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Global Routine Immunization Policies For Refugees

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Global Routine Immunization Policies for Refugees

Jad A. Elharake

A Thesis

Presented to

The Faculty of the Department of Health Policy and Management

Yale School of Public Health

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Master of Public Health

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Yale Institute for Global Health, Yale School of Medicine, & Yale School of Nursing

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ABSTRACT*Background*

In 2020, approximately 26 million refugees resettled in a new country—fleeing their homes due to conflict, persecution, violence, and human rights violations. Refugees often migrate from developing countries with limited access to adequate health care, routine immunizations, and public health resources. Because of low immunization coverage and potentially underlying health conditions, including stress, trauma, overcrowding during transit, poor hygiene and sanitation services, and malnutrition, refugees face a greater risk of contracting vaccine-preventable diseases (VPDs). This presents a key public health challenge and ethical imperative to serve the health needs of refugees resettling each year.

Objective

The purpose of our study was to collect, analyze, and compare policies and guidelines related to routine immunizations for refugees across 20 low- and middle-income countries (LMICs) and 20 high-income countries (HICs), with the highest number of refugees per 1000 residents.

Methods

Primary and secondary data sources were used to collect policy evidence from LMICs. Primary data were obtained from WHO-country officers, who were emailed between November and December 2020 to confirm data collected, provide additional information, and/or recommend different contact person(s). Secondary data for both LMICs and HICs were collected systematically through searches of information from government health ministries, public health agencies, non-governmental organizations, and the medical and public health literature.

Results

Among the 20 LMICs, the number of refugees per 1000 residents ranged from 8 to 209 refugees, while for the 20 HICs it ranged from 2 to 15 refugees. Across the policy data collected for 20

LMICs, 13 countries specified standing routine immunization policies and guidelines applicable nationwide for refugees, five countries reported refugee vaccination guidelines only in response to specific infectious disease outbreaks, and six countries published guidelines on time-limited vaccination campaigns for refugees. Among the 20 HICs, 14 countries included refugees in their national routine immunization programs, 10 countries required a basic clinical screening prior to arrival, and 18 countries required a basic clinical screening upon arrival. Additionally, 15 HICs implemented local, community refugee clinics to provide routine immunizations, seven HICs required refugees to pay out of pocket for their vaccinations, and 11 HICs required refugees to receive specific vaccinations upon arrival.

Discussion

Refugees are at increased risk of contracting infectious diseases. Our review of routine immunization policies and guidelines for refugees in 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents, found significant variations in how countries provide and deliver immunizations to their refugee communities. LMICs and HICs must strongly consider including refugees in their national routine immunization programs, providing easily accessible and affordable vaccinations, and collecting routine immunization data for refugees to reduce vaccine-preventable diseases and protect the health of refugee populations—especially during the COVID-19 pandemic.

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FIGURE 1. 20 low- and middle-income (LMICs) and 20 high-income countries (HICs) with the highest number of refugees per 1000 residents (as of 2019).

