MANDATORY SCHOOL VACCINATION POLICIES: HIGHLIGHTING OR EQUALIZING RACIAL AND SOCIOECONOMIC DISPARITIES IN SCHOOL CHILDREN? BARRIERS, ATTITUDES, AND BEHAVIORS TOWARDS FULFILLING REQUIREMENTS

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ABSTRACT

With the rise of vaccine preventable illness in the US, the importance of timely vaccinations in children remains a priority. Mandatory school vaccination requirements are effective because they are generally accepted by the public, they allow schools and immunization programs to share resources, and they serve as a safety net to ensure all school children are immunized appropriately regardless of race, socioeconomic status (SES), or access to medical care. However, it has repeatedly been shown that low-income, urban minority children have higher rates of underimmunization. The city of Philadelphia has a disproportionately large number of undervaccinated students compared to the rest of the state. Philadelphia also has the highest poverty rate in the 10 largest cities of the US, and the majority of those living in poverty are minorities. Given that the majority of Philadelphia students attend Philadelphia public schools, and of those students, greater than 75% are minorities, the disparity follows established trends. Understanding the beliefs, attitudes, and behaviors of guardians of students in the School District of Philadelphia regarding mandatory immunization requirements and their barriers to fulfilling mandatory requirements can help facilitate future compliance. Ultimately, this information can reduce the number of undervaccinated students in the city and bridge this gap dividing students along racial and SES lines.
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CHAPTER 1: INTRODUCTION

Background and Significance of Mandatory Vaccine Policies

With the rise of vaccine preventable illness in the US, the importance of timely vaccinations in children remains a priority. School immunization laws have played a large role in reducing vaccine-preventable illnesses in the US, and they continue to be vital for maintaining a healthy population. Laws requiring immunization have existed since the 19th century\(^1\), but widespread, enforced, school-immunization laws began in the 1970s in an effort to control endemic measles\(^2\). Measles was primarily affecting school-age children and schools were major sites of transmission. CDC data from the late 1970s showed that states with school immunization laws had incidence rates of measles that were 40-51% lower than states without immunization laws\(^3\). Over time, this led to all states enacting school immunization laws, and today, most states have school immunization rates greater than 90% for all mandated vaccines\(^4\).

Enforcement and exemptions from school immunization laws vary by state. Most states allow medical, religious, and personal belief exemptions from school vaccinations. Those states without religious or personal belief exemptions have the highest immunization rates. As of 2019, only New York, Mississippi, California, and West Virginia prohibited religious or personal belief exemptions from their school immunization requirements\(^5\). Mississippi has the highest vaccination rates in the country, with greater than 99.2% of kindergarten students vaccinated for MMR, DTaP, and Varicella. The success of Mississippi’s vaccination program can be attributed to strong legislation and historical precedent, robust infrastructure created by the State Department
of Health, and support by physicians. After California eliminated all non-medical exemptions, the MMR immunization rates in kindergartners increased from 92.6% in 2014 to 97.3% in 2016\textsuperscript{6,7}.

School immunization laws have been repeatedly supported by courts. The State Supreme Court of Illinois declared in response to arguments against school requirements for the smallpox vaccine in 1919, “there are many people…who resist, and have the right to resist, compulsory vaccination of their children except in cases of necessity; yet they have no right to insist on their children continuing in school and mixing in large congregations without obeying such requirements…The right to enjoy school and other privileges, recognized by our law, must be so used and enjoyed as not to expose other people unnecessarily to dangerous diseases or contagions\textsuperscript{8}”. The Mississippi State Supreme Court upheld mandatory vaccination laws in 1979 stating not only that immunizations serve public interest and protect health, but also ruled that religious exemptions discriminated against children whose parents did not have those religious exemptions, thus violating the 14\textsuperscript{th} amendment which calls for equal protections of the laws\textsuperscript{9}.

Enforcement of mandatory school vaccinations varies nationally per district and can result in exclusion from school if there is no documented exemption. Enforcing school vaccinations is a large administrative burden limiting many schools from adequately implementing these laws. Exclusion is typically a last-case scenario, so schools typically undertake substantial effort to help students become compliant. Exclusion from school as an enforcement mechanism does, however, work—data from North Dakota (which had one of the lowest reported kindergarten immunization rates in
the US in 2015-2016) illustrated that schools that enforced immunization requirements to
the point of exclusion had significantly higher immunization rates and lower levels of
non-compliance\(^\text{10}\). Importantly, in schools that began enforcing policies during their
study, less than 0.25% of students were actually excluded from schools (from
approximately 7% of students that were originally non-compliant). Moreover, there were
no significant increases in exemptions in the two newly enforcing school districts.

