

Tragic Choices: Autism, Measles, and the MMR Vaccine

by

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Part I – The Choice

Kristen typically loved the monthly Sunday brunches with her mother Anne and older sister Carly. Kristen adored them both. Her mother was, in Kristen's eyes, a saint, having worked two jobs as a single mom to not only raise both girls, but also put them through college. And Carly was that great older sister, always supportive, helping Kristen with her math homework when mom was working the night shift at a local restaurant. Carly graduated from East Texas State University four years ago, was married, had a four-year-old son Ian, and was a successful graphic artist in Dallas. Kristen herself completed a BA degree in marketing last year, worked as a sales manager for Time-Warner Cable in Austin, was also happily married, and had a 14-month-old daughter named Alissa. The monthly "girls' day out" was an excuse for the three women to celebrate the love and commitment that helped them through the difficult times when Anne was working 80 hours a week and Carly was helping care for Kristen. The monthly brunches were also an opportunity for Carly's and Kristen's husbands to bond with their own young children, who (although Anne loved them dearly) were not invited to the brunches.

The last gathering, however, had been strained. Following Kristen's graduation, Anne courageously tackled her lifelong dream and enrolled in a nursing program at East Texas State. After the first year of course work, Anne was near the top of her class. "Not bad," thought Kristen, "for a 50-year-old ex-waitress from Fort Worth." Anne's increasing expertise in health issues made her, once again, a resource for the entire clan, as Ian had been diagnosed with Autism Spectrum Disorder (ASD) just four months after his first birthday. Autism can take a heavy toll on a family, especially those with children exhibiting the most extreme form of the disease. Ian unfortunately was in this group—regressing from a happy and interactive one-year-old to a toddler who was completely unresponsive to his parents, and whose long bouts of repetitive rocking were interspersed with brief but intense periods of uncontrollable aggression and self-abuse. Anne's genuine love for her daughters and grandchildren, coupled with her access to the medical school's library, made her a knowledgeable and compassionate counsel for Carly.

Two seemingly random events led to an uncharacteristic and heated exchange at their last gathering. Anne was taking a course in microbiology, and Carly had stumbled onto an episode of "Larry King Live" while channel surfing.

Kristen was running late. When she was directed to a patio table to join her mother and sister, she found them engaged in the same battle left unresolved a month ago.

"Mom, Jenny McCarthy is just one of many celebrities speaking out against the measles vaccine—and she has the right to—her own son is autistic, and Jenny is convinced that the combined measles, mumps, and rubella (MMR) vaccine is the cause. She and actor Jim Carrey made a very convincing case on the Larry King show, while the scientists looked to be in bed with big pharmaceutical companies, Big Pharma as they call it, to make money from selling vaccines.

It's a huge business. And there has to be something behind this epidemic of autism. Did you know that the MMR vaccine replaced the old, simple measles vaccine in 1988? And did you know that during the 20 years following its introduction, autism rates increased by almost 600%? And the rates are still increasing—one in every 110 kids today develops some form of ASD.”

Anne tried not to sound smug or motherly in her response, but a recent topic in her microbiology course dealt with the amazing benefits of vaccines, including the shot (or “jab” as it was known in Great Britain, Anne remembered from lecture) against measles.

“Carly, both the original and the more effective MMR vaccines have nearly eliminated a serious and deadly disease. The measles virus kills. A paper we had to read for class showed that during the 20 years following its release in 1963 the measles shot prevented fifty million cases of measles and saved at least 5,200 lives in the United States alone. And that's not all. A common complication from measles is encephalitis, a massive swelling of the brain, which can lead to brain damage and mental retardation. During that same 20-year period, at least 17,000 American kids were spared that tragedy. And I don't believe the link between MMR and autism has been firmly made.”

