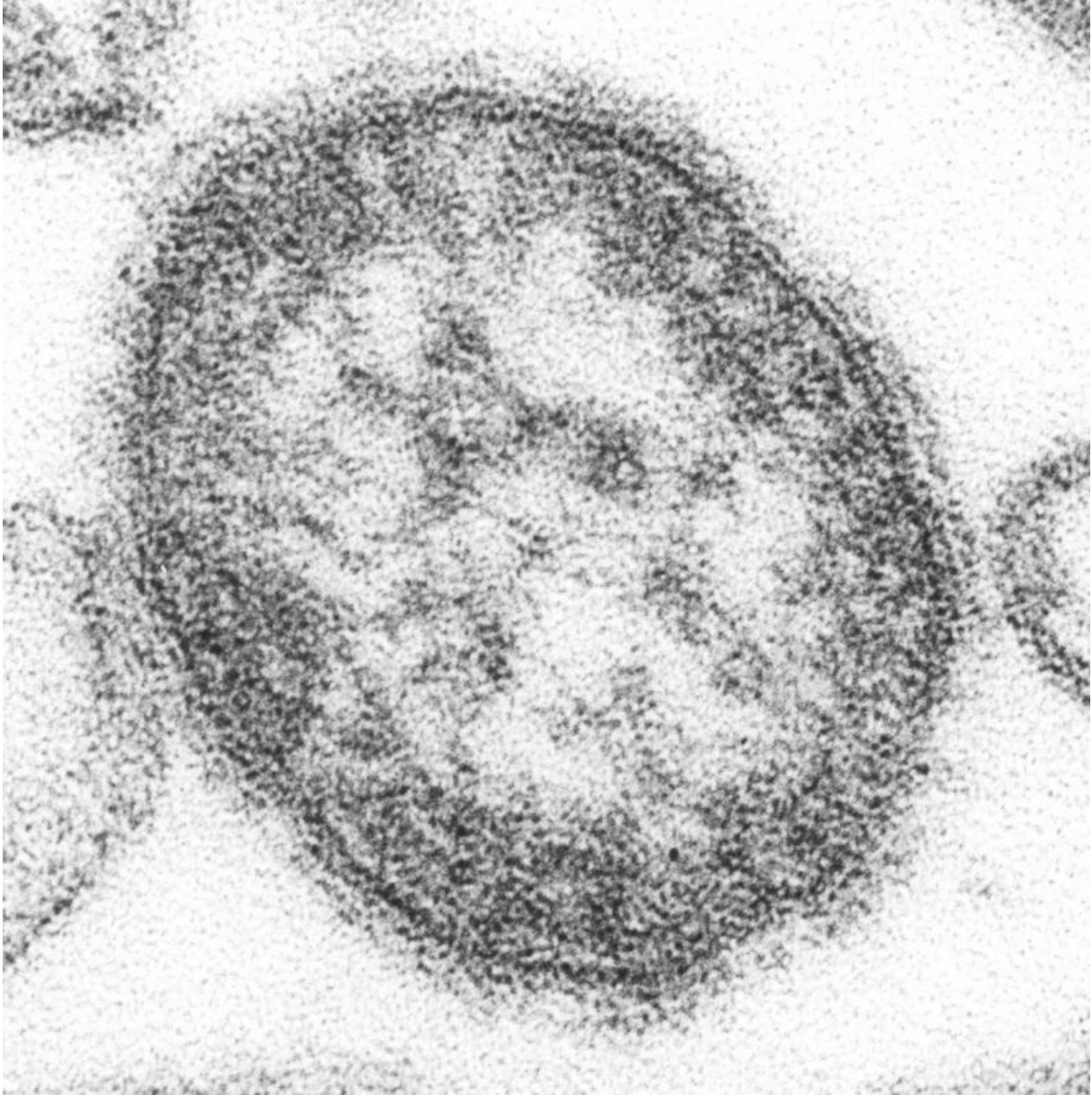


Australia is 'an island in a sea of measles'

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An electron micrograph of the measles virus. Credit: CDC/ Courtesy of Cynthia

S. Goldsmith

Combating the resurgence of measles requires vigilant clinicians and sustained, high level vaccination coverage, because Australia is "an island in a sea of measles," according to the authors of Perspective published online today by the *Medical Journal of Australia*.

Measles is the most highly communicable human virus known. Compared with COVID-19, which has an R0 (the average number of secondary cases generated from a single case in a fully susceptible, freely mixing population) of between 2 and 3, measles has an R0 of between 9 and 18—double that of smallpox and four times that of Ebola.

"It can therefore result in devastating and explosive outbreaks where immunity gaps exist," wrote the Perspective authors, led by David Durrheim, Professor of Public Health Medicine at the University of Newcastle, and Director of Health Protection, Hunter New England Population.

It is transmitted by respiratory droplets, and aerosolised particles can remain airborne for up to two hours, making infection possible well after a patient has left an enclosed space such as a clinic waiting room.

"Although the majority of patients recover from measles, up to one child in every thousand infected in wealthy countries will die, usually due to pneumonia or encephalitis," wrote the authors. "The immunosuppression caused by the [measles infection](#) may last months to years, and rare but devastating neurological complications include acute disseminated encephalomyelitis, measles inclusion body encephalitis and subacute sclerosing panencephalitis."

In 2019, Australia had 285 confirmed [measles cases](#), the highest number reported since 2014, the year that it was verified by the Regional Verification Commission for Measles Elimination in the Western Pacific to have eliminated measles.

"At the beginning of 2020, Samoa was in a state of emergency due to a measles outbreak," wrote Durrheim and colleagues.

"It resulted in over 5700 cases and over 80 deaths, the majority being in children under five years of age. There were concurrent outbreaks regionally, in New Zealand, Tonga, American Samoa and Fiji. Globally, there has been a massive resurgence of measles with over 360,000 cases reported to the World Health Organization between 1 January and 31 July 2019—almost three times the number reported over the same period for 2018. We have also seen the re-establishment of endemic measles in some countries, such as the United Kingdom, where it was previously eliminated."

Durrheim and colleagues wrote that although the majority of measles cases occurred in underimmunised individuals there has been a "small but increasing" proportion of cases in adults reporting previous measles vaccination.

"At the time of elimination verification in Australia, the estimated efficacy of measles [vaccine](#) was 96.7% for one dose and 99.7% for two doses," they wrote.

"Thus, about one in 300 fully vaccinated people who are exposed to measles are vulnerable to "breakthrough" infection, resulting from either an inadequate response at the time of vaccination or waning of immunity over time." Vaccination remains the key control mechanism for measles. A population immunity of 95% is required to eliminate ongoing measles transmission. While childhood vaccination coverage in 2019 was above

90% for all Australian states and territories, few met the 95% target for measles.

"Measles virus is the ultimate opportunist and will capitalize on any gaps in immunity," Durrheim and colleagues concluded.

"National programs are important, but measles control cannot be achieved without effective local prevention and [control measures](#), including diligent vaccination and prompt diagnosis by alert clinicians. With outbreaks occurring regionally, concerted effort is required to maintain Australia's elimination of measles and continue progress towards the goal of global [measles](#) eradication."

More information: Kirsten M Williamson et al. Australia: an island in a sea of measles, *Medical Journal of Australia* (2020). [DOI: 10.5694/mja2.50650](#)

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