Exemptions from these laws are necessary for children with certain medical
conditions that prevent them from receiving vaccinations. These children rely on school
immunization laws to help achieve herd immunity. The national exemption rate in the
2018-2019 school year was approximately 2.5% and only 0.3% were medical
exemptions\(^4\). However, while rates of non-medical exemptions are increasing, most
undervaccinated children do not have exemptions, and most states could ensure herd
immunity (95% vaccination rates) if this population of children are targeted for catch-up.

Importantly, nationally, a disproportionate number of undervaccinated children
are located in schools with larger populations of black and low-income families\(^11-13\).
When the measles vaccine came out in 1968, rates of the disease declined significantly.
However, persistent outbreaks shed light on areas of lower immunization levels. A
resurgence in 1989-1991 primarily involved unvaccinated urban minority preschoolers.
An analysis by the National Vaccine Advisory Committee in 1991 identified the failure
to provide this population vaccinations on schedule as the primary cause for the outbreak,
and they provided recommendations to decrease barriers to vaccination that subsequently
prompted the creation of the federal program Vaccines for Children (VFC). This
program, established in 1993, enabled low-income children to receive immunizations at
The CDC compared vaccination rates from “pre VFC era” of 1967-1985 to the “VFC era” (1994-2013) and found that coverage with one dose of a measles-containing vaccine increased from less than 70% before the 1989-1991 outbreak to greater than 90%. Furthermore, coverage with new vaccines, introduced during the VFC era increased rapidly.

**Figure 1: Vaccine coverage rates among preschool-aged children - United States 1967-2012**

These rates include all children, both VFC eligible and VFC non-eligible, so they indicate the success of the US vaccination program as a whole, and they likely include other factors in addition to the VFC program. However, the ability of the VFC program to remove financial and logistical barriers to achieving immunization likely played a large role in improving coverage rates (Figure 1).
Studies have repeatedly illustrated the disproportionately high number of non-exempted undervaccinated minority and poor children. In 1986, the Robert Wood Johnson Foundation completed a national phone survey of over 2000 children. They found that poor, non-white, and uninsured children were more likely to be undervaccinated than nonpoor and white children. These disparities were consistent in the most recent CDC data reported from the 2016-2018 National Immunization Survey-Child. It follows that schools with larger proportions of these populations have higher rates of undervaccinated students.

Adolescents comprise another disproportionately underimmunized population of students. Over the past decade, the adolescent immunization schedule has expanded to include 2 doses of the meningococcal vaccine (MCV), 1 dose of tetanus, diphtheria, and acellular pertussis vaccine (TDaP), 2-3 doses of human papillomavirus vaccine, and an annual influenza vaccine. There is an inverse correlation between healthcare utilization and children’s ages, and most state laws only require TDaP and MCV for school, resulting in significantly lower rates of fully vaccinated adolescents compared to children. Research suggests that lack of consistent and urgent healthcare provider recommendations, parents declining the vaccines due to perceived low risk of the child acquiring the disease, adverse effects of vaccines, and association with sexual activity in regards to the HPV vaccine also contribute to inadequate adolescent immunization rates.

In summary, mandatory school vaccination requirements are effective because they are generally accepted by the public, they allow schools and immunization programs to share resources, and they attempt to serve as a safety net to ensure all school children
are immunized appropriately regardless of race, socioeconomic status, or access to medical care. Additionally, school immunization requirements have been shown to increase immunization rates of other vaccines not included in the mandate. Dempsey et al. found that states with school Tdap requirements had an approximately 5% increase in HPV vaccination rate. However, despite their generally advantageous practicality, the ethics of mandating immunizations for entrance to school is controversial.

