

Anti-vaxx – wilful ignorance or misunderstanding?

From 3 September 2018 to 21 February 2019, the island state of Madagascar reported 82 905 measles cases and 926 deaths,^[1] a totally unacceptably high number of cases and deaths in an era when vaccination against this potentially deadly disease is safe and effective, and freely available in Madagascar. In late February a French couple with an unvaccinated child reintroduced measles to Costa Rica, a Central American country that has been free of the disease for 5 years.^[2] Washington State, USA, declared a state of emergency on 25 January 2019, with 55 cases of the disease declared an outbreak (defined as more than 3 cases). Most cases were in unvaccinated children aged less than 10 years. Cases have been seen in 11 states in the USA this year, according to the Centers for Disease Control, including New York City, New York State and Washington State.^[3] Vaccination rates in the Pacific Northwest are among the lowest in the USA. Yet as relatively recently as 2000, measles had been eliminated from the USA, with no cases transmitted by patients within the country.

It is easy to assume that the anti-vaxx movement is something fairly new. But a quick look at the history of the anti-vaccination movement^[4] takes us back to France in 1763, where inoculation against smallpox was introduced to Paris by an Italian doctor named Gatti. Because of the crude technique, inoculated patients could pose a danger to others and so needed to be quarantined, which Gatti did not do, and the French parliament ordered that no further inoculations take place. However, parents started to inoculate their children because of the prevalence of smallpox across Europe. By 1798, Edward Jenner had engineered the smallpox vaccine, using cowpox. But in spite of the efficacy of the vaccine, there was still controversy. In the UK the Vaccination Act of 1853 ordered mandatory vaccination for infants up to 3 months old, with penalties for vaccine refusal. This was met with immediate resistance, with organisations such as the Anti-Vaccination League forming as a result. The resistance spread to the USA, and by 1879 several groups had formed. By 1924, vaccines were available for tuberculosis, diphtheria and tetanus as well as smallpox, with development ongoing for polio, typhoid, influenza and whooping cough. But opposition remained, particularly in the USA, not helped by the so-called Cutter incident in 1955 in which 120 000 doses of the Salk polio vaccine inadvertently contained live polio virus along with the inactivated virus, causing 40 000 cases of polio, 53 cases of paralysis and 5 deaths. In 1974, 36 children allegedly suffered neurological complications after diphtheria, tetanus and pertussis (DTP) vaccination, leading to a drop from 81% to 31% in UK vaccination rates. And between 1979 to 1996 Sweden declared a moratorium against whooping cough vaccination, during which time 60% of all children contracted the disease before the age of 10.

Now for the big one – the Andrew Wakefield *Lancet* paper^[5] proposing a relationship between the measles, mumps and rubella

(MMR) vaccine and autism. And this one has stuck firmly in people's minds, even though the paper was retracted in 2011. The damage was done. Add to this the 1998 movement to remove thimerosal, containing mercury, used as a preservative in vaccines, the so-called Green our Vaccines movement, and vaccination rates started to fall across the Western world. By 2013, measles had returned to the USA and on 2 July 2015 the first death from measles for 12 years occurred. In the meantime Andrew Wakefield has become a celebrity in his own right, fêted by anti-vaxxers the world over, and gathering the support of influential celebrities and politicians.

On 5 March this year (2019), the *Annals of Internal Medicine* published a nationwide cohort study of 657 461 children born in Denmark from 1999 through to 31 December 2010, with follow-up from 1 year of age and through to 31 August 2013.^[6] They concluded that MMR vaccination 'does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination'. From the responses I have seen on social media to posts about this study by people trying to allay anti-vaxxer's fears, I suspect that even this will not be enough to turn the tide. It would seem that public health is going to become another victim of populism. Throwing science at people who truly do not want to accept it will not work. As a profession we need to try to overcome this wilful ignorance and lack of acceptance, and authorities need to put the public good before individual beliefs.

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