

## Vaccines



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In terms of the public-health benefits that vaccination has delivered, it is almost without an equal – only the provision of safe drinking water has had a greater impact. The World Health Organization estimates that vaccines prevent between 2 million and 3 million deaths from infectious diseases every year. The protection afforded by vaccination is clear, but so is what happens when vaccine coverage in a population falls below the level required to achieve ‘herd immunity’ (see page S44). There are also numerous infections without a vaccine and these continue to claim lives. But researchers are making significant steps towards filling these protective gaps (S46).

Diseases caused by parasitic infection have proved a particularly difficult nut to crack. After decades of research, a vaccine for malaria is being piloted in children in Africa. Although this is a hopeful development, it does not end the quest. The vaccine is imperfect, and other types are being pursued (S51). Progress is also being made in protecting people from parasitic worms (S54). And researchers are exploring the possibility of harnessing the ability of some plants and insects to pass immunity to their offspring to protect them from infection by parasites and other organisms (S55).

In humans, newborns and older people have most to gain from vaccination, because they are the most vulnerable to infectious disease. Unfortunately, vaccines tend to be least effective in these groups. A better understanding of immunity in the old and the very young could lead to vaccines tailored to their needs (S48). Such advances will only bear fruit, however, if people take up the option of vaccination. Groups opposed to the practice have existed for almost as long as the vaccines themselves. For many years, governments have proposed penalizing those who disregard their recommendations, and such mandates are now widespread; evidence of their effectiveness, however, is unclear (S58). For many, a better use of time and money is to listen to the concerns of the hesitant – a much larger group of people than those who are vehemently opposed (S57).

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**Richard Hodson**  
Supplements editor

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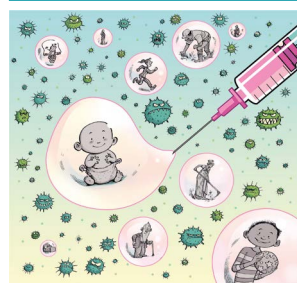
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Vaccines offer protection against disease throughout our lives. Credit: David Parkins

**About Nature Outlooks**

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