Health Profiles of Newly Arriving Refugees in Kentucky, 2016: Data from the University of Louisville Global Health Program

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Abstract

Objectives: Refugees resettling in the United States bring with them a number of health conditions, the majority chronic. These health conditions may impact their ability to be successful with disease self-management and employment, and acculturate and thrive in their new communities. Knowledge of health conditions present in individual refugee populations can be of benefit to healthcare providers in the community and public health. The objective of this manuscript is to describe the state of health among refugees newly arriving in the US and resettling in Kentucky during 2016.

Methods: Using data from the domestic health screens, immunization clinics, and the Centers for Disease Control and Prevention Electronic Disease Notification, a database entitled *Arriving Refugee Informatics Surveillance and Epidemiology (ARIVE)* was developed and the Research Electronic Data Capture (REDCap) system used as the platform.

Results: A total of 1495 adult and pediatric refugees were screened during January-June 2016 in Louisville, Lexington, Owensboro, and Bowling Green, Kentucky and data entered into ARIVE. Results from those domestic health screenings identified dental abnormalities (60%), obesity (23%), decreased visual acuity (14%), hyperlipidemia (14%), and elevated blood lead levels in child refugees (12%). Latent tuberculosis infection was identified in 13% and more than 32% had evidence of at least one intestinal parasite. Conditions of social importance included tobacco use among 16%. Mental health issues were evident as 15% had a positive Refugee Health Screener (RHS-15) result and more than 13% indicated they had witnessed or experienced torture.

Conclusions: This analysis shows that the main health conditions facing refugees after arriving in the US are chronic conditions that require long-term medical management and support services. Upon review of these results, a systematic approach to solving the problem of long-term follow-up needs to be established for refugees in order to address and decrease the impact of chronic health conditions. Using information from this Kentucky assessment may promote interest in a national refugee health database as a means of developing population-based and population-specific interventions to improve overall health.

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Introduction

Each year, thousands of refugees are resettled through the United States (US) federal Refugee Program. In 2015, according to

the Office of Refugee Resettlement (ORR), US communities welcomed more than 140,000 refugees and other entrants.(ORR 2016) As these refugees enter the US from a variety of countries, they bring with them health conditions that represent both short and long-term challenges to public and personal health. During the initial months of resettlement, health coverage is often provided through state or federal programs, such as Medicaid, that require close monitoring of resource consumption due to the limited funds allocated for this purpose. Surveillance of health conditions that are impactful to the public's health (e.g. transmissible infections) as well as those that may require high resource

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utilization (e.g. chronic kidney disease) is critical to the resettlement program as well as to the communities that welcome the refugees.

In order to identify existing health conditions among newly arriving refugees, a partnership began between the Kentucky Office for Refugees (KOR) and the University of Louisville in early 2012, funded by KOR through a five-year CDC Surveillance grant. This partnership involved the development of a process whereby data gathered from the overseas medical examination, available through the Electronic Disease Notification system (EDN), could be combined with local data gathered during the domestic health screening. Local health screening is provided as part of the refugee health assessment, also known as the domestic health screening, and is ideally performed within the first ninety days of arrival of the refugee into their new communities. This results in a more complete picture of the health status for an individual refugee. Data from the EDN and the domestic health screen allowed for development of a semi-annual report describing the state of refugee health among all those resettled in Kentucky.

The objective of this manuscript is to describe the state of health among refugees newly arriving in the US and resettling in Kentucky thereby providing a framework that may be replicated by other states to do the same.

Methods

Domestic health screening visits are provided at six sites in Kentucky. Newly arriving refugees are provided with opportunities to receive this screening that consists of a physical assessment, history, laboratory testing, and mental health screening. The US Centers for Disease Control and Prevention (CDC) guidelines for domestic refugee health screening were used to determine the data elements captured from the health screening events, develop the data collection instrument and a corresponding data dictionary (CDC 2012a; 2012b). A paper-based data capture form and a corresponding data dictionary (UofL Division of Infectious Diseases 2017) were developed. The Research Electronic Data Capture (REDCap) system was selected as the data management platform for all refugee health data. REDCap was developed at Vanderbilt University for the purpose of collecting clinical research data and runs as a web-based application accessible through a web browser (Harris et al. 2009). The database containing all refugee health information was named the *Arriving Refugee Informatics Surveillance and Epidemiology (ARIVE)*. Reports outlining data for individual refugees and refugee groups resulted and enabled identification of specific health issues or health needs that existed across specific populations. For data aggregated across all refugee groups, an initial framework for a semi-annual report was provided to KOR for their review, approval, and dissemination. These reports were then provided to KOR, all Kentucky resettlement sites, and requesting partners.

