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REGIONAL OFFICE FOR Europe

HEALTH EVIDENCE NETWORK SYNTHESIS REPORT 53

A review of evidence on equitable delivery, access and utilization of immunization services for migrants and refugees in the WHO European Region

Elisabetta De Vito | Paolo Parente | Chiara de Waure | Andrea Poscia | Walter Ricciardi

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Health Evidence Network synthesis report **53**

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HEN Health Evidence Network
EVIDENCE FOR DECISION-MAKERS

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Knowledge Hub on Health and Migration

Abstract

This review focuses on existing immunization policies and practices for migrants and refugees and provides an overview of barriers and facilitators for access to and utilization of immunization services. Evidence was obtained by a scoping review of academic and grey literature in English and a further 11 languages and included official documents available from the websites of ministries of health and national health institutes of the WHO European Region Member States. The review highlights that vaccination policies tailored to migrants and refugees are very heterogeneous among WHO European Region Member States. By comparison, common barriers for the implementation and utilization of immunization services can be identified across countries. Outlined policy options are intended to strengthen information about immunization for migrants and refugees, support future evidence-informed policy-making, enable the achievement of national vaccination coverage goals and improve the eligibility of migrants and refugees to access culturally competent immunization services.

Keywords
IMMUNIZATION PROGRAMS, IMMUNIZATION, VACCINATION, REFUGEES, TRANSIENTS AND MIGRANTS, COMMUNICABLE DISEASE CONTROL, EUROPE

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ABBREVIATIONS

HBV	hepatitis B virus
MMR	combined measles–mumps–rubella (vaccine)
NGO	nongovernmental organization
NIP	national immunization programme
UNHCR	Office of the United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
VPD	vaccine-preventable disease

CONTRIBUTORS

Authors

Elisabetta De Vito
Professor, Department of Human, Social and Health Sciences, University of Cassino and Southern Lazio, Cassino and Professor, Department of Public Health, Centre for Global Health Research and Studies, Catholic University of the Sacred Heart, Rome, Italy

Paolo Parente
Researcher, Department of Public Health, Catholic University of the Sacred Heart, Rome, Italy

Chiara de Waure
Assistant Professor, Department of Public Health, Catholic University of the Sacred Heart, Rome, Italy

Andrea Poscia
Assistant Professor, Department of Public Health, Catholic University of the Sacred Heart, Rome, Italy

Walter Ricciardi
Professor, Department of Public Health, Catholic University of the Sacred Heart, Rome, Italy

External peer reviewers

Tammy Boyce
Cardiff University, Wales, United Kingdom

Pierre Van Damme
Centre for the Evaluation of Vaccination, Vaccine & Infectious Disease Institute, University of Antwerp, Belgium

Aslihan Coskun
Public Health Expert, Department of Vaccine Preventable Diseases, Public Health General Directorate, Ministry of Health, Ankara, Turkey

Collaborators

Andrea Barbara, Pasquale Cacciatore, Alice Corsaro, Marianxhela Dajko, Marianna D'Andrea, Grazia Leuconoe Sisti, Franziska Lohmeyer, Valerio Mogini and Vladimir Vukovic (Department of Public Health, WHO Collaborating Centre for Health Policy, Governance and Leadership in Europe, Centre for Global Health Research and Studies, Catholic University of the Sacred Heart, Rome, Italy).

WHO Regional Office for Europe

Division of Health Emergencies and Communicable Diseases

Robb Butler, Vaccine-preventable Diseases and Immunization programme
Siddhartha Sankar Datta, Vaccine-preventable Diseases and Immunization programme
Mark Muscat, Vaccine-preventable Diseases and Immunization programme

Division of Policy and Governance for Health and Well-being

Santino Severoni, Migration and Health programme
Soorej Jose Puthoopparambil, Migration and Health programme

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SUMMARY

The issue

Providing equitable access to safe and cost-effective vaccines is vital to protect vulnerable groups in any country and to reduce morbidity and mortality from vaccine-preventable diseases (VPDs), particularly among children. Migrants and refugees in the WHO European Region may be particularly vulnerable to VPDs. Children, who constitute approximately 25% of the total migrant population, are considered at greatest risk of VPDs because they may not have yet been vaccinated or may not have completed the schedule for all vaccines. In November 2015, WHO, the United Nations High Commissioner for Refugees and the United Nations Children's Fund made a joint recommendation that migrants and refugees in the WHO European Region should be vaccinated without unnecessary delay according to the immunization schedule of the host countries. The WHO European Region's "Strategy, action plan and resolution on refugee and migrant health", adopted in September 2016, addresses the issue of immunization among migrants and refugees.

The synthesis question

The objective of the review is to address the following question: "What is the evidence on equitable delivery, access and utilization of immunization services for migrants and refugees within WHO European Region?" The review focuses on existing immunization policies and practices for migrants and refugees and provides an overview of barriers and facilitators for access to and utilization of immunization services.

Types of evidence

Evidence was obtained by a scoping review of academic and grey literature, in English and Russian, including official documents available from the websites of ministries of health and national health institutes in the Region. A total of 56 articles/papers/documents published between 2007 and July 2017 were considered for this review.

Results

Immunization policies, vaccine delivery practices and barriers to access and utilization of immunization services by migrants and refugees vary widely in WHO European Region:

- national immunization programmes seldom include specific recommendations for immunization for migrants and refugees;
- fewer than one third of the countries have specific directives on immunization focusing on migrants and refugees, including children and pregnant women;
- undocumented migrants receive immunization services in very few countries because of inbuilt administrative barriers in the host countries related to their entitlement to free health services, including immunization;
- in most of the countries of the Region, the delivery of immunization services is primarily carried out by the public health care systems, but international organizations and nongovernmental organizations are also involved in a few;
- lack of financial and human resources, in particular cultural mediators and/or interpreters, is seen as a barrier to the effective implementation of national immunization policies and to the systematic collection and evaluation of data for corrective actions;
- socioeconomic, sociocultural and educational issues remain important obstacles for migrants and refugees in accessing the available immunization services in the host countries; and
- targeted interventions have been shown to be successful in improving the uptake of immunization programmes among migrants and refugees, for example door-to-door vaccination initiatives, media campaigns, thematic lectures, peer-to-peer interactions and health promotion days.

Policy considerations

A systemic and tailored approach to the management of immunization among migrants and refugees is critical. Adequate protection of migrants and refugees from VPDs may require long-term strategies by national health systems. This review suggests the following policy options to be considered by policy-makers in strengthening immunization for migrants and refugees in the WHO European Region.

- Ensure national policies are in place for provision of equitable and high-quality immunization services tailored to migrant and refugee populations:
    - national immunization programmes should ensure that migrants and refugees benefit from easy access to the vaccines offered free of charge under the national vaccination schedule; and
    - appropriate strategies, such as outreach activities, and existing initiatives, such as tailored immunization programmes, should be considered to improve the delivery and uptake of vaccines.

- Provide appropriate administrative mechanisms and ensure political commitment to address the existing barriers to vaccination service delivery and utilization; useful interventions include:
    - interpreters and cultural mediators to support interactions;
    - provision of information in the languages of the migrants;
    - models for collection of relevant data on migrants and refugees that avoid issues of stigma and discrimination;
    - effective collaboration on service delivery between national health services, existing social services networks and local service providers in the country;
    - provision of adequate training and culturally relevant information for health care professionals to ensure that they understand the specific needs of the migrants and refugees they link with and can avoid detrimental inappropriate behaviours and/or stereotypical attitudes; and
    - inclusive decision-making that involves migrants and refugees during planning and implementation of vaccination programmes.
- Promote strategies to address wider issues such as marginalization, health literacy and other social determinants of health that contribute to low vaccination coverage among migrants and refugees.
- Develop realistic implementation plans together with a robust monitoring and evaluation framework to review existing policies periodically in light of population movement and VPD epidemiology in the host countries.
- Foster research to further understand and address the barriers related to immunization service delivery and utilization in these groups.
- Devise appropriate mechanisms to promote cross-border collaboration and sharing of good practices among countries in the Region.

