5-2022

Reflections on North Texas Pediatric Internship

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For my honors project, I had the opportunity to work as a medical assistant at Irving Pediatrics, located just outside of Dallas, Texas. Under the supervision of Dr. Muhammed Haq, this position proved to be a positive learning experience as I gained a better understanding of the inter-collaborative nature of healthcare and the pediatric specialty as a whole. Working throughout the summer of 2020, I was able to experience first-hand how the COVID-19 pandemic forced changes in pediatric healthcare. In this essay, I will provide a description of my internship, overall analysis of my experience, and a literature review investigating the effects COVID-19 has had on pediatric vaccination rates and parental hesitancy.

Summary of Activities

Irving Pediatrics provides services for children ages 0-18 including well visits, sports physicals, vaccinations, allergy treatments, strep testing, hemoglobin tests, and urinalyses. The practice is made up of two physicians, three nurse practitioners, and five medical assistants. I worked alongside Dr. Muhammed Haq and his wife, Dr. Sara Hasham, who founded the practice over ten years ago. I was also fortunate enough to occasionally observe Esther Wooten, a part-time nurse practitioner. My internship at the clinic consisted of three different jobs: taking vitals and medical histories, shadowing providers, and working the COVID-19 desk.

For many of my shifts, I was responsible for taking the patients' vitals. I measured weight, height, blood pressure (if over the age of three), temperature, heart rate, oxygen saturation, and respiratory levels. If the child was an infant, I measured their body length and head circumference with a measuring tape. For yearly physicals, I conducted hearing and vision exams. After all vitals were recorded, I asked the parent or guardian what medications the child was taking, symptoms the child was experiencing (if a sick visit), and what concerns the

parent/guardian had. Some visits required hemoglobin tests. If this was the case, I would perform a fingerstick and test the sample. All vitals were documented in the eClincalWorks software system so that they were easily accessible among all providers. If the patient was scheduled for a well-visit, I created growth charts that included data from previous visits. This was completed for height, weight, and head circumference up to three years. These graphs were then given to the provider to make sure the patient was following their growth curve and made it easy to see how the child compared to others their same age.

During my time at Irving Pediatrics, I was also responsible for working the COVID-19 table located directly in front of the office's door. The patient and their parent/guardian had to pass the table before checking-in for their appointment. At this time, COVID-19 testing was not available in the clinic and COVID patients were not being seen. First, I would make sure the patient was accompanied by only one parent/guardian and that everyone over the age of two was wearing a mask. If they were not, it was my responsibility to provide them with one. Then, I would ask the parent/guardian to fill out a questionnaire asking if they had experienced symptoms of COVID-19 or travelled within the last two weeks. Lastly, I would take the entire party's temperature to make sure they did not have a fever. If signs of COVID-19 were not present, the patient and their parent/guardian were allowed to proceed. Between patients, I was also responsible for disinfecting the waiting area, answering phone calls, and scheduling appointments.

On days that I was not processing patients or working the COVID-19 table, I shadowed one of the physicians or nurse practitioners. This was a valuable experience for me because I was able to see the similarities and differences between the different types of providers as well as encounter a variety of different cases. Between patients, I observed the provider chart and had

the opportunity to ask questions. Due to COVID-19, I was also able to witness the rise of telemedicine. Throughout my time at the clinic, more and more appointments were booked via video call if they did not require a physical examination. As a future healthcare provider, this was important for me to experience as this is a mode of healthcare I do not expect to disappear.

First Objective

The following paragraphs will detail my experiences related to three goals I hoped to achieve during my time at Irving Pediatrics. My first objective was to use this experience to determine whether I wanted to pursue physician assistant (PA) or medical school. Although Irving Pediatrics did not have a PA as part of their team, I was able to see the differences between physicians and mid-level providers by working alongside nurse practitioners. I liked how the nurse practitioners at the clinic were autonomous and maintained a positive relationship with their supervising physician. They saw their own patients, prescribed medicine, and were sometimes the only providers when Dr. Haq and Dr. Hasham were absent. Every nurse practitioner I met appeared to love their job and seemed to genuinely enjoy coming into work every day. Some patients even preferred to see one of the nurse practitioners. The only specific example I encountered that a nurse practitioner was unable to do was prescribe Schedule II drugs that could lead to severe psychological or physical dependence.

During my time at Irving Pediatrics, Dr. Haq was like a mentor to me. For example, he shared what his journey was like becoming an MD and how he balances his work and personal life. He inspired me to do more research on the PA profession and compare it with that of an MD. Although I have the upmost respect for MDs, I realized that this was personally not the right path for me. For example, I liked the flexibility and work-life balance the PA profession

had to offer. The combination of Dr. Haq's invaluable advice and observing the roles of mid-level providers helped me conclude that I wanted to become a physician assistant.

