RAPPORTI ISTISAN 17|15

ISSN: 1123-3117 (cartaceo) • 2384-8936 (online)

Immunization strategies and coverage in non-European Union Countries of the Mediterranean Basin and Black Sea

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in the Mediterranean Basin and Black Sea

EPIDEMIOLOGIA
E SANITÀ PUBBLICA

ISTITUTO SUPERIORE DI SANITÀ

Immunization strategies and coverage in non-European Union Countries of the Mediterranean Basin and Black Sea

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2017, vi, 86 p. Rapporti ISTISAN 17/15

In the framework of the "Network for the control of cross-border health threats in the Mediterranean Basin and Black Sea", the ProVacMed (PROgrammes for VACcination in the MEDiterranean area) project, was conducted in 2015-2016 with the aim of enhancing and sharing the knowledge on the control of the vaccine preventable diseases in this area. A survey was carried out among non-EU countries of the Mediterranean Basin and Black Sea to collect updated information on vaccination strategies and coverage, including data at subnational level and risk groups. This report firstly depicts an exhaustive overview of immunization policies and coverage data in these Countries. The added value of the ProVacMed project was the strengthening of the Network with inclusion of experts working in the field of vaccination in non-EU countries of the Mediterranean Basin and Black Sea, representing an important step for health threats preparedness involving these Regions.

Key words: Vaccine preventable diseases; Immunization strategies; Vaccination coverage; Mediterranean Basin and Black Sea

Istituto Superiore di Sanità
Strategie e coperture vaccinali nei Paesi non-EU dell'area del Mediterraneo e del Mar Nero
Cristina Giambi, Martina Del Manso, Maria Grazia Dente, Christian Napoli, Carmen Montaño-Remacha, Flavia Riccardo, Stefania Giannitelli, Alessia Ranghiasci, Gloria Nacca, Monica Bolli, Pasqualino Rossi, Maria Grazia Pompa, Silvia Declich e il Network for the control of cross-border health threats in the Mediterranean Basin and Black Sea
2017, vi, 86 p. Rapporti ISTISAN 17/15 (in inglese)

Nell'ambito del "Network for the control of cross-border health threats in the Mediterranean Basin and Black Sea", nel 2015-2016 è stato condotto il progetto ProVacMed (PROgrammiVACcinali nell'area del MEDiterraneo), finalizzato a rafforzare e condividere conoscenze sul controllo delle malattie prevenibili da vaccino in quest'area. È stata effettuata un'indagine tra paesi non-EU dell'area del Mediterraneo e del Mar Nero per raccogliere informazioni aggiornate su strategie e coperture vaccinali, inclusi dati sub nazionali e nei gruppi a rischio. Questo rapporto, per la prima volta, presenta una panoramica esaustiva delle strategie e coperture vaccinali in questi Paesi. Il valore aggiunto di ProVacMed è stato il rafforzamento del Network con l'inclusione di esperti nel campo delle vaccinazioni provenienti da paesi non-EU dell'area del Mediterraneo e del Mar Nero, rappresentando un passo importante per la preparazione a potenziali minacce sanitarie in queste Regioni.

Parole chiave: Malattie prevenibili da vaccino; Strategie vaccinali; Coperture vaccinali; Bacino del Mediterraneo; Mar Nero

Il progetto ProVacMed project è stato realizzato con un finanziamento del Ministero della Salute italiano (Direzione generale della comunicazione e dei rapporti europei e internazionali) – nell'ambito dei progetti EUROMED-UpM (Unione per il Mediterraneo).

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Il rapporto è accessibile online dal sito di questo Istituto: www.iss.it.

Citare questo documento come segue:
Giambi C, Del Manso M, Dente MG, Napoli C, Montaño-Remacha C, Riccardo F, Giannitelli S, Ranghiasci A, Nacca G, Bolli M, Rossi P, Pompa MG, Declich S and the Network for the control of cross-border health threats in the Mediterranean Basin and Black Sea. *Immunization strategies and coverage in non-EU Countries of the Mediterranean Basin and Black Sea.* Roma: Istituto Superiore di Sanità; 2017. (Rapporti ISTISAN 17/15).

