Childhood Vaccinations

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Problem Statement

One public health concern is the need for children to be vaccinated. The rate of nonmedical exemptions to school immunization requirements has been increasing, and children with exemptions have contributed to outbreaks of vaccine-preventable diseases. There have been concerns of vaccines being linked with negative consequences such as autism, having a mercury containing preservative (thimerosal) that is harmful, or causing diabetes and even cancer meanwhile the wide ranges of benefits seem to have been overshadowed. For example because of vaccines small pox has been eradicated and many other outbreaks have been prevented. Still some see vaccines as a danger. In the ‘Education before Vaccination’ article written by Christina England it discusses the ‘lies’ of the government in regards to parental rights to know the ingredients of vaccines, the adverse effects and given consent. But the article does not include avenues that can be taken to learn about vaccines or the public health reasoning behind enforcing vaccinations especially when children are attending schools or involved in activities that cause them to interact with others.

The impacts of not receiving vaccinations include being at a greater risk of catching one of the vaccine preventable diseases such as pertussis: “whooping cough”, measles, diphtheria, chicken pox, and the flu. Infecting others who are not able to be fully vaccinated such as young babies; people with medical reasons such as leukemia and other cancers, HIV/AIDS and other immune system problems; people receiving chemotherapy, radiation therapy, or large doses of corticosteroids. And increase exposure of American Indian and Alaska Natives to vaccine-preventable diseases which continue to threaten them at a much higher rate than other ethnicities. Unvaccinated people can greatly infect the small percentage of children whose immunizations
did not “take”. And if a child is not vaccinated and catches a disease germ, the child’s body may not be strong enough to fight the disease 2.

**Research Question**

Parental uncertainty about vaccinations, their schedules and policy is understandable and answers should be readily available since parents who are better informed are more inclined to get their children vaccinated 4. This concept then raises the question: *How does the vaccination rate of children whose parents received educational information on the safety and efficacy of vaccinations compare to children whose parents receive no such info?*

**Population** – Elementary school aged children in Cincinnati

**Intervention** – Educational program /information informing parents of the necessity for childhood vaccinations (i.e. long-term effects, safety of others, decreased illnesses, etc.)

**Comparison** – Elementary school aged children in Cincinnati whose parents do not receive the intervention

**Outcome(s)** – higher vaccination rates.

This is important because whether or not a child is vaccinated does not only affect that child but the family and the community. The consequences of what will happen if children do not receive vaccinations needs to be considered alongside the long term benefits to either choice 2. Therefore data is needed that contains this information to educate parents about vaccines because their questions allow solutions to be developed.

Solutions that should be considered are programs that not only to inform parents the role of vaccinations but educated them on the process, effects, adverse effects and ingredients included in the vaccines. Updated training and resources to better inform family practitioners who can thoroughly answer questions and concerns that parents may have. Training for parents to help them learn how to react if an adverse reaction does occur to decrease anxiety and
encourage parental involvement. And collecting current data to show how vaccinations are a cost efficient practice in the long-run. Potential outcomes from these solutions would be an increased number of compliant parents. Decreased number of hospital visits for preventable diseases. Parents lose fewer workdays to care for sick children with preventable cases. And an increase in healthier children results in fewer outbreaks and ultimately decreases preventable deaths.

Critique of Existing Evidence

Some data that I have reviewed that is working towards these solutions is an article titled: An evaluation of immunization education resources by family medicine residency directors by Nowalk,M.P.; Zimmerman,R.K.; Middleton,D.B.; Sherwood,R.A.; Ko,F.S.; Kimmel,S.R.; Troy,J.A. which appeared in the 2007, 39, 10, p715-719 of Family Medicine. This study evaluated the immunization education resources by family residency directors. It is mostly valid because there was a 57.2% response from the surveys that were mailed out to various residency directors across the United States who evaluated their experience with teaching immunization education, its importance to being taught, satisfaction with information sources and teaching materials and immunization resources. That percentage of a response is good considering the people being surveyed were very busy residential directors. Also two studies were compared, even though not much information from the 2001 study is offered, but having that initial study to compare shows longevity and decreases the possibility of counterfactuals. The people being surveyed were very relevant because they are the ones educating the physicians whom parents will question.