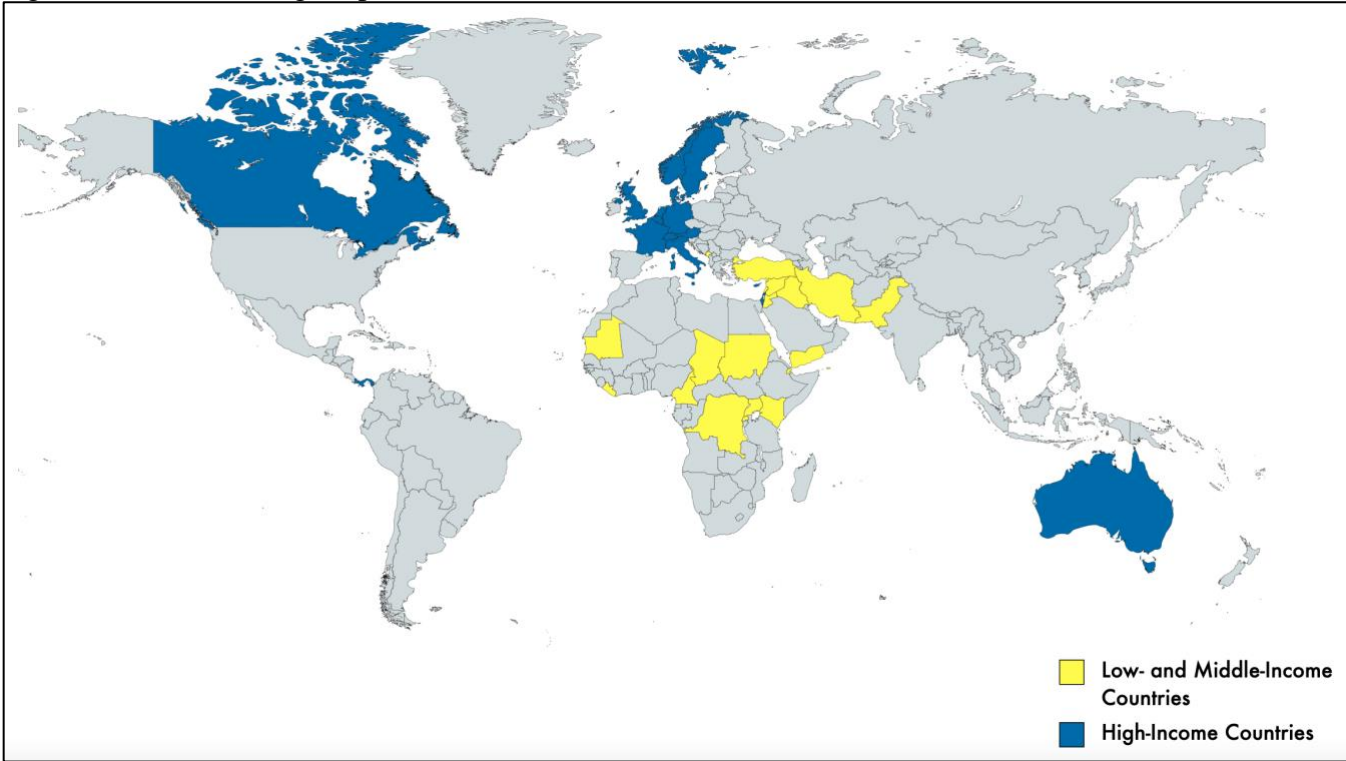


TABLE 1. Principal characteristics and features of routine immunization policies and guidelines pertaining to refugees for 20 LMICs and 20 HICs.

	Countries
LMICs	
Standing Guidelines and Policies Applicable Nationwide	Iran, Iraq, Jordan, Kenya, Lebanon, Liberia, Montenegro, Nauru, Pakistan, Rwanda, the Democratic Republic of Congo, Turkey, and Uganda
Refugees only living in camps	Iraq, Iran, Jordan, Kenya, Lebanon, and Liberia
Refugees only registered with the UNHCR	The Democratic Republic of Congo, Pakistan, and Rwanda
Refugees treated like citizens	Lebanon, Montenegro, and Nauru
Outbreak-specific Resources	Cameroon, Chad, Iran, Sudan, and Yemen
Vaccination Campaigns	Chad, Djibouti, Mauritania, Sudan, Syria, and Turkey
HICs	
Standing Guidelines and Policies Applicable Nationwide	Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Israel, Italy, Liechtenstein, Norway, Sweden, and United Kingdom
Specific routine vaccination guidelines for refugees	Belgium, Canada, Germany, Israel, Italy, and Liechtenstein
Vaccinations for all ages	Austria, Belgium, Canada, Cyprus, Finland, France, Germany, Israel, Italy, Liechtenstein, Norway, and United Kingdom
Vaccinations for children only	Denmark and Sweden
Basic Clinical Screenings	
Pre-Arrival	Austria, Belgium, Canada, Cyprus, France, Germany, Italy, Panama, Switzerland, and United Kingdom
Arrival	Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Italy, Israel, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Panama, Switzerland, and United Kingdom
Community-based	Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Italy, Israel, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, and United Kingdom
Costs of Vaccinations	
Free-of-charge	Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Italy, Luxembourg, Malta, Netherlands, Sweden, and United Kingdom
Out-of-pocket fees	Australia, Canada, Israel, Liechtenstein, Norway, Panama, and Switzerland
Specific Vaccinations Upon Arrival	Belgium, Canada, Cyprus, Finland, Israel, Malta, Netherlands, Norway, Panama, Sweden, and Switzerland

