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# The Opportunity Cost Associated with Duplication of Publicly Provided Immunization Services for the Refugee Population

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The Opportunity Cost Associated with Duplication of Publicly Provided Immunization  
Services for the Refugee Population

A Senior Honors Thesis

Submitted in Partial Fulfillment of the Requirements for Graduation in the Honors  
College

By: Bridget Murphy  
Nursing Major

The College at Brockport  
May 2, 2017

Thesis Director: Elizabeth Heavey, PhD, MS, RN, CNM, Associate Professor of Nursing

*Educational use of this paper is permitted for the purpose of providing future students a model example of  
an Honors senior thesis project.*

### **Introduction**

According to the Department of State: Bureau of Population, Refugees and Migration, in the 2016 fiscal year (October 2015-September 2016), 84,995 refugees were admitted to the United States. This is the highest number of refugees in any year during Obama's presidency (Connor, 2016). Nearly 1,200 refugees arrived in Rochester, NY in Monroe County in 2016, a 56% spike from 2015 (Murphy, 2016). Many refugees arrive with pre-existing health issues acquired from fleeing their home country and living in refugee camps. Refugees are more susceptible to infectious disease than general immigrants (Amara & Aljunid, 2014). Before admission to the U.S., refugees must be interviewed, screened and cleared by multiple different agencies. The U.S. government provides a multiple services to address the unique health needs of this vulnerable population. In our area, the Monroe County Department of Health (Department of Health, 2013) provides the initial infectious disease screening and immunizations for the refugee population during the resettlement process. As of January 2008, New York State legislature passed the Immunization Registry Law, requiring health care providers to report all vaccinations administered to patients under 19 years old and the person's immunization history to the New York State Department of Health using the New York State Immunization Information System (NYSIIS). The goal of NYSIIS is to "establish complete, accurate, secure, real-time immunization medical record that is easily accessible and promotes public health" (Department of Health, 2013). One main benefit of an immunization registry is decreasing unnecessary duplicate immunizations thus decreasing health care costs (Patel et al, 2015). Preventing duplicate immunizations reduces both patient costs such as time and pain of vaccination and public cost by saving

public resources. However, if NYSIIS is not kept up-to-date or care providers do not utilize the system appropriately, the effectiveness of the system is diminished. Electronic immunization registries can be an efficient tool if they are kept up-to-date and are routinely utilized (McKenna, Sager, Gunn, Tormey & Barry, 2002).

The DOH runs an immunization clinic that helps ensure refugee children are healthy, and prepared to attend school in New York State. Required immunizations are administered at the DOH and may be inadvertently repeated at other primary care practices later in the refugee resettlement process. The resettlement process includes establishing a medical home and Medicaid coverage for the provision of primary care that is not available at the DOH. Immunizations that are administered at the DOH are documented in the state-wide NYSIIS system, which is accessible to all registered health care providers. The transition of care to the secondary site is associated with duplication of immunization services related to not using NYSIIS appropriately at the secondary care site, poor documentation and/or errors in tracking (such as misspelled names which is a common issue in this population). This results in unnecessary administration of expensive vaccines within a very resource-limited state environment.

NYSIIS provides an opportunity to examine and quantify the cost of invalid vaccinations administered and then subsequently billed to Medicaid at the secondary provider location. This paper will present the initial data gathered by a team of personnel during a quality improvement initiative conducted in Monroe County in the spring of 2016.

### **Objective**

The objective of the project was to analyze the extent and total cost associated with duplication of immunization services in Monroe County's pediatric refugee population in 2015. Recommendations for strategies to improve cohesion and cooperation among public health agencies, eliminate duplication of services and produce cost savings will be included.

### **Methods**

In this retrospective study, data was collected in April 2016 at the Monroe Country Department of Health. Data collection included review of all pediatric patient's charts initially seen in the Monday morning Refugee Services Health Clinic in 2015 (N=250). The NYSIIS system was then utilized to identify what vaccinations were duplicated or administered inappropriately at the secondary care site after transfer from the DOH. The type of vaccine that was duplicated or administered inappropriately (i.e. too soon after DOH vaccination) was documented. Of the 250 patient charts, 100 were dual reviewed by the researchers to ensure inter-rater reliability for what we identified as inappropriately administered vaccines. Inter-rater reliability was established at 99%.

The CDC price list for vaccines (see appendix A) and a \$20.00 administration fee (Medicaid) was used to establish the cost associated with inappropriate administered vaccines at the secondary care practice. Sometimes providers administer combination vaccines to avoid administering multiple injections to children. In this study, when combination vaccines were administered to children and at least two components of the vaccination were required, we consider this to be "provider judgment." These instances were classified as appropriate vaccination administration even if all components were not

necessary. If combination vaccines were administered and only one component was necessary these instances were identified as inappropriate duplication of vaccinations.

