



“The two public health interventions that have had the greatest impact on the world’s health are **clean water** and **vaccines**.”

FACT: We need herd immunity

Herd immunity is when enough people are vaccinated to protect the population. 95% of people need to be vaccinated for there to be herd immunity because, if a person has measles but everyone around them is vaccinated, it is difficult for it to spread. Currently only 77% of 5-year-olds in London have had a full MMR vaccine course¹⁰. Herd immunity protects vulnerable people who cannot be vaccinated but this can’t be relied on to protect every individual - only being vaccinated can.

FACT: Natural immunity is not a safe alternative

Natural immunity occurs once people have acquired and survived a potentially life-threatening illness. Receiving a vaccine to prevent a life-threatening illness is much safer.

FACT: Combined vaccinations do not overwhelm the immune system

Babies and children encounter millions of different germs every day, and their immune systems are not overwhelmed. Exposure to viruses/ bacteria in vaccines is much less than this natural, daily exposure. A recent large study found **no evidence** that having multiple vaccines at once weakens the immune system or is harmful^{11, 12}.

FACT: Children with egg allergy can safely receive vaccines

The only children who cannot receive vaccines in primary care are those who have had anaphylaxis to a previous vaccine. MMR is safe in those with egg allergies¹³. If a child has a severe egg allergy, they may need to see a specialist before receiving the **flu vaccine only**, and even then, only when the child has previously been admitted to intensive care after severe anaphylaxis to egg¹⁴.

UK Vaccination Schedule¹⁵

8 weeks	<ul style="list-style-type: none"> DTaP/IPV/Hib/Hep B Men B Rotavirus Oral Vaccine
12 weeks	<ul style="list-style-type: none"> DTaP/IPV/Hib/Hep B Pneumococcal (PCV) Rotavirus Oral Vaccine
16 weeks	<ul style="list-style-type: none"> DTaP/IPV/Hib/Hep B Men B
12 – 13 months	<ul style="list-style-type: none"> Hib/ Men C MMR (VaxPRO or Priorix*) PCV booster Men B booster
2 – 8 years	<ul style="list-style-type: none"> Children’s flu vaccine (each year from September)
3 years 4 months	<ul style="list-style-type: none"> DTaP/IPV MMR (check first dose given)
12 – 13 years	<ul style="list-style-type: none"> Human Papilloma Virus (2 doses 6-24 months apart)
13 – 18 years	<ul style="list-style-type: none"> Td/IPV (& check MMR status) Men ACWY

For information about unknown/incomplete vaccination history & vaccinations abroad see:

Public Health England - Vaccination of individuals with uncertain or incomplete immunisation status:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/658744/Algorithm_of_individuals_with_uncertain_or_incomplete_vaccine_status.pdf

UK and international immunisation schedules comparison tool:
<https://www.gov.uk/government/publications/uk-and-international-immunisation-schedules-comparison-tool>

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Vaccinations: facts & figures

Introduction

In 1915 the single leading cause of death of 1-4 year-old children in the UK was **measles** - 11,498 children died. In 2015 the single leading cause of death was a brain tumour, killing fewer than 20 children¹.

Vaccination is one of the most successful public health measures ever introduced, preventing up to 3 million deaths worldwide every year. The UK has a comprehensive vaccination schedule to protect against a range of infectious diseases. Unfortunately, there has been a decline in vaccination uptake over the past two decades. Because of this, cases of measles and mumps have nearly doubled in recent years - **in 2018, there were 962 confirmed measles cases in England**².

MMR



The **MMR vaccine protects against measles, mumps and rubella**. Rubella can be very harmful to unborn babies. A mother infected in the first 10 weeks of pregnancy will likely miscarry and 90% of babies who survive will suffer from learning disabilities, blindness, deafness, heart abnormalities or stunted growth³.

PCV



The PCV vaccine protects against pneumococcal infection, which can cause **pneumonia - the leading cause of death in children worldwide**. Pneumococcal infection can also cause meningitis. 15% of children with this will die and 25% will have severe lasting effects, including loss of hearing/sight, learning disabilities & seizures³.

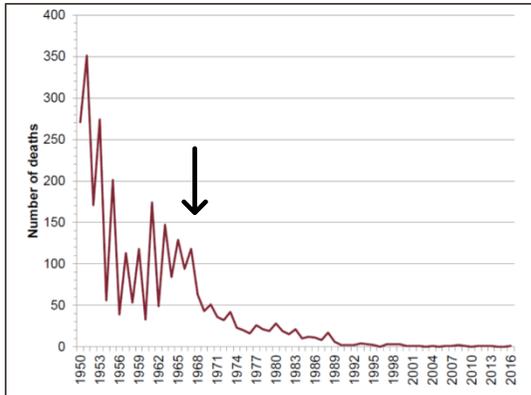
Men B & Men ACWY



Men B & ACWY vaccines **prevent meningococcal septicemia**, 1 in 20 cases of which result in death. 1 in 5 survivors have permanent effects such as limb amputations, hearing loss, seizures and brain damage³.

FACT: Vaccinations work

This graph shows deaths caused by measles before and after the vaccine was introduced in 1968¹.