INTRODUCTION

In 2020, approximately 80 million people were involuntarily displaced worldwide, including 26 million refugees, which accounted for the largest annual number of displaced individuals on record.¹ According to the United Nations High Commissioner for Refugees (UNHCR), refugees are individuals who are outside their country of nationality or habitual residence, and are fearful of persecution because of their race, religion, nationality, and other demographic characteristics.¹ Several major crises have led to the significant displacement of individuals over the last decade, including the Syrian conflict, South Sudan's displacement crisis, the massive flow of stateless refugees from Myanmar to Bangladesh, and the outflow of Venezuelans across Latin America.¹

With high levels of migration to and within regions around the world, refugees often migrate from countries with limited or no access to adequate health care—including routine immunizations—and different disease epidemiological landscapes.² Additionally, refugees are likely to be exposed to stress, trauma, overcrowding during transit, poor hygiene and sanitation services, and malnutrition, which all pose a threat to their overall health.^{2,3} Because of low routine immunization coverage and potentially underlying health conditions, refugees face a greater risk of contracting vaccine-preventable diseases (VPDs), severe illness, and eventually death.² This presents a key public health challenge and ethical imperative to serve the health needs of refugees resettling each year.

With the recent migration of millions of refugees to Europe, 15 European countries reported a four-fold increase in the number of VPD cases—affecting over 50,000 people and causing over 70 deaths, with a majority of these cases and deaths made up of refugees.^{3,4} Given the need to

improve routine immunization rates among the refugee community, World Health Organization (WHO), UNHCR, and the United Nations International Children's Emergency Fund (UNICEF) provided immunization guidelines and general principles for European countries to include refugees and other migrants in their national immunization programs.⁵ The report emphasized the need to provide health care services and routine vaccines for refugees, recommended mechanisms for distributing specific vaccines, and discussed interventions that countries may adopt to strengthen their communicable disease surveillance systems.⁵ In 2018, the European Center for Disease Prevention and Control (ECDC) distributed technical documents that provided clinical recommendations for vaccinating refugees.⁶ However, VPD outbreaks continue to occur in different geographic clusters across Europe.⁷⁻⁹

A majority of the existing literature on access to routine immunizations for refugees is focused on high-income countries (HICs), particularly European countries.^{4,10-13} Also, to our knowledge, there are no studies that summarize or compare routine immunization policies for refugees across low- and middle-income countries (LMICs) or any published technical guidance for LMICs to provide routine immunizations to their refugee populations. This is alarming as 85% of refugees usually flee to a different LMIC, which generally neighbors their country of origin.¹

Furthermore, many LMICs already struggle to provide affordable and adequate routine immunizations to their own citizens, all while in many cases facing economic and political crises of their own.¹⁴

Given the critical gaps in knowledge on routine immunization delivery and access for refugees, the purpose of our study was to collect, analyze, and compare policies and guidelines related to

routine vaccinations for refugees across 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents. Our findings provide international health care authorities a clear understanding of the various routine immunization policies, including key gaps and inconsistencies, to identify effective public health strategies and guidelines to protect the health of refugees worldwide. Also, given the severe impact of the coronavirus disease-2019 (COVID-19) pandemic on refugees worldwide,¹⁵ it is of even greater priority to include refugees in national immunization programs, including COVID-19 vaccine rollout plans.

