Each of these studies could contribute to that goal, but the work is still preliminary, says Gabriel Nuñez, an immunologist at the University of Michigan Medical School in Ann Arbor. For example, the microbial study does not show that any of these organisms contributes to disease, he notes. And it is unclear what proportion of people with IBD have altered *ETS2* activity or make autoantibodies against IL-10. "Perhaps these are rare patients, and only a handful in the world will benefit," he says.

Yet even if only a handful of people find relief because of these results, that will be progress, he adds. "Even if you cure only one patient, it's important for that person and their family."

1. Stankey, C. T. *et al. Nature* **630**, 447–456 (2024).
2. Griffin, H. *et al. N. Engl. J. Med.* **391**, 434–441 (2024).
3. Kumbhari, A. *et al. Cell Host Microbe* **32**, 1147–1162 (2024).
4. GBD 2017 Inflammatory Bowel Disease Collaborators. *Lancet Gastroenterol. Hepatol.* **5**, 17–30 (2020).

HALF OF THE WORLD LACKS SAFE DRINKING WATER, STUDY FINDS

Latest estimate doubles the previous figure, highlighting gaping holes in health data.

By Alix Soliman

Approximately 4.4 billion people drink unsafe water – double the previous estimate – according to a study published on 15 August in *Science*. The finding, which suggests that more than half of the world's population is without clean and accessible water, puts a spotlight on gaps in basic health data and raises questions about which estimate better reflects reality.

That this many people don't have access is "unacceptable", says Esther Greenwood, a water researcher at the Swiss Federal Institute of Aquatic Science and Technology in Dübendorf and an author of the paper (E. E. Greenwood *et al. Science* **385**, 784–790; 2024). "There's an urgent need for the situation to change."

The United Nations has been tracking access to safely managed drinking water, recognized as a human right, since 2015. Before this, the UN reported only whether global drinking-water sources were 'improved', meaning they were probably protected from outside contamination, with infrastructure such as backyard wells, connected pipes and rainwater-collection systems. According to this benchmark, it seemed that 90% of the global population had its drinking water in order. But there was little information on whether the water itself was clean and, almost a decade later, statisticians are still relying on incomplete data.

"We really lack data on drinking-water quality," Greenwood says. Today, such information exists for only about half of the global population. That makes calculating the exact scale of the problem difficult, she adds.

In 2015, the UN created its Sustainable Development Goals to improve human welfare. One of them is to "achieve universal and equitable access to safe and affordable drinking water for all" by 2030. The organization updated its criteria for safely managed drinking-water sources: they must be improved, consistently available, accessible where a person lives and free from contamination.

Using this framework, the Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP), a research collaboration between the World Health Organization (WHO) and the UN children's agency UNICEF, estimated in 2020 that there are 2.2 billion people without access to safe drinking water. To arrive at this figure, the programme aggregated data from national censuses, reports from regulatory agencies and service providers, and household surveys.

But it assessed drinking-water availability using a different method from the one used by Greenwood and her colleagues. The JMP examined at least three of the four criteria in a given location, and then used the lowest value to represent that area's overall drinking-water quality. For instance, if a city had no data on whether its water source was consistently available, but 40% of the population had uncontaminated water, 50% had improved water sources and 20% had water access at home, then the JMP estimated that 20% of that city's population had access to safely managed drinking water. It then scaled this figure across a nation's population using a simple mathematical extrapolation.

By contrast, the *Science* paper used survey responses about the 4 criteria from 64,723 households across 27 low- and middle-income countries between 2016 and 2020. If a household failed to meet any of the four criteria, it was categorized as not having safe drinking water. From this, the team trained a machine-learning algorithm and included global geospatial data – including factors such as regional average temperature, hydrology and population density – to estimate that 4.4 billion people lack access to safe drinking water.

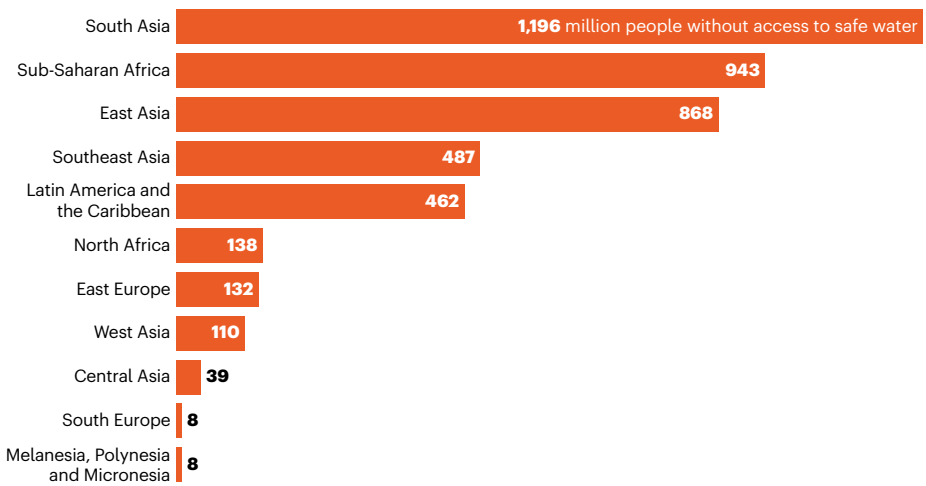
The model also suggested that almost half of those people live in South Asia or sub-Saharan Africa (see 'Water woes').

'A long way to go'

It's "difficult" to say which estimate – the JMP's or the new figure – is more accurate, says Robert Bain, a statistician at UNICEF's Middle East and North Africa Regional Office, based in Amman, Jordan, who contributed to the calculation of both numbers. The JMP brings together many data sources but has limitations in its aggregation approach, whereas the latest estimation takes a small data set and scales it up with a sophisticated model, he says.

