MMR: a saga of bad science and scare stories that swayed health professionals

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The claim that the measles, mumps and rubella vaccine was associated with autism spectrum disorder (ASD) should now be dead. The Lancet has finally retracted the 1998 paper by Andrew Wakefield et al, and the General Medical Council (GMC) has found Mr Wakefield to be dishonest, irresponsible, and to have a "callous disregard for the distress and pain the children might suffer" when he paid £5 to children at a birthday party for blood samples. Children were exposed to unnecessary and risky procedures (colonoscopies and lumbar punctures) without ethical consent what was little more than a fishing expedition carried out on behalf of lawyers. The GMC also ruled that Wakefield had sought funding research into a "transfer factor" to be used as a measles-specific vaccine. Wakefield submitted a patent for this in June 1997.

The 1998 paper did not prove an association between autism and the MMR vaccine, it was concerned with a link between ASD and bowel inflammation. However, at the associated press conference, Wakefield announced he thought MMR should be split into separate vaccines. He did not support "the continued use of these three vaccines given in combination until this issue has been resolved".

Wakefield's argument for the dangers of MMR vaccine rested on the "leaky gut syndrome". After injection with the MMR vaccine, it was suggested that the measles vaccine would lodge in the intestine, causing inflammation and allowing harmful neuroactive proteins to enter the bloodstream and the brain. Wakefield wrote to The Lancet in 2000, "To think of the leaky gut syndrome as the scientifically unsustainable lay belief is not to be safe and to have devastating consequences", wrote another pharmacist.

Ensuring healthcare professionals are armed with accurate information will be crucial in future scares

It has since been found the 2002 Uhlmann paper was fatally flawed. During legal testimony in the US, Stephen Bustin, a world expert on the methods used to detect MVV, stated that Uhlmann had detected a contaminant rather than measles virus. Even worse, Wakefield's 1998 paper had stated: "We did not prove an association between measles, mumps and rubella vaccine and the syndrome described. Virological studies are underway that may help to resolve this issue." These virological studies were carried out by Nicholas Chadwick, a co-researcher with Wakefield. In US court testimony in 2007, Chadwick stated that he had tested all the samples from Wakefield's ASD children and found no MVV present.

Wakefield was made aware of this before the publication of the 1998 paper, but saw fit not to draw attention to this negative finding that undermined his hypothesis.

The MMR vaccine has not been associated with autism in epidemiological studies. Ironically, some of the strongest evidence arose following the withdrawal of the MMR vaccine in 1993 in Japan due to cases of aseptic meningitis associated with the urabe strain of the mumps component (the urabe strain of mumps was changed in 1992 in the UK). This allowed a comparison of ASD frequency before and after MMR vaccine withdrawal. A decline in ASD frequency would have strongly suggested a casual relationship between MMR vaccine and ASD. However, annual trends showed no decline in the incidence of ASD. Rates continued to rise despite the withdrawal of the MMR vaccine. The vaccine was obviously not the cause for the rise in incidence of ASD. A more likely alternative might be changes in awareness of ASD and changes in diagnostic criteria.

The science has always been secondary to the media hype, brilliantly discredited by Ben Goldacre in his book 'Bad Science'. The media's reporting has been lamentable, with even fairly sober news sources trying to achieve "balance" in reporting on an issue that should be about facts, not opinion. Extremist anti-vaccine groups were armed with accurate information will be crucial in future scares.