METHODS

Data Collection

Routine immunization policy data for refugees was documented and analyzed across 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents (as of 2019)¹ (Figure 1).

- LMICs: Cameroon, Chad, the Democratic Republic of Congo, Djibouti, Iran, Iraq, Jordan, Kenya, Lebanon, Liberia, Mauritania, Montenegro, Nauru, Pakistan, Rwanda, Sudan, Syria, Turkey, Uganda, and Yemen.
- HICs: Austria, Australia, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Israel, Italy, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Panama, Sweden, Switzerland, and United Kingdom.

Based on the International Organization for Migration's (IOM) and UNHCR's definition, refugees are individuals who are outside their country of nationality or habitual residence, and are fearful of persecution because of their race, religion, nationality, and other demographic characteristics.¹⁶

Primary and secondary data sources, including government health ministries' websites and literature from PubMed, were used to collect policy evidence from LMICs. Primary data were obtained from WHO-country officers, who were emailed between November and December 2020, to confirm data collected, provide additional information, and/or recommend different contact person(s). However, given the abundant and easily accessible refugee immunization policy data for HICs, only secondary data sources were used to collect policy evidence.

Secondary data, for both LMICs and HICs, were collected systematically through searches of information from government health ministries, public health agencies, non-governmental organizations, and the medical and public health literature through PubMed.

Analysis

Using a framework analysis,¹⁷ we conducted a comparative analysis of routine vaccination and immunization policies and guidelines pertaining to refugees in 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents. We synthesized the policy data by identifying key characteristics and features to develop a deep understanding of the vaccination policies and guidelines.

RESULTS

Guidance and policy data for a total of 20 LMICs and 20 HICs were collected using publicly available documents and articles published online by government health ministries, public health agencies, non-governmental organizations, and academic scholars. We received responses from WHO-country officers across 11 LMICs, who confirmed the data collected and/or provided additional data. For the 20 LMICs, the number of refugees per 1000 residents ranged from 8 to 209 refugees, while for the 20 HICs it ranged from 2 to 15 refugees.

Low- and Middle-Income Countries

Standing Guidelines and Policies Applicable Nationwide

Across the policy data collected, 13 out of the 20 countries specified standing laws, policies, or routine immunization guidelines pertaining to refugees nationwide (Table 1). However, there was significant variation in the approaches articulated in these materials. Six of the 13 countries provided vaccinations to refugees only living in camps. One of the six countries required refugee children enrolled in schools to be vaccinated, and distributed free routine vaccinations to all refugees in its centers and at border and registration sites. Three countries offered vaccinations to refugees only if they were registered with the UNHCR. Three countries' vaccine policy applied to refugees as they do to their natural born citizens. A different country specified the type of vaccinations (measles and rubella) that is offered to refugees.

Outbreak-specific Responses

Five countries reported refugee routine vaccination guidelines only in response to specific disease outbreaks. Four out of the five countries provided doses of the measles vaccine after identifying a measles outbreak, and a different country responded to a cholera outbreak.

Vaccination Campaigns

Out of 20 LMICs, six published guidelines on time-limited vaccination campaigns for refugees. Four of the six countries focused on catch-up programs that provided missing routine vaccine doses to refugees. The remaining two countries focused on preventive campaigns for cholera and polio.

High-Income Countries

Standing Guidelines and Policies Applicable Nationwide

Across 20 HICs, refugees are included in 14 countries' national immunization programs, which provided vaccinations to refugees as they do to natural born citizens (Table 1). The remaining six countries excluded refugees from their national immunization programs. Additionally, six out of the 14 countries had specific vaccination guidelines for refugees within their national immunization programs. Lastly, 12 out of the 14 countries provided vaccinations to all ages, while the remaining two countries provided vaccinations to only children.

Basic Clinical Screenings

Out of 20 HICs, 10 countries required a basic clinical screening prior to arrival to the host country to identify and treat potential VPDs. Moreover, 18 countries required a basic clinical screening upon arrival to the host country. Lastly, 15 countries implemented local, community refugee clinics for additional VPD health assessments in jurisdictions with the most concentrated number of refugees.

