

How does herd immunity work?

Script from the animation by the Vaccine Knowledge Project, Oxford Vaccine Group, University of Oxford: <http://vk.ovq.ox.ac.uk/herd-immunity>

Vaccines protect us in two ways. Firstly, they protect the individual against serious infectious diseases. In the case of measles, for example, over 99% of people who get two doses of the MMR vaccine will be completely protected against catching measles.

But there is a second way in which vaccines protect us. If the vaccine stops you catching the disease, you can't pass it on to anyone else. This means that when enough people in the population are protected by vaccination, it effectively stops diseases from circulating at all.

This is often called herd immunity, but a better name is herd protection, because it helps to protect those who are especially vulnerable to infectious diseases. This includes:

- all newborn babies, because they are too young to be vaccinated;
- older people, because our immune systems become less effective as we age;
- people with cancer or an organ transplant, because they are on treatments that seriously weaken the immune system;
- and people who get vaccinated but just don't make a response to the vaccine, for reasons we don't yet fully understand.

You will certainly know people in some of these groups. You may have them in your family now, or in the future. Perhaps you are in one of these groups yourself. If everyone around these vulnerable individuals is fully vaccinated, it will help to protect them against serious diseases like measles that could kill them. So even if you don't feel at risk from a disease yourself, getting vaccinated benefits others in your community and your family.

Sometimes herd immunity is used as a reason not to vaccinate. It sounds reasonable. If everyone around you is vaccinated and you are protected by herd immunity, surely it can't make any difference if you don't get vaccinated yourself?

The problem is that if enough people behave like this vaccination rates will soon fall, and then diseases will start to circulate again. This is particularly true for very infectious diseases such as measles.

It's also important to realise that herd immunity doesn't guarantee protection. People who don't get vaccinated tend to cluster together in communities. So if a disease outbreak does occur, it is much more likely to spread within these communities than in the population as a whole. And herd immunity doesn't work at all for some diseases like tetanus, which is caught from bacteria in the environment rather than other people.

So getting vaccinated gives us the best chance of individual protection, as well as helping to protect some of the most vulnerable people in our society.