Statistical Analysis

Data analysis was performed at the UL-GHC using current versions of Tableau (Seattle, WA) and R (R Foundation for Statisti-

Table 1 Summary Data Sample Data From the *Arriving Refugee Informatics Surveillance and Epidemiology (ARIVE)* Database for Adult, Adolescent and Child Refugees Resettled in Kentucky, January-June 2016.

Variable	Descriptive Statistics
Demographics	
Age, median (IQR ^[1])	27 (24.7) N= 1495
Country of Origin (10 most common)	n (%)
Cuba	575 (38)
Democratic Republic of Congo	219 (15)
Burma/Myanmar	207 (14)
Somalia	133 (9)
Iraq	101 (7)
Bhutan/Nepal	84 (6)
Afghanistan	63 (4)
Syria	47 (3)
Sudan	22 (1)
Eritrea	15 (1)
Marital Status (Age ≥ 18)	N= 952 (64%)
Married	486 (51)
Divorced	50 (5)
Widowed	19 (2)
Separated	7 (1)
Single	330 (35)
Single living with partner	60 (6)
Social History	
Tobacco use, n (%)	104/666 (16)
Alcohol use (Age ≥ 18), n (%)	105/594 (18)
Witnessed or Experienced Torture, n (%)	187/1398 (13)
Refugee Health Screener (RHS-15 ^[2]) Positive Screen	158/1038 (15)
Communicable Diseases	
Latent tuberculosis,	167/1275 (13)
HIV Infection	8/1426 (1)
Chronic Hepatitis B (HBsAg Positive ^[3])	37/1379 (3)
Intestinal Parasites	245/763 (32)
Immunity to Varicella (Age ≥ 18)	766/968 (79)
Non-Communicable Diseases	
Diabetes, n (%)	22/1495 (1)
Hypertension, n (%)	68/1495 (5)
Decreased Visual Acuity, n (%)	215/1495 (14)
Obesity (BMI ≥ 30 kg/m ² , Age ≥ 18), n (%)	220/976 (23)
Anemia, n (%)	109/1446 (8)
Hyperlipidemia, n (%)	53/389 (14)
Dental Abnormalities, n (%)	694/1160 (60)
Pediatric Blood Lead Level ≥ 5 μg/dL, n (%)	52/433 (12)
Myalgia/Arthralgia, n (%)	47/1495 (3)

[1] (IQR) Interquartile Range; [2] RHS-15 is the mental health screening tool commonly used to assess stress and depression among resettling refugees; [3] (HBsAg) Hepatitis B surface antigen

cal Computing, Vienna, Austria). Descriptive statistics were used to document data on refugees and, wherever possible, charts were created to visualize data. Annual reports entitled **Kentucky Refugee Health Assessment Report** outlined the state of refugee health in Kentucky (UofL Division of Infectious Diseases 2017).

Results

From January through June, 2016 there were 1495 newly arriving adult, adolescent or child refugees seen in one of the six health screening sites in Kentucky. A descriptive overview of the refugees resettling in Kentucky and some of the health issues of particular concern are shown in **Table 1**. The complete health report for showing presence of health conditions by individual country can be found in the **2016 Kentucky Refugee Health Assessment Report** (UofL Division of Infectious Diseases and KOR 2016). This report demonstrates health conditions identified across that entire population of 1495, but it also breaks down the conditions according to country of origin.

Table 1 shows that a majority of those resettled were from Cuba (38%), Democratic Republic of the Congo (15%), Burma/Myanmar (14%), and Somalia (9%). Sixty-four (64%) percent of those were 18 and older, and of those, 51% were married. Social habits impacting health include tobacco use and 16% of those arriving refugees indicated they used some sort of tobacco product.