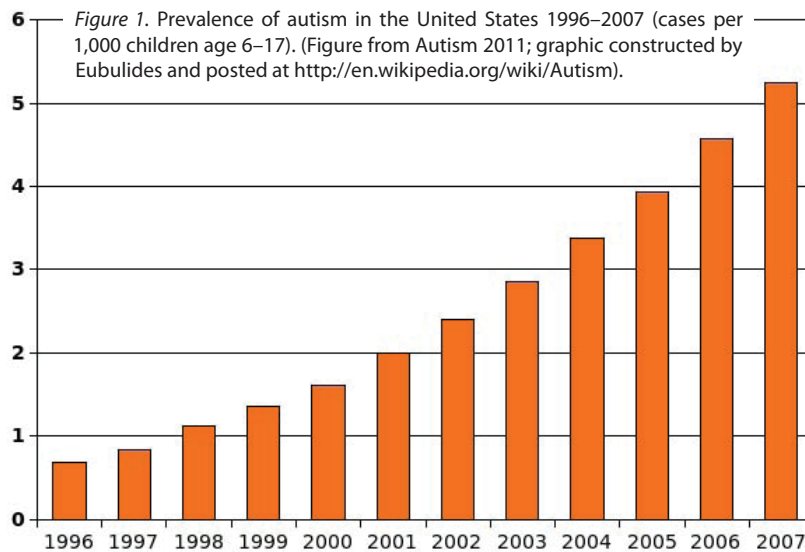
Carly interrupted before Anne could finish. “I know the link has been made,” she said with more than a hint of anger in her voice. “Just look at Ian. He was a happy and interactive one-year-old. I take him in for his MMR shot at 15 months, just like my pediatrician said to, and a week later he stops smiling, he stops talking, and he stopped looking me in my eyes—he just slipped away. Jenny McCarthy has spoken with hundreds of parents of autistic children, all caused by the vaccine, and a highly respected scientist in Great Britain proved the connection.”

“But Carly, epidemiological studies show that if less than 90% of a population receives the measles vaccine, the disease will return, killing....”

“Mom, stop, just stop right there! I refuse to sacrifice my children for the greater good. I won't do it, I can't do it anymore. I've lost Ian. And I'm responsible. I thought the vaccine would help, I was told it would help, and I held his tiny little hand while he took it. He didn't even cry. Now he is gone. And I'm scared. We're running out of time. Kristen has to choose. I don't want her to carry around the guilt that I will carry forever. I don't want us to lose Alissa, too.”

Part II – The Connection

Carefully examine the evidence presented below; then answer the questions at the end of this section.



The data table below has been taken from the scientific investigation referenced by Carly when she snapped at her mother that “a highly respected scientist in Great Britain proved the connection” between autism and the MMR vaccine.

Table 1: Neuropsychiatric diagnosis and interval post MMR vaccination.*

<i>Child</i>	<i>Behavioral Diagnosis</i>	<i>Causal agent (identified by parents or pediatrician)</i>	<i>Interval from exposure to symptoms</i>
1	Autism	MMR	1 week
2	Autism	MMR	2 weeks
3	Autism	MMR	48 hours
4	Autism? Disintegrative disorder?	MMR	Dramatic deterioration immediately after MMR booster at 4.5 years
5	Autism	None—but MMR at 16 months	Self-injurious behavior started at 18 months
6	Autism	MMR	1 week
7	Autism	MMR	24 hours
8	Post-vaccinial encephalitis?	MMR	2 weeks
9	Autistic spectrum disorder	Recurrent inner-ear infections	1 week (MMR 2 months previously)
10	Post-viral encephalitis?	Measles (previously vaccinated with MMR)	24 hours
11	Autism	MMR	1 week
12	Autism	None-but MMR at 15 months	Developmental deterioration noted at 16 months

*Adapted from Table 2 in Wakefield et al. (1998) Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet* 351:637–641.

