“Paranoia Strikes Deep”*: MMR Vaccine and Autism

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On February 12, 2009, the US Court of Federal Claims issued a trio of long-awaited decisions in its Omnibus Autism Proceeding.1 The 3 were representative cases chosen from more than 5500 pending MMR/autism cases by the Plaintiffs’ Steering Committee. Each presented the theory that the measles-mumps-rubella (MMR) vaccine in combination with thimerosal, a mercury-based ingredient contained in some diphtheria-tetanus-pertussis (DTP), diphtheria-tetanus–acellular pertussis (DTaP), hepatitis B, and Haemophilus influenzae type B (Hib) vaccines, causes autism. In nearly 700 combined pages that reviewed the scientific and epidemiological evidence, all 3 opinions determined that the plaintiffs had not demonstrated a link between these vaccines and autism.

One opinion ended most dramatically: “To conclude that [the child’s] condition was the result of his MMR vaccine, an objective observer would have to emulate Lewis Carroll’s White Queen and be able to believe 6 impossible (or at least highly improbable) things before breakfast.”

In July and August 2009, the US Court of Federal Claims affirmed the findings in all 3 cases. During this same period, Andrew Wakefield—the UK physician credited with originating the vaccine/autism theory—came under substantial criticism. London’s Sunday Times reported that Wakefield had falsified his findings in his 1998 article in The Lancet.2 On January 28, 2010, the UK’s General Medical Council (GMC) concluded what has been called the “longest and most complex disciplinary hearing ever held,”3 with findings that detailed Wakefield’s “callous, unethical, and
irresponsible” conduct. In response, on February 2, 2010, The Lancet retracted Wakefield’s paper. Neither the judicial decisions, the ethics findings, nor The Lancet’s retraction appears to have shaken the Wakefield faithful. The National Autism Association posted this in the hours following the GMC’s announcement: “Parents of children with autism around the world are calling the findings against Dr Andrew Wakefield in the UK’s General Medical Council unjust and a threat to researchers investigating autism as a medical condition. . . . Bravo to Dr Andrew Wakefield.”

Age of Autism posted this in response to The Lancet’s retraction: “those who will stand behind Wakefield . . . will remain standing proudly with integrity, truth, and honor . . . the lancet will slide into a pool of ignorant denial . . . along with all their lies and cover ups [sic].”

This article seeks to illuminate the debate by reviewing autism prevalence over time, summarizing the findings of the Wakefield ethics hearing, analyzing the legal proceedings, and providing a modest glimpse into the future.

**Autism prevalence through the years**

The word “autism” derives from the Greek autos, meaning “self.” Swiss psychiatrist Paul Bleuler coined the word in 1912 to describe a condition in which a person removes himself or herself from social interaction. Leo Kanner, who founded the world’s first child psychiatry program at Johns Hopkins and authored *Child Psychiatry*—the first text on the subject—published the first description of autism in his 1943 article, “Autistic Disturbances of Affective Contact.”

It would be nearly 4 decades after Kanner’s seminal article before “autism” entered the lexicon of most mental health clinicians. The closest diagnosis listed in the first rendition of DSM in 1952 was “Schizophrenic reaction, childhood type.” In 1968, DSM-II would add that the “Schizophrenia, childhood type” disorder might include symptoms of “autistic, atypical and withdrawn behavior.” DSM-III contained the first listing of “Diagnostic Criteria for Infantile Autism,” and DSM-III-R presented “Diagnostic Criteria for Autistic Disorder.” DSM-IV-TR reiterates the presentation of DSM-III-R.

In 1994, the US Department of Education began to tabulate autism cases. Over the following decade, the number of cases among youths between the ages of 6 and 21 years was shown to increase by more than 20% annually (Table 1).

The data for children aged 3 to 5 years, tabulated since 2000, reveal a similar trend (Table 2).