1. INTRODUCTION

1.1. Background

The successful implementation of vaccination programmes across the WHO European Region has been one of the major public health successes in recent decades and has led to the control of several VPDs (e.g. diphtheria, hepatitis B, measles, meningitis, poliomyelitis (polio), rubella and tetanus) with a notable reduction in child mortality (1). Nevertheless, outbreaks of VPDs continue to occur even in Member States with well-established vaccination programmes (2–4) because of the presence of people who either are not vaccinated or are undervaccinated (1,5). In all, 554 150 of the 11.2 million children born in the WHO European Region in 2012 did not receive the complete three-dose series of diphtheria, pertussis and tetanus vaccine by the age of 1 year (1). Children missing these vaccinations are much more likely to catch any one of these infectious diseases (1,3,4,6–11). For example, in 2009, a single importation of wild poliovirus type 1 in Tajikistan caused a polio outbreak that spread to Kazakhstan, the Russian Federation, Turkmenistan and Uzbekistan, leading to over 463 confirmed cases and 47 polio-compatible cases (12,13).

As it is necessary to ensure adequate levels of immunity in the whole population in a country to prevent epidemics and the re-emergence of VPDs, national health authorities in the WHO European Region have increased their efforts to reach vaccination coverage targets within a framework of international shared objectives and immunization strategies (1,6). For example, in October 2016 at the fifth meeting of the European Regional Verification Commission for Measles and Rubella Elimination, only six of the 53 Member States in the WHO European Region still reported endemic transmission: Belgium, France, Germany, Italy, Poland and Romania (14). Romania has been experiencing a large outbreak of measles since February 2016, reporting 6743 measles cases, including 30 deaths, by mid-2017. Between the beginning of 2017 and 11 June 2017, Italy has reported 2988 measles cases (3).

In this context, national and international public health institutions consider the immunization of migrants and refugees (adults and children) in transit and recipient countries as an important issue (6). Migrants and refugees may not be immunized or may be underimmunized in their countries of origin and so may be vulnerable to acquire VPDs circulating in the WHO European Region. In addition, such populations might come from regions with high prevalences of VPDs, posing a threat to underimmunized populations within transit/recipient

countries (1,3,5–9,15–19). Migrant and refugee children constitute around 25% of the total migrant population in Europe and they are considered the group at greatest risk for VPDs because they may not have been vaccinated in their country of origin or may not have completed the vaccination course (5).

Even when migrants have permission to stay, they may be vulnerable to VPDs because of informal (e.g. language, information and cultural) and economic barriers that prevent them from spontaneously accessing immunization campaigns for VPDs, even when access to health care services is provided free of charge (6,16–18).

UNICEF in 2017 has called upon States "to ensure that supplies, facilities and personnel are available at point of entry to vaccinate refugee and migrant children against VPDs" and to "initiate catch-up vaccination campaigns for children in migrant and refugee communities" (10).

The European Vaccine Action Plan 2015–2020 proposes that all Member States in the Region pay special attention to migrants, international travellers and marginalized communities to ensure their eligibility and access to culturally competent immunization services and information (1). The WHO Regional Office for Europe recommends that all Member States that are recipients of migrants should actively identify vulnerable population (or those with unknown immunization status) and ensure the implementation of tailored immunization programmes, providing equitable access to safe and cost-effective vaccines (1,5). The WHO European Region in September 2016 also adopted the Strategy and action plan for refugee and migrant health in the WHO European Region (5), which deals specifically with this issue. Current recommendations by WHO, UNHCR and UNICEF state that migrants and refugees should be vaccinated without unnecessary delay in the European Region according to the immunization schedule of the host Member States (16).

The development and implementation of immunization policies tailored to migrants and refugees are also important because outbreaks of measles and other VPDs have been documented in migrant settings within the transit/host countries of the Mediterranean migration routes (9,20), and low seroprevalence rates for several VPDs have been identified among high-risk migrant groups and refugee children (21).

The aim of this report is to gather and collate data about existing policies and practices on immunization of migrants and refugees in the WHO European Region and to present an overview of barriers in access and use of vaccination services.

1.2. Methodology

A scoping review of available peer-reviewed and grey literatures was carried out between 1 June and 30 June 2017 identifying articles published between 2007 and June 2017 and national documents (in 12 languages) for the WHO European Region.

For the peer-reviewed literature, a total of 1337 articles were found after screening and removal of duplicates and 76 full-text articles were assessed for eligibility, giving a final set of 35 articles (6,20,22–54). For the grey literature, 2223 documents were identified with 140 full-text documents assessed and 18 finally selected. A further three were added from searching of the reference lists, giving a final total of 21 (16–18,55–72).

Fig. 1 summarizes the distribution of studies from Member States of the European Region used in this review.

Furthermore, consultation of the websites of ministries of health and national health institutes identified a total of 57 web documents (i.e. national immunization plans, NIPs, national laws, policy papers) (73–129) and a search on Google and Google Scholar yielded a total of 23 documents (130–152); these were used for the boxed examples and to complement the description of the NIPs. The report uses the term **migrants and refugees** to refer to all migrant groups, including refugees, unless otherwise specified.

Annex 1 has full details of the methodology.

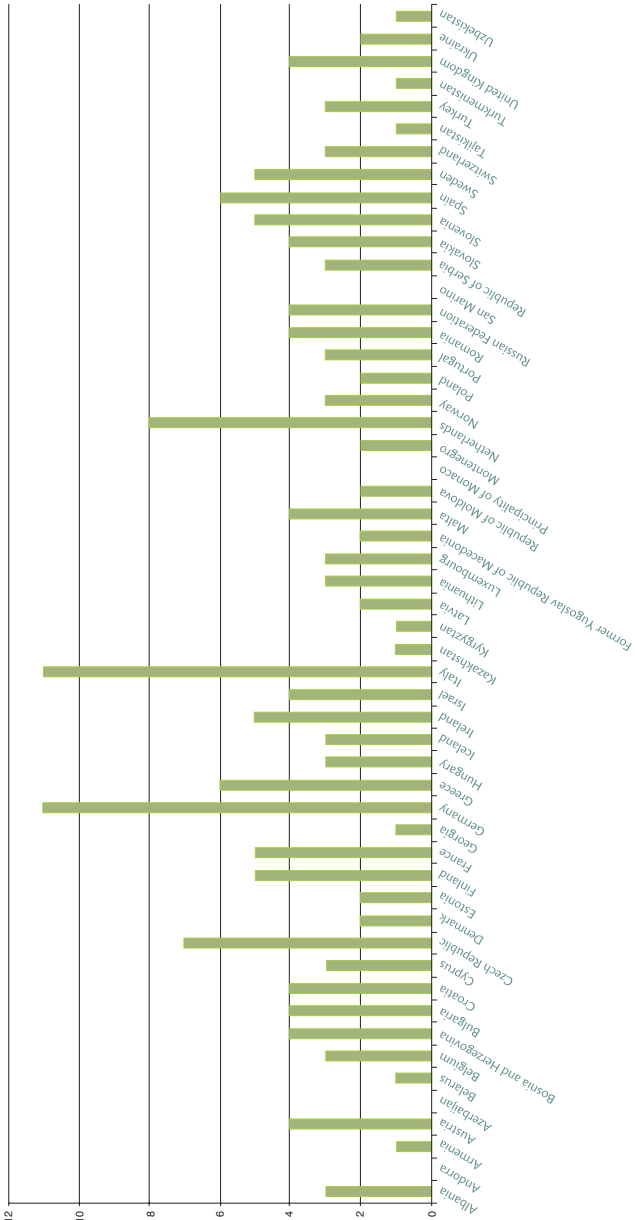


Fig. 1. Distribution of studies included in this review that reported data from Member States of the WHO European Region

2. RESULTS

2.1. Overview of existing national policies on immunization of migrants and refugees

The topic of national immunization policies for migrants and refugees is considered within both the peer-reviewed and the grey literature for countries within and beyond WHO European Region. In fact, the majority of studies described projects over several countries or focused on interventions aimed at promoting vaccination and on preventive strategies among migrants in different WHO European Region Member States. In particular, 22 studies from peer-reviewed and grey literature focused specifically on selected vaccination policies in 38 countries.

