Amid Ohio Measles Outbreak, New Global Report Warns of Decreased Vaccination During COVID-19 Pandemic

Jennifer Abbasi

A measles outbreak is underway this winter in central Ohio, where 73 known cases and 26 hospitalizations have occurred since late October, according to health department data updated on December 12. The Columbus-area outbreak comes on the heels of an unrelated cluster of 22 cases in Minnesota this year.

Meanwhile, an annual report from the World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC) warns that substantial progress toward global measles elimination saw setbacks during the COVID-19 pandemic that put millions of children at risk for the highly contagious disease.

According to the November 25 Morbidity and Mortality Weekly Report (MMWR), an estimated 24.7 million children worldwide missed their first measles vaccine dose through routine immunization services in 2021, and another 14.7 million missed their second dose.

Because measles transmits so efficiently, 89% to 94% vaccination coverage is needed to achieve herd immunity depending on the setting, according to a 2017 WHO position paper. The new report estimated that global measles vaccination coverage for the first dose in the 2-dose series decreased from a peak of 86% in 2019 to 81% in 2021, the lowest coverage since 2008.

Estimated measles cases and deaths are still down from historic levels, the report noted. From 2000 to 2021, estimated cases decreased from more than 34 million to around 9.5 million and estimated deaths fell from more than 760,000 to almost 128,000—an 83% reduction in mortality. However, both estimated cases and deaths were higher in 2021 than in 2020.

In the year leading up to this October, 29 large or disruptive measles outbreaks have occurred in Africa, the Eastern Mediterranean, and Europe, according to provisional monthly data reported to the WHO. Nigeria leads the number of cases reported over the past 12 months, with more than 22,000, but Liberia’s measles rate is the highest, at more than 1000 cases per million people.

History tells that outbreaks continue to pose risks to unvaccinated or undervaccinated children everywhere, including in the US, where measles was declared eliminated in 2000. In 2019, before the COVID-19 pandemic, 873,022 cases were reported globally, with almost 1300 of those in 31 US states.

In an interview with JAMA, WHO surveillance officer Anna Minta, MD, MPH, the first author of the new report, said that the WHO and the CDC “are deeply concerned about the declining coverage rates of measles-containing vaccine.”

“With record lows of nearly 25 million children who did not receive even one dose of measles vaccine, suboptimal early detection of measles outbreaks through surveillance, and large ongoing outbreaks,” she said, “measles is an imminent threat in every region of the world.”

**Eroding Progress**

The world has made major strides in routine childhood vaccination in the past 4 decades. Global coverage of the first dose of measles-containing vaccine more than doubled from 1980 to 2019, according to an analysis from last year. But most of the gains were made in the first 30 years, and coverage of childhood vaccinations largely plateaued over the past decade.
During the COVID-19 pandemic, routine childhood vaccinations backslid. Data published this fall suggest that between 2019 and 2021, global vaccination coverage decreased not just for measles but also for diphtheria, tetanus, and pertussis; tuberculosis; *Haemophilus influenzae* type b; hepatitis B; polio; rubella; and human papillomavirus.

“The paradox of the pandemic is that while vaccines against COVID-19 were developed in record time and deployed in the largest vaccination campaign in history, routine immunization programmes were badly disrupted, and millions of kids missed out on life-saving vaccinations against deadly diseases like measles,” WHO Director-General Tedros Adhanom Ghebreyesus, PhD, said in a November 23 statement.

Several factors contributed to the decline in measles vaccination during the pandemic, said Saad B. Omer, MBBS, MPH, PhD, director of the Yale Institute for Global Health. Even early on, the interpretation that vaccination turned “into this insanely polarized political thing,” he said, further eroding vaccine acceptance. “Once there was that kind of hesitancy out there and that kind of divisiveness, it’s not surprising that it has bled over into people thinking about vaccine mandates and childhood vaccinations in general.”

Vaccine hesitancy—or outright refusal—is driving the measles outbreak among children in central Ohio, according to Mysheika W. Roberts, MD, MPH, health commissioner for Columbus Public Health, the jurisdiction where about 95% of the total cases have occurred. Even before the COVID-19 pandemic, Omer warned that increasing data gaps will complicate catch-up vaccination strategies, something he’s pushing the US and other nations to implement. “We are potentially looking at the biggest backslide in immunization rates, even in this country, and a lot of us are flying blind,” he said.