The results of the study were that of the 456 surveys 261 were returned concluding that the popularity of bound resources has decreased, while immunization web sites have increased in importance. In 2005, 59 (23%) of the respondents reported seeing the journal supplement,
“Vaccines Across the Lifespan, 2005”, a significant decrease from 2001 (34%; P=.004). Meanwhile 67% of respondents preferred to receive the supplement online as opposed to the print copy. With use of the website, www.ImmunizationEd.org, Shots 2005 was rated by more than half (56.5%) as “excellent” for value 6.

These results apply to the research question because physician factors are an integral part of efforts to maintain and improve vaccination rates among patients in all age groups. This study has external validity because it assesses the significance of educational resources being current and easily accessible since the recommended number of vaccines, options for combination vaccines and groups for whom vaccines are recommended are increasing. In addition, the use of the internet for research is also very common among parents who are not receiving adequate information from their physicians.

Another study I reviewed titled: Videotape increases parent knowledge about poliovirus vaccines and choices of polio vaccination schedules by Dunn,R.A.; Shenouda,P.E.; Martin,D.R.; Schultz,A.J. which appeared in 1998, 102, 2, e26 of Pediatrics assessed the effectiveness of two educational interventions among parents/guardians. This study is very valid because pre and post intervention tests were used to determine the impact of two interventions. One intervention was a videotape and the other a vaccine information statement (VIS) to increase short term knowledge about poliovirus vaccines and choices of polio vaccination schedules. Also, because of the diverse groups of ethnicities, education and parental types used this study allows great external validity since 90.3% of the participants completed the study.

The results were that a total of 399 parents/guardians were recruited to participate in the study. Of these, 318 (79.7%) consented to participate and 287 (90.3%) completed the study. Both interventions increased scores on post intervention questionnaires but the videotape viewers
scored significantly higher on their post test compared with parents/guardians assigned to only read vaccine information statements. In the videotape + VIS group, 95 participants (66%) provided written comments about the videotape. Parents/guardians stated most often that the videotape was "clear," "concise," "easy to understand," "very informative," or "explained everything." Of 58 (41%) parents/guardians in the videotape + VIS group who read the VIS, 25 (43%) stated that the videotape was more helpful than the VIS, and 31 (53%) said videotape and VIS were equally helpful. An additional 11 (9%) parents/guardians who did not read the VIS stated that they preferred the videotape. Of 89 (62%) parents/guardians in the VIS-only group who read the VIS, 83 (93%) indicated that the VIS was an effective means of providing information.

These results apply to the research question because it assesses the effectiveness of the educational information needed in order to help parents to become more compliant. And it directly looks at what avenue of education is more effective in educating parents about an important vaccine. These results have a lot of generalizability because the demographic characteristics of the parents/guardians included a variety of races/ethnicities: African-Americans, Hispanics, Whites, Others (Asians, Native-Americans, Multi-racial); educational ranges: from eight grade and less to college graduate, and parental types: parents, grandparents, foster parents and other relatives. Using such a variety of people and backgrounds allows for greater application.

A different study I reviewed titled: Rural parents’ perspectives about information on child immunization by Miller,N.K.; Verhoef,M.; Cardwell,K. which appeared in 2008, 8, 2, p863 of Rural Remote Health interviewed improvements to optimize information given to parents from the perspectives of parents. This study is somewhat valid because all of the participants were
from rural a community which gave a limited perspective but the information obtained was still helpful. However, only 11 out of 35 eligible and available respondents were used so more data could have been collected which would have gave the results more external validity. Using a survey parental insight taken into consideration was: whether any immunization information contributed to parents’ decisions; and, if so, how; what types of information and content parents required; the sources of information parents considered helpful and trustworthy; and parents’ suggestions on how information could be conveyed to them more effectively.

