



Protecting children from pneumonia

Worldwide, pneumonia is the leading cause of childhood death outside the neonatal period. Most of these deaths have occurred in low- and middle-income countries (LMICs) and about one-third could be prevented by using the pneumococcal conjugate vaccine (PCV). However, LMICs have not made full use of PCV because of its high cost and uncertain impact. Researchers at The University of Melbourne and Murdoch Children’s Research Institute (MCRI) and their international partners have taken major steps towards addressing these issues, making PCV more accessible globally.



Origin

The cost of PCV has declined since it first became available in 2000, however a prevailing understanding that 3 doses of PCV are necessary for sustained protection meant that the absolute cost of vaccination programs remained high.

However, if evidence became available that using reduced-dose schedules was effective, this could allow LMICs to maintain good protection for their populations while providing considerable savings for their health systems.



Investment

NHMRC-funded researchers who have worked to increase PCV availability include Fiona Russell, Kim Mulholland, Paul Licciardi, Catherine Satzke, Jonathan Carapetis and Clair von Mollendorf.

Other sources of funding this research include the World Health Organization (WHO), Gates Foundation, Gavi , Wellcome Trust, PATH, Pfizer, US National Institutes of Health, Thrasher Foundation and the Australian Government Department of Foreign Affairs and Trade (DFAT).



Research

Clinical trials in Vietnam, The Gambia and other countries, led by MCRI teams, demonstrated that a 2-dose PCV in infancy is as adequate as 3, and that even a single dose may provide protection. The success of a 2-dose schedule relies on PCV providing ongoing indirect protection for infants in their first year of life. The MCRI team’s work on indirect effects from studies in Australia, Mongolia, Lao PDR and Papua New Guinea found that PCV provides indirect effects even in settings where vaccination rates are low and heterogeneous.



Translation

Invasive disease and pneumonia surveillance in most LMICs either does not exist or is not of a standard that can be used for policy decisions regarding PCV formulations and schedules. Consequently, the MCRI team led the development of the 2013 WHO pneumococcal carriage guidelines which have now been adopted in 76 countries and which WHO is updating in 2025. The team’s work has also led to further studies of the effectiveness of PCV vaccination campaigns in high-risk settings, including populations living in humanitarian settings.

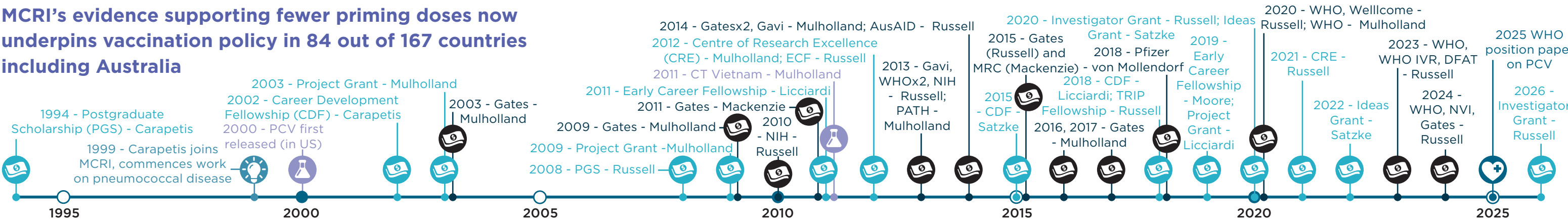


Impact

The WHO updated its PCV Position Paper in 2025, using the findings from MCRI’s trials. Evidence is now available that countries can effectively use a 2-dose schedule provided they have sustained coverage of more than 80% for 5 years or evidence of sustained control of pneumococcal vaccine types.

For LMICs that fit the WHO criteria for a switch to 2 doses, this provides savings to allow improvements in coverage or the introduction of other critical vaccines.

MCRI’s evidence supporting fewer priming doses now underpins vaccination policy in 84 out of 167 countries including Australia



Researchers

Prof Fiona Russell
Prof Kim Mulholland
A/Prof Paul Licciardi

Prof Catherine Satzke
Prof Jon Carapetis AM
Dr Clair von Mollendorf

Prof Grant Mackenzie
Dr Cattram Nguyen
Dr Eleanor Neal



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