Second Objective

My second goal during my internship was to gain a better understanding of the inter-collaborative nature of healthcare and grow my communication skills to effectively fulfill my role in a patient's care. Irving Pediatric's mission is to provide the highest quality healthcare and to be a "medical home" to their patients. It is important for parents to feel comfortable bringing their children to the practice and have trust in the care that they are receiving. I was able witness moments where the providers successfully interacted with difficult patients, adjusted to language barriers, exhibited empathy, and clearly presened diagnoses and treatment plans. Communication skills are necessary in keeping your patients coming back to your practice.

My experiences during this internship have made me more comfortable communicating and working collaboratively with healthcare staff. As a future PA, I will work alongside doctors, specialists, nurses, therapists, and managers. Everyone has a unique and significant role to play in a patient's care whether it is the receptionist booking an appointment or the physician prescribing a treatment plan. One mistake in any role could be detrimental. For example, simply measuring head circumference incorrectly could cause a baby to be placed in the wrong growth curve. If this is not immediately fixed, the mistake could bring future diagnoses that are incorrect. However, on the positive side, working in a team-setting brings the ability to catch other's mistakes.

Everyone in the clinic was a team player and never refrained from helping another staff member. For example, Dr. Haq would often consult one of the nurse practitioners if he wanted a second opinion on a case. Everyone has one goal: to optimize patient care. This should not be

placed solely on the doctor's shoulders. At the beginning of the internship, I would have been afraid to interact with a patient on my own. Now I feel completely comfortable doing so.

Third Objective

My final goal was to grow my knowledge base in the pediatric field and to be able to apply that knowledge. Learning how to take vitals was a valuable experience for me because it was my first time working directly with a patient. As stated before, I was able to learn how to communicate effectively with patients and healthcare staff. I learned an abundance of new medical terminology and was able to see firsthand how a pediatric office is run. This was my first experience implementing learned knowledge into real-world scenarios. For example, I was able to recognize when a patient needed to be tested for strep when they presented symptoms such as sore throat, pain when swelling, fever, and swollen tonsils.

Participating in a hands-on setting taught me that there is a significant difference between textbook medicine and the world of a practicing physician. Patients are extremely complicated. They do not always present classic symptoms or respond to treatment as they should. It takes the ability to solve complex problems and analytical ability to be successful. Paying attention to intricate details is crucial in the world of medicine, especially in the COVID era. If I missed a symptom while screening a patient, I would be the one responsible for exposing the practice to the virus.

Working at Irving Pediatrics was a valuable learning experience that introduced me to the role of a healthcare provider. During a handful of patient interactions, I noticed that many parents were hesitant to vaccinate their children. This sparked my curiosity, and I began to wonder if the COVID-19 pandemic played any sort of role in these parents' decisions. What are the reasons behind these declines? What are some intervention methods that could get these

children back on schedule? The remainder of this paper will discuss my research found on this important topic.

Abstract

This literature review is an examination of how vaccination rates have changed for pediatric routine immunizations since the outbreak of the COVID-19 pandemic and whether it has impacted specific groups of children. Articles were compiled through the PubMed/Medline database and organized in an evidence table. Decreased vaccination rates for children 0-18 years held true across all sources in a variety of different countries. The most common reason for delay was the fear of being infected with COVID-19. Intervention methods for hesitant parents include reminder systems, walk-in/free clinics, and promoting patient education. It is important to understand the effects COVID-19 has had on pediatric routine vaccinations to prevent the spread of preventable diseases and plan intervention methods accordingly.

Review of the Literature

The COVID-19 pandemic and attempts to limit its transmission have had an unprecedented impact on healthcare services at all levels. This includes routine immunizations for pediatric patients. Before the pandemic, the rate of parental vaccine hesitancy was estimated to be 6.7% for routine childhood vaccines and over 25% for influenza vaccines (Kempe et al., 2020). To make matters worse, the Centers for Disease Control (CDC) reported a significant decline in pediatric vaccine uptake just one week following the national declaration of emergency in March 2020 (Santoli et al., 2020). I experienced vaccine refusal first-hand in multiple patient encounters at Irving Pediatrics. Common concerns underlying hesitancy brought up to Dr. Haq included uncertainty about the need for vaccination as well as questions about vaccine safety and efficacy. Sociodemographic factors associated with parental vaccine hesitancy vary across locations and contexts. There is currently limited data to quantify the impact of COVID-19 on pediatric immunization coverage across the world. In addition, more research is needed to identify whether the pandemic has impacted access to vaccinations differently for specific groups of children (age, race, and/or ethnicity).

In this project, I will conduct a narrative review that addresses how vaccination rates have changed for pediatric routine immunizations since the outbreak of the COVID-19 pandemic and whether it has impacted specific groups of children. It is important to understand the effects COVID-19 has had on pediatric routine vaccinations to prevent the spread of preventable diseases and plan intervention methods accordingly.

