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Reflection: an MD and PA students' take on vaccination

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Cover Page Footnote
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Reflection: An MD and PA Student Take on Vaccination

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BACKGROUND

Sliding aside the pediatrics emergency room curtain, I was startled by the peal of high-pitched laughter coming from the one-year-old, blue-eyed and blonde-haired, previously healthy baby boy perched on the exam table.

The baby didn't appear sick; when we walked in he was standing on the exam table with his mother's hands wrapped around his waist, and a big smile lighting up his face. His mother brought him in because earlier that afternoon he had vomited streaks of bright red blood mixed with milk.

The emergency medicine resident on the team had come in with me, and asked all of the pertinent questions regarding other signs or symptoms, changes in behavior, sick contacts, and previous medical history. The child had no other previous or current medical problems and hadn't had any sick contacts. The family was from an affluent suburb of Nashville, and the mom stayed at home with her son, who was the only child. Next, the resident asked the child's mother, "and he is up to date on all vaccinations?" The mother responded that he was not, and that he hadn't received any vaccines "because of all of the controversy about the shots." The resident engaged the mother appropriately, asking if she understood the risks of not vaccinating and inquired about what she was specifically worried. The child's mother said she understood the risks, and the resident moved back to the topic of the blood streaked vomit.

As I stood in the corner watching this exchange, I was saddened by the fact that this child was needlessly at risk for these fatal but preventable diseases. I was also struck by how well the resident handled the situation. He engaged the patient, provided the appropriate medical advice, and when it was apparent that the child's mother was firm on her decision, he moved on. He couldn't force vaccinations, and it was a busy night in the ED with about 20 more patients in the waiting room. I realized that the only way this mother would be "proven wrong", and grasp the seriousness of her decision, was for her child to get sick with one of these diseases. But this would, of course, be tragic (and no decent physician would ever say "I told you so" after a child contracts a disease they should have been vaccinated against). Consider recent events in the news: Disney Land last year [1,2], the recent pertussis outbreak in the Pacific Northwest [3], or the current rate of measles here in Tennessee over the last five years; or even better yet, ask any attending hospital pediatrician what they think about vaccination. They have likely seen unvaccinated children develop meningitis, or perhaps even die of these preventable diseases.

PERSPECTIVES

In my estimation, there are four major players in this phenomenon: the patient, the physician, the medical literature, and the non-medical literature/fringe media.

In 1998, Andrew Wakefield published a research paper indicating that the MMR vaccine may be a cause of autism and Crohn's disease [4,5,6]. When other researchers were unable to reproduce his results, and a reporter discovered serious financial conflicts of interest, investigators found that his data was fabricated, and his coauthors on this paper withdrew their support [7]. Further investigation revealed that he was planning on creating an MMR vaccine scare to introduce his version of the vaccine for financial gain [8]. By 2010, Wakefield's papers in the medical journals Lancet and Neurotoxicology had been retracted or withdrawn by their respective editors and coauthors, and the remainder of his scientific work was under further scrutiny [9]. Later, his medical license was revoked. But at this point, the cat was out of the bag, and the damage had been done.

Since this time, numerous large-scale randomized controlled clinical trials have been undertaken, and all of them have shown no correlation between autism and the MMR vaccine [10]. The medical literature is now clear: vaccines do not cause autism, and they should be given to every child without a medical contraindication. The data are unambiguous.

This brings me back to the mother's choice of the word "controversy". As I thought about this case in the weeks following the event, I remained stuck on this point in our interaction. I came to realize that many people in society think that there is, in fact, a vaccine controversy. They believe that there are two groups of doctors currently locked in a heated debate about the safety and efficacy of vaccines, especially in regards to autism. However, this in no way reflects the reality of the situation. The medical community's consensus confirms that vaccines are safe and effective when given at the prescribed ages.

Despite the mountain of evidence supporting the safety of vaccines, Wakefield's assertions have propagated on the internet and have been repeatedly shared by fringe media outlets without respect to the truth regarding Wakefield's data and the subsequent scientific inquiry. A perfect example of this is the alternate vaccination schedule. While we have significant data supporting the safety of vaccines when given in their normal sequence, we have no data to support the use of an alternative vaccine schedule. Thus, parents who suggest alternate schedules are supporting an unproven vaccine series over the traditional one that has been provided to millions of children before and has been shown to be safe. Nevertheless, these people often stand on the theoretical logic that too many vaccines "overwhelms the immune system", an assertion that we know to be false. We do know, however, that bacterial meningitis can overwhelm the immune system if you aren't vaccinated against it. There is no controversy here.

