Vaccination and Andrew Wakefield

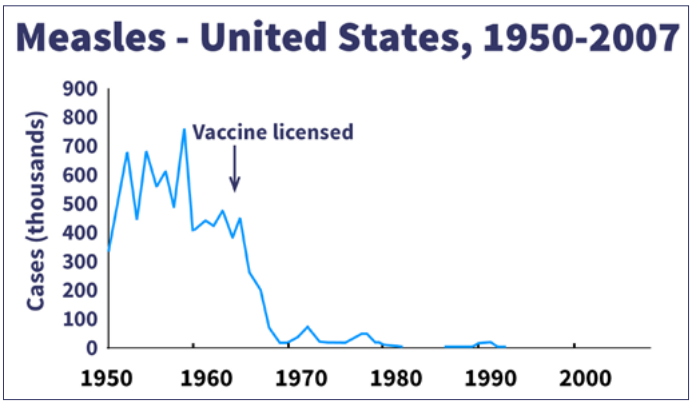
NZASE article

Measles

Measles is a childhood disease that can cause severe symptoms (including brain damage and death)[1]. It is highly contagious, infecting 90 percent of contacts if they are not immune[2].

However, the MMR vaccine now protects us from Measles, as well as Mumps and Rubella. The vaccine contains weakened forms of these viruses which trigger our body to make antibodies to fight them off, making us immune. In Aotearoa/NZ in 1959, 16 people died of measles[3], but the universal introduction of the measles and later MMR vaccines saw measles virtually eliminated.

From Measles gets a helping hand, 2014, Science-Based Medicine.



However, some parents are choosing not to vaccinate their children and now measles is returning. In 2019 Aotearoa/NZ had a serious measles outbreak with 2,200 confirmed cases[2]. Most of these were in Auckland, with Pacific communities particularly affected.

Complications among the 400 who were hospitalised included three cases of encephalitis (brain swelling), 65 of pneumonia, and five pregnant women, two of whom lost their babies (the only two deaths)[4].

It was worse in the Pacific islands. Samoa (population 200,000) reported 5,700 cases and 83 people died, mostly children under five[5].

Although measles is easily prevented, the outbreak occurred because immunisation rates had fallen in Aotearoa/NZ. Reasons included the increasing circulation of misinformation, leading to distrust and reduced uptake of vaccination[4]. And some of this scepticism is due to Andrew Wakefield.

A child being vaccinated. Photo: James Gathany & Judy Schmidt, US Center for Disease Control and Prevention.

Andrew Wakefield's study

This British gastroenterologist was studying bowel problems in children with autism. After approaches by parents, he began to research possible connections with the MMR vaccine.

He found children who suddenly began to show autism symptoms after MMR vaccination. With several co-authors, he published results based on 12 children suggesting a link between their bowel disease (which he called enterocolitis), autism, and the MMR vaccine (note he did not say "caused").

This paper was published in the *Lancet*, a peer-reviewed journal, in 1998. And, unusually for the time, Wakefield held a press conference.

Studies of twins show autism to have a strong genetic basis. Children often show the first unmistakeable signs of autism as toddlers, an age at which they are receiving their vaccinations. A media furore led to a groundswell of parents believing in this external cause and encouraging others not to vaccinate.

The study reinforced the beliefs of those already sceptical about vaccinations and immunisation rates dropped worldwide, especially for MMR (see graph next page). With 95 percent immunisation needed for

herd immunity[1], a drop to 80 percent led to an increased incidence of measles, resulting in severe and permanent damage. The controversy was fuelled by sensationalist media reporting.

Critique

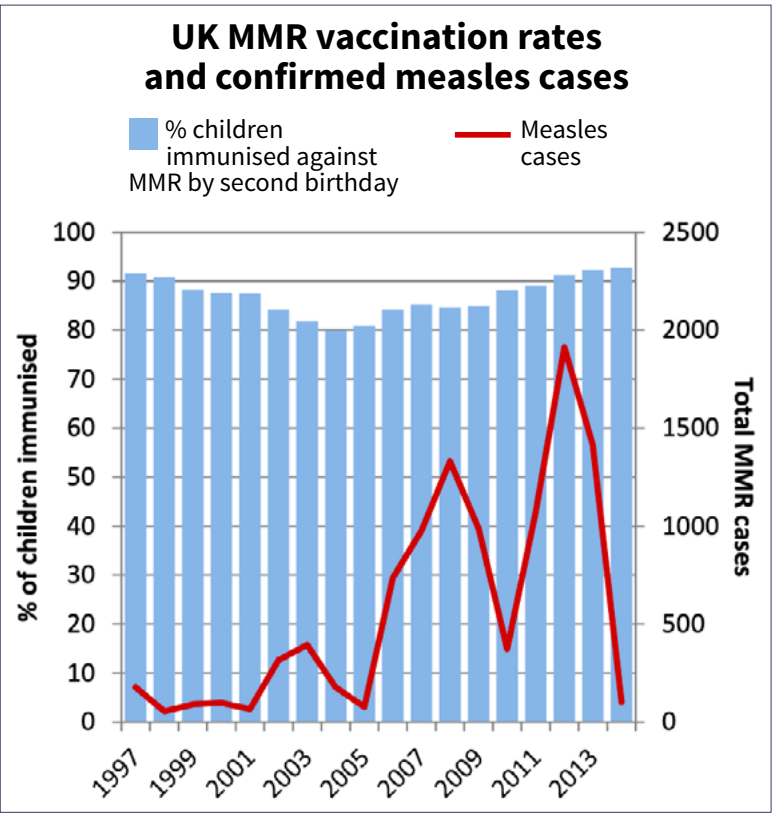
As with all published science, other scientists tried to replicate the findings with larger data sets, but these results could not be reproduced and doubt began to emerge.