Most recently, on December 18, 2009, the CDC released “Prevalence of Autism Spectrum Disorders.” The CDC found that “approximately 1% or 1 child in every 110” had autism; this represents an increase in prevalence of 57% from 2002 to 2006. The report concludes: “Although improved ascertainment accounts for some of the prevalence increases documented in the ADDM [Autism and Developmental Disabilities Monitoring] sites, a true increase in the risk for children to develop [autism] symptoms cannot be ruled out.”
In 1995, Andrew Wakefield was a GI surgeon at a London hospital when he developed a theory that the measles virus in the MMR vaccine causes autism. He and a dozen colleagues conducted a study of 11 boys and 1 girl between 3 and 10 years old. As Wakefield wrote in his 1998 *Lancet* paper, “We saw several children who, after a period of apparent normality, lost acquired skills, including communication.” Wakefield’s team conducted a number of diagnostic procedures on the children, including ileocolonoscopy and biopsy, MRI, electroencephalography, and lumbar puncture. Wakefield concluded that all 12 children had an “intestinal dysfunction” that was associated with “autistic-spectrum disorders” in a way that “suggests that the connection is real and reflects a unique disease.”

Wakefield added that his study “did not prove an association between measles, mumps, and rubella vaccine and the syndrome described.” But, he warned, “If there is a causal link between measles, mumps, and rubella vaccine and this syndrome, a rising incidence might be anticipated after the introduction of this vaccine in the UK in 1988.”

Before the publication of Wakefield’s findings, the MMR inoculation rate in the UK was 92%—nearly the herd immunity requirement of 95%. Following the publication, the inoculation rate dropped to below 80%. In 1998, the year of publication, there were 56 measles cases in the UK. By 2008, there were 1348 cases and 2 confirmed deaths.

When subsequent studies failed to find any proof of the connection between MMR vaccine and autism, 10 of the 13 coauthors of the Wakefield study renounced its conclusions. Moreover, 4 years ago, Brian Deer, a reporter for London’s *Sunday Times*, began investigating Wakefield’s study. Among other things, Deer discovered that although Wakefield had reported the onset of the subjects’ autism symptoms immediately after receiving the MMR vaccine, “in only one case did medical records suggest this was true, and in many of the cases, medical concerns had been raised before the children were vaccinated.” Two of the investigative findings were particularly troublesome. Unbeknownst to the parents of the subjects, Wakefield had applied for a patent for an alternative vaccine before commencing his study, and he had been retained by a plaintiff’s attorney and paid over $500,000 to investigate the alleged relationship between the vaccine and autism. Deer’s reporting and 3 letters of complaint to the GMC catalyzed the organization to convene its Fitness to Practise Panel on July 16, 2007, to consider the fates of Wakefield and John Walker-Smith and Simon Murch—2 colleagues who had stood by the 1998 *Lancet* paper. The GMC found ethical violations in Wakefield’s failure to disclose to his patients his compensation arrangement with the attorney, carrying out unwarranted “invasive gastrointestinal and neurological tests” on subjects and, in general, exhibiting “callous disregard for the distress and pain that [he] knew or ought to have known the children involved might suffer.”

Those GI tests were unwarranted because the Wakefield group did not refer children to the gastroenterology department for clinical reasons as reported to parents and in *The Lancet* paper. Rather, the “referring doctors referred the children for investigation of the role played by the measles vaccination or the MMR vaccination into their developmental disorders and did not report any history of GI symptoms.”

Stunningly, the GMC also found that to obtain a “control group,” Wakefield turned to the children who attended his son’s birthday party. There, without proper informed consent or parents’ authorization, he obtained blood samples from the attendees and “as a reward at the end of the party the children who had given blood all received £5.” Compounding the ethical violation, at a conference in California, Wakefield publicly referred to the event in “humorous terms” and expressed “an intention to obtain research samples in similar circumstances in the future.”

Wakefield left the UK in the early 2000s to move to Austin, Tex, where he founded the *Thoughtful House Center for Children*. The organization provides “medical, educational, and recreational services for children with developmental disorders.” He remains unbowed: “The allegations against me and against my colleagues are both unfounded and unjust, and I invite anyone to examine the contents of these proceedings and come to their own conclusion.”