Some studies were carried out through cross-sectional surveys (13) or specific cross-sectional sero-surveys (3), but most have targeted different interventions within WHO European Region Member States in order to strengthen their immunization policies for migrants or to check their effectiveness.

In 2012, Riccardo et al. conducted an online survey of 26 countries to obtain information on their NIPs, service delivery channels, formal and informal barriers to immunization for migrant populations and availability of demographic and vaccination coverage data (20). Among 22 responders, it was possible to extract data from 12 WHO European Region Member States (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, France, Greece, Italy, Malta, Romania, Serbia, Slovenia and Spain) and from Kosovo (in accordance with Security Council resolution 1244 (1999)).

Analysis of extracted data showed that seven countries had specific regulations supporting the immunization of migrants. Immunization was free of charge for adult migrants in six. Vaccines included in the NIP were provided free of charge to legally residing migrant children in 11 and to undocumented migrant children in eight. Nevertheless, there were no details about the age limits used to define children for the offers.

A specific programme facilitating access and acceptance of immunization in migrant populations was reported for six countries: of these, immunization services for migrants and refugees were organized as part of the routine service in 87% and as outreach activities in 47%, with 23% using other strategies to increase awareness (e.g. catch-up campaigns).

A further survey in 2017 included 11 WHO European Region Member States (Albania, Armenia, Bosnia and Herzegovina, Georgia, Israel, Montenegro, Republic of Moldova, Serbia, the former Yugoslav Republic of Macedonia, Turkey and Ukraine) and Kosovo (in accordance with Security Council resolution 1244 (1999)). It found that four countries (Albania, Armenia, Israel and Republic of Moldova) offered all the vaccinations included in their NIPs to newly arrived migrant children (6). This study also did not give details of the age limit used to define children. Georgia offered polio vaccine to people arriving from Afghanistan, Nigeria, Pakistan and the Syrian Arab Republic; the former Yugoslav Republic of Macedonia offered polio and measles–mumps–rubella (MMR) vaccines; and Serbia offered polio, MMR and diphtheria–tetanus–pertussis vaccines.

In 2010–2013, the Promote Vaccination among Migrant Population in Europe project (PROMOVAX) assessed immunization policies in eight WHO European Region Member States (Croatia, Cyprus, Germany, Greece, Hungary, Italy, Norway and Poland) (61). Results showed that there were neither any specific national laws guiding migrant immunization nor any national body specifically entrusted to monitor and administer immunizations to this group. Nonetheless, in Norway, there was a national vaccination register (SYSVAK) that collected information about migrants, even if it was impossible to identify information for distinct groups of migrants and refugees. In Germany, by comparison, there was a database in which prevention and immunization services for migrants also listed migrant background.

In Cyprus, Italy, Germany and Norway, there were policies/actions promoting immunization for migrants. Germany had specific activities tailored to simplify access to health care for migrants with the aim of reducing health inequalities among them (e.g. through brochures and sensitive migrant-approach projects for prevention and immunization promotion). In Norway, doctors and general practitioners at local municipality levels, health workers at asylum centres and employees at school and health stations assumed specific responsibilities for promoting immunization in their own contexts through the delivery of information on the Norwegian health system in general and on the management and handling of infectious diseases and vaccination in particular. In Cyprus, activities on vaccine information or education were carried out at family level or within asylum seeker groups based on health officer visits among these groups to promote awareness about immunization. In Italy, the NIP encouraged migrant-targeted activities as a strategic priority through specific projects on cultural and linguistic mediation (61).

In 2007, Zuckerman et al. focused specifically on vaccination policies against hepatitis B virus (HBV), which WHO had recommended should be implemented

globally to control the disease (54). Denmark, Finland, Iceland, Ireland, the Netherlands, Norway, Sweden and the United Kingdom had yet to implement universal childhood HBV vaccination, adopting a policy of targeting high-risk groups, which could include migrants.

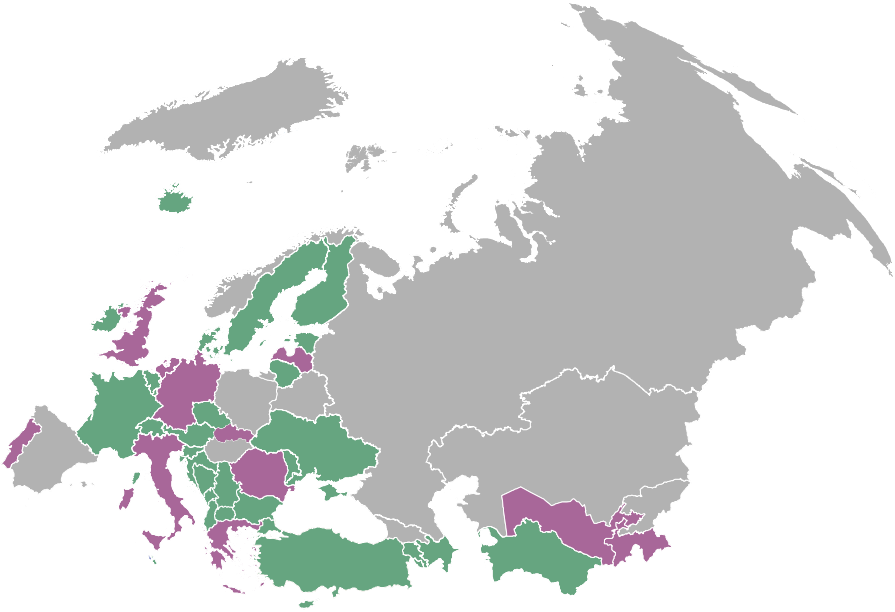
In Greece, a comprehensive HBV immunization programme tailored to first-generation migrants from the former Soviet Union and for the Muslim religious minority group was started in 1994 in the region of Thrace. The programme was subsequently extended to the whole country to reach migrants, adults and children, coming from high-HBV-endemic countries (52).

Institutional websites of ministries of health and national health institutes of WHO European Region Member States were examined to provide an overview of immunization policies for migrant populations in the Region and this was supplemented by integrating information from searches of the peer-reviewed literature and Google and Google Scholar. Fig. 2 shows the situation regarding immunization for migrants and refugees in WHO European Region Member States.

Although 42 WHO European Member States have a comprehensive NIP, only 11 (Germany, Greece, Italy, Latvia, the Netherlands, Portugal, Romania, Slovakia, Tajikistan, United Kingdom (England) and Uzbekistan) include recommendations for immunization for migrants (90,91,97,102,110,111,113,115,118,122,125). NIPs usually provided general recommendations either to pay attention to the entire migrant population or to consider vaccination for migrant children and workers, refugees and asylum seekers as a priority. For example, in Germany, vaccinations are not mandatory, but asylum seekers have the right to receive vaccinations, and diphtheria, HBV, MMR, polio and tetanus vaccines are provided (61,130,131). Six countries (Germany, Greece, Italy, Portugal, Slovakia and the United Kingdom (England)) provide recommendations both in their NIPs and in specific directives (such as ministerial documents, regional or national guidelines or circulars) (35,42,45,97–100,111,112,115,125,126).