Along with vaccination coverage, the new report found that global measles surveillance also has decreased. Ratner said this means that a recent decline in cases reported worldwide—from 873,022 in 2019 to 159,073 in 2020 to 123,981 in 2021, according to the November 25 MMWR—may not be accurate.

An undercount would have implications beyond tracking and preventing measles. For epidemiologists like Minta, measles is a canary in the coal mine. Because measles transmits much more easily from person to person than many other infections but is highly preventable with vaccination, an increase in cases can be the first sign of weakness in immunization programs and health systems. “If measles vaccination is decreasing and we’re seeing measles outbreaks, that means there’s a breakdown in health services in general,” Minta said.

Future reports could bring better news. In a December 6 statement, Kate O’Brien, director of the Department of Immunization, Vaccines and Biologicals at the WHO, announced that the organization and its immunization partners will intensify action in 2023 to “catch up, recover, and strengthen” the childhood vaccination program to at least pre-pandemic levels.

Both Ratner and Omer said they expect to see more measles outbreaks in the US and globally until vaccine coverage improves everywhere. This will require strengthening weakened health systems,

“we’re sounding the alarm that if your child is of age and not vaccinated, they should get vaccinated ASAP.”

Mysheika W. Roberts, MD, MPH

parents were afraid to bring their children to vaccination clinics was simplistic, “and has proved to be even more simplistic as time went on,” he said in an interview.

More important, in his view, was a whole health system under stress. “There isn’t a lot of slack in the world when it comes to the capacity of the system,” he said.

Health systems and aid agencies around the world were forced to cut back on non-COVID services to reduce the spread of infection and to divert personnel and other resources to the pandemic. In many places, this affected routine and supplementary immunization activities and disease surveillance, explained Adam Ratner, MD, MPH, director of the Division of Pediatric Infectious Diseases at New York University Grossman School of Medicine.

In fact, the new report found that 18 measles vaccination campaigns planned since March 2020 still hadn’t taken place by December 2021, adding up to an estimated 61 million vaccine doses that were postponed or missed.

Uptake Issues

In the US, most children today have access to vaccines, Ratner said in an interview. Vaccine hesitancy, however, is a major barrier to childhood vaccination that is growing in importance, he said.

Ratner noted that before COVID-19, most US neighborhoods had good childhood vaccination coverage, but pockets existed with low rates. During the pandemic, vaccination turned “into this insanely polarized political thing,” he said, further eroding vaccine acceptance. “Once there was that kind of hesitancy out there and that kind of divisiveness, it’s not surprising that it has bled over into people thinking about vaccine mandates and childhood vaccinations in general.”

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Both Ratner and Omer said they expect to see more measles outbreaks in the US and globally until vaccine coverage improves everywhere. This will require strengthening weakened health systems,
using data-driven approaches to improve vaccine acceptance, and getting the highest level of political commitment, Omer said: “It’s not going to happen on autopilot.”

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Conflict of Interest Disclosures: Dr Omer reported being a consultant to the Bill & Melinda Gates Foundation, Gavi, and the US Food and Drug Administration Biologics Effectiveness and Safety Initiative through IBM; being a member of the National Vaccine Advisory Committee; being on the faculty of the Medscape Steering Committee for the COVID-19 Vaccination Education Center; being a selection panel member for the Kuwait Foundation for the Advancement of Sciences; serving on The Rockefeller Foundation Global Vaccination Initiative Advisory Council; and having provided written and oral testimony regarding vaccines to state and federal legislative committees. Dr Ratner reported being associate editor of Clinical Infectious Diseases, a publication of the Infectious Diseases Society of America; being a member of the American Academy of Pediatrics Committee on Infectious Diseases and the Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices MMR Vaccine Working Group; being a past member of the board of directors of the Pediatric Infectious Diseases Society; and being past president of the Infectious Diseases Society of New York. Dr Roberts reported serving as chair elect of the Big Cities Health Coalition, being a member of the CDC Advisory Committee to the Director Health Equity Workgroup, the Lifeline of Ohio Minority Advisory Group, and OhioHealth’s Faith, Culture and Community Benefit Committee; and being a mentor for OhioHealth’s Physician Diversity Scholars Program. No other disclosures were reported.

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