



Vaccine delivery to newly arrived refugees and estimated costs in selected U.S. clinics, 2015



Clelia Pezzi^a, Audrey McCulloch^a, Heesoo Joo^a, Jennifer Cochran^b, Laura Smock^b, Ellen Frerich^c, Blain Mamo^c, Kailey Urban^c, Stephen Hughes^d, Colleen Payton^e, Kevin Scott^e, Brian Maskery^a, Deborah Lee^{a,*}

^aCenters for Disease Control and Prevention, Division of Global Migration and Quarantine, Atlanta, GA, United States

^bMassachusetts Department of Public Health, Division of Global Populations and Infectious Disease Prevention, Boston, MA, United States

^cMinnesota Department of Health, Saint Paul, MN, United States

^dNew York State Department of Health, Albany, NY, United States

^eThomas Jefferson University, Philadelphia, PA, United States

ARTICLE INFO

Article history:

Received 4 May 2017

Received in revised form 10 October 2017

Accepted 8 December 2017

Available online 1 February 2018

Keywords:

Refugee health

Refugee immunizations

Vaccine preventable diseases

Vaccine costs

Cost-benefit

ABSTRACT

Background: Newly arrived refugees are offered vaccinations during domestic medical examinations. Vaccination practices and costs for refugees have not been described with recent implementation of the overseas Vaccination Program for U.S.-bound Refugees (VPR). We describe refugee vaccination during the domestic medical examination and the estimated vaccination costs from the US government perspective in selected U.S. clinics.

Methods: Site-specific vaccination processes and costs were collected from 16 clinics by refugee health partners in three states and one private academic institution. Vaccination costs were estimated from the U.S. Vaccines for Children Program and Medicaid reimbursement rates during fiscal year 2015.

Results: All clinics reviewed overseas vaccination records before vaccinating, but all records were not transferred into state immunization systems. Average vaccination costs per refugee varied from \$120 to \$211 by site. The total average cost of domestic vaccination was 15% less among refugees arriving from VPR- vs. nonVPR-participating countries during a single domestic visit.

Conclusion: Our findings indicate that immunization practices and costs vary between clinics, and that clinics adapted their vaccination practices to accommodate VPR doses, yielding potential cost savings.

Published by Elsevier Ltd.

1. Introduction

The United States has accepted approximately 70,000 refugees annually for resettlement in recent years [1]. Although immigrants are required to have documented Advisory Committee on Immu-

Abbreviations: ACIP, Advisory Committee on Immunization Practices; CDC, Centers for Disease Control and Prevention; CPT, Current Procedural Terminology; DTP/DTaP/DT/Td/Tdap, diphtheria/tetanus/pertussis-containing vaccines; EDN, Electronic Disease Notification system; Hib, *Haemophilus influenzae* type B; HepA, hepatitis A; HepB, hepatitis B; HPV, human papillomavirus; IPV, inactivated poliovirus; IIS, immunization information systems; IOM, International Organization for Migration; MMR, measles, mumps and rubella combination vaccine; VPR, Vaccination Program for U.S.-bound Refugees; VPD, vaccine-preventable disease; VFC, Vaccines for Children program.

* Corresponding author at: Centers for Disease Control and Prevention, Division of Global Migration and Quarantine, 1600 Clifton Road NE, MS E-03, Atlanta, GA 30333, United States.

E-mail address: DLee1@cdc.gov (D. Lee).

<https://doi.org/10.1016/j.vaccine.2017.12.023>
0264-410X/Published by Elsevier Ltd.

nization Practices (ACIP)-recommended [2] vaccines prior to U.S. entry ((8 U.S.C. 1182)(a)(1)(A)(ii)), refugees are not subject to this requirement.

During 2012, the U.S. Centers for Disease Control and Prevention (CDC) and the Bureau of Population, Refugees, and Migration (PRM) of the Department of State (DOS) developed the overseas Vaccination Program for U.S.-bound Refugees (VPR). The objective of VPR is to prevent morbidity, mortality, and costly travel delays associated with vaccine-preventable disease (VPD) outbreaks during the resettlement process and to facilitate earlier school enrollment for children after arrival [3–6]. The program was implemented by the International Organization for Migration (IOM). At the time of this analysis, U.S.-bound refugees examined in the participating countries of Ethiopia, Kenya, Malaysia, Nepal, Thailand, and Uganda were offered up to two doses of five ACIP-recommended vaccines (hepatitis B [HepB]; inactivated poliovirus [IPV]; diphtheria/tetanus/pertussis-containing vaccines [DTP/

DTaP/DT/Td/Tdap]; measles, mumps and rubella combination vaccine [MMR]; and *Haemophilus influenzae* type B [Hib]) in the 3–6 month interval between overseas medical examination and departure for the United States [3]; the program has since expanded to new vaccines (Pneumococcal Conjugate [PCV13] and Rotavirus), and to 21 countries [7,8]. The program is jointly funded by the U. S. Department of Health and Human Services/CDC and DOS/PRM. More information on VPR is available elsewhere [8].