**Ethics of Mandatory School Vaccination Requirements**

Arguments against mandatory school immunization requirements center around autonomy and individual freedom of choice over medical decisions. Navin et al. argue against eliminating nonmedical exemptions based on ethical grounds. They reason that it is morally justifiable to offer exemptions to people who object to laws for reasons of “religious conviction, secular conscious, or personal integrity”, especially when imposing the law on them would subject them to moral and psychological harm and when exemption policies do not place others at risk. They claim that there are other ways to decrease the risk to others in the case of vaccine exemptions (namely increased inconvenience) that would preserve moral grounds for nonmedical exemptions. They suggest that limiting exemptions through eliminationism may cause parents to pull their children from schools, thus not necessarily increasing vaccination rates, and removing children from formal, high-quality education may limit their ability to serve as high functioning adult members of society. Finally, eliminationism may cultivate political polarization surrounding vaccine policies and science. Salmon et al. points to history, when the UK made Smallpox vaccination compulsory and initially without non-medical
exemption. Parents who refused vaccines were venerated after over 20,000 people took to the streets to protest the law. Similar backlash has occurred in the United States, contributing to the failure of several states in restricting exemptions\textsuperscript{25}. Overall, it is felt that parental confidence in vaccinations is paramount, and some feel that eliminating exemptions can jeopardize confidence and decrease overall vaccination rates.

Arguments for mandatory vaccination center around the “clean hands principle”. Basically, in order to receive justice, you must act justly. In regards to vaccination- you cannot maintain the right to individual choice if it puts others at harm by potentially exposing them to vaccine-preventable diseases\textsuperscript{26}. Field and Caplan present a moderate stance: they state that mandatory vaccination policies introduce a conflict between competing ethical values: autonomy vs. beneficence, utilitarianism, justice, and non-maleficence. The relevance and importance of each ethical value changes depending on the context, the disease severity, the subgroup, and public health considerations surrounding the vaccine mandate and disease (Figure 2)\textsuperscript{27}.

![Figure 2: Competing ethical concerns in combination](image-url)
Importantly, whenever mandatory school immunization laws are put in place, the governing body must ensure equitable access to all children. As noted, the majority of undervaccinated students are low-income, non-white, and urban children without exemptions. As there is no shortage of supply, this gap speaks to barriers in receiving care. Lack of health insurance or provider, transportation difficulties, financial burdens from missed work, and lack of education are likely only a few of the barriers to care. Methods to facilitate vaccination include utilizing all PCP visits for immunization catch-up including sick and mental health visits, increasing access to PCPs by decreasing waiting times for vaccines and expanding hours of operation, increasing text and web-based education, collaboration with public health workers, and frequently, collaboration with schools for both education on and delivery of vaccines\textsuperscript{28-32}. Parents typically welcome school-based vaccine clinics, and they are repeatedly successful in increasing vaccination rates, but they require substantial resources from both the school and public health departments\textsuperscript{32-35}.

Mandatory Vaccination Policies in Pennsylvania

Like all other states, vaccinations are required for attendance in all grades in Pennsylvania and failure to comply with this regulation can result in exclusion from school (28 Pa.CODE CH.23). Guardians of Pennsylvanian students can request medical, personal belief, and/or religious exemptions from this requirement. In Pennsylvanian schools in the 2018-2019 school year, 3.7% of kindergarten, 7\textsuperscript{th}, and 12\textsuperscript{th} grade students had vaccine exemptions and 3.6% of students were enrolled provisionally (students had 30 days to complete required vaccinations or submit exemption paperwork to continue
attending school). A total of 509 children (approximately 0.12%), were denied admission due to failure to complete required immunizations36. In Philadelphia, where the childhood poverty rate in 2016 was approximately 37% (and is higher for black and Hispanic children), 1.9% of kindergarten, 7th, and 12th grade students had exemptions, and 14.2% were enrolled provisionally. Only 5 children were reported to be denied admission in the 2018-2019 school year36,37. The large number of provisionally enrolled students with very few students excluded from school in 2018-2019 is largely due to lack of enforcement. Efforts to enforce the law by the School District of Philadelphia (SDP) increased prior to the 2019-2020 school year. According to the SDP, prior to the start of the 2019-2020 school year, there were approximately 26,000 students (approximately 13%) in the district that did not meet PA state school immunization requirements. The SDP underwent enormous effort to ensure each student met the immunization requirements, and ultimately approximately 3200 students met eligibility for exclusion from school due to failure to complete the requirements on the first school exclusion eligibility date of Nov 4, 201938. Data for the number of students actually excluded from school is unavailable. The discrepancy in underimmunized students in Philadelphia compared to the rest of the state highlights the importance of understanding community level needs and attitudes surrounding vaccinations. Further, the large drop in percentage of students provisionally enrolled at the start of the school year to eligible for exclusion by the exclusion date indicates the success of the SDP in overcoming barriers to vaccination. It also highlights that most students are undervaccinated not because of parental preference, but for other reasons.
Uncovering those reasons is paramount to increasing student vaccination rates. As it is in the best interest of its students, and especially given the disparity of undervaccination in low SES and minority students, it is ultimately the goal of the SDP not to have a single student excluded from school due to his or her failure to complete the vaccine requirements. Prior to the November exclusion deadline of 2019, the SDP sent letters, texts, and made phone calls and in person visits to assist families in getting their students up to date. Vaccine clinics were set up with the city health centers and hours were expanded to facilitate completion of vaccinations. Despite this, approximately 3200 SDP students had still not met vaccine or exemption requirements and were eligible for exclusion from school. Thus, a study was designed with the SDP to further investigate families’ opinions on mandatory vaccine policy and barriers to completing immunization requirements.