Costs of Vaccinations

Seven countries required refugees to pay out of pocket for their vaccinations, while the remaining 13 countries offered vaccinations free of charge.

Specific Vaccinations Upon Arrival

Upon arrival, 11 countries required refugees to receive specific vaccinations. Across these 11 countries, six countries required the measles, mumps, and rubella (MMR) vaccine, four countries required the Bacillus Calmette-Guerin (BCG) vaccine, three countries required the Hepatitis B vaccine, two countries required the inactivated polio vaccine (IPV), one country required the meningococcal vaccine, one country required the yellow fever vaccine, and one country required the diphtheria, tetanus, and pertussis (DTaP) vaccine.

DISCUSSION

Immunizations are one of the most cost-effective and successful public health interventions worldwide in preventing infectious diseases, while also reducing morbidity and mortality.¹⁸ Our review of routine immunization policies and guidelines pertaining to refugees in 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents, found substantial variations in how countries provide routine immunizations to their refugee populations. Across the policy data collected for 20 LMICs, there were standing guidelines and policies applicable nationwide, outbreak-specific response policies, and routine vaccination campaign guidelines. On the other hand, there were four main themes found across the 20 HICs' policy data, which were standing guidelines and policies applicable nationwide, basic clinical screenings, costs of vaccinations, and specific vaccinations upon arrival. Understanding the level of access to and delivery of routine vaccinations for refugees is important for international health organizations to ensure equitable distribution of immunization services to refugees. These findings will also assist donors and governments in identifying countries that are in need of additional funding and support to cater to their refugee population, especially during the COVID-19 vaccine rollout.

Consistent with the existing literature on policy data for HICs, specifically European Union and European Economic Area (EU/EEA) countries,^{4,10-12} our study found significant heterogeneity in immunization policies for refugees. Specifically, while many HICs included refugees in their national routine immunization programs, six HICs did not take into account refugees for their country-wide vaccine delivery. With millions of refugees resettling in HICs each year, excluding refugees from national routine vaccination programs will lead to suboptimal vaccination—posing a risk for transmission of VPDs. For example, to ensure sufficient immunity, a minimum of 95% of the country’s population must be fully vaccinated against MMR to stop the transmission of MMR.¹⁹ Evidently, in the last two decades, the most reported outbreaks involving refugees migrating to EU/EEA countries were of MMR.¹³ Therefore, HICs must include refugees in their standing vaccine guidelines and policies applicable nationwide to maintain high routine vaccination coverage and protect the health of refugees.

Additionally, our findings showed inconsistencies across HICs’ basic clinical screenings to identify and treat potential VPDs prior to arrival, upon arrival, and while living in the host country. Similar gaps were identified in a study led by the Italian Institute of Health, which was conducted among 28 EU/EAA countries in 2018.⁴ Because the delivery of particular routine immunizations, such as the MMR, IPV, and hepatitis A/B vaccines, require several doses and a continuum of follow-up vaccine appointments,²⁰ HICs must implement interventions across countries of arrival, transit, and destination to improve the documentation and monitoring of vaccination schedule among refugees. With this approach, HICs will ensure and maintain high routine vaccination rates for refugee populations. In addition to monitoring refugees during their migration journey, HICs should also consider mandating specific vaccinations. Our study found

that only 11 out of the 20 HICs required specific vaccinations upon arrival. In the last several years, HICs have observed numerous outbreaks related to MMR, varicella, hepatitis A, and rubella among refugee communities.¹³ Consistent with the ECDC's recommendations that were published in their 2018 public health guidance protocol on screening and vaccination for infectious diseases among refugees,⁶ governments should require refugees to be vaccinated against all VPDs.

