to reduced lung function, chest tightness, shortness of breath and inflammation.

In India, <40  $\mu\text{g}/\text{m}^3$  is the limit recommended by the National Ambient Air Quality Standards. PM2.5 is exceedingly high in North Indian states. As much as 55.5% of the population used solid fuels in India in 2017. A total of 12.5% of the total deaths, were attributable to air pollution which were mostly in the population below 70 years of age. It was estimated that if air pollution levels in India were controlled, the average life expectancy in 2017 would have been higher by 1.7–2 years. The Clean Air Strategy aims to reach zero emissions by 2050.

Better public understanding and awareness is essential if people are to make informed decisions and influence the air quality in their communities. A combined effort is needed if we wish to make true progress in improving air quality. Currently, there is no clear strategy or legislative guidance.

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