

# Pacific Island Countries demonstrate the sustained success of a coordinated measles mass vaccination campaign

David N. Durrheim,<sup>a,\*</sup> Ilisapeci Vereti Tuibeqa,<sup>b</sup> George Siaoasi Aho,<sup>c</sup> Jean-Paul Grangeon,<sup>d</sup> Divinal Ogaoga,<sup>e</sup> Andre Wattiaux,<sup>f</sup> Kayla Mae Mariano,<sup>g</sup> Roger Evans,<sup>g</sup> Shafiqul Hossain,<sup>g</sup> and Syeda Kanwal Aslam<sup>g</sup>

<sup>a</sup>University of Newcastle, Wallsend, New South Wales, Australia

<sup>b</sup>Colonial War Memorial Hospital, Fiji

<sup>c</sup>Vaoial Hospital, Tonga

<sup>d</sup>Pasteur Institute of New Caledonia, New Caledonia

<sup>e</sup>Solomon Islands Ministry of Health and Medical Services, Solomon Islands

<sup>f</sup>Office of Health Surveillance and Response, French Polynesia

<sup>g</sup>World Health Organization Regional Office for the Western Pacific, Philippines

While the world procrastinates on whether to commit to a measles eradication goal, unvaccinated children continue to needlessly die due to this vaccine-preventable viral infection.<sup>1</sup> More than a decade has passed since an expert assessment unequivocally concluded the feasibility of the eradication ambition, but epidemiological, ethical and economic costs of delaying eradication continue to accrue.<sup>2,3</sup> There is increased urgency to accelerate eradication efforts as the dual pandemic impacts of weakened surveillance and decreased childhood immunisation coverage threaten to unleash a global measles resurgence.<sup>4</sup>

There is downside to tackling measles elimination on a country-by-country basis rather than closely coordinating activities, particularly mass immunisation campaigns and surveillance, across epidemiological blocks of countries that share travel, trade, tourism and family connections. In the Western Pacific Region (WPR), since 2014, eight higher-income-countries and areas {HICs—Australia, Brunei Darussalam, Hong Kong SAR (China), Japan, Macao SAR (China), New Zealand, Republic of Korea, Singapore} have been verified to have achieved and maintained measles elimination, while two low-middle income countries (Cambodia and Mongolia) achieved elimination but endemic transmission was re-established within a couple of years.<sup>5</sup> These latter countries border endemic countries with cross-border population flows, providing pathways for recurrent viral introduction.

The 21 Pacific Island Countries and Areas (PICs)—of which five are lower-middle-income and five upper-middle-income-countries—provide a promising case-study of what can be achieved when strongly linked countries coordinate their measles elimination efforts, particularly mass immunisation campaigns. The WPR Measles Elimination Verification Commission and Sub-Regional Verification Committee for Measles and

Rubella Elimination for the PICs agree that there is no evidence of ongoing endemic measles transmission since 2019 in PICs, and have encouraged the PICs to aim for verification of measles elimination by 2025.<sup>5</sup>

Historically, measles had a devastating impact on Pacific Island communities. For example, the 1875 outbreak in Fiji resulted in more than 20,000 deaths during a four-month period; over a quarter of the Fijian population!<sup>6</sup> The PICs continued to experience large regular measles outbreaks, despite the introduction of measles-containing vaccine into all PICs by 1982, and thus they collectively decided to interrupt the cycle of measles transmission. A Pacific-wide coordinated measles vaccination campaign was conducted in 1997/1998, targeting all children up to 14 years of age. As a block the PICs also progressively strengthened routine infant immunization and those with lower coverage conducted periodic vaccination campaigns targeting children 1–4 years of age, mirroring the coordinated approach adopted by the Pan-American Health Organisation.<sup>7</sup>

The synchronised 1997/1998 immunisation campaign achieved high coverage (median country coverage of target group = 94%) and was extremely successful in accelerating elimination. Measles outbreaks declined from an average 11.7 outbreaks per annum between 1980 and 1998 to 1.9 outbreaks per annum between 1999 and 2023 (Fig. 1). There was a simultaneous profound impact on the size of outbreaks with 5.68 large disruptive outbreaks ( $\geq 20$ /million incidence) per annum before the campaign compared to 0.67 per annum after the campaign.

The relatively small population sizes of individual PICs (ranging from 916,131 in Fiji to 35 in Pitcairn Island—see footnote<sup>h</sup>) make it extremely unlikely that measles transmission after importation could persist for >12 months<sup>8</sup> but their close interconnectedness with

<sup>h</sup>Two countries >500,000 population (Fiji, Solomon Islands); >250,000 (Vanuatu, New Caledonia, French Polynesia); >100,000 (Samoa, Guam, Kiribati, Federated States of Micronesia, Tonga); while the remainder have less than 100,000 population (Marshall Islands, Northern Mariana, American Samoa, Palau, Cook Islands, Tuvalu, Nauru, Wallis and Futuna Islands, Niue, Tokelau).

\*Corresponding author.

E-mail address: david.durrheim@newcastle.edu.au (D.N. Durrheim).  
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