### **Results**

We identified 64 inappropriately administered pediatric vaccinations at the secondary care provider site. The total cost of the inappropriately vaccinations themselves was \$3,263.00. The administrative costs associated with the inappropriate vaccines was \$1,280.00. The total cost associated with inappropriate vaccinations of pediatric refugee patients transferred from the Monday morning clinic in 2015 was \$4,543.00. The total DOH budget for the initial cost of the appropriate pediatric vaccines themselves and administering the pediatric vaccines on Monday mornings in 2015 was \$61, 268 (personal communication, Mary Young, 6/7/16). Readministering these vaccines at the secondary care site is duplicating 7.4% of the initial budget allotted for these services.

### **Discussion**

The primary limitations of this study include the under-detection of potentially greater levels of inappropriately administered vaccines that exist because we did not count the fairly frequently noted use of a combination vaccine if at least two components of the vaccine were required and multiple injections to pediatric patients were avoided. Also, the costs we found were gathered after following the small population of clinic visits that occurred for the pediatric refugee population seen only on Monday mornings after they transferred care to the secondary provider site. If these costs also exist for all patients seen throughout all clinic sessions at the DOH who later transfer care, this would

create a substantially greater Medicaid cost burden on an already limited county and state budget.

### **Implications**

Our results indicate that during the transition of care period from the DOH to the secondary care providers, data in NYSIIS could be used more effectively than it is right now. The cost of administering invalid vaccinations at the secondary care site is approximately 7% of the totally budget associated with the initial management of the refugee patients at the DOH. There is a potential for lost work and school time for children and their parents when unnecessary immunizations are given and they can potentially feel ill or have a low temperature after receiving the immunization. This unnecessary discomfort and the additional demands on short staffing to provide the immunization are also costs associated with the duplication administration of immunizations. Improved utilization of the NYSIIS system at the secondary care site could be associated with a decrease in duplication of services and substantial cost savings within the Medicaid managed care system. It could also save potential pain, discomfort and lost work or school time for patients and their families.

### **Human Participant Protection**

This study was approved by the Institutional Review Board at The College at Brockport. See Appendix D.

### References

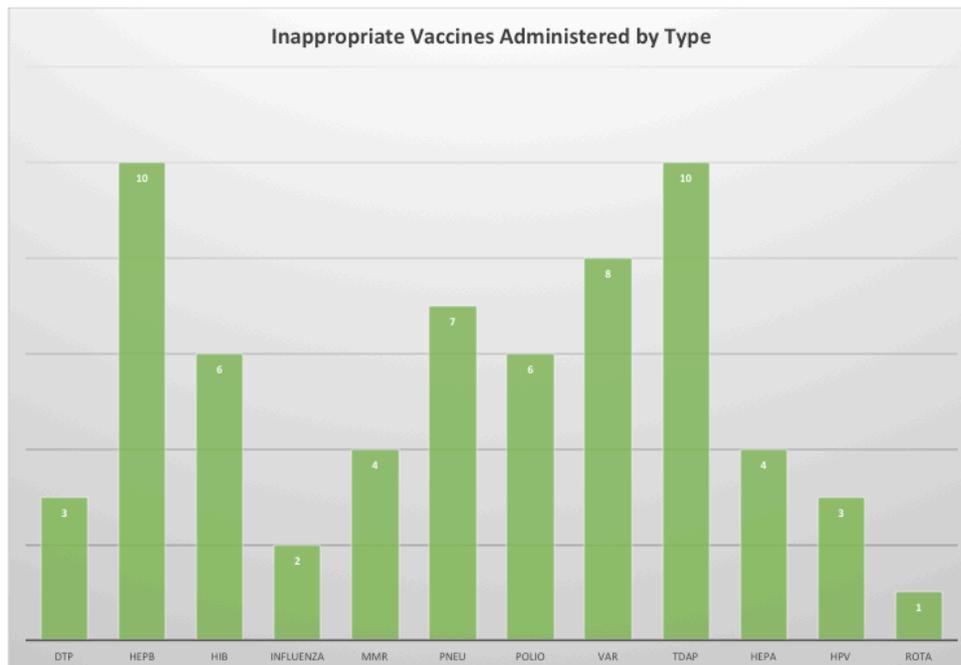
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**Appendix A: CDC Price List**