Through this work, the SDP will receive valuable information on how it can better align with families so that students receive appropriate vaccinations and no child needs to be excluded from school for failure to comply with vaccine policies. Ultimately, it is the hope that the SDP will benefit from a healthier school population with significantly less risk for vaccine-preventable illness.
CHAPTER 2: THE STUDY

Problem Statement

The city of Philadelphia has a disproportionately large number of undervaccinated students compared to the rest of the state. Philadelphia also has the highest poverty rate in the 10 largest cities of the US, and the majority of those living in poverty are minorities\(^36\). Given that the majority of Philadelphia students attend Philadelphia public schools, and of those students, greater than 75% are minorities, the disparity does not seem coincidental\(^39\). Understanding SDP guardians’ beliefs, attitudes, and behaviors regarding mandatory immunization requirements and SDP interventions, and barriers to fulfilling mandatory requirements, can help facilitate future compliance with the requirement and reduce the number of undervaccinated students in the city, ultimately aiming to bridge the gap dividing students along racial and SES lines.

Research Plan

Sample

Participants will include guardians of current 7\(^{th}\) and 12\(^{th}\) grade students at Bethune Elementary, Kenderton Elementary, and Dobbins High School in North Philadelphia. Students must have been enrolled in school by the first day of the 2019-2020 school year (September 3, 2019).

Guardians of seventh and twelfth grade students were chosen as they all received communication from the SDP prior to the start of the 2019-2020 school year due to their universal need for updated required immunizations. Seventh and twelfth grade students
are an important population to target as the district must ensure these students are up to date on a yearly basis. Understanding barriers these students face in becoming vaccinated, and successful interventions by the SDP, can be generalized to the entire student body. Kenderton Elementary, Bethune Elementary, and Murrell Dobbins Career and Technical Education High School were chosen given strong existing relationships with Temple’s Center for Urban Bioethics (CUB) which will likely make recruitment more successful.

Guardian’s will be recruited through contacts and flyers within the schools, and the Office of Family and Community Engagement (FACE) of the SDP will provide names and contact information of guardians of 7th graders at Kenderton and Bethune and 12th graders at Dobbins. We will screen a random sample for eligibility until we have enough interviews to reach theme saturation.

Guardians will be eligible if they are a legal guardian of current 7th or 12th grade student at Dobbins, Kenderton, or Bethune, their student was enrolled by first day of 2019-2020 school year, and they are English- or Spanish-speaking. A fluent Spanish-speaker will aid in translating interviews and consents to Spanish.

*Research Method and Design*

This will be a qualitative study using a series of iterative semi-structured interviews with guardians from each of three groups of students: those that remember being notified by the SDP regarding their students’ vaccine requirements prior to the start of the 2019-2020 school year, those that do not remember receiving any information regarding their students’ vaccine requirements, and those that are unsure if they received
any correspondence from SDP prior to the start of the 2019-2020 school year. Interviews will be completed until theme-saturation, likely requiring a maximum of 20 participants in each group.

Participants will be queried regarding thoughts on mandatory vaccination policies, barriers to satisfying requirements, and successful school interventions (flyers, phone calls, emails, letters, visits) to complete vaccinations. The interviews will be completed via phone and they will be recorded, transcribed, and analyzed to identify content themes using grounded theory approach.

Data Collection

This study will be conducted by myself in partnership with Temple’s CUB. The FACE office will provide the list of guardians and best method of contact to me. Potential participants will be screened by trained staff at Temple’s CUB. I will contact eligible guardians, and I will obtain verbal consent prior to participation in the study. Participants will be offered phone interviews that will take approximately 20 minutes to complete. Participants will be compensated $20 for their time. Data from each interview will be audio recorded and transcribed verbatim by a research transcription service, Accurate Dependable Affordable (ADA) Transcription Services.