CRITIQUE

Overall, I view this situation that we face as a society, and as providers in our respective clinics, as a communication problem. The recent vaccine "controversy" is a product of the history of the vaccine's success. Most of us have never seen a child with

polio or taken care of a patient with measles or rubella because of the accomplishments of the vaccination program in the 20th century. Since the efforts of the medical community have made these diseases less common, much of the public is unaware of the depravity of the risk that some of these diseases pose. Now we face a situation where, to some individuals, the real risk of serious illness has become overshadowed by the imaginary risk of less serious disease.

Furthermore, members of the medical community encounter the common situation where complex medical ideas and often-delicate risk stratification scenarios must be communicated to patients who might not have the medical background necessary to comprehend the details. After all, I am currently in my 7th year of post-secondary education, and there are times where I read a research article or witness a treatment plan be developed, and I miss the subtlety or gloss over the deeper decision-making that lies below the surface. We expect our patients, who may have read a compelling article or heard some convincing anecdotal evidence, to agree with our recommendations. This is no simple task.

LEARNING

The doctor-parent dyad should approach this issue in the same way that we approach the topic of car seats: there is no controversy with car seats, car seats do not cause any disease or disorder, and using a car seat is scientifically proven to reduce the chance of childhood morbidity and mortality (exactly like vaccines). Rarely, there are some babies who, for medical reasons, cannot use a normal car seat. Similarly, there are some children who cannot receive certain vaccines. However, one could argue that vaccines are even better than car seats, because when a parent vaccinates their healthy child, they contribute to the immunity of the whole population, which helps to protect those children who cannot be vaccinated because they are too young or have a medical contraindication. If medical professionals approach vaccines in the same way that they do car seats, I think we will, by default, communicate with the appropriate sentiment when it comes to vaccines.

In fact, I argue that there is an ethical imperative to do just that. We have laws in Tennessee that mandate the use of car seats for children and specify at which ages and how they should be utilized. We have no religious exemption for car seats because such an exemption would be absurd. But we balk, for some reason, at mandating vaccination when the two scenarios are functionally equivalent.

In my opinion, this sort of approach should be the default. Instead of asking, "would you like your MMR vaccine today?" we should say, "today you are due for the MMR vaccine, I will send the nurse in to give it." Then, if the patient objects, we can discuss the risks and benefits of vaccination, just as we would if they refused to use a car seat. If we, as medical professionals, approach the discussion of vaccination as if there is a controversy, then our patients will assume that such a controversy does exist. With that being said, we also must also understand that each person we interact with is approaching each medical scenario with different background knowledge, and with

different perspectives. Just as all medical professionals would readily educate a parent on why rear-facing car seats are important for their infant, we should also be prepared and motivated to explain why the vaccination protocol is a proven safe, effective intervention to protect the health and well-being of their child.

REFERENCES

[1] McCarthy M. Measles outbreak linked to Disney theme parks reaches five states and Mexico. BMJ. 2015 Jan 23; 350:h436. PMID 25616478.

[2] California Department of Public Health. California Measles Surveillance Update. April 10, 2015. Last accessed on December 10 2015.

[3] "Whooping-cough cases spike; vaccination is key, officials say". The Seattle Times, 17 April 2015.

[4] Godlee F, Smith J, Marcovitch H. Wakefield's article linking MMR vaccine and autism was fraudulent BMJ 2011; 342 :c7452

[5] Fang FC; Steen RG; Casadevall A. October 2012. "Misconduct accounts for the majority of retracted scientific publications". Proceedings of the National Academy of Sciences 109: 17028–17033. doi:10.1073/pnas.1212247109

[6] "Great Science Frauds". Time Magazine, 13 January 2012.

[7] Madsen KM, Hviid A, Vestergaard M; et al. November 2002. "A population-based study of measles, mumps, and rubella vaccination and autism". N. Engl. J. Med. 347 (19): 1477–82. doi:10.1056/NEJMoa021134. PMID 12421889.

[8] "Vaccine study's author held related patent, medical journal reports". CNN. 11 January 2011. Retrieved 10 December 2015.

[9] Murch SH; Anthony A; Casson DH; et al. 2004. "Retraction of an interpretation". Lancet 363 (9411): 750. doi:10.1016/S0140-6736(04)15715-2.

[10] Committee to Review Adverse Effects of Vaccines; Institute of Medicine; Stratton K, Ford A, Rusch E, et al., editors. Adverse Effects of Vaccines: Evidence and Causality. Washington (DC): National Academies Press (US); 2011 Aug 25.