Journalist Brian Deer collected a massive amount of evidence of wrong-doing, publishing his findings in the *British Medical Journal* after peer review. He found conflict of interest, a lack of ethics and flawed science in Wakefield's study.

Conflict of interest

Among the most serious finding was that Wakefield had been paid (by legal aid) to produce evidence against MMR by a lawyer hoping to raise a class-action lawsuit against the drug companies [the action failed]. Wakefield also patented an alternative measles vaccine, and in total he earned over £1 million[6]

From e-Bug: Vaccinations teacher sheet



from the work, which he did not declare when submitting his paper to the journal.

This income became public in 2004 with several consequences: *The Lancet* (and most of the co-authors) retracted the conclusions of the paper; vaccination levels rebounded; and in 2007 the General Medical Council (GMC) began a professional misconduct hearing.

Flawed science

This study was not randomised or controlled. The 12 children had been pre-selected through anti-MMR campaign groups, and most of their parents were clients of the lawyer compiling the lawsuit.

The claim of the sudden onset of autism within two weeks of the vaccination was shown to be a sham – unverified assertions by parents. Not one child in Wakefield's study showed all three conditions – autism, its sudden onset and enterocolitis[7]. Some showed symptoms of autism before their vaccination, and some were found to not have autism at all[6,8]. Wakefield did not compare autism rates of children who received MMR with those who were not vaccinated.

Deer accessed patient data to find that Wakefield had "repeatedly changed, misreported and misrepresented diagnoses, histories and descriptions of the children"[6] to support his claim of a link between MMR, the bowel disorder and sudden-onset autism. Wakefield collected data on many children, but only reported on 12[9]. A former graduate student testified that Wakefield ignored laboratory data which conflicted with his hypothesis[10].

Not only did no study by other scientists produce data to support the findings published in the *Lancet*, Deer found a mass

Questions about this graph

1 Describe the trend in immunisation rates.
2 Describe the trend in measles cases.
3 Is there a link or pattern between these two data sets?
4 What other information do we need to understand this link?
5 What are some possible explanations for the drop in measles cases in 2010?

of authoritative research which found no link between MMR vaccine and autism.

For example, one Danish study examined 500,000 children, 75 percent of whom had been vaccinated for MMR. It found no association between vaccination and the development of autism[11].

A Japanese study of 30,000 children found autism cases continued to rise even after the MMR vaccine was withdrawn and replaced with single vaccines[12].

The *Lancet* is a top-rated international journal but its peer-review system was cause for concern here. A study based on results from only 12 cases is statistically meaningless, and should not have been published if it had been adequately vetted[10].

Unethical practice

The 12 vulnerable, developmentally-challenged children were exposed to many invasive and distressing procedures. These included anaesthesia, ileo-colonoscopies, lumbar punctures, MRI brain scans, EEGs, radioactive drinks and x-rays. Despite Wakefield's claim to the contrary, these procedures were not approved by the hospital's ethics committee.

In 2011 the GMC found Andrew Wakefield guilty on all 36 charges, labelling him dishonest and unethical as well as callous in his abuse of developmentally-challenged children. He was struck off the register of UK doctors, no longer able to practice medicine in the UK. The *Lancet* fully retracted the paper.

Like climate change, scientists are near-unanimous on this issue – the MMR vaccine does not cause autism – although this is still argued by non-scientists.

Questions to consider

1. In a table show what Wakefield did wrong, why it was wrong and what he should have done.
2. This trial was not randomised or controlled. What do these terms mean? Include them in Q1.
3. What is a conflict of interest? Why do scientists need to declare them when they publish?
4. What do you think is the lesson from this story?
5. How does the data show the 2019 outbreak in Samoa was worse than in Aotearoa/NZ?
6. What other diseases are children in Aotearoa/NZ vaccinated for?
7. Do some research to find out about autism.

Sources

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Ngā Kupu

From Te Aka Māori Dictionary & Paekupu

Ārai mate – Immunity
Arotake aropā - Peer review
Hamupaka – False, sham, humbug
Mate karawaka – Measles
Mate urutā – Epidemic
Rangahau – To study, research, survey
Rongoā āraimate – Vaccine, vaccination
Takiwātanga – Autism
Tikanga matatika – Code of ethics
Tuku rongoā āraimate – To vaccinate
Whakapae – Hypothesis, hypothesise.