Interview Guide

My name is Dr. Tepper and I am a pediatrician working with Temple University’s Center for Urban Bioethics.
You expressed interest in taking part of my study, and I am interested in hearing your views on the school district’s vaccine policy. I would specifically like to know any difficulties you experienced in getting your child vaccinated or getting the required paperwork needed if you chose not to vaccinate. I would also like to know your thoughts on ways the school can help families get their students vaccinated.

Is this something you would be interested in talking more with me about?

Would you prefer to do it over the phone or in person?

I am going to ask you for your official consent so you know your rights in regards to this research.

I will read the official consent document to you and if you agree, you can give me consent over the phone.

We encourage you not to tell us anything specific about your student’s health as this interview is meant to find out your general thoughts on immunization policies and any difficulties you had in getting your student vaccinated. You are neither expected nor required to tell us about any personal health information about you or your student.

Do you have any questions before we start?

If you are ready, we will begin.

(Since this is a semi-structured interview, the script provided is a sample of questions, but the actual script will vary with each interview).

Do you remember being contacted by your child’s school or the School District prior to the start of this school year?

No

o Is your child up to date on their shots?
- No
  - Is this because he or she has an exemption (a form that officially allows your student not to have vaccines)?
  - Parents have many reasons their children aren’t up to date on their shots- can you tell me the reason your child isn’t up to date?
    - Can you tell me about any difficulties you’ve had getting your child vaccinated on schedule?
- Yes
  - Can you tell me about any difficulties you’ve had getting your child vaccinated on schedule?
  - Some parents don’t know about the vaccine requirements- how and when did you learn about them?
  - Do you have any ideas as to why some parents don’t know about the requirements?
    - Was your student ever excluded from school (not allowed to come to school) because he/she was missing vaccines?
    - How do you feel about the SDP requiring vaccines to attend school?
    - Do you have any ideas on how the SDP can make people aware of the vaccines they need?
    - What about ideas about how the SDP can help students become up to date with all their vaccines or appropriate refusal paperwork?
• Yes
  o How did they contact you?
  o Do you remember how many times they contacted you?
  o Did you know about the school requirements before the school contacted you?
  o Is your child up to date on their shots?
  - No
    • Is this because he or she has an exemption (a form that officially allows your student not to have vaccines)?
    • Parents have many reasons their children aren’t up to date on their shots - can you tell me the reason your child isn’t up to date?
      o Can you tell me about any difficulties you’ve had getting your child vaccinated on schedule?
  - Yes
    • How did you know your student needed updated vaccines this year?
      o Was it because of the schools outreach that your student is up to date on his/her shots? If so, what type of outreach was particularly helpful?
    • Can you tell me about any difficulties you’ve had getting your child vaccinated on schedule?
• Some parents don’t know about the vaccine requirements-how and when did you learn about them?

• Do you have any ideas as to why some parents don’t know about the requirements?
  o Was your student ever excluded from school (not allowed to come to school) because he/she was missing vaccines?
  o How do you feel about the SDP requiring vaccines to attend school?
  o Do you have any ideas on how the SDP can make people aware of the vaccines they need?
  o What about ideas about how the SDP can help students become up to date with all their vaccines or appropriate refusal paperwork?

That concludes the interview, do you have any questions?

Thank you so much for your participation. If you have any questions please don’t hesitate to reach back out to me at xxx or my email tuc57255@temple.edu.

Data Analysis

The interviews will be analyzed to identify content themes using grounded theory approach. The interview questions are designed such that preliminary codes will include success of SDP interventions: unnecessary, successful, unsuccessful, and incomplete, and barriers to completion. Unnecessary interventions include those families that had already completed vaccination requirements prior to SDP contact, successful SDP interventions include those that completed their vaccinations after SDP contact, unsuccessful
interventions include those that received SDP contact, but did not complete vaccinations, and incomplete interventions include those who deny having received SDP communication and did not complete their vaccinations. Barriers to care will likely include time constraints, transportation, education, and access to care. Novel codes will be constructed with analysis.

A Bump in the Road: Why Derailed?

The inception of this project began with my desire to work with city policy makers in an effort to learn more about health policy. Working with the SDP was a great opportunity for me to integrate my interests in pediatrics, social determinants of health, and public policy. Together with administration within the SDP, the FACE office and I came up with the above project based on the extensive amount of work FACE and the district completed prior to the start of the 2019-2020 school year and a desire to ultimately not have to exclude any students from school.