Some NIPs include recommendations that apply to specific situations, such as urgent epidemiological conditions (e.g. Romania (113)), or specific vaccinations (e.g. Portugal (111)). Specific directives tailored to migrants and refugees were found for 20 Member States (Albania, Armenia, Austria, Bulgaria, Croatia, Denmark, Georgia, Germany, Greece, Hungary, Kazakhstan, Ireland, Israel, Italy, Republic of Moldova, Portugal, Sweden, the former Yugoslav Republic of Macedonia, Turkey and the United Kingdom (England and Wales)) (6,35,42,45,80,82,86,92,94–96,98,100,101,112,120,124,126,131,132,137).

Fig. 2. Immunization for migrants and refugees in WHO European Region Member States



Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Former Yugoslav Republic of Macedonia
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Montenegro
Netherlands
Norway
Poland
Portugal
Romania
Russian Federation
Republic of Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
Turkey
Turkmenistan
United Kingdom (no data for specifically for Wales or Scotland alone)
Ukraine
Uzbekistan

Countries that have NIP

Countries that have NIP considering migrants and refugees

Data not available

For example, in Sweden, a national regulation prescribes the vaccination of all children in the country (including asylum-seeking children) for diphtheria, measles, mumps, polio, rubella and tetanus (130,131). HBV vaccine is provided for migrants even though it is not included in the mandatory NIP (54,130).

It was impossible to retrieve an NIP for 11 countries and for six of these it was also impossible to retrieve directives tailored to migrants and refugees.

Immunization policies in countries with little or not up to date information (the Russian Federation) or which are facing high migration flows at the border (Greece, Italy and Turkey) were examined and the results are summarized in Boxes 1–4.

Box 1. Vaccination of migrants and refugees in Greece

WHO estimates that 73 million migrants were living in the WHO European Region in early 2016, 52% of whom were women (153). In particular, Greece has had a central role as it is on the main transit route to the destinations of central and northern Europe, through the western Balkans (66,132): 850 000 migrants and refugees had entered by sea until the agreement between the European Union and Turkey (133).

The migrants and refugees who arrived in Greece during 2016 were mainly children (age 0–18 years) from countries with a lower vaccination coverage rate (134). This has led to the organization of tailored vaccination programmes in the form of mass vaccination campaigns, with the coordination and supervision of the General Secretary of Public Health of the Ministry of Health.

Priority vaccines for migrants and refugees in Greece have been defined and provided through a specific programme (135): in infancy for MMR; combined diphtheria, tetanus, pertussis and polio; and tuberculosis. More than 30 000 vaccines have been administered under the programme, with an estimated vaccination coverage (first vaccine dose) for children appropriate to age of 83% for MMR; 82% for combined diphtheria, tetanus, pertussis and polio; 76% for pneumococcal vaccine; 75% for Haemophilus influenzae type b; and 79% for HBV.

Vaccination was mainly conducted by NGOs with considerable experience and expertise in massive vaccination campaigns, as well as by some health services of the national health systems and the Institutes of Public Health (136).

Box 1. (Contd)

Specific mass campaigns have been organized to implement the priority vaccination programme in all refugee/migrant accommodation, including children living in residential centres and in other urban areas (e.g. hotels, apartments) or atypical structures (137,138). In addition, emphasis has been placed in the implementation of established good practices in the vaccination campaign (139).

Box 2. Labour migrants and vaccination in Russia and central Asia

The Russian health care system had a long period of crisis during 2000–2010, but then recovered substantially in terms of financing, performance, organizational coherence and health outcomes. Rapid economic growth alongside a demographic decline produced a strong demand for labour. In response, starting in 2000, large numbers of migrants came into the Russian Federation, mainly from central Asian and other ex-Soviet states and mainly to Russian cities. Lacking citizenship or residence permits, most of these migrants were largely excluded from the public health care system, adding another category of constraint on universal health care access in the Russian Federation (140).

According to data from the Russian Federal Migration Service, the number of temporary labour migrants in Russia is increasing significantly. While the figure was approximately 380 000 in 2003, it reached more than 702 000 in 2005, 1014 000 in 2006 and 1717 000 in 2007. Although 2.4 million foreign workers worked in the Russian Federation in 2008, this was only 3.4% of the total workforce. The following three countries of central Asia were the largest suppliers of foreign workers in 2008: Uzbekistan (643 000), Tajikistan (391 000) and Kyrgyzstan (185 000) (56).

Since the late 2000s, economic growth and development, increased health expenditure and modernization of health care measures have contributed to improvements across all Russian regions. For example, routine standard vaccinations in the NIP cover 97–98% of the population. There have been gains in the control of communicable diseases: 75% of those newly diagnosed with tuberculosis were getting WHO-recommended treatment in 2010, up from 44% in 2004, while mortality from tuberculosis had declined by 25% (63).

Box 2. (Contd)

Several agreements have been established between the Russian Federation and the countries of the Commonwealth of Independent States to provide health services

for migrants to the Russian Federation. Article 10 of the agreement between the Governments of the Russian Federation and the Republic of Tajikistan on Labour Activities and Protection of Rights of the Russian Federation Citizens in the Republic of Tajikistan and Republic of Tajikistan Citizens in the Russian Federation (2004) requires migrant workers from Tajikistan to present copies of a health certificate, with proof of immunization. Nevertheless, this agreement has been characterized by legal inconsistencies, as it was drafted without taking into consideration the lack of a system for certifying the documents (56,141).

Box 3. Turkey, immunization and Syrian refugees

The ongoing conflict in the Syrian Arab Republic has led to the destruction of health care facilities, breakdown and destruction of childhood immunization programmes, a shortage of drugs and a lack of access to clean water (30,142,143). It is estimated that around 6.5 million people are displaced within the country in 2017. More than 4.2 million Syrians have crossed borders and Turkey hosts more than 3.1 million refugees (31,85,86). Re-emerging infectious diseases are becoming a growing issue in the Syrian Arab Republic, including polio, cholera, typhoid fever and tuberculosis. For example, WHO reported 37 polio cases in the Syrian Arab Republic as of 20 March 2014. Regional spread was confirmed by a report of a case in Iraq, the first in that country since 2000 (144).

Because of the ongoing conflict, children in the Syrian Arab Republic have had no access to immunization services for five years, so the cohort of those aged under 5 years can be defined as totally unvaccinated (31,142). Turkey was declared polio free in 1998, but the situation described above prompted the need for supplementary polio immunization activities in this country. Since 2011, nine rounds of mop-up campaigns with oral polio vaccine have been conducted. Turkish and Syrian (and other refugee) children aged under 5 years were vaccinated with more than 5.5 million doses of oral polio vaccine at the borders, in the camps and in the 20 provinces where 90% of the Syrian population is located. Up to mid-2017, no polio cases have been reported (144,145).

Box 3. (Contd)

Since 2012, measles too has been on the rise among Syrian refugees in Turkey. Measles was reported in 18 Syrian refugees in 2012, 656 in 2013, 88 in 2014, 102 in 2015 and eight in 2016 (142,146,147). The Turkish Public Health Service has initiated vaccination against measles in refugee camps in Turkey (142,146,147) and the Ministry of Health of Turkey has conducted targeted vaccination campaigns for refugees and migrants since 2011 (142,147–149). All childhood vaccinations are provided to the beneficiaries within camps, outside camps and at borders (MMR and oral polio vaccine). The vaccines are provided by family physicians in the respective locations in line with Turkey's NIP (142,147). As part of the national and subnational vaccination campaigns conducted by the Ministry of Health, migrant populations are also vaccinated in streets, schools and workplaces (70–72,142,147).