WATER WOES

A modelling study has revised the estimate for the number of people in the world without safe drinking water up from two billion to four billion. And South Asia, which includes Bangladesh and India, is being hit hardest.



SOURCE: E. E. GREENWOOD *ET AL. SCIENCE* **385**, 784–790 (2024)

The study by Greenwood and her colleagues really highlights "the need to pay closer attention to water quality", says Chengcheng Zhai, a data scientist at the University of Notre Dame in Indiana. Although the machine-learning technique used by the team is "very innovative and clever", she says, water access is dynamic, so the estimation might still not be quite right. Wells can be clear of pathogenic bacteria such as *Escherichia coli* one day and become contaminated the next, and the household surveys don't capture that, Zhai suggests.

"Whichever number you run with — two billion or four billion — the world has a long way to go" towards ensuring that people's basic rights are fulfilled, Bain says.

HOPES DASHED FOR DRUG AIMED AT MPOX EMERGENCY IN AFRICA

Early trial results show that an antiviral drug is no better than placebo against a spreading virus.

By Mariana Lenharo

The drug tecovirimat did not accelerate recovery for people in a clinical trial in the Democratic Republic of the Congo (DRC) who were infected with a concerning type of monkeypox virus, according to the US National Institutes of Health (NIH). The viral type, called clade I, has been spreading across Africa and is thought to be more lethal than the one that caused a global outbreak of disease that began in 2022, known as clade II.

Tecovirimat, an antiviral drug, is used to treat mpox, the disease caused by the monkeypox virus, despite there being limited clinical evidence that it resolves symptoms. The drug was originally developed to treat smallpox, which is caused by a related virus; both are members of the *Orthopoxvirus* genus.

"These are certainly not the ideal results that we were all hoping for," says Jason Kindrachuck, a virologist at the University of Manitoba in Winnipeg, Canada.

The spread of clade I in the DRC and other countries in Africa prompted the World Health Organization (WHO) to declare a public health emergency of international concern — its highest level of alert — on 14 August. A day earlier, the Africa Centres for Disease Control and Prevention (Africa CDC), based in Addis Ababa, declared its first-ever public-health emergency over the outbreak.

Since then, both Sweden and Thailand have reported their first cases of a strain of clade I, called clade Ib, that scientists reported in April as being able to spread more easily between people, by means including sexual contact (E. H. Vakaniaki *et al. Nature Med.* https://doi.org/nc55; 2024). Before last year, clade I was thought to transmit mainly through household contact and through contact with infected wild animals.

ELIJAH NOUVELAGE/BLOOMBERG/GETTY

The drug tecovirimat was made for smallpox.

During the trial, launched by the NIH's National Institute of Allergy and Infectious Diseases (NIAID) in Bethesda, Maryland, and the DRC's National Institute of Biomedical Research in Kinshasa, people infected with clade I were given either tecovirimat or a placebo pill. According to the NIH, which announced early results on 15 August, the antiviral did not reduce the duration of mpox symptoms compared with the placebo.

Mpox can cause fluid-filled skin lesions, fever, headache and, in severe cases, death. Significantly, however, the study participants' mortality rate, regardless of whether they received tecovirimat or placebo, was lower than the overall mortality rate for any type of mpox reported in the DRC: 1.7% versus 3.6%.

This could be because of the care that the participants received during the trial. The 597 people enrolled were hospitalized for at least 14 days, and during this period they received, among other things, nutritional support; treatment for other infections or diseases they had, including malaria; and psychosocial support.

"The level of care was very high," says Lori Dodd, a biostatistician at the NIAID and a project leader for the trial. Maintaining that high quality of care outside a clinical trial could be challenging, she adds, "so the team will be working on how to translate that care model for people with mpox who are recovering on an outpatient basis and in resource-limited settings".

Hope for specific groups

The maker of tecovirimat, SIGA Technologies, based in New York City, suggested in a press release that trial participants who had received early treatment with the drug and those who had severe disease had shown a "meaningful improvement". But the full data have not been released. They are being analysed, and a manuscript is being prepared for submission to a peer-reviewed journal, Dodd says.

"We are all eager to see the paper, in particular to see if there is any group that could be selectively targeted for treatment, especially people with HIV," says Piero Olliaro, an infectious-disease specialist at the University of Oxford, UK, adding that outcomes for people with advanced HIV who get infected with the monkeypox virus are often poor (O. Mitjà *et al. Lancet* **401**, 939–949; 2023).

It's not yet clear whether the trial results can be extrapolated to clade Ib. "We don't know a lot about clade Ib for the time being, and we need more investigations into the clinical presentation and outcomes to inform whether new clinical trials are required," Olliaro says.

Although the preliminary results for tecovirimat are disappointing, Kindrachuck says, they do point to the fact that "if we get resources into the DRC and beyond for support for patients with clade I mpox, we can actually increase recovery".

Nicaise Ndembi, a virologist at the Africa CDC in Addis Ababa, says that the results do not change the response plan to the current outbreaks, which includes enhancing surveillance, increasing laboratory testing, strategic distribution of the limited vaccine doses available and negotiating the acquisition of more doses. But he says that the findings highlight the fact that an appropriate standard of care is crucial to reducing mortality related to mpox.

A vaccine against mpox, made by the biotechnology firm Bavarian Nordic in Hellerup, Denmark, exists, but is largely unavailable in African countries. However, Bavarian's chief executive, Paul Chaplin, has reported to *STAT News* (see go.nature.com/3t040ih) that the European Union has placed an order for 175,000 doses to be donated to the Africa CDC.

Additional reporting by Max Kozlov.