As anticipated when working in the public sector, my project had a slow start due to many bureaucratic obstacles. Different stakeholders within the district had different ideas on how my skills could best be put to use, but after much deliberation, we ultimately decided to use my expertise as a pediatrician and bioethics student to study attitudes surrounding school mandated vaccines and barriers to satisfying state requirements. The project faced subsequent delays in the SDP IRB approval process, and it was approved and a data request was being fulfilled to obtain guardians’ names and contact information when schools were shut down due to the COVID-19 crisis. As district employees were working remotely, I was unable to get guardians’ contact
information, and because schools were not in session, I was unable to recruit within schools. This combined with Temple’s institutional hold on research has indefinitely delayed the start of my project.
CHAPTER 3: CONCLUSIONS

The COVID-19 crisis adds an interesting element to this project. The findings I would have gotten regarding beliefs and attitudes surrounding vaccines and state mandated vaccine policies are inevitably going to be different following the COVID-19 crisis and its permanent effect on our society. Barriers that parents faced in fulfilling vaccination requirements at the beginning of the 2019-2020 school year will likely be recounted differently in the present circumstances. As it is currently unclear if schools will resume in-person instruction in the fall, I don’t know that the current version of my project will even be relevant to the schools at this point. Certainly, as time passes from the SDP interventions prior to the 2019-2020 school year, parents will likely not be able to accurately remember what SDP interventions worked and what didn’t, especially if immunization requirements change going forward.

Regarding guardians’ beliefs on vaccines in general, my guess is that given the significant public fear surrounding the disease and momentous disruption to life, people will view vaccines more favorably than before, and they will be more inclined to ensure their children are up to date on appropriate vaccines. Moreover, given that schools had to be closed to contain spread of the disease, the importance of school vaccine policies will be more relevant. However, despite a possible mindset change, fear of contracting illnesses in settings like doctors’ offices may prevent their actual completion. Furthermore, changes to the economy following this crisis may introduce new or worsen existing barriers to satisfying requirements. My fear is that due to the COVID-19 crisis and related stay at home orders, the state (and schools) will relax school vaccine
requirements for some time to allow families to get caught up. However, the longer children remain underimmunized, the greater the risk to the child and the larger population.

Pediatricians around the country are currently very concerned about delays in well child checks leading to outbreaks of other vaccine-preventable illnesses that can be more harmful to children than COVID. Measles has an infectivity rate at least three times higher than COVID\textsuperscript{40}. An electronic health records company compared immunization administration rates from the week of Feb 16 to April 5 and found a 50% drop in MMR administration and a 73% drop in HPV administration\textsuperscript{41}. The CDC examined vaccine administration data from two sources: the VFC provider order data and the Vaccine Safety Datalink (VSD) and noted a 2.5 million-dose decline in order of regular childhood vaccines (not counting influenza vaccines) compared to the same period in 2019 (Figure 3)\textsuperscript{42}. There is a greater decline in routine vaccination in children greater than 2 years old which will augment the disparity of undervaccination in older children.
Figure 3. Weekly changes in VFC provider orders and VSD doses administrated for routine pediatric vaccines - United States. Jan 6-April 19, 2020

Of additional concern, due to significant decreases in visits, pediatric practices are facing financial difficulties with many worried about permanent closure. Together with a likely surge in visits when social distancing measures are lifted, closure of pediatric practices will add additional barriers to children receiving their vaccines.
Pediatric offices are coming up with resourceful ideas to ensure their patients are appropriately vaccinated, and this creativity can and should be applied to future vaccination efforts. Pediatricians are making house visits, providing “drive up vaccination clinics” in parking lots, and deploying mobile vaccination units. Just as there isn’t just one barrier towards completion of immunizations, there isn’t one solution. Public education, legislation, and availability are all important aspects of a successful immunization program. The COVID-19 crisis is bringing the importance, and difficulties, of routine immunization to light.

Working on this project with the school district taught me three important lessons regarding working in the public sector. First, having connections and maintaining positive relationships is the best way to get started and keep moving. By establishing several different connections, I was able to launch, and then sustain my project by pursuing it from several angles. Second, working in government is inevitably filled with administrative and political hurdles. Despite this, my third lesson: with persistence, meaningful work and positive change is possible.
BIBLIOGRAPHY