CDC recommends that refugees be referred for a federally funded medical examination at a local health department or healthcare provider within 90 days [9] upon arrival in the United States. The examination's purpose is to follow-up on health conditions noted overseas and link refugees to the U.S. healthcare system. CDC domestic screening guidelines recommend that clinicians take this opportunity to provide the appropriate ACIP-recommended vaccines to refugees [9].

Vaccination activities during the domestic medical examination are not well documented in the literature, and we know little about the domestic vaccination costs. Here, we report on how refugees' medical records are evaluated for documentation of receipt of prior vaccinations, describe the decision-making process that guides domestic vaccination, as well as the extent to which overseas and domestic vaccine doses are documented in state immunization information systems (IIS) during the domestic medical examination [10]. Although previous publications describe site-specific vaccination processes and costs [11,12], we analyzed vaccination practices in sixteen clinics in three states and one institution during the domestic medical examination, and estimated vaccination-specific costs from the U.S. government perspective.

2. Methods

2.1. Participants

We collaborated with four partners (referred to as 'sites' in this paper): three states, and one university medical system. The three states provided data from five clinics each (15 total), all of which participate in federally funded domestic refugee screening programs, such that the selected clinics screen at least 70% of each state's annual refugee arrivals. The university medical system provided data from one clinic that screens 10% of annual refugee arrivals to the state in which it is located. The four sites provided information on any recently arrived refugees who received a domestic medical examination in one of the 16 participating clinics during three 2-week time periods in July 2014, November 2014, and March 2015. Each refugee was counted as a single observation regardless of the number of clinic visits during the three time periods. The sites also collected aggregated information on the number and type of vaccines given to refugees as part of the domestic medical examination during the three time periods. We categorized persons <19 years old as children and persons ≥ 19 as adults, per ACIP definition [2].

2.2. Data collection

Site partners extracted aggregated refugee data, stratified by age and country of overseas exam from their refugee health surveillance systems, and clinics summarized their immunization practices and unit charges for services.

2.3. Measures

2.3.1. Clinic immunization practices

Sites provided information on the types of participating clinics conducting domestic medical examinations (e.g., health

departments, community health clinics, etc.) in their jurisdictions, as well as immunization/titer screening protocols used by clinics. Clinics provided information on refugee screening and immunization practices for 10 specific vaccines: HepB, IPV, DTP/DTaP/DT/Td/Tdap, MMR, Hib (VPR vaccines) and human papillomavirus (HPV), hepatitis A (HepA), meningococcal, pneumococcal, and varicella vaccines (nonVPR vaccines). In addition, clinics reported the proportion of the screening medical exam devoted to vaccination, and their access to, and use of, overseas immunization information and domestic antibody testing results to determine vaccination needs. Clinics also reported the extent to which domestic vaccination data were recorded in electronic health records, refugee health surveillance systems, and state IIS.

2.3.2. Cost indicators

Sites collected information from clinics on billing practices for the domestic medical examination, including proportion of total visit time spent on vaccination, Current Procedural Terminology (CPT) codes used to bill for refugee clinic visits, vaccine costs, vaccine administration fees, refugee health examination visit costs, number of office visits associated with the examination, antibody testing for immunity, and reporting of overseas and domestic vaccines to state IIS. All clinics received children's vaccines through the Vaccines for Children (VFC) program, a federal program providing vaccines at no cost to children not otherwise able to pay, or an alternative source [13], and two of the four clinics were able to provide price data for adult vaccines. Clinics also reported information on the type and number of vaccine doses given during the exams, aggregated by refugees' age and country of origin. Individual-level billing data were not available and billed amounts may depend on the insurance status of individual patients. Refugees have coverage primarily through Medicaid jointly administered by the U.S. federal and State governments or the Refugee Medical Assistance program administered by the federal Office of Refugee Resettlement. In place of billing data, we estimated average charged amounts per refugee based on data provided by sites and estimates of vaccine prices as summarized below.

2.4. Analyses

2.4.1. Clinic immunization practices

To summarize clinic immunization practices, we tabulated clinic-reported access to overseas immunization records by site, clinic use of antibody testing by vaccine (HepB, varicella, HepA, and MMR) by site, clinic documentation of overseas vaccine doses, and reporting of domestic vaccine doses administered by site and age group (child or adult).

2.4.2. Cost analysis

Analysis was conducted on costs associated with vaccines administered during the domestic medical examination using U. S. CDC *Vaccine Price List* (archived January 5, 2015) and Medicaid reimbursement rates. All costs were estimated using 2015 dollars from the US government perspective (costs to federal, state, and local governments). We calculated the average number of doses given and the average cost to vaccinate per refugee during the post-arrival exam by site and age; more detailed information on our methods is in the [Appendix](#). We determined the average number and cost of vaccines given to refugees stratified by whether or not they were examined in a country participating in VPR at the time of their overseas medical evaluation. We made the following assumptions to calculate the average vaccination costs per refugee by site:

- (1) Clinic-provided data on vaccine charges approximated actual cost to the federal government.

Download English Version:

<https://daneshyari.com/en/article/8485724>

Download Persian Version:

<https://daneshyari.com/article/8485724>

[Daneshyari.com](https://daneshyari.com)