Between 2013 and 2016, 350 000 Syrian children from 6 months to 15 years of age were vaccinated with the MMR vaccine both within and outside the camps. In addition, a total of 2.5 million MMR doses have been provided in streets, schools and workplaces in high-risk districts of Turkey as part of supplementary immunization activities. In addition to these ongoing strategies, the Ministry of Health in 2017 conducted a two-round door-to-door mass campaign with a countrywide team of 5000 health care workers during which more than 358 000 children under 5 years of age and under temporary protection were reached and vaccinated with MMR vaccine and more than 120 000 children with oral polio vaccine. Pentavalent (diphtheria, tetanus, pertussis, HBV and H. influenzae type b) and HBV vaccines were also given as appropriate for age. These vaccinations were recorded into the national online immunization database and the children will be followed for routine immunization by family physicians. All these additional elimination strategies are ongoing (70–72,142,149).

Box 4. The Italian experience: Sicilian contingency plan

Italy, in particular the region of Sicily, is the location of the first subregional institution in the WHO European Region to develop an operational strategy to respond to the public health implications of sudden and large arrivals of immigrants, given the large influx through Mediterranean route (150).

As the search and rescue operations changed the geographical origins of the arrivals, there was a need for enhanced coordination among all actors involved

Box 4. (Contd)

within and beyond the health sector, and immunization (especially for migrant children) became a priority in order to protect the population (both migrant and local) from VPDs.

From the beginning of 2014 until the end of 2015, more than 280 000 migrants arrived in Sicily, crossing the Mediterranean Sea to access European territory (151). In the same year, the WHO Regional Office for Europe, through its Public Health Aspects of Migration in Europe project, started to work with the Health Regional Councillor of the Sicily region on a regional contingency plan for the management of massive influxes of migrants.

With the start of the military operation Mare Nostrum, the geographical distribution of migrants in Sicily radically changed, thus challenging the capacity of the regional health authorities throughout the whole region. To address this challenge, the contingency plan identified all actors involved in the public health response to migration, integrating their roles in a coherent process and established a homogeneous procedure to improve the organizational aspects of the public health response by increasing the efficiency of both logistical and human resources.

Owing to the complexity and intersectoral nature of this issue, a wide diversity of stakeholders was involved. Authorities from the Ministry of Health and Internal Affairs of Italy (at both national and regional levels), NGOs and other important stakeholders were present during the launch of the contingency plan.

The operative framework of the Sicilian contingency plan was published on 7 July 2017 (150); in particular, paragraph 7.6 required that all children who arrive in Sicily should be evaluated from a health care point of view. All migrant children can receive the same services as Sicilian children, as provided by the regional Sicilian health system. Consequently, these children are cared for by general paediatricians and can benefit the from Sicilian immunization plan (152).

2.2. Factors influencing the implementation of policies

Three principal factors were identified from the literature as being responsible for a lack of implementation of national recommendations and policies at local level.

First, there may be a lack of financial and human resources to provide migrants with immunization (61). Staff shortages may be a considerable obstacle, particularly

a lack of cultural mediators and/or interpreters and translators, who are valuable for setting up culturally competent services (61).

A second common problem arises from the poor level of training for health care providers on migrants' health needs, entitlement to health care and culture (54). Professionals or administrative personnel who are not adequately trained are not only likely to contribute to a lower quality of service but also may assume detrimental inappropriate behaviours and stereotypical attitudes towards migrants (54). As reported in an assessment conducted among undocumented migrants and refugees in Cyprus, Malta, Poland and Romania, lack of cultural competence could even lead to refusing to provide care for children (59).

Third, implementation of policies also suffers from a lack of routine data collection and evaluation, which might then highlight needed corrective measures. Nevertheless, a few papers have addressed the topic of evaluation (28,36). The collection of data on the epidemiology of VPDs and vaccination coverage is a requisite for effective evaluation, particularly as so few data are currently available (36,44,54,60,61).

Lastly, at country level, the lack of clarity within policies/recommendations about immunization policies for migrants and refugees can become a key factor hindering the implementation of immunization policies (6,16).

2.3. Factors influencing utilization of the available immunization services

Both the peer-reviewed and the grey literature provide evidence about barriers to the uptake of immunization services among migrants and refugees. These barriers may have a different impact on access to immunization services for a newly arrived migrant than for a settled one, but the available literature does not make a clear distinction.

The following are the main factors influencing access and utilization of immunization services.

- **Entitlement** may vary. Although regular/labour migrants have the same health rights as the local population in many countries, undocumented/refugee status can limit access to the health service (16). This represents a formal barrier to access to immunization services.

- **Sociocultural issues** include, on the one hand, marginalization (39,61), discrimination (39) and stigmatization (39) and, on the other hand, a low level of integration (61), difficulties in adaptation, acculturation, family background (61) and cultural and language barriers (26,39,47,61). These informal barriers may lead to fewer people receiving immunization than are actually entitled to do so (20). Furthermore, the lack of clear and strong recommendations from health care providers (51) and the lack of trust in health care personnel and authorities (47,61) may discourage access to health services, in particular for undocumented migrants (47).
- **Education-related issues** can affect knowledge of and access to services. Low levels of education, knowledge and health literacy can all be barriers to accessing available services (51,61). For example, the unavailability of information and educative materials in native languages constitutes an important cultural barrier to the access and utilization of immunization services (27,61).
- **Socioeconomic issues** such as low income can create difficulties in accessing services that require a co-payment, even if it is small (39,59). Often those on low incomes find it difficult to go to vaccination centres during working time or to obtain appointments (40,61).
- **Other issues** can hinder the interaction between migrants and providers (51). Length of stay in a country (40,61), fear of arrest, lack of insurance coverage (51,59,61) and official migration status all can act as barriers (51). Differences also exist among migrant groups, with refugees reported to have a lower uptake of services compared with asylum seekers (40), and undocumented migrants often excluded from national health services (39).

2.4. Good practice for policies and implementation and utilization of immunization services

The literature search yielded several examples of good practices for promoting the implementation and utilization of immunization services for migrants.

The second European Immunization Week, launched in April 2007 with 25 WHO European Region Member States actively engaged, was followed by a meeting attended by 42 experts representing 27 Member States and partners. The meeting provided an opportunity to discuss national and regional experiences and ways of consolidating, developing and strengthening the next European

Immunization Week. The meeting produced documentation reporting a number of initiatives carried out by Member States in the WHO European Region that aimed at reaching out to high-risk groups through advocacy, communications and supplementary immunization (67). These initiatives included:

- door-to-door initiatives, such as screening in high-risk communities, checking of immunization cards, distribution of information materials (in native languages) and vaccination campaigns;
- media campaigns, including press conferences, website information, local media articles, posters, banners, billboards, videos, and radio and TV talk shows;
- information presentation, such as press conferences, "clown shows" for children and theatre plays;
- immunization-focused lessons in schools;
- health promotion days and open-door days; and
- telephone hotlines.