In order to answer this question, I conducted a narrative review through the PubMed/Medline database. Exclusion criteria included patients eighteen and older and articles that did not mention COVID-19 or were more than five years old. My focus was within the

United States and Canada, however I included a few articles written in other countries. COVID-19 is a global pandemic that has affected all areas, therefore I felt it was important to include articles outside of the United States.

I was part of all aspects of the research process. Key words for my search were “routine vaccines,” “COVID-19,” “vaccine hesitancy,” and “pediatrics.” All included articles answered the question: How does this article address, inform, or support the need for my thesis work? Sources had to be peer-revised and address biases or limitations to be included. This specific narrative review focuses on changes in vaccination rates of pediatric patients before and during COVID-19 and interventions to eliminate vaccine hesitancy during a pandemic. Results were organized in an evidence table. Over fifteen sources were included in the review. Headers included the following: Author & Year, Study Design & Sample Size, Setting, Purpose, and Outcome. My studies are discussed in the review by important findings and how they relate to the bigger picture of my thesis.

Like Irving Pediatrics, most physicians continued scheduling well-visits and vaccination services throughout the pandemic (O’Leary et al., 2021). In addition, most practices implemented COVID-19 related safety guidelines suggested by the CDC such as wearing a mask, limiting the number of people who accompany the patient, enforcing social distancing, and eliminating time spent in the clinic. Only 10% of pediatric physicians reported advising patients and/or parents to delay vaccinations to avoid in-person risks (O’Leary et al., 2021). Nevertheless, well-visits and vaccinations reached their lowest points in April 2020 compared to 2018 and 2019 statistics (Kujawski et al., 2021). In the United States, all pediatric age groups had a significant drop in mean immunization rates immediately following the CDC’s release of social

distance guidances: 31% for ages 0-2, 78% for ages 3-9, and 82% for ages 10-17 (O'Leary et al., 2020).

Due to Irving Pediatric's location, I thought it would be important to gather statistics solely from clinics across the state of Texas. According to data analyzed from the Texas Immunization Registry, there was a 47% relative decline in immunization rates between 2019 and 2020 among 5-month-olds and a 58% decline among 16-month-olds. Only a 5% decline was observed among 24-month-olds. These numbers are significantly larger than the 31% national average for unvaccinated children under the age of two. Declines in immunization rates were larger in rural counties and coincided with increases in state vaccine exemptions over the past 5 years due to an aggressive anti-vaccine movement in Texas (Nuzhath et al., 2021).

Decreased vaccination rates also held true for other countries outside of the United States. For example, the University of Toronto determined that coverage rates in Canadian children under 2 years decreased significantly in the early months of the COVID-19 pandemic, especially in children aged 15 and 18 months old (Wang et al., 2022). Similarly, Wuxi, China experienced delays in more than 50% of planned vaccinations throughout February and March 2020 (Ji et al., 2022).

Both vaccine confidence and risk perception play a vital role in whether a parent chooses to vaccinate their children. According to the CDC, vaccine confidence is the belief that vaccines work, are safe, and are part of a trustworthy medical agenda. Risk perception refers to people's subjective judgements regarding the likelihood of negative occurrences that result from vaccines such as injury, disease, illness, and death. Many other factors influence vaccine decision-making, such as patient demographics. During the pandemic, households with higher incomes had less hesitancy, with both increased confidence and decreased risk perception (He et al., 2021).

Hispanic ethnicity displayed increased confidence, but increased risk perception. The African American race had no association with confidence, however, did have increased risk perception (He et al., 2021). Furthermore, the proportion of up-to-date vaccines were lowest in non-Hispanic Black children across all age groups, both during and prior to the pandemic (DeSilva et al., 2021). Large household sizes and lack of insurance also played a significant role in vaccine delays (Alsuhaibani and Alaqeel, 2020). Data from studies such as these suggests that different strategies for different demographic groups may be needed to target effective communication about vaccines.

According to a survey in London, 85.7% of respondents considered it important for their children to receive routine vaccinations on-time during the pandemic (Bell et al., 2020). However, there was lack of clarity if vaccination services were operating as normal, difficulties organizing appointments, and fear of contracting COVID-19 while visiting clinics. Similar opinions were held in Italy as 34% of respondents of a survey given by the Italian Pediatric Society reported skipping a vaccine appointment. 44% reported they were afraid of contracting the COVID-19 virus, 42% reported vaccination services postponed the appointed, and 13% reported that their pediatrician's office was closed (Russo et al., 2021). Universal across all studies selected for this literature review, the most common reason for delay was the fear of being infected with COVID-19.