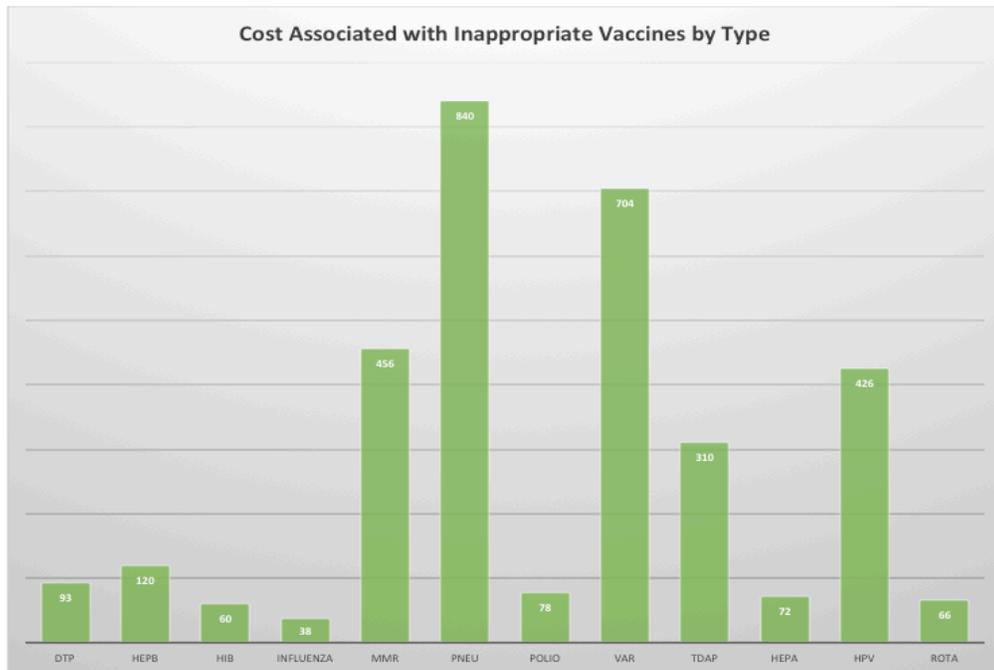
<i>Vaccine</i>	<i>Cost of (1)</i>
Dtap	\$55
HepB	\$12
Hib	\$10
Influenza	\$19
MMR	\$114
Pneum	\$120
Polio	\$13
Varicella	\$88
Tdap	\$31
<b>HPV</b>	<b>\$142</b>
HepA	\$18
Rota	\$66

Centers for Disease Control and Prevention. (2016). CDC Vaccine Price List. Available at: [www.cdc.gov/vaccines/programs/vfc/awardees/vaccine--management](http://www.cdc.gov/vaccines/programs/vfc/awardees/vaccine--management).

**Appendix B: Inappropriate Vaccines Administered by Type**



**Appendix C: Cost Associated with Inappropriate Vaccines by Type**



**Appendix D: IRB Approval**

The College at  
**BROCKPORT**  
STATE UNIVERSITY OF NEW YORK  
**Institutional Review Board**

**\*EXEMPT DETERMINATION\***

**Date:** 4/18/2016

**To:** Elizabeth Heavey

**From:** Julie Wilkens  
IRB Compliance Officer  
[jwilkens@brockport.edu](mailto:jwilkens@brockport.edu)

**Re:** IRB Proposal # 2015-128

**Project Title: Cost Associated With Duplication Of Publically Provided  
Immunization Services For the Refugee Population**

Your proposal has been determined to be exempt as of 4/18/2016. IRB approval is good for one calendar year.

Before 4/18/2017, submit a Continuation Request by e-mail to the IRB office. A reminder will also be sent to you in eleven months by the IRB office, but it is the researcher's responsibility to make sure the protocol approval does not expire.

You may use only the documents and procedures that have been approved by the IRB in conducting your research. If you wish to make any changes to these documents or procedures, you must submit a new proposal and obtain approval from the IRB prior to implementing any changes. The exception to this is including adding research assistants or new investigators, which may be requested using Form K. You may use the original proposal as a template for the new proposal.

Any injury to a subject due to the procedures must be reported immediately.

When signed consent documents are required, the primary investigator must retain the signed consent documents for a minimum of three years past completion of the research activity.

If continuing review is not granted before the expiration date of 4/18/2017, approval of this protocol expires on that date.

Best wishes in conducting your research.

**Appendix E: Dissemination**

These results were presented in a poster presentation at the North American Refugee Health Conference in June 2016 and at the National Conference for Undergraduate Research in April 2017.