Arriving refugees demonstrated a number of health issues involving a communicable condition. More than 13% had a positive blood assay indicating presence of latent tuberculosis infection (LTBI) and more than 32% have evidence of at least one intestinal parasite. **Figure 1** shows the breakdown of LTBI according to country of origin. Non-communicable health conditions included presence of dental abnormalities in 60%, obesity (23%), abnormal visual acuity (14%) and hyperlipidemia (14%). Elevated blood lead levels ($\geq 5\mu\text{g/dL}$) were identified in 12% of refugees less than 19 years of age with approximately 50% of refugee children from Sudan showing a lead level $\geq 5\mu\text{g/dL}$. **Figure 2** shows the countries where elevated blood lead levels among refugee children were identified.

Refugees aged 14 and older were administered a Refugee Health Screener 15 (RHS-15) to assess for stress and depression. Of those 1038 screened, 158 (15%) screened positively for stress and depression. In addition, 1398 refugees were asked about witnessing or experiencing torture and 13% responded that they had. **Figure 3** shows the proportion of positive RHS-15 screening results across countries of origin.

Conclusion

Development of summary reports has provided the Kentucky refugee resettlement program with an ability to identify existing health issues present in refugee populations. As these data were analyzed, several problems became clear: 1) health conditions varied among refugees resettling from different areas of the world; 2) our understanding of the scope of health conditions among the different refugee groups was limited; and 3)

this limited understanding impacted our ability to develop and implement feasible, culturally competent and affordable health interventions. This has facilitated development of targeted interventions focusing on health and disease self-management. Having individual and summary reports has allowed development of a network of specialist providers. For example, the analyses enabled providers to understand the depth of mental health needs that exist among the various refugee populations. The frequency of refugees reporting or witnessing torture, whether or not state-sponsored, has led to development of a robust mental health program that includes counseling, psychotherapy, medication as appropriate, and active case management. Recognizing conditions of public health importance, such as latent tuberculosis infection, has facilitated partnerships with local and state public health so that gaps in existing systems of care can be addressed. This has helped ensure that refugees with LTBI are involved in a coordinated care approach and risks to their receiving communities are recognized and actively managed. Health concerns such as these have led to development of a new paradigm for care that emphasizes community delivered healthcare and disease self-management through outreach into specific refugee communities.

Although the purpose of this report is to outline the health issues present among refugee resettling in Kentucky, there are several limitations. First, each of the six sites currently provide data in a paper format. Not all data elements may have been provided for all refugees seen. Second, despite availability of the domestic health screening not all refugees take advantage of this opportunity so the report reflects only those who were seen. Upon comparison of lists of new arrivals with submitted data collection forms, approximately 10% of refugees failed to take advantage of the health screening. Third, few of the refugees speak English so interpreters were used to gather health data with the exception of laboratory values. Former refugees were hired to assist with some health screenings but the accuracy of the data, data collection, and data recording process are not known.

Experiences with refugee health and achieving a broad understanding of health issues has enabled development of a comprehensive program that has become the basis for a Refugee-Centered Medical Home. This program begins with the refugee health assessment early in the resettlement period; bridges to primary care; links with specialty, coordinated, comprehensive care; and allows a robust evaluation of costs, safety, patient outcomes, and emerging needs. Having this program based at the University of Louisville facilitates involvement of the full range of services and research programs present in a large metropolitan research environment. The learning that has occurred through this process has demonstrated value and may be applicable for use by any or all other states involved in refugee resettlement. Further, the data that result may be invaluable to the federal resettlement program as they seek to determine ways to ensure continuation of the program, while maintaining the fiscal and programmatic oversight that must be present. Additionally, these data provide the basis for development of new, population- and evidence-based guidelines for specific refugee populations.

Fig. 1 Latent Tuberculosis Infection (LTBI) by Country of Origin, Refugees Resettled in Kentucky January-June 2016

Fig. 2 Blood Lead Level $\geq 5\mu\text{g/dL}$ by Country of Origin, Refugees 18 Years of Age and Younger Resettled in Kentucky January-June 2016

Fig. 3 Positive RHS-15 Screen, Refugees 14 Years of Age and Older Resettled in Kentucky January-June 2016

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