Questions

1. What should Kristen do?
2. How long does she have to decide?

Part III – Conference

On February 28, 1998, the same day that his article was to be published in the *Lancet*, Dr. Andrew Wakefield called a press conference. He announced that he and his team believed they had found a link between a routine childhood vaccine and autism. Eight of the 12 children in their study developed this neurological disorder within a few days of receiving the MMR “jab.” Somehow, the vaccine was causing intestinal inflammation, allowing harmful proteins to enter the child’s bloodstream, eventually traveling to the brain, causing the disorder. To prevent this, parents simply needed to request that their pediatrician separate the MMR vaccine into three separate shots, one each for measles, mumps, and rubella, the same way these immunizations had been delivered prior to the development of the combined vaccine.

Question

1. How do you think the public reacted to Wakefield et al.’s findings?

Part IV – Consequences

Figure 2 shows what happened in Great Britain. The picture in the U.S. is similar. After examining these patterns, answer the questions below.

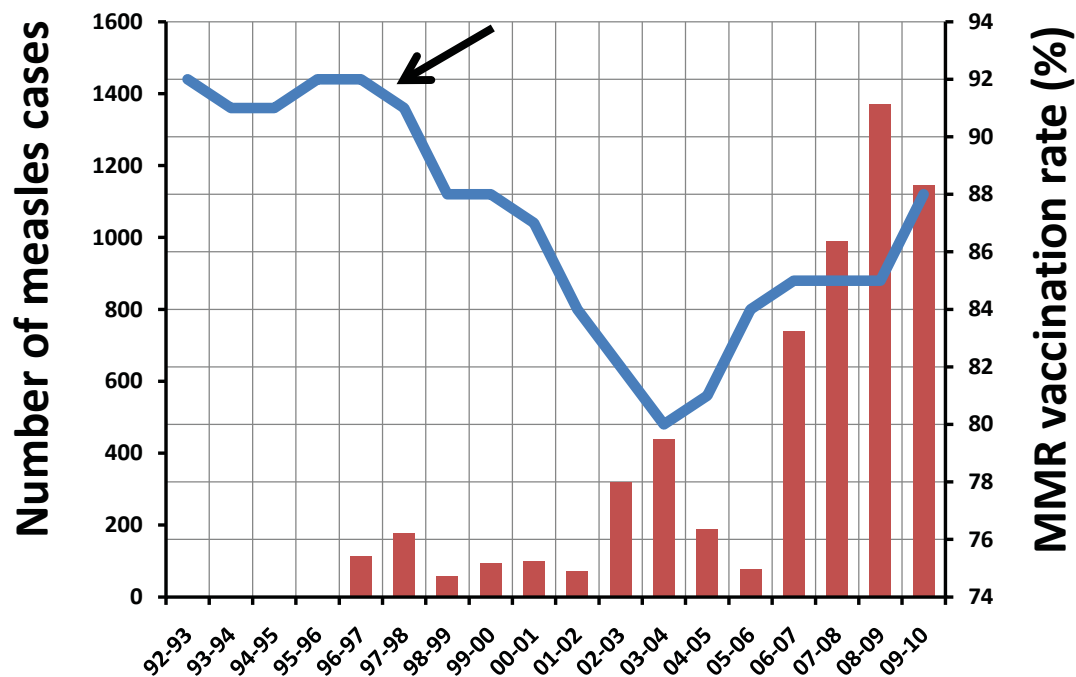


Figure 2. Vaccination rates (blue line) and the number of laboratory confirmed measles cases (red bars) in Great Britain during the years 1992–93 through 2009–10. The arrow shows the approximate publication date of the Wakefield et al. (1998) article in the *Lancet*. See also Jansen et al. (2003) and Salzberg (2010). Data graciously provided by the Health Protection Agency, United Kingdom (Health Protection Agency 2010a; NHS Information Center 2010). Data on lab-confirmed measles cases prior to 1996 are unavailable due to a change in screening methods (Alexandra Baker, Health Protection Agency, personal communication).

Questions

1. Did Wakefield et al.'s data and interpretations merit the resulting public fear of the MMR vaccine? Why or why not?
2. Design a better study to examine the purported cause and effect relationship between the MMR vaccine and autism. Be prepared to discuss the details of your study design.



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