



When the English physician Edward Jenner successfully inoculated a young boy against smallpox, I doubt he envisaged the enduring scope of his breakthrough and the millions of lives that vaccinations would save. The late 1950s saw a concerted worldwide public health drive to vaccinate against smallpox, leading to its global eradication a mere 20 years later. Polio, a potentially crippling disease, has also been declared eradicated across large swathes of the world, but there remains much work to do. Earlier this year measles hit the headlines after an outbreak of 125 cases in Disneyland, California. Partly as a result of its scarcity nowadays, it is often perceived to be harmless and this has seen decreased vaccination rates in many areas. It still however sadly kills 400 people a day, despite being preventable. As vaccination has been proven to be safe and effective at disease prevention, most countries have vaccination schedules for children to ensure that they develop lasting immunity to such infections.

In the UK, we have a fairly robust schedule. It sometimes starts at birth, but usually vaccinations begin at the age of two months with most administered before 13 months. By the schedule's completion in teenage years, our children have effective immunity to an array of harmful diseases, including (but not limited to): diphtheria, tetanus, pertussis (whooping cough), measles, mumps, rubella, pneumococcal pneumonia and meningitis C.

Vaccinations in the UK

Influenza is another vaccine routinely offered now, usually to children between the ages of two and four years old. The month of September usually heralds a big drive for influenza vaccination (as influenza peaks in the winter) but it can be given at any time of year. The schedule can be complex, but essentially if your child is medically fit, they receive a single dose, which is now administered as a nasal spray without needing an injection. The injection is still used for adults - it is particularly important for pregnant women to prevent them from contracting flu during pregnancy. The whooping cough vaccination is also vital for pregnant women, with the aim of protecting the unborn baby from developing this in their first few weeks of life. All women of childbearing age should also have effective immunity against rubella because contracting this during pregnancy can have serious consequences for the developing baby.

It can be tricky keeping up-to-date with what vaccinations should be completed and when they should be given, especially when moving between countries, but a routine check with your doctor should determine if everything is in order or if catch-up doses are required. There are some key differences between the schedules of different countries, which reflect a combination of disease prevalence and financial resources. In France for instance, hepatitis B is one of the routine vaccinations given. This is a good example of a disease that could be

easily eradicated - unlike other infections, it has no animal reservoir or insect transfer, meaning it is purely passed between, and affects humans. The American vaccination schedule also includes this, as well as varicella, more commonly known as chickenpox. This is not part of the UK schedule mainly because children recover well and there is generally a low complication rate, but complications can range from skin infections and scarring to nervous system damage.

Currently in the UK, hepatitis B and chickenpox vaccines are available privately, not via the NHS (unless the child in question is at high-risk of contracting either). Another vaccination currently only available privately is meningitis B, which protects children against serious and potentially fatal strains of this disease. From late 2015, the meningitis B vaccine will be available on the NHS, but only those aged up to four months old at its introduction will be eligible.

Human papillomavirus (HPV) vaccination has a slightly different goal and has become part of the schedule for all young girls in the UK, France and the USA recently. The aim of HPV is to prevent cancer - specifically, cervical cancer. Various sub-types of HPV are known to directly result in this, and the vaccine currently used is effective at immunising against the sub-types that cause 70 per cent of cervical cancers. HPV is an almost unavoidable sexually transmitted virus with no proven cure, so this is a fine example of prevention being paramount.

Today, more than 200 years since Jenner's first steps, vaccination is one of medicine's greatest advances in public health, effectively preventing millions of child and adult deaths annually. With a united vaccination drive we can ensure that countless preventable deaths and complications stay just that - prevented.

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