Legale rappresentante dell'Istituto Superiore di Sanità: *Gualtiero Ricciardi*
Registro della Stampa - Tribunale di Roma n. 114 (cartaceo) e n. 115 (online) del 16 maggio 2014

Direttore responsabile della serie: *Paola De Castro*
Redazione*: Paola De Castro* e *Sandra Salinetti*
La responsabilità dei dati scientifici e tecnici è dei singoli autori, che dichiarano di non avere conflitti di interesse.

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviations

BCG	Bacillus Calmette-Guérin vaccine
bOPV	bivalent Oral Poliomyelitis Vaccine
DT	Diphtheria-Tetanus vaccine
dT	reduced diphtheria toxoid-Tetanus toxoid vaccine
DTaP	Diphtheria-tetanus-acellular pertussis vaccine
DTaP-IPV	Tetravalent vaccine (Diphtheria-Tetanus-acellular Pertussis-Inactivated Poliomyelitis Vaccine)
DTaP-IPV-Hib	Pentavalent vaccine (Diphtheria-Tetanus-acellular Pertussis-Inactivated Poliomyelitis Vaccine - *Haemophilus influenzae* type b)
DTP-IPV-Hib	Pentavalent vaccine (Diphtheria, Tetanus, Pertussis - Inactivated Poliomyelitis Vaccine - *Haemophilus influenzae* type b)
DTP-IPV	Tetravalent vaccine (Diphtheria-Tetanus-Pertussis-Inactivated Poliomyelitis Vaccine)
DTP	Diphtheria-tetanus-pertussis vaccine
DTP-HepB-Hib	Pentavalent vaccine (Diphtheria-Tetanus-Pertussis-Hepatitis B-*Haemophilus influenzae* type b)
DTP-IPV-HepB-Hib	Hexavalent vaccine (Diphtheria-Tetanus-Pertussis-Inactivated Poliomyelitis Vaccine-Hepatitis B-*Haemophilus influenzae* type b)
DTwP	Diphtheria-Tetanus-whole cell Pertussis vaccine
DTwP-HepB-Hib	Pentavalent vaccine (Diphtheria-Tetanus-whole cell Pertussis-Hepatitis B-*Haemophilus influenzae* type b)
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EU	European Union
HAV	Hepatitis A virus
HBV	Hepatitis B virus
Hep A	Hepatitis A vaccine
Hep B	Hepatitis B vaccine
Hib	*Haemophilus influenzae* type b
HPV	Human Papilloma Virus
IPD	Invasive Pneumococcal Disease
IPV	Inactivated Poliomyelitis Vaccine
ISS	Istituto Superiore di Sanità (Italian National Institute of Health)
M	Monovalent measles vaccine
MICS	Multiple Indicators Cluster Survey
mos	months
MR	Measles-Rubella vaccine
MMR	Measles-Mumps-Rubella vaccine
MMRV	Measles-Mumps-Rubella-Varicella vaccine
NIP	National Immunization Plan
OPV	Oral Poliomyelitis Vaccine
PCV	Pneumococcal Conjugate Vaccine
RV	Rotavirus Vaccine
SIA	Supplementary Immunization Activity
tOPV	trivalent Oral Poliomyelitis Vaccine
TT	Tetanus Toxoid
UNRWA	Nations Relief and Works Agency for Refugees
VC	Vaccination Coverage
VPD	Vaccine Preventable Diseases
VZV	Varicella Vaccine

WHO	World Health Organization
wks	weeks
yrs	years

Countries

AL	Albania
AM	Armenia
BA	Bosnia-Herzegovina
DZ	Algeria
EG	Egypt
GE	Georgia
IL	Israel
JO	Jordan
LB	Lebanon
LY	Libya
MA	Morocco
MD	Moldova
ME	Montenegro
MK	Republic of Macedonia-FYROM
PS	Palestine
RS	Serbia
SY	Syria
TN	Tunisia
TR	Turkey
UA	Ukraine
XK	Kosovo

ACTIVITIES OF THE PROJECT "PROGRAMMES FOR VACCINATION IN THE MEDITERRANEAN AREA"

The activities of the Project PROgrammes for VACcination in the MEDiterranean area (ProVacMed) are part of a broader action, started in 2007 with the EpiSouth Project (1), aimed at strengthening preparedness to common health threats and bio-security risks in the Mediterranean Basin and Black Sea.