The WHO Regional Office for Europe in 2016 described strategies implemented in four Member States (Bulgaria, Lithuania, Sweden and the United Kingdom) following guidelines within tailored immunization programmes (64). These guidelines are used to understand and address the main causes of undervaccination in general and among specific groups, such as migrants. Tailored immunization programmes begin with the identification of a clearly defined population group in which the lack of full participation in immunization programmes could have an impact on public health; these programmes rely on community engagement to identify and overcome barriers to immunization. In particular, members of the undervaccinated population (which will include migrant groups) are involved as active stakeholders in defining barriers to immunization and designing solutions to overcome them. For example, in Sweden an intervention was first launched to improve vaccination coverage in population groups that did not participate fully in immunization programmes; these included Somali migrants, who were recognized as an underserved group, undocumented migrants and those who did not agree with vaccination. The programme encompassed lectures, videos, peer-to-peer interactions and training in communication skills for nurses (64).

The current guidelines of the Robert Koch Institute and the German Standing Committee on Vaccination in Germany (STIKO) make recommends for refugees upon arrival in the country and upon arrival at their destination community (35,42,45).

- **Arrival in the country:**
  - basic clinical screening to identify and initiate treatment for acute medical problems and potential contagious diseases, as well as to close gaps in vaccination coverage; and
  - documentation of clinical findings to avoid redundant investigations and to optimize individual medical care.
- **Arrival at the destination community:**
  - collaboration with refugees to bring them up to date with all the recommended vaccines; and
  - provision of a high standard of medical care, as for the general population.

Within a country, if the existing recommendations cannot be implemented, a minimum vaccination offer should be made depending on the person's age according the country's NIP.

3. DISCUSSION

3.1. Strengths and limitations of the review

This report provides an overview of existing immunization policies and practices as well as of barriers to the implementation and use of immunization services in the WHO European Region. In particular, it has identified common barriers among countries that deserve policy action at international, regional and national levels. The report was based on an extensive review of both peer-reviewed and grey literature and on consultation of national websites of the two main actors in policy development and implementation: ministries of health and national health institutes.

The searches were far-reaching in that more than 3500 documents were initially identified from the WHO European Region and the composition of the review team allowed searching for evidence in a total of 12 languages (Albanian, Croatian, English, French, German, Greek, Italian, Macedonian, Russian, Serbian, Slovene and Spanish). The results of this report should be interpreted with the following limitations.

Given the wide diversity of languages and cultures in the 53 Member States of the WHO European Region, it is possible that evidence in other languages may have been missed;

There is a lack of a shared definition of migrants (19) at the international level and it was challenging to stratifying data by migrant legal status (documented versus undocumented, refugees, asylum seekers).

Since the implementation of policies takes place at local level with the involvement of different actors (local health authorities, NGOs), it was difficult to ensure that all existing information had been collected (5,11,12,52,61).

Furthermore, included studies mostly discussed the topic of immunization for migrants without addressing specific age-related strategies or those for different migrant groups. Consequently, details on policies were often lacking.

3.2. Current immunization policies for refugees and migrants

Adequate protection against VPDs for both host populations and migrants and refugees requires long-term strategies by national health systems and a systemic, tailored approach to the management of immunization among migrants and refugees. The delivery of immunization services is primarily carried out by the public health care systems in most countries of the Region, but international organizations and NGOs can also be involved.

Immunization policies, vaccine delivery practices and barriers to access and utilization of immunization services by migrants and refugees vary widely in the WHO European Region but a few general issues did arise from the report:

- NIPs seldom include specific recommendations for immunization for migrants and refugees;
- fewer than one third of the countries from which documents could be retrieved have specific directives on immunization focusing on migrants and refugees, including children and pregnant women;
- undocumented migrants receive immunization services in very few host countries because of inbuilt administrative barriers related to their entitlement to free health services, which will include immunization;
- lack of financial and human resources, in particular cultural mediators and/or interpreters, can be a barrier to the effective implementation of national immunization policies; and
- systematic collection and evaluation of data to modify immunization polices are often sparse, again often through lack of financial and human resources.

Among refugee and migrant groups themselves, socioeconomic, sociocultural and educational issues remain important obstacles for access to the immunization services that are available to them in the host countries, but targeted interventions have been shown to be successful in improving the uptake of immunization programmes.

3.3. Policy options and implications

A systemic and tailored approach to the management of immunization among migrants and refugees is critical and provision of adequate protection from VPDs may require long-term strategies by national health systems. This review identified the following policy options to be considered by policy-makers in strengthening immunization for migrants and refugees in the WHO European Region.

- Ensure national policies are in place for provision of equitable and high-quality immunization services tailored to migrant and refugee populations:
    - NIPs should ensure that migrants and refugees benefit from easy access to the vaccines offered free of charge under the national vaccination schedule; and
    - appropriate strategies, such as outreach activities, and existing initiatives, such as tailored immunization programmes, should be considered to improve the delivery and uptake of vaccines.
- Provide appropriate administrative mechanisms and ensure political commitment to address the existing barriers to vaccination service delivery and utilization; useful interventions include:
    - interpreters and cultural mediators to support interactions;
    - provision of information in the languages of the migrants;
    - models for collection of relevant data on migrants and refugees that avoid issues of stigma and discrimination;
    - effective collaboration on service delivery between national health services, existing social services networks and local service providers in the country;
    - provision of adequate training and culturally relevant information for health care professionals to ensure that they understand the specific needs of the migrants and refugees they link with and can avoid detrimental inappropriate behaviours and/or stereotypical attitudes; and
    - inclusive decision-making that involves migrants and refugees during planning and implementation of vaccination programmes.
- Promote strategies to address wider issues such as marginalization, health literacy and other social determinants of health that contribute to low vaccination coverage among migrants and refugees.

- Develop realistic implementation plans together with a robust monitoring and evaluation framework to review existing policies periodically in light of population movement and VPD epidemiology in the host countries.
- Foster research to further understand and address the barriers related to immunization service delivery and utilization in these groups.
- Devise appropriate mechanisms to promote cross-border collaboration and evaluation and sharing of good practices among countries in the Region.

4. CONCLUSIONS

A systemic approach to migration health issues and to support specific immunization strategies is important for achieving national vaccination coverage goals in the wider framework of VPD prevention.

This report on delivery and utilization of immunization services and immunization policies for migrants and refugees within the WHO European Region collates relevant information and presents policy evidence from peer-reviewed publications, grey literature and institutional and non-institutional websites to identify major considerations for policy-making in the area.

This review highlights that vaccination policies are very heterogeneous with respect to the immunization of migrants and refugees. In fact, there are countries that provide a wide access to vaccination and others with a more limited offer tailored to specific groups (e.g. refugees). Furthermore, it is generally often difficult to have a clear insight into vaccination policies in terms of specific targets, settings and offers.

Despite the major gaps identified in the evidence and some methodological limitations, the findings highlight the need for ensuring equitable immunization services for migrants and refugees; creating effective mechanisms to counteract barriers to access to immunization services; establishing a robust monitoring framework; and promoting collaboration among services within countries and among WHO European Region Member States.

All the policy options outlined are likely to facilitate future evidence-informed policy-making to achieve national vaccination coverage goals and to improve eligibility and access to culturally competent immunization services and information about immunization to migrants and refugees.

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ANNEX 1. SEARCH STRATEGY

Databases and websites

The following databases were searched for academic peer-reviewed literature: Cochrane Library, Web of Science, McMaster's Health Evidence, PubMed, Science Direct and Scopus. Websites of the following institutional and non-institutional organizations were searched for grey literature: European Centre for Disease Prevention and Control, European Union/European Commission, GAVI Alliance, International Organization for Migration, Migrant Integration Policy Index, Organisation for Economic Co-operation and Development, UNHCR and WHO.

In order to identify articles regarding countries with limited or non-current data, additional Google and Google Scholar searches were performed.

Searches were conducted from 1 June 2017 to 30 June 2017.

