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# How do vaccines work?

**KS2** **KS3** Ages 7-14 🕒 4 min read

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Your immune system is brilliant at fighting infections — but it needs to learn what to fight first. Vaccines teach it without making you actually sick.

When a germ like a virus gets into your body, your immune system studies it. It figures out the germ's weak spots and builds special weapons called antibodies designed to destroy it. This takes a week or two — which is why you feel rotten while your body catches up.

A vaccine is like a wanted poster. Instead of meeting the actual criminal, your immune system gets shown a photo and told "if you ever see this, attack immediately." When the real germ shows up, your body already knows exactly what to do — no delay, no getting ill first.

## What's actually in a vaccine?

Different vaccines work different ways. Some contain dead or weakened versions of the germ — harmless, but enough for your immune system to study. Others (like the COVID mRNA vaccines) just deliver instructions that teach your cells to make a bit of the germ's outer coat so your immune system can practise on that.

## Why do some vaccines need multiple doses?

One dose gets your immune system paying attention. A second dose (a "booster") makes the memory much stronger — like revising for an exam. Your immune system then remembers the threat for years, sometimes forever.

## Why does it matter if everyone gets vaccinated?

When enough people are immune, the disease can't spread easily — it keeps running into dead ends. This is called herd immunity. It also protects babies, elderly people, and anyone who can't be vaccinated for medical reasons.