The countries of these Regions share the same public health challenges and, therefore, it is worthwhile sharing information, lessons learnt, strategies and working towards harmonization of approaches and procedures. With this aim, a consistent number of projects (EpiSouth, EpiSouth Plus, MedPremier, MedilabSecure) have addressed priorities for preparedness for health threats (training, surveillance, early warning, laboratory, etc.) actively involving the countries of these Regions. Among all the relevant issues for preparedness strengthening, the control of the Vaccine PrevenTable Diseases (VPDs) is central, also in the light of the migration fluxes which have interested the Mediterranean Basin in these last years (2, 3).

The health problems of refugees, asylum-seekers and migrants are generally similar to those of their host populations; however, the physical and psychological effects of fleeing their home countries and the long, arduous journeys they undertake increase their overall health risks. For example, mass population movement, lack of sufficient water and inadequate shelter and sanitation conditions increase the risks for acquiring communicable diseases.

Most of the refugees and migrants come from countries where vaccines are widely accepted and coverage has traditionally been high. Those most at risk for vaccine-preventable diseases are young children who have not yet been vaccinated because the vaccination programmes in their home countries have been interrupted by civil unrest and war (4). Furthermore, many residents and mobile individuals in the host countries of the Region remain susceptible. Many do not avail themselves of vaccination due to misconceptions about vaccines, complacency, poor awareness of the benefits of vaccines or religious or philosophical beliefs. Others do not have access to vaccination services because they do not have health insurance or are not registered with the health system (4). Strengthening the knowledge on the control of VPDs in the Mediterranean basin is an important starting point for health threats preparedness involving these Regions. Therefore, the ProVacMed Project was conducted in 2015-2016 in order to establish a Network of experts from the Mediterranean Basin and Black Sea in the field of vaccination and collect information on immunization strategies and vaccination coverage in the countries of the Network; also vaccination strategies addressed to newly arrived migrants were investigated.

This report discusses the main results of the project and includes country specific profiles in order to show an exhaustive overview of immunization policies and coverage data in the Mediterranean Area and Black Sea Basin.

Aims and objectives

The general aim of the ProVacMed project is to enhance and share the knowledge on the control of the vaccine preventable diseases in the Mediterranean Basin and Black Sea.

Specific objectives are:

- to create a network of experts working in the field of vaccination from the countries of the Mediterranean Basin and Black Sea;

- to collect and share information on updated vaccination strategies and coverage, including information at subnational level and risk groups in these countries.

Methodology

Identification of contact points for the ProVacMed activities

The ProVacMed project, conducted in the period February 2015-August 2016, intended to involve the 21 non-EU countries of the Mediterranean Basin and Black Sea: Albania, Algeria, Armenia, Bosnia and Herzegovina, Egypt, Georgia, Israel, Jordan, Kosovo, Lebanon, Libya, Moldova, Montenegro, Morocco, Palestine, Serbia, Syria, Republic of Macedonia-FYROM, Tunisia, Turkey e Ukraine.

Contacts from other projects actively involving these countries (EpiSouth, EpiSouth Plus, MedPremier, MedilabSecure) were used to identify experts working in the vaccination field to be invited for participating in the Network.

Survey design, tool development and pilot

In order to collect data on vaccination strategies and coverage in the Mediterranean Basin and Black Sea, a survey was conducted among the experts involved in the Network.

To collect information a standardised questionnaire was developed in the period February-May 2015.

Public information on immunization strategies and coverage were revised. Information regarding strategies and coverage in children and adolescents are yearly published on the website of the World Health Organization (WHO) for most of the countries including the Mediterranean area and the Black Sea basin. Information regarding immunization strategies and coverage for adolescents and risk groups and sub-national coverage data resulted to be lacking. Thus, questionnaires were pre-filled with available data, published on the WHO website, and countries were asked to verify pre-filled information and to report the missing data.