The results from 11 interviews stated factors that influenced decisions were not only information based but included factors such as past experiences, perceived risks, and personal beliefs. Mothers’ concerns included being respected, being given all the information and just making the right decision. Perceptions of ‘good’ information were based on credibility of sources and characteristics such as current, accurate, logical, understandable, and clear. Information distribution suggestions included various presentations such as written, oral and visual, quantity, availability, timing and containing content that addressed concerns. And recommendations for health professionals who convey the information were for example being willing to locate resources for parents.

These qualitative results apply to the research question because parents are not going to be compliant with deciding on a vaccination until they are satisfied that they understand the information that is being presented to them. And with this data, application can begin to be made in regards to fine tuning the information to answer parents’ questions. Even though this study was based on rural parents the generalizability of the data being used for other mothers is somewhat applicable because the concerns that were addressed can be presented with other demographics and still makes sense.
Additional Evidence/Proposed Methodology

The findings of these studies are helpful but additional evidence is needed such as results that relate the effective educational resources to the fluctuation in vaccination rates. A way to gather this data would be to conduct a 6 year study. To stay within the 6 year study range each child would have to be at the age of 7 by December 31 because the next set of vaccinations if given the 7-10 year old vaccinations (Phase I) would be the 11-12 year old vaccinations (Phase II). A follow up would be documented when they are 10 years old for their 11 year old vaccinations and then again at 12 for their 13-18 year old vaccinations (Phase III) to compare compliance consistency.

Randomly 300 hospitals around the United States would be chosen because that would give at least 6 hospitals from each state to offer a wide range of data. Each hospital would randomly select 30 parents with 6 year old children 3 months before their scheduled 7 year old vaccinations. A sample size less than 30 would not be significant and with more the study may not be as manageable in such a busy environment. The 3 month time frame before each Phase will be used. The parents need to be from diverse races (i.e. African American, White, Hispanic, Asian, Native American, and Multi-racial); educational ranges (i.e. eighth grade and less to college graduate); types (i.e. parents, grandparents, foster parents, other relatives who are primary health care guardians) and economic status’ to diversify the data for generalizability.

At these hospitals each randomly selected parent would be escorted to their room by a nurse and watch an educational video only on the vaccine(s) their child is recommended to receive for his/her Phase while they wait for their doctor. This video would be no longer than 15 minutes and would identify and describe the vaccine, through animation show how it helps
prevent the targeted disease, identify possible side effects and include current statistical data to confirm intervention benefits such as cost effectiveness and decreased illnesses. This video would be based on the updated CDC recommend immunization schedule for persons aged 7 through 18 years for currently licensed vaccines.

After the video, the doctor would come in and specifically ask “What questions do you have for me?” and answer any lingering questions. Then when the doctor leaves the nurse would give each parent a Vaccine Information Sheet. Each parent that watched the educational video will have their child flagged and later documented as Yes ALL - child received all vaccines presented in video, Yes SOME - child received only some of vaccines presented in video (if multiple vaccines), No – child received none of the vaccines presented in video, or Absent- Child did not return for scheduled vaccination. This same documentation would be repeated for each Immunization Phase.

Yet, the research question focuses specifically on elementary school aged children in Cincinnati. This is not a problem because the data received from the larger study will include Cincinnati as representing some of the 6 hospitals required from each state. And with 30 parents from each hospital being used Cincinnati can be significantly represented. Also by looking at Phase I of the study, which is targeting parents with 6 year old children 3 months before their scheduled 7 year old vaccinations, the specification of elementary school aged children can be observed and documented. However, the larger study is needed for generalizability, statistical significance and practical importance.
Works Cited


2009.


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