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Immunization Safety: Addressing Parental Safety Concerns

Hardwick Area Health Center
Andrew Gallagher, MS3
October-November 2017
Faculty Mentors: Dr. LeClerc, Dr. Sher, Dr. Buckley
Problem Identification

- Rumors and misinformation regarding vaccine safety have circulated since 1998, when a study published by Andrew Wakefield alleged a link between autism and vaccines. The study had no “control” groups, only studying twelve children with autism who had been vaccinated as children. The paper was retracted by publishing journal as well as the majority of the co-authors. Later, Wakefield was found guilty of fraud, as it was discovered he had falsified data and received payments from law firms seeking to sue vaccine manufacturers.

- A study published in 2011 found that parents’ top vaccine-related concerns included the number of vaccines during the first 2 years of life, administration of too many vaccines in a single doctor visit, and a possible link between vaccines and autism.

- More than 10% of parents of young children refuse or delay vaccinations, with most believing that delaying vaccine doses is safer than providing them in accordance with the Centers for Disease Control and Prevention’s recommended vaccination.

- Even among parents who do vaccinate, more than a quarter believe that delaying vaccines is safer.

- In Vermont, while parents can no longer claim Philosophical Exemption for their children, they are still able to claim Religious Exemption to opt-out of vaccinations.

- In Vermont in 2015:
  - 89% DTaP vaccine (≥4 doses) in children 19-35 months old
  - 95% MMR vaccine (≥1 dose) in children 19-35 months old
  - 87% Varicella vaccine (≥1 dose) in children 19-35 months old
Public Health Cost

- In the US, the rates of both measles and pertussis are on the rise. Measles, once declared eradicated from the United States, has recently resurfaced, with 667 cases in 2014 and 189 in 2015, according to the CDC. Pertussis dropped to fewer than 2,000 US cases for several years in the 1970-80s before increasing to 48,000 cases in 2012, a 60-year high, according to the CDC.

- Costs to families: during a pertussis outbreak in New York during 1995-96 and found costs to families were $2,822 per ill infant (4044 in 2017 dollars) and did not include cost to insurers or costs of possibly infecting others.

- Costs to insurers: with congenital rubella syndrome over his or her lifetime is estimated to be about $143,000 in 2014 dollars.

- Costs of containment: in one instance during the 2005 measles outbreak cost of containment for ONE individual costs public health authorities $62,216.

- Cost to society: illness and lost productivity from unvaccinated individuals, 18 years and older, is estimated to be $7.1 billion in 2015.
Community Perspective on Issue

Community Interviews:
- Dr. Mackalyn LeClerc MD, Family Medicine Physician, Hardwick Area Health Center
- Martha Marshfield FNP, Family Medicine Nurse Practitioner, Hardwick Area Health Center

Important Themes:
- Anecdotally, fairly low vaccination rates, anti-vaccination sentiment present in area which tends to be vocal about believes
- Patients may not fully understand risks, especially with diseases avoided by vaccines are difficult to comprehend, as they are not currently in community
- Patients do not see mumps, measles, and polio; therefore, the threat seems remote, may not grasp severity of diseases
- Provider Goals: Education on the true risks and benefits of vaccination, but respect the rights of parents to make health decisions for children
- Area of contention, difficulty walking the line between education and confrontation
- Epidemic certainly possible here, especially in pockets where vaccination rates can be below average
Intervention and Methodology

- Create patient education materials regarding:
  - Past and current research
  - Common misconceptions
  - Current guidelines

- Supply reading materials in Waiting Room
- Post copies in Exam Rooms to read while waiting for clinician
- Make copies for patients wishing to take information home
- Provide further resources to patients and parents
What are the benefits of vaccination?

Vaccines prevent childhood diseases, many of which can be deadly or disabling. While mild, whopping cough and meningitis once killed thousands of children per year, vaccines have drastically decreased death from these diseases. In order to keep preventable deaths low, children must be vaccinated.

Are vaccines safe? What about autism?

"Yes. Vaccines are safe, among the safest medical treatments available. In fact, very few thousand injuries including millions of children have shown that vaccines do not cause autism.

The World Health Organization, the European Medicines Agency, Health Canada, and other national and international health groups have concluded that there is no link between vaccines and autism. In 2011, an Institute of Medicine report concluded on eight vaccines given to infants and adults found that, with few exceptions, these vaccines are very safe. Most recently, a 2015 Canadian study included 3.3 million children and observed the same finding. Rubella and pneumonia have occurred since 2004, which study with only a few children with previously diagnosed with autism who had been vaccinated.

The paper was published by the journal and majority of the researchers. Law. Waterfall was found guilty of fraud, which was the only кто made embellishments and received payments from an immigration to sue vaccine manufacturers.

Are there too many vaccines? Is there such a thing as too much? too soon?

Evidence research has shown no relationship between number of vaccines received and any disease. Evidence that the above claim is incorrect is presented by countless immune stimulating proteins, called "antigens" (whooping cough, tetanus, whooping cough, etc.) is a lay and reasonable argument. It is thought that an immune system should respond to vaccine antigens as disease. The idea that adding additional antigens is what your child is exposed to can be argued. However if you still believe that number of vaccines does not pose given what is known about the immune system or the biology of infection.

In my opinion, it is a good idea to open up the vaccines for public interaction. The American Academy of Pediatrics recommends that the only effect of delaying vaccine dosage is making your child more susceptible to illness. Excuses to not accompany schedule. While these dosages can make a child or adult feel. It can be stated.

References

Evaluation of Effectiveness and Limitations

- **Effectiveness:**
  - May need to be evaluated over time
  - Data could be collected regarding vaccination rates at the clinic before and after educational materials provided
  - Patients could be surveyed about their beliefs about vaccine safety before and after reading educational materials

- **Limitations:**
  - Limited data has been collected previously on a county by county, clinic by clinic basis to assess significant impacts
  - Intervention is reliant on distribution of information and parents willingly reviewing materials
  - Small population would be reached
Recommendations for Future Interventions

- Public health studies have found that parents who delayed or refusing vaccinations because of safety concerns were significantly more likely to seek additional information about their decision from the Internet (11.4% vs. 1.1%), and significantly less likely to seek information from a doctor (73.9% vs. 93.9%). Therefore, this may indicate that vaccine safety education before and during pregnancy could be an effective intervention.

- Continued research can focus on which interventions and educational resources would most effectively encourage parents to vaccinate their children.

- Refine and update educational materials.

- Distribute educational materials to other offices.

Davis MM. Toward high-reliability vaccination efforts in the United States. (Editorial) JAMA 2016 Mar 15;315(11):1115-7


Lee LH, Pichichero MA. Costs of illness due to Bordetella pertussis in families Archives of Family Medicine 2000, 9 (10): 989-960


Images:

Vermont Immunization Program 2016 Annual Report, Vermont Department of Health
Vermont Immunization Program 2015 Annual Report, Vermont Department of Health
Vermont Immunization Program 2014 Annual Report, Vermont Department of Health
Interview Consent Form

- Thank you for agreeing to be interviewed. This project is a requirement for the Family Medicine clerkship. It will be stored on the Dana Library ScholarWorks website. Your name will be attached to your interview and you may be cited directly or indirectly in subsequent unpublished or published work. The interviewer affirms that he/she has explained the nature and purpose of this project. The interviewee affirms that he/she has consented to this interview.

- Yes ___X____ / No ______