FACT: Side effects - measles vs vaccination

1 million children with measles	1 million children vaccinated with MMR
80,000 will have diarrhoea	999,966 will have no issues
70,000 will have otitis media (ear infections)	33 will develop transient thrombocytopenia (a temporarily reduced platelet count which gets better on its own)
50,000 will have pneumonia (chest infections)	1 will have a significant allergic reaction
1000-3000 will have primary encephalitis (swelling/ inflammation around the brain)	<1 (0.22) may develop encephalitis (swelling/ inflammation around the brain). There is no strong evidence of this, but there are a few case reports.
1000 will have postinfectious encephalomyelitis (swelling/inflammation around the brain & spinal cord)	
110 will develop subacute sclerosing panencephalitis (a progressive neurological condition, ending in death)	
2000 will die	

Source: Australian Academy of Science, 2019

FACT: MMR Does not cause autism

A review in 2012 looked at data from **14,700,000** children and **found no association between MMR and autism**⁴.

So why do some people think it does?

In 1998, Dr Andrew Wakefield, published a very small study in the Lancet suggesting a link between autism and MMR vaccination in 8 of the 12 patients they studied. There has since been strong evidence proving this false. The Lancet, who published the paper, retracted it. The General Medical Council investigated Dr Wakefield and he was struck off the medical register. The investigation stated that he was “dishonest, irresponsible and showed callous disregard for the distress and pain” of children. They also said that Dr Wakefield “abused his position of trust” and carried out clinically unnecessary and invasive tests on children without ethical approval or appropriate qualifications⁵.

FACT: Ingredients (incl. heavy metals)

The main ingredients in a vaccine are the active ingredient and water. The active ingredient is usually a tiny part of a virus or bacteria - enough to stimulate the immune system, but not enough to make us unwell with the disease. All other ingredients weigh a few milligrams or less.

Previously, a tiny amount of a mercury-based compound (thiomersal) was used in vaccines. Although there was no evidence demonstrating harm from this, it **has not been present in any UK vaccines since 2006**³. There is a small amount of Aluminium within vaccines (between 0.2 & 0.8mg), as this makes them more effective. Aluminium is naturally present in our food and water supply - we eat & drink an average of 24mg of it every single day⁶.

Members of the Jewish & Muslim community have expressed concerns about porcine gelatin in vaccines (specifically the flu vaccine). Jewish leaders have shown support for vaccines, as no gelatin is being eaten^{7,8}. The Muslim Council of Britain suggests that vaccines containing porcine gelatin (i.e. nasal flu & MMR VaxPRO) are not permitted in Islam unless lives are at risk with no alternatives, but does not suggest refusal. They recommend consulting with a health practitioner to make an informed decision.⁹ *NB: MMR Priorix does not contain porcine gelatin⁸.

Useful Links and References:

- Office for National Statistics: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/causesofdeathover100years/2017-09-18>
- Public Health England: <https://www.gov.uk/government/publications/measles-confirmed-cases/confirmed-cases-of-measles-mumps-and-rubella-in-england-and-wales-2012-to-2013>
- Vaccine Knowledge Project: <http://vk.ovg.ox.ac.uk/>
- Demicheli V, Rivetti A, Debalini MG, Di Pietrantonj C. Vaccines for measles, mumps and rubella in children. Cochrane Database of Systematic Reviews. 2012, Issue 2.
- NHS: <https://www.nhs.uk/news/medical-practice/ruling-on-doctor-in-mmr-scare/>
- Greger JL. Dietary and other sources of aluminium intake. Ciba Found Symp. 1992.
- The JC, 2017, Children at risk as Charedi parents say no to vaccinations (online) available: <https://www.thejc.com/news/uk-news/children-at-risk-as-charedi-parents-say-no-to-vaccinations-1.430122> (accessed 2/7/2019).
- Public Health England, 2019, Vaccines and porcine gelatin (online) available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/824013/PHE_vaccines_porcine_gelatin.pdf
- Muslim Council of Britain, 2019, Position on Flu Vaccines (online) available: <https://mcb.org.uk/mcb-updates/position-on-flu-vaccines/>
- Public Health England Profiles: <https://fingertips.phe.org.uk/>
- Miller, Elizabeth et al. “Safety and immunogenicity of coadministering a combined meningococcal serogroup C and Haemophilus influenzae type b conjugate vaccine with 7-valent pneumococcal conjugate vaccine and measles, mumps, and rubella vaccine at 12 months of age.” Clinical and vaccine immunology: CVI vol. 18,3 (2011): 367-72. doi:10.1128/CVI.00516-10
- Glanz, Jason M et al. “Association Between Estimated Cumulative Vaccine Antigen Exposure Through the First 23 Months of Life and Non-Vaccine-Targeted Infections From 24 Through 47 Months of Age.” JAMA vol. 319,9 (2018): 906-913.
- A. T. Clark, I. Skypala, S. C. Leech, P. W. Ewan, P. Dugué, N. Brathwaite, P. A. J. Huber and S. M. Nasser, Clinical & Experimental Allergy, 2010 (40) 1116–1129
- ‘Green Book’ April 2019: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/796886/GreenBook_Chapter_19_influenza_April_2019.pdf
- NHS, Childhood vaccines timeline: <https://www.nhs.uk/conditions/vaccinations/childhood-vaccines-timeline>

For further reading see - Vaccine Knowledge Project: <http://vk.ovg.ox.ac.uk/>