Study selection

The following inclusion criteria were used:

- written in Albanian, Croatian, English, French, German, Greek, Italian, Macedonian, Russian, Serbian, Slovene and Spanish;
- conducted in one of the 53 Member States of the WHO European Region;
- available in full-text form;
- referred to migrants and refugees;
- referred to policies, implementation and utilization of immunization services, equity in access to vaccination services and good practices in immunization strategies; and
- published from 2007 to the end of June 2017.

There were no exclusion criteria and all types of document were considered eligible (peer-reviewed papers with any study design, books, reports, guidelines, ministries of health documents, presentations, opinion papers or editorials). Two pairs of reviewers independently assessed the documents in an unblinded standardized manner, with disagreements resolved by consensus among the authors. Searching of institutional documents in national websites was performed singly by multiple

trained screeners according to their specific knowledge of the native language. Studies were finally selected through the following steps:

1. checking and removal of duplicates of the studies retrieved from different databases;
2. selection of eligible studies on the basis of titles and abstracts;
3. collection of the full text of potentially relevant studies; and
4. analysis of the full texts in order to ensure that studies met eligibility criteria.

Data extraction

The following information was collected from the included documents and placed into formal data extraction forms: authors, year of publication, study design, study period, study population, aim and objectives, main results and/or recommendations. For each country, the availability of an NIP was explored and recorded. Where there was an NIP available, information related to migrants and refugees was collected, if present. Furthermore, specific directives on vaccinations for the migrants and refugees were also evaluated if described.

Search terms

The following search terms were used for the databases.

Cochrane Library

(transients AND migrants (MeSH) OR transient OR migrant OR immigrant OR foreigner OR alien OR emigrant OR refugee OR asylum seeker) AND (vaccination OR immunization OR vaccine OR immune* OR "vaccines" (MeSH)) AND (influenza OR hpv OR human papillomavirus OR pertussis OR mmr OR tetanus OR measles OR rubella OR rubeola OR mumps OR meningococcal OR pneumococcal OR hepatitis b OR rotavirus OR varicella OR diphtheria OR polio OR ipv OR opv OR rabies OR hepatitis e OR yellow fever OR cholera OR dengue OR japanese encephalitis OR tick-borne encephalitis OR tuberculosis OR typhoid OR varicella OR "diphtheria-tetanus-acellular pertussis vaccines" (MeSH) OR "whooping cough" (MeSH) OR "poliovirus" (MeSH) OR "neisseria meningitidis" (MeSH) OR "pneumococcal infections" (MeSH) OR "measles-mumps-rubella vaccine" (MeSH) OR "papillomavirus infections" (MeSH) OR "papillomaviridae" (MeSH) OR "chickenpox" (MeSH) OR "hepatitis, viral, human" (MeSH) OR "hepatitis a" (MeSH) OR "hepatitis b" (MeSH) OR hbv OR hav OR hib) AND ("social control

policy" (MeSH) OR "public policy" (MeSH) OR "social protection" OR protection, social OR "migration policy" OR "migration policies" OR policies, migration OR policy, migration OR "social policy" OR policies, social OR policy, social OR "social policies" OR "health services accessibility" (MeSH) OR "delivery of health care" (MeSH) OR ((healthcare OR "health care") AND (delivery OR access)) OR (vaccination OR immunization OR vaccine OR immune* OR vaccines (MeSH))) AND (plan OR strategy OR program* OR programme OR practice OR intervention OR law* OR reform* OR implementation OR "implementation framework" OR reform)

Web of Science

(migrant or immigrant or emigrant or asylum seeker or refugee) and (vaccination or immunization) and (influenza or human papillomavirus or pertussis or mmr or tetanus or measles or rubeola or mumps or meningococcal or pneumococcal or hepatitis b or rotavirus or varicella or diphtheria or polio or ipv or opv or rabies or hepatitis e or yellow fever or cholera or dengue or japanese encephalitis or tick borne encephalitis or tuberculosis or typhoid or hav or hib) and (policies or accessibility or delivery or health care or health care or program or plan or strategy or practice or intervention or law or reform or implementation or "implementation framework" or reform)

McMaster's Health Evidence

((transients AND migrants) OR transient OR migrant OR immigrant OR foreigner OR alien OR emigrant OR refugee OR asylum seeker) AND (vaccination OR immunization OR vaccine OR immune* OR "vaccines") AND (influenza OR hpv OR human papillomavirus OR pertussis OR mmr OR tetanus OR measles OR rubella OR rubeola OR mumps OR meningococcal OR pneumococcal OR hepatitis b OR rotavirus OR varicella OR diphtheria OR polio OR ipv OR opv OR rabies OR hepatitis e OR yellow fever OR cholera OR dengue OR japanese encephalitis OR tick-borne encephalitis OR tuberculosis OR typhoid OR varicella OR "diphtheria-tetanus-acellular pertussis vaccines" OR "whooping cough" OR "poliovirus" OR "neisseria meningitidis" OR "pneumococcal infections" OR "measles-mumps-rubella vaccine" OR "papillomavirus infections" OR "papillomaviridae" OR "chickenpox" OR "hepatitis, viral, human" OR "hepatitis a" OR "hepatitis b" OR hbv OR hav OR hib) AND ("social control policy" OR "public policy" OR "social protection" OR protection, social OR "migration policy" OR "migration policies" OR policies, migration OR policy, migration OR "social policy" OR policies, social OR policy, social OR "social policies" OR "health services accessibility" OR "delivery of health care" OR ((healthcare OR "health care") AND (delivery OR access)) OR (vaccination

OR immunization OR vaccine OR immune* OR vaccines)) AND (plan OR strategy OR program* OR programme OR practice OR intervention OR law* OR reform* OR implementation OR "implementation framework" OR reform)

PubMed

(migrant* OR migrat* OR emigra* OR immigrant* OR "asylum seeker*" OR refugee* OR foreign* OR" foreign-born" OR "displaced person" OR "displaced people" OR stateless OR state-less OR noncitizen* OR non-citizen* OR outsider* OR newcomer* OR "newly arrived" OR "new arrival*" OR "recent entrant*" OR "non national" OR non-national OR transient* OR minorities OR ethnic OR irregular migra* OR undocumented migra* OR post-migra* OR deport* OR "undocumented migrants" OR "irregular migrants" OR asylum* OR "regular migrants") and ((vaccination OR immunization OR vaccine or immune* OR "vaccines"[MeSH]) AND (influenza OR hpv OR human papillomavirus OR pertussis OR mmr OR tetanus OR measles OR rubella OR rubeola OR mumps OR meningococcal OR pneumococcal OR hepatitis b OR rotavirus OR varicella OR diphtheria OR polio OR ipv OR opv OR rabies OR hepatitis e OR yellow fever OR cholera OR dengue OR japanese encephalitis OR tick-borne encephalitis OR tuberculosis OR typhoid OR varicella OR "diphtheria-tetanus-acellular pertussis vaccines"[MeSH] OR "whooping cough"[MeSH] OR "poliovirus"[MeSH] OR "neisseria meningitidis"[MeSH] OR "pneumococcal infections"[MeSH] OR "measles-mumps-rubella vaccine"[MeSH] OR "papillomavirus infections"[MeSH] OR "papillomaviridae"[MeSH] OR "chickenpox"[MeSH] OR "hepatitis, viral, human"[MeSH] OR "hepatitis a"[MeSH] OR "hepatitis b"[MeSH] OR hbv or hav or hib)) AND (social control policy[MeSH] OR public policy[MeSH] OR social protection OR protection, social OR migration policy OR migration policies OR policies, migration OR policy, migration OR social policy OR policies, social OR policy, social OR social policies OR health services accessibility [MeSH] OR delivery of health care[MeSH] OR ((healthcare OR "health care") AND (delivery or access)) OR ((vaccination OR immunization OR vaccine OR immune* OR "vaccines"[MeSH]) AND (plan OR strategy OR program* OR programme OR practice OR intervention OR law* OR reform* OR implementation OR "implementation framework" OR reform)))

