



e-quilibrium

- "electronic briefs on behavior and health"

Volume 10, Number 8
August 2014

Vaccinations

The development of vaccinations to prevent illnesses that were once common is arguably one of the most significant advances in public health. Some diseases that were responsible for extensive morbidity and mortality have largely been eliminated. However, there is a small cohort of parents that are choosing to not have their children vaccinated for fear of complications from the vaccine, especially autism. This matter has garnered attention as a few illnesses that had become quite rare in the United States have had increasing incidence rates, such as measles, mumps, and pertussis.

The purported link between vaccines and autism apparently began in the late 1990s with the publication of a study that suggested that vaccines could contribute to autism. The study received widespread media attention, and although numerous subsequent studies have found no link, this notion still persists for many people. A systematic review recently published in *Pediatrics* again concluded that there is strong evidence that the MMR (measles/mumps/rubella) vaccine is not associated with autism. The study furthermore acknowledged that although rare adverse events can occur with vaccinations, the protective benefits of vaccinations far outweigh such events.

With respect to autism, it is noteworthy that there have been several studies finding a link between residential proximity to agricultural pesticides during pregnancy and increased incidence of autism spectrum disorder. There are a number of reasons why this research has gotten less attention than the purported vaccine-autism link, one of which is that

reducing and/or eliminating exposure to agricultural pesticides is much less controllable on an individual level than is opting to not have children vaccinated.

Fortunately, although the rate of vaccine exemptions has increased in recent years, the overall rate remains under 2% according to the Centers for Disease Control (CDC). How this rate will change going forward remains to be seen. It should also be noted that parents opting to not vaccinate their children is only one factor contributing to the uptick in incidence of some of the aforementioned illnesses.

With respect to parental decisions regarding vaccinations for their children, consider the role of the “availability heuristic,” a predictable cognitive bias. Simply put, the availability heuristic refers to the tendency for instances that are easily retrievable in memory to be judged as more frequent. Most parents today have heard and/or seen stories in the media where other parents claim that their child’s autism is due to vaccines, but most parents today have not heard and/or seen stories of serious complications of the measles. Many parents do not know that complications of measles include pneumonia, encephalitis, hearing loss, and death. In 2008, the CDC reported 164,000 deaths from measles worldwide. It can be difficult for decisions which are highly emotional (i.e., the wellbeing of one’s child) to be made based upon statistical facts and or public health recommendations, if that means going against anecdotal stories of parents who strongly advise against a vaccine. Behavior is strongly influenced by perceived personal and/or immediate risks. Consider the demand for anthrax vaccine after the events of 9/11/01, whereas now there is relatively little concern about anthrax (nor is there any public health need for anthrax vaccination).

There are certainly areas where medical science does not consistently affect human behavior, and this matter with vaccines constitutes one example. All people are vulnerable to the influence of the availability heuristic, so that awareness of this vulnerability when making health-related decisions is an important first step in minimizing its impact.

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