

Current measles vaccination targets may not be enough to achieve elimination

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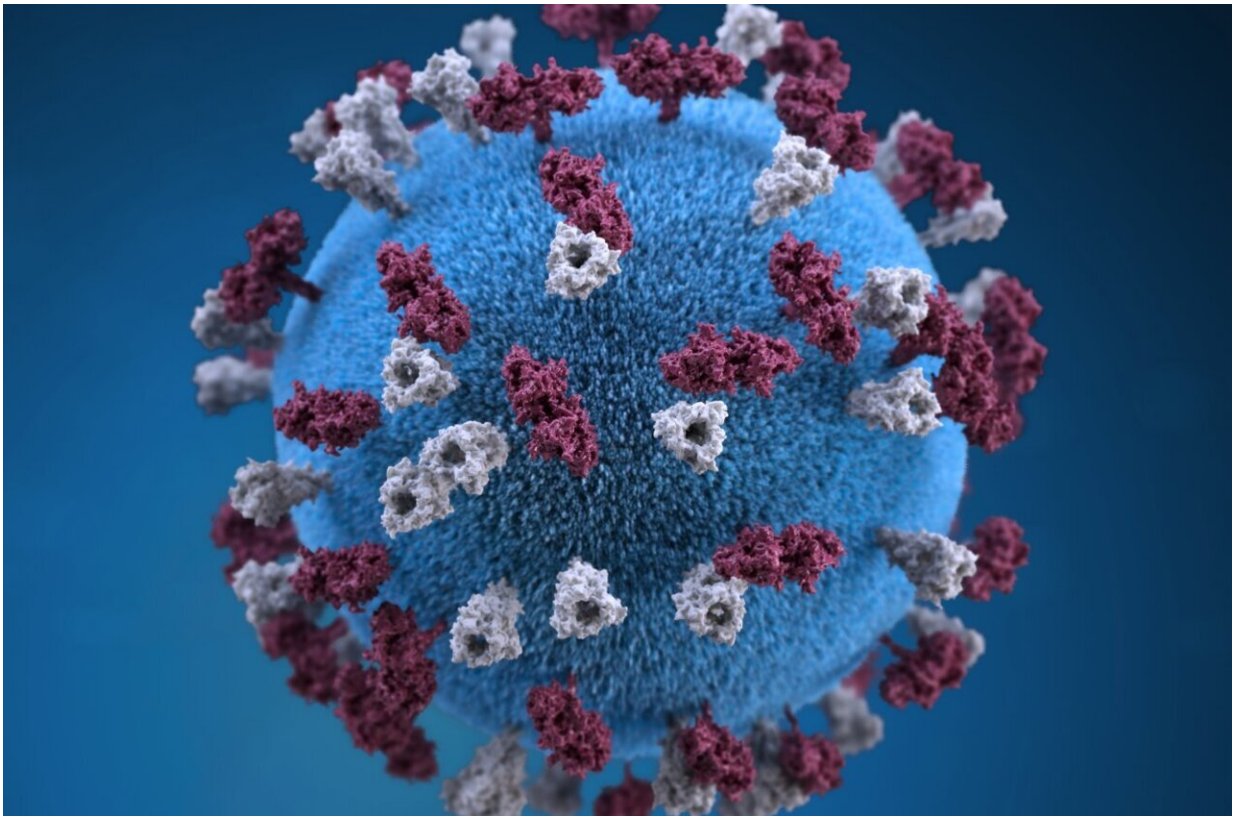


Illustration of the virus which causes measles. Credit: CDC/ Allison M. Maiuri, MPH, CHES

New research, to be presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Lisbon,

Portugal (23-26 April), suggests that the current two-dose measles immunization coverage target of 95% may be the absolute minimum required to provide enough protective immunity in the population to achieve and maintain measles elimination.

The [systematic review](#) and meta-analysis examining the effectiveness of two doses of the measles [vaccine](#) in over 7,000 participants (aged 9 months to 23 years) from 13 countries is by Lukas Hemmers from the State Office for Health and Social Affairs in Berlin, Germany, and colleagues.

According to the latest published figures from 2018, only six countries in the EU/EEG (Croatia, Hungary, Iceland, Portugal, Slovakia, and Sweden) report two-dose measles [vaccine coverage](#) of 95% or higher, suggesting that elimination of measles in the EU is uncertain, researchers say.

Measles elimination is defined as the absence of endemic measles transmission in a region or other defined geographical area for 12 months or longer. Because measles spreads so easily, an estimated 95% of a population needs to be vaccinated with two doses of measles-containing vaccine (MCV2) every year in every community to achieve protection for all and prevent outbreaks.

This current elimination strategy assumes that two doses of the measles are at least 96% effective in preventing measles, and that at least 91.5% of the population are immune to the disease. However, estimates of MCV2 vaccine effectiveness have not been properly combined to determine whether they are high enough to achieve elimination.

To provide more evidence, researchers searched for all observational studies published in English, German, Dutch and Spanish, which reported on the vaccine effectiveness of MCV2 up to April 2021. The

final analysis included 33 peer-reviewed articles from an initial cache of 430. The analysis included 21 studies comparing the risk of measles in individuals (aged 9 months or older without immunodeficiency) that had received MCV2 to those who had not been vaccinated. All studies were conducted in outbreak settings.

The analysis estimated that average MCV2 effectiveness was 96.4% in the general population under real world conditions. Age, location and [study design](#) did not appear to have an impact on vaccine effectiveness, although the moderator analysis was limited to only seven studies from Europe and North America.

"Over the past two years, the number of reported measles cases in Europe have been low, probably due to COVID-19 control measures rather than reaching the 95% immunization target for measles vaccination. However, our analysis suggests that even if routine two-dose measles vaccination reaches 95%, and the [vaccine effectiveness](#) is 96%, then the fraction of the population that needs to be immune to achieve elimination (ie, 91.6%) is only just met, if you discount immunity conferred by one dose of measles-containing vaccine", explains Hemmers.

He continues, "Assuming pre-pandemic contact patterns will return as we come out of the pandemic, a vaccination level of 95% should be the minimum requirement, rather than the goal, for successful measles elimination. Consequently, further efforts to increase measles vaccination coverage are needed in most European countries."

Prior to the COVID-19 pandemic, almost 90,000 cases of measles and 37 deaths were reported across 48 of the 53 countries in the WHO European region in the first six months of 2019. This is more than the 84,462 cases recorded for the whole of 2018. Ukraine was particularly affected, with more than 54,000 cases and 18 deaths in the first six

months of 2019. Moreover, four countries (Albania, Czechia, Greece and the UK) have lost their measles elimination status. Across the European region as a whole, was 91% coverage for the second dose of measles vaccination in 2018.

The authors acknowledge some limitations with the study, including that the review mainly included [observational studies](#) from the WHO regions of Europe and North America. In addition, the included studies did not provide data on people older than 23 years of age—which may limit the conclusions that can be drawn. "This highlights that our view on the immunogenicity of [measles](#) vaccination is skewed towards younger people and the effect of waning immunity in adults is not adequately addressed", says Hemmers.

Provided by European Society of Clinical Microbiology and Infectious Diseases

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