**The litigation**

The autism cases are being prosecuted under the National Vaccine Injury Compensation Program. The law applies to diphtheria, tetanus, pertussis (DTP, DTaP, DT, TT, or Td), measles, mumps, rubella (MMR or any components), polio (OPV or IPV), hepatitis B, Hib, varicella, rotavirus, and pneumococcal conjugate vaccines. Individuals claiming an injury from a covered vaccine must file a claim for “no-fault” compensation with the US Court of Federal Claims. The claims are resolved not by juries but by Special Masters. As the court noted in its background statement on the cases, the hearings for the 3 test cases were comprehensive: “Regarding all 3 cases, in addition to the 5000 pages of transcript and the well over 700 pages of post-hearing briefs, the records in these 3 cases contain...
939 medical articles (a typical vaccine case presents about 10). . . . Between the 3 cases, 50 expert reports were filed and 28 experts testified. (By contrast, a typical vaccine case presents 2 to 6 experts.)

The factual allegations of the 3 cases provide a textbook explanation of the Wakefield theory of “autistic enterocolitis.” Each victim was “a normal child for her first 16 months until she experienced the effects of . . . vaccinations containing thimerosal, and the MMR vaccination.” The vaccines damaged the child’s immune system, resulting in an immune deficiency that prevented her from being able “to clear from her body the measles virus contained in the MMR.” The virus caused inflammatory bowel disease and also “entered [the child’s] brain, causing inflammation and autism.”

The Special Masters rejected each component of the claim. In the Michelle Cedillo case, for example, a toxicologist asserted that the mercury component of thimerosal might provide a “possible path” for the causation of “immune dysregulation and immune suppression in humans.” But, without evidence to support the theory, the Special Master rejected the claim as “speculation.”

Similarly, the Master rejected the claim that Michelle developed an abnormal, “dysregulated” immune system. The parents’ expert had compared the child’s immune system responses with those of adults. But, when compared with the immune systems of similarly aged subjects, Michelle had an “entirely normal immune response.”

Most critically, the parents contended that measles virus had invaded Michelle’s body, causing neurological damage and the resulting autism. They based the claim on an ileum biopsy obtained and processed by the Unigenetics Ltd laboratory in Dublin. The operators of the lab, led by V. Uhmann, had also provided the medical evidence for this possibility in a 2002 paper published in *Molecular Pathology.* Andrew Wakefield and 3 other of his coauthors on *The Lancet* paper were coauthors of the Uhlman paper.

In 2006, a paper by D’Souza and associates in *Pediatrics* found the Uhlmann paper flawed. In particular, the D’Souza paper concluded that the “primers,” or short DNA fragments utilized in the polymerase chain reaction process to amplify the measles virus DNA, had not been sufficiently specific to generate accurate results. That no other researcher ever replicated Uhlmann’s findings reinforced this conclusion. Moreover, the parents “offered virtually no evidence” that the claimed virus was a “vaccine-strain measles virus.”

At opinion’s end, the Special Master offered an explanation for why, given the dearth of medical evidence, the parents had brought their claim: “Unfortunately, the Cedillos have been misled by physicians who are guilty, in my view, of gross medical misjudgment.”

The future

The legal maneuvers are far from over. The parents in each of the cases have appealed to the US Federal Court of Appeals. Moreover, in the summer of 2008, Special Masters heard evidence on the plaintiffs’ second theory of causation—that thimerosal alone causes autism—and their decisions are due soon.

Some advocates of the link between MMR vaccine and autism have changed position in light of the developments over the past year. For example, Alison Singer, a senior executive of Autism Speaks, resigned from the group in January 2009 and urged it to use its resources to look elsewhere for answers because “looking where we know the answer isn’t is one less dollar we have to spend where we might find new answers. The fact is that vaccines save lives; they don’t cause autism.”

But, this quote from Hollywood couple Jim Carrey and Jenny McCarthy, posted on the Age of Autism Web site, illustrates the intransigence of some in these groups: “It is our most sincere belief that Dr Wakefield and parents of children with autism around the world are being subjected to a remarkable media campaign engineered by vaccine manufacturers reporting on the retraction of a paper published in *The Lancet* in 1998 by Dr Wakefield and his colleagues.”

Civil War era lawyer, orator, and philosopher Robert Green Ingersoll once said, “Science built the Academy, superstition the Inquisition.” We can only hope that science and not superstition drives the future of the debate of the relationship between childhood vaccines and autism.

References:


6. Online Etymology Dictionary. 


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