

The Autism Vaccine Scare

The main goal of vaccination is to stop the spread of communicable diseases. Maintaining a herd vaccination rate of ~90% is how WHO controls outbreaks of preventable infectious diseases. However, the autism vaccine scare of the late 1990s compromises herd immunity rates, as isolated outbreaks of measles, mumps and hepatitis occur as a result of a widespread vaccine boycott. This paper identifies key events and lay interpretations that develop during this awkward, unsure time.

There are two key events that first evoke panic among the world's parents. First, the 1998 Wakefield study releases evidence against the MMR vaccine. Wakefield theorizes that the measles virus attacks the gut, making the gut permeable, or "leaky," to toxic chemicals found in gluten- and casein-containing foods. The peptides from the food then leak into the bloodstream and eventually reach the brain, causing changes in development and behavior. This study is retracted twelve years later for professional misconduct. However, the study is captivating to parents because it offers a plausible explanation for the causation of regressive autism. Children with regressive autism develop normally until about 2 years of age, and then they slowly lose typical social skills, speech and behavioral stability. In hindsight, parents commonly report that their children's regressive symptoms occur soon after the administration of the MMR vaccine. With this anecdotal temporal association and the Wakefield findings, a biological causation model is created. The Wakefield study is emotionally appealing to parents because they can relate it to their personal experiences with their children. A

vaccine injury is also logical when added to the sequence of events leading up to an autism diagnosis.

The second event that worsens the U.K. panic occurs across the world in the U.S. In 1999, the CDC releases findings that three thimerosal-containing vaccines, hepatitis-B, Hib and DTaP, expose young children to cumulative levels of mercury that exceed EPA daily exposure limits. A cascade of studies follow, all trying to evaluate if vaccine mercury poisoning is the environmental trigger of autism. Strikingly, the behavioral symptoms of mercury poisoning mirror autism symptoms very closely. The drama worsens when parents learn that only one clinical study has ever tested the toxicity of intravenous thimerosal, and this bogus study was performed in 1930 on dying patients. Later in 1999, the AAP and vaccine manufacturers agree that thimerosal should be removed as a precautionary measure, and this decision sends parents into an uproar because it looks to them like a government cover-up. With lack of evidence to justify administering a potentially toxic metal to children, followed by a swift recall in 1999, parents believe that the government is to blame for thimerosal-related vaccine injuries. Now, it is important to understand that the U.K. and U.S. anti-vaccination events are based on different hypotheses: the U.K. vaccine opponents argue that the MMR vaccine injures the gut, which allows toxic chemicals to reach the brain and hinder development; the U.S. vaccine opponents are against the use of a metal-containing preservative because children may receive cumulative doses that are toxic to the brain. The fact that there are two strong anti-vaccine hypotheses in two different countries is enough to evoke a worldwide scare and boycott of vaccines.

Then the prevalence, cohort and epidemiologic studies are published. All of the science from these sources shows that autism rates have been climbing, almost exponentially, since the 1980s. This causes the lay population to believe that there is a

worldwide “autism epidemic” erupting. What the lay population does not seem to understand is that the increase in these numbers does not necessarily indicate a true increase. Increased autism reporting is mostly due to improved diagnostics, increased awareness, broadening of the term “autism” to include less severe forms of the disease, as well as improved study and reporting methods. Also, the majority of the population misinterprets the results of the thimerosal study. For example, after the 1999 removal of thimerosal from vaccines, had the autism-thimerosal causation hypothesis been true, then autism rates should have fallen. However, rates continue to climb even to this day, with each successive birth year having an increased reporting rate, indicating that thimerosal does not cause autism. But by this point, the anti-vaccination lay population has become so deeply convinced that this is all a government conspiracy, that no science will change their mindset.

By 2004, the government has basically rejected all evidence citing an autism-vaccine link and the majority of government funding is funneled elsewhere. Rather than alleviating fears, this final announcement gives vaccine opponents a new target. They believe that the government is more concerned with maintaining herd immunity than the safety of children. Even today, 25% of parents still believe that vaccines cause autism. The anti-vaccination movement puts its trust in radical autism treatments and absurd scientists, basically anyone other than the government.

When I first set out to examine this situation for myself, I became convinced that vaccines do cause autism. That is because the majority of Google searches pull up anti-vaccination websites. It is not until I read source studies do I realize that the anti-vaccination movement is mostly based on a wrong perception of scientific fact. In a way, the anti-vaccination movement has taken good science hostage, and the digital age facilitates this. People no longer need (or think they need) advice from scientific

authorities- they can do their own internet research and make decisions alone. What the autism-vaccine scare shows us is that the internet outcompetes truth, and the development of alternative health literacies is based on public perception rather than fact. Bridging the gap between the scientific community and the lay community is the only way to solve this issue, but finding a way to restore trust in an age of technology-based independence is quite a doosie.