Science Direct

(migrant or immigrant or emigrant or asylum seeker or refugee) AND (vaccination or immunization or influenza or human papillomavirus or pertussis or mmr or tetanus or measles or rubeola or mumps or meningococcal or pneumococcal or hepatitis b or rotavirus or varicella or diphtheria or polio or ipv or opv or rabies or

hepatitis e or yellow fever or cholera or dengue or japanese encephalitis or tick borne encephalitis or tuberculosis or typhoid or hav or hib) AND (policies or accessibility or delivery or health care or health care or program or plan or strategy or strategy or practice or intervention or law or reform or implementation or "implementation framework" or reform)

Scopus

(migrant or immigrant or emigrant or asylum seeker or refugee) AND (vaccination or immunization or influenza or human papillomavirus or pertussis or mmr or tetanus or measles or rubeola or mumps or meningococcal or pneumococcal or hepatitis b or rotavirus or varicella or diphtheria or polio or ipv or opv or rabies or hepatitis e or yellow fever or cholera or dengue or japanese encephalitis or tick borne encephalitis or tuberculosis or typhoid or hav or hib) AND (policies or accessibility or delivery or health care or health care or program or plan or strategy or strategy or practice or intervention or law or reform or implementation or "implementation framework" or reform)

Selection of studies

Studies in the peer-reviewed literature were selected as shown in Fig. A1 and those from the grey literature as shown in Fig. A2.

Fig. A1 Search of the peer-reviewed literature

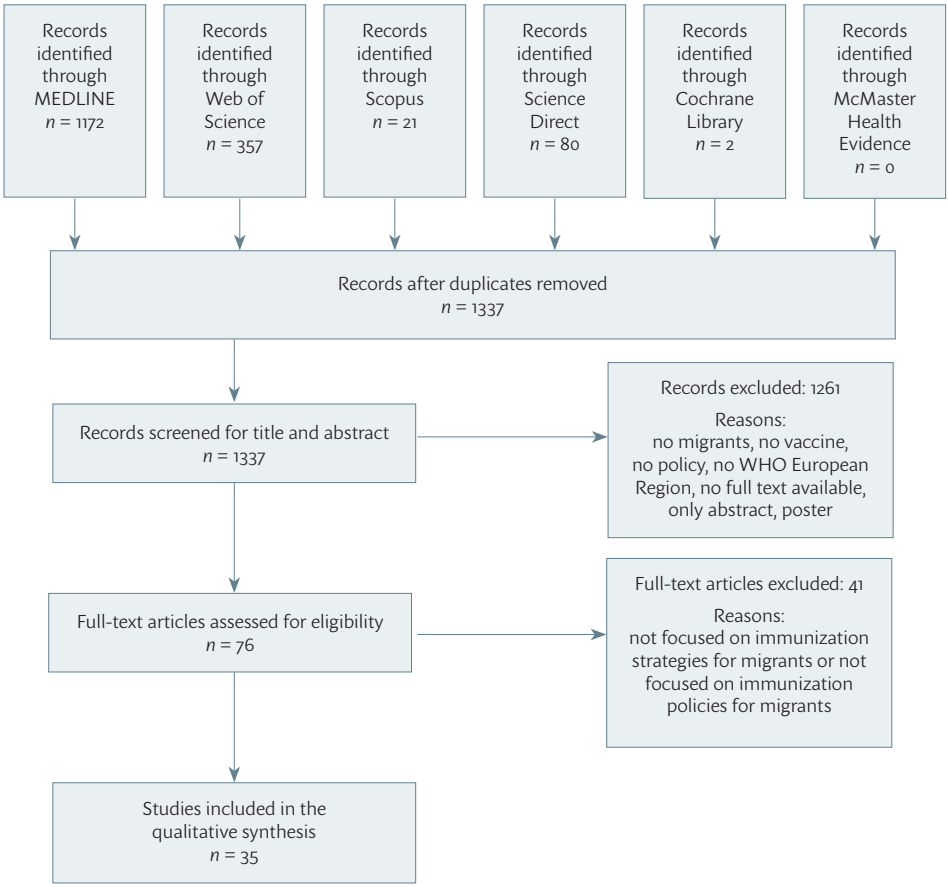
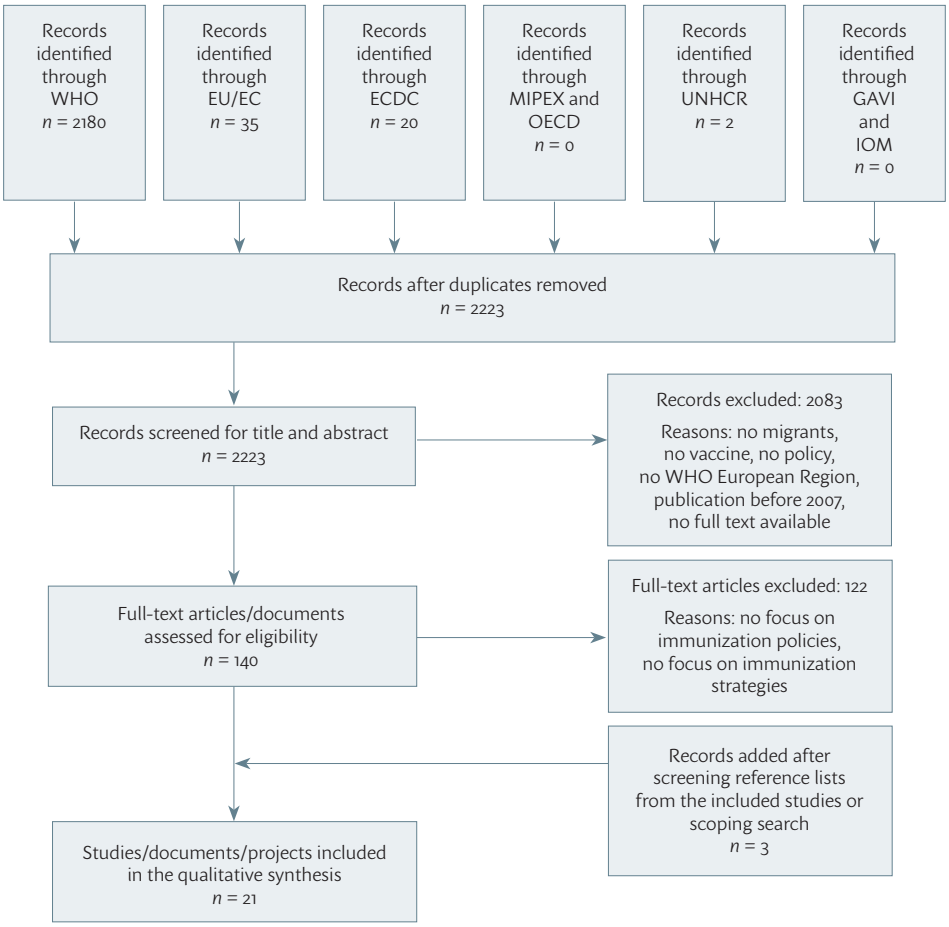


Fig. A2 Search of the grey literature



ECDC: European Centre for Disease Prevention and Control; EU/EC: European Union/European Commission; IOM: International Organization for Migration; MIPEX: Migrant Integration Policy Index; OECD: Organisation for Economic Co-operation and Development.

World Health Organization
Regional Office for Europe
UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00
Fax: +45 45 33 70 01
Email: euwhocontact@who.int
Website: www.euro.who.int