Furthermore, our review of policy data across 20 HICs identified discriminatory practices in routine vaccination costs against refugees. Seven countries required refugees to pay out of pocket for their vaccinations while it was free of charge for their citizens. This has immense consequences as majority of refugees are fleeing LMICs and are also living under an absolute state of poverty.¹ Therefore, establishing universal provision of equitable and affordable routine immunization services for refugees must be prioritized across all HICs.

Our routine immunization policy data for refugees across 20 LMICs identified several gaps in immunization delivery to refugee populations; only 13 LMICs specified standing policies and guidelines applicable nationwide for refugees. While individuals living in LMICs are vulnerable to contracting VPDs, refugees face greater health threats as they reside in camps and tents that are overcrowded, lack access to safe water and sanitation, and have limited access to basic health care.¹ LMICs already face various health system challenges, including financial constraints, shortages in health care workforce, fragmented health care infrastructures, and political instability, when providing immunization services to their own citizens.²¹ Thus, developed countries and global health organizations must support LMICs, via financial and human resource

investments, and help implement permanent routine immunization programs catered to specifically refugees—especially as most refugees resettle in LMICs.

Additionally, our study found that five LMICs reported routine vaccination guidelines for refugees only in response to specific disease outbreaks, and six LMICs published guidelines on time-limited vaccination campaigns. This is evident as studies have shown that health care systems in LMICs are frequently overburdened with VPDs, including MMR, polio, meningococcal meningitis, yellow fever, hepatitis A, and cholera.²² In addition to responding to infectious disease outbreaks and creating vaccination catch-up programs, LMICs must consider including refugees as a part of their delivery of routine immunization services through their national immunization programs. This will not only help prevent the spread of diseases and reduce morbidity and mortality rates among both refugees and citizens,³ but may also be cost-effective. Between 2011 and 2020, vaccines against ten pathogens saved \$681.9 billion of economic burden across 94 LMICs.²³ Also, an increase in vaccine coverage will lead to even greater economic benefits from 2021 to 2030.²³ An additional public health intervention that must be considered is collecting routine immunization data to monitor refugees' vaccination coverage and follow-up schedules, which will assist LMICs in reaching herd immunity.³ However, it is important to recognize that given that there are limitations in LMICs' health systems, financial and resource support from international organizations is needed.

To consider, in addition to those noted above, we have identified a set of immunization policy recommendations for national governments. Across both HICs and LMICs, the delivery of affordable routine immunization services for refugees as part of the basic health services through

national vaccine programs must be prioritized. For LMICs, given that there are limitations in the countries' health system capacity (e.g., the lack of much-needed financial and human resources impacts the implementation of national recommendations and policies and the supply of immunization services for refugees), financial and resource support from international organizations is needed. In addition, mobile vaccination clinics, combined health care-services, and routine immunization data collection will help bridge immunity gaps, especially in hard-to-reach refugee settings and populations.¹⁵

In HICs, culturally-appropriate and locally-organized routine immunization services may be helpful in reaching refugees in geographic clusters, and will address any language and cultural barriers with navigating a new health care system. It is also important for health care authorities to conduct survey research and longitudinal studies, in collaboration with local and community organizations, to understand, identify, and address any potential vaccine hesitancy or knowledge gaps among the refugee population to ensure high immunization uptake. Lastly, countries, particularly LMICs, must strengthen their disease surveillance systems to evaluate the role of routine immunization programs on reducing VPDs and continuously inform vaccine policy decisions.²⁴

COVID-19 Vaccine Policies

The COVID-19 pandemic has overburdened health systems worldwide. To mitigate the spread of the virus, governments adopted various public health measures, such as closing borders, pausing transportation, and shutting down non-essential businesses (e.g., immigration agencies).²⁵ By April 2020, over 165 countries fully or partially closed their borders, with 90 countries refusing to host individuals seeking asylum.²⁵ While these measures were effective in curbing the spread

of COVID-19, they made it more challenging for refugees to flee humanitarian crises and reach safety. Even after governments began to re-open their borders, refugees resettled in camps and tents that were densely populated and lacked access to safe water, sanitation, and COVID-19 mitigation resources, which increased their risk for contracting COVID-19.¹⁵