A draft of the questionnaire was presented and discussed during the Workshop on "Screening practices for infectious diseases among newly arrived migrants" and "Vaccine PrevenTable Disease (VPD): strategies and coverage" held at ISS on the last 28-29 May 2015 (5). This workshop was organised as the final event of a project conducted in the years 2014-2015 (MedPremier project), that conducted a survey on screening practices for infectious diseases among newly arrived migrants with the countries of the Network for the control of cross-border health threats in the Mediterranean Basin and Black Sea (6).

During the workshop the draft questionnaire was tested with the participants to the meeting, in order to check if questions were understandable and exhaustive, if questions in different thematic sections were consistent, and if some questions might be considered too sensitive. It was tested by 13 countries: 11 non-EU countries (Albania, Bosnia and Herzegovina, Israel, Jordan, Kosovo, Lebanon, Moldova, Republic of Macedonia-FYROM, Serbia, Tunisia, and Ukraine) and 2 EU countries (Spain and Greece).

Two additional themes to be explored were identified from the discussion with participants and added to the questionnaire: immunization policies targeting newly arrived migrants and supplementary immunization activities conducted in the countries. Moreover, in order to avoid overloading the network, during the meeting it was decided to focus the collection on six VPDs: poliomyelitis, diphtheria, tetanus, rubella, measles and hepatitis B.

After the pilot testing, the questionnaire was reviewed and amended taking on board comments from the partners. It was finalized in November 2015. The final version was again tested in one country.

Questionnaire for data collection

The questionnaire, in excel format, was organised by thematic sections to make it easier to be filled in. It included nine excel sheets.

The 1st sheet collected general information on the country and the National Immunization Plan (NIP).

The 2nd sheet was focused on vaccination strategies addressed to newly arrived migrants. Information was sought on: presence of protocols/procedures/laws supporting vaccination policies targeting newly arrived migrants, check of migrant immunization status (yes/no) and how it is checked (anamnesis alone, immunization card verification, laboratory tests), vaccination offer to migrants (type of vaccine, target groups, sites of delivery), recording and transmission of information on administered vaccines.

The 3rd sheet was focused on Supplementary Immunization Activities (SIA) conducted in the last five years. Information was sought on: type of SIA (catch-up, mop-up, follow-up), vaccine offered and target population, period and area where the SIA was conducted, modality of vaccine delivery, campaign vaccination rate.

Sheets from 4th to 8th collected information on immunization strategies and coverage for poliomyelitis, diphtheria-tetanus, measles, rubella and hepatitis B. Sheets from 4th to 8th are divided in 3 sections:

1. *Vaccination strategies*: information was sought on immunization strategies in children, adolescents, adults and risk groups recommended, homogeneity of strategies at the sub national level, vaccination schedules, type of vaccine/antigen, payment mechanism for vaccine and administration.
2. *Vaccination coverage, national data*: estimated coverage rates were asked for children, adolescents, adults and risk groups. Information on the method used to monitor vaccination coverage and frequency of assessment was also requested.
3. *Vaccination coverage, sub-national data*: estimated coverage for paediatric vaccinations, method and frequency of assessment was collected by sub national territory.

The 9th sheet includes glossary and instructions for filling.

Questionnaires for each country were prefilled with the information available on WHO website, regarding immunization strategies (doses and schedule, vaccine type/antigen, funding) (7) and vaccination coverage (coverage data, methods of assessment) (available from: http://apps.who.int/immunization_monitoring/globalsummary/wucoveragecountrylist.html).

Countries' experts were asked to verify and/or update the prefilled information and fill the empty fields.

Data handling, analysis and validation

The finalised electronic questionnaire was sent to countries in December 2015. Non-responding countries were followed up by individual contacts by email. Data collection was completed in May 2016. The data were analysed in June 2016 and a report produced in the period July-August 2016.

