



## Rotavirus: discovery and vaccines

Rotavirus is the most common cause of severe gastroenteritis in children worldwide. In Australia during the 20th century it was a major cause of infant death. NHMRC-funded researchers at The Royal Children's Hospital, Melbourne (RCH) and the University of Melbourne discovered rotavirus. Along with researchers at Murdoch Children's Research Institute they also made important contributions to the development of rotavirus vaccines leading to significant decreases in mortality and hospitalisation for infants.



### Origin

Infant diarrhoea has been a significant problem throughout recorded history. In Australia, during the first decade of the 20th century, it accounted for one quarter of all deaths of children aged 0-4 and ranked second only to tuberculosis as a cause of death through infectious disease. During the decade 1919-1928, 15,436 Australian children under one year of age died from gastroenteritis, accounting for almost 20% of deaths in this age group.

### Investment

Over many years, NHMRC invested time and resources towards solving the problem of infant diarrhoea. Commencing in 1945, NHMRC began funding researchers who were looking for solutions. This funding supported investigations into the cause of infant diarrhoea, the identification of viruses using electron-microscopy and the development of vaccines. NHMRC also supported the development of national policy aimed at reducing infant diarrhoea.

### Research

Researchers worldwide had for decades been searching for the infectious cause of acute diarrhoea in infants, but had been unsuccessful. NHMRC-funded researchers equipped with world-leading skills and technology were the first to identify that the upper intestine was the site of infection, the first to identify the infectious agent - rotavirus - and the first to demonstrate how laboratories world-wide could test for the presence of rotavirus in their own patients.

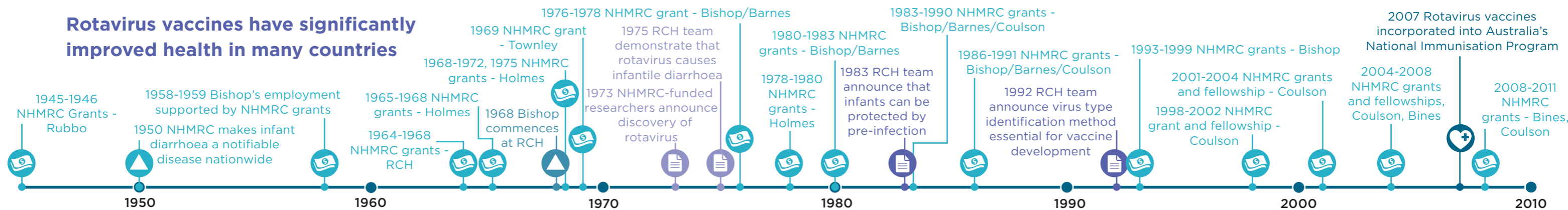
### Translation

In 1983, a team of researchers at RCH announced that infants infected with rotavirus as newborns were protected from severe symptoms of diarrhoea on reinfection. This finding provided strong evidence that a rotavirus vaccine would be effective. The RCH team also produced monoclonal antibodies that have been used globally for vaccine development and trials. From July 2007, rotavirus vaccines were incorporated into Australia's National Immunisation Program for all Australian infants.

### Impact

The rotavirus discovery and vaccine development are among the most important contributions made by medical research to global human health. Worldwide, rotavirus vaccination has led to a significant and sustained reduction in the proportion of hospital admissions for acute gastroenteritis due to rotavirus among children younger than 5 years. The rotavirus vaccine was so effective at reducing hospitalisations that gastroenteritis wards in Australian hospitals were able to close.

### Rotavirus vaccines have significantly improved health in many countries



### Researchers

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