As COVID-19 vaccine rollout is underway, national COVID-19 vaccination policies must include refugees to successfully end the pandemic. According to the UNHCR, out of 90 countries that developed national COVID-19 vaccination strategies, about half included refugees in their vaccination plans.²⁶ COVAX, an initiative led by the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi, WHO, and UNICEF, aims to ensure the equitable distribution of COVID-19 vaccines to all countries, specifically LMICs.²⁷ However, COVAX plans to vaccinate only 20% of qualified LMICs' population, with most doses being distributed to health care workers.²⁸ Thus, it is unclear to what extent the initiative's vaccine rollout will include refugees.^{27,28} The WHO's Strategic Advisory Group of Experts have already listed refugees as one of the main priority groups who should receive COVID-19 vaccines.²⁹ Also, in terms of long-term sustainability, the addition of COVID-19 vaccines to immunization programs, particularly when they are likely to become a part of routine immunization schedules, will strain health care systems—especially in LMICs.²⁴ Therefore, international organizations must immediately identify short- and long-term solutions and public health interventions to ensure the vaccination of refugees across LMICs and HICs.

Strengths and Limitations

To our knowledge, this is the first study to conduct a comparative analysis of routine immunization policies and guidelines pertaining to refugees in LMICs and HICs, with the

highest number of refugees per 1000 residents. As potential limitations, it is not clear to what extent these guidelines and national policies were implemented in practice. Because secondary data were collected systematically through searches of information from government health ministries, public health agencies, non-governmental organizations, and the medical and public health literature, policies and guidelines that are unpublished were not included in our data. Also, our study was focused on national immunization policies and guidelines. Thus, we did not include any regional- or local-level implementation. While we do discuss a set of recommendations pertaining to routine vaccination policies for HICs and LMICs, it is important to acknowledge that these policy changes are not simple and context matters, especially because each country is faced with various challenges, including financial, political, and infrastructural barriers. Lastly, additional research is needed to further understand the continuously evolving vaccine policies and guidelines for refugees worldwide.

Conclusion

Immunizations are one of the most effective public health interventions in controlling the spread of infectious diseases.¹⁸ Our review of routine immunization policies and guidelines for refugees in 20 LMICs and 20 HICs, with the highest number of refugees per 1000 residents, found significant variations in how countries provide and deliver immunizations to their refugee communities. Overall, LMICs and HICs must strongly consider including refugees in their national routine immunization programs, providing easily accessible and affordable vaccinations, and collecting routine immunization data on refugees to reduce VPDs and protect the health of refugee populations—especially during the COVID-19 pandemic.

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APPENDIX

Appendix A. Secondary data sources for 20 LMICs and 20 HICs with the highest number of refugees per 1000 residents.

	Sources
LMICs	
Cameroon	<p>WHO. <i>An opportunity before the official introduction of IPV in Routine Immunization</i>. 2014.</p> <p>WHO. Regional situation analysis, practices, experiences, lessons learned and ways forward. https://www.who.int/docs/default-source/documents/publications/health-of-refugees-migrants-afro-2018.pdf. Published 2018. Accessed April, 2021.</p>
Chad	<p>Anya B-PM, Moturi E, Aschalew T, et al. Contribution of polio eradication initiative to strengthening routine immunization: Lessons learnt in the WHO African region. <i>Vaccine</i>. 2016;34(43):5187-5192.</p> <p>Bechir M, Schelling E, Wyss K, et al. An innovative approach combining human and animal vaccination campaigns in nomadic settings of Chad: experiences and costs. <i>Medecine tropicale: revue du Corps de sante colonial</i>. 2004;64(5):497-502.</p> <p>Ndiaye SM, Ahmed MA, Denson M, et al. Polio outbreak among nomads in Chad: outbreak response and lessons learned. <i>The Journal of infectious diseases</i>. 2014;210(suppl_1):S74-S84.</p>
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