Many parents felt their child's risk of acquiring vaccine-preventable diseases were low due to physical distancing measures, thus vaccinating their children was more risky than beneficial (Bell et al., 2020). However, this is simply trading one deadly disease for another. For example, coverage levels that drop below 80% could lead to a 3-fold increase in measles annually in children across the United States. Many do not know that measles is airborne and

much more transmissible than COVID-19 (Zhong et al., 2020). As soon as social-distancing guidelines relax, this disease has the potential to run rampant among unvaccinated children. A study conducted by the University of Wisconsin-Madison projected a decline in projected vaccination coverage for infants born in 2019 from 90% to 82% for their first does of the MMR vaccine (Carias et al., 2020). Ephrem Tekle Lemango, associate director for immunization at UNICEF states, "Even before the pandemic, we were seeing how even small pockets of low measles immunization coverage could fuel unprecedented outbreaks, including in countries where the disease had been considered eradicated," (Torjesen, 2021). COVID-19 has caused these gaps to grow even larger, which could eventually lead to deadly outbreaks. This is especially risky for schools that are reopening for in-person learning.

It is important to know which routine vaccinations have had the steepest declines since the beginning of the pandemic. Compared to the 2017-2019 average vaccination rates, there was a 28% reduction in MMR vaccine uptake, a 35% reduction in HPV vaccine uptake, and a 30% reduction in Tdap vaccination uptake in 2020 for children and adolescents enrolled in Louisiana Medicaid (Walker et al., 2022). Another study in Singapore found a 25.6-73.6% drop-in MMR uptake rates, a 0.4-10.3% drop for 5-in-1 vaccine uptake rates (Diphtheria, Tetanus, Pertussis, inactivated Polio-Haemophilus influenza) and an 8.0–67.8% drop-in uptake rates for PCV (Zhong et al., 2020).

Although vaccine administration rebounded during June–September 2020, approaching pre-pandemic levels in most jurisdictions, this increase was not sufficient to achieve the catch-up vaccination rates needed to address the many months when children missed routine immunizations. According to the University of Wisconsin-Madison School of Medicine, a 15% catch-up rate may be necessary to achieve projected vaccination coverage similar to previous

years (Carias et al., 2020). Schools and local public health authorities should continue to enforce school vaccination requirements and encourage catch-up schedules, even for children attending school virtually, to ensure a safe return to in-person learning for US children.

Simple solutions can have a significant impact in improving pediatric vaccination rates. For example, pediatricians should communicate that they are open despite the pandemic and have taken the necessary precautions to ensure patient safety. In fact, the CDC recommends that providers consider co-administering COVID-19 vaccines with other routinely recommended vaccines to limit in-person visits. In addition, parents can consider immunization assessment and counseling during the telemedicine visit and scheduling the patient for a brief vaccination-only encounter at an appropriate time and location.

Patient reminder and recall systems are also effective intervention methods that lead to increased vaccination rates. Patients of a target population are reminded when immunizations are due (reminders) or late (recall). This can be done via postcard, letter, telephone, text-message, etc. Walk-in and after-hours vaccination clinics as well as providing vaccinations free of charge are also effective strategies for improving childhood immunization rates. In fact, many children are eligible for free vaccinations through the Vaccines for Children Program (Centers for Disease Control and Prevention, 2016). Programs such as these should be emphasized for families who cannot afford to go to the doctor or do not have health insurance.

Patient education also plays a critical role in pediatric vaccination rates. It is crucial that healthcare providers amplify positive and accurate information to the public. This can be in the form of a conversation with a healthcare provider, informational posters in exam rooms, and vaccine information sheets/webpages. A randomized control study testing the combination of an educational video and informational handout resulted in a statistically significant score reduction

of 5.2 points on the Parent Attitudes about Childhood Vaccines (PACV) survey, indicating a reduction in parental vaccine hesitancy (Williams et al., 2013). Another important strategy is to target expecting mothers during prenatal visits. One study found that 90.0% of children whose mothers had received prenatal vaccination education were fully immunized by 12 months of age, compared with 82.9% of children whose mothers had not received the intervention. Children in the intervention group were 3.4 times more likely to complete the full vaccination series and 2.3 times more likely to complete the series on time than children whose mothers did not receive the intervention (Pappano et al., 2004). As a future pediatric PA, I will play a vital role in counseling vaccine-hesitant parents and establishing confidence. Knowing these different intervention strategies and the reasoning behind them will help me increase vaccination rates in pediatric patients and consequently reduce the rate of vaccine-preventable diseases.

Conclusion

This internship and literature review have taught me the skills necessary for evidence-based practice and effective communication. This will help me provide the highest quality patient care as a physician assistant. Evidence-based practice is not only about applying the best research evidence to a PA's decision-making, but also taking the patient's situation and values into account. Medicine requires individualized care, especially in the midst of a global pandemic. My goal is to always keep improving for my patients and make sure they are satisfied with the outcome of their care. This project has not only taught me how to search and review literature effectively but evaluate my findings and consider all interventions.

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