Descriptive analysis was carried out, summarising data by calculating frequencies or proportions. After data analysis was finished, the draft report was circulated among national

experts who had completed questionnaire and they were asked to validate their data and make changes if needed. Aggregate data on immunization strategies, national schedules, coverage data are here reported, the country profiles, with these data and information for each participating country, are in Appendix.

Network and survey's response rate

Among the 21 non-EU countries of the Mediterranean Basin and Black Sea, an expert working in the vaccination field was identified for 18 countries. It was not possible to identify the contact point for Turkey, Syria and Morocco. Thus, 18 countries were invited to participate in the survey: Albania, Algeria, Armenia, Bosnia and Herzegovina, Egypt, Georgia, Israel, Jordan, Kosovo, Lebanon, Libya, Moldova, Montenegro, Palestine, Serbia, Republic of Macedonia-FYROM, Tunisia and Ukraine. Of 18 countries invited to participate, 15 responded to the survey (83%). Lebanon, Libya and Montenegro did not provide data. All responding countries except one (Ukraine) validated the preliminary report.

Results: aggregate data on immunization strategies, national schedules, coverage estimates

Immunization strategies and national vaccination schedules

All the 15 responding countries provided information regarding immunization strategies and calendars regarding the 6 selected VPDs (poliomyelitis, diphtheria, tetanus, measles, rubella and hepatitis B). Fourteen countries provided the full vaccination schedule, including all the vaccinations offered in the NIP (not only the 6 vaccinations mentioned above). In all countries, except Bosnia and Herzegovina, immunizations strategies are homogeneous in the whole country and did not differ among sub-national areas.

Vaccinations included in the immunization schedules are funded by government in 14 countries and two sub-national areas of Bosnia and Herzegovina (Federation BiH and Brcko District); in one sub-national area of Bosnia and Herzegovina (Republic of Srpska) vaccinations are funded by Health Insurance Funds. In Georgia, all vaccines are free of charge, except for the dT booster in adults that is fully paid by recipients. Most countries use combined vaccines for paediatric vaccination; the most frequently used product is the pentavalent vaccine against diphtheria, tetanus, pertussis, *Haemophilus influenzae* type b (Hib) and hepatitis B (DTP-HepB-Hib). The hexavalent vaccine (DTP-IPV-HepB-Hib) is used in Georgia and Republic of Macedonia-FYROM. Immunization schedules for poliomyelitis and diphtheria, tetanus and pertussis show the higher variability among countries in terms of number of doses, age groups and type of product.

Immunization strategies against poliomyelitis

In most countries 5 or 6 doses of polio vaccine are offered by 7 years of age; in 4 countries 7 or 8 doses are offered by 7 years. In all countries but two, IPV vaccine has been introduced according to WHO indications that recommend introducing IPV vaccine before the shift from tOPV to bOPV. In Moldova only tOPV is used, but the schedule is going to be modified in 2017 (using both IPV and bOPV). In Egypt only bOPV is used. Bivalent OPV is used in most

countries; tOPV is still used only in 2 states (BA, MD). In 8 countries one or two OPV boosters are offered to adolescents. Only Kosovo offer one bOPV booster to adults (Table 1).

Table 1. POLIOMYELITIS: immunization strategies in Countries from Mediterranean Basin and Black Sea

C#	Children			Adolescents	Adults
	doses by 7 yrs	TV	schedule	schedule	schedule
AL	5	IPV, bOPV	IPV 2,4 mos; IPV/bOPV* 6 mos,2 yrs; bOPV 6 yrs		
AM	6	IPV, bOPV	bOPV 6,12,18 wks; IPV 24 wks; bOPV 18 mos, 6 yrs		
BA	5	IPV, tOPV	BIH: IPV 2,4,6 mos; tOPV 18 mos, 5 yrs Srpska, Brcko: IPV 2,3,4 mos; tOPV 18 mos, 6 yrs	tOPV 14 yrs	
DZ	6	IPV, bOPV	bOPV at birth,2 mos; IPV 3 mos; bOPV at 4,12 mos, 6 yrs	bOPV 11-13 yrs	
EG	7	bOPV	bOPV at birth, 2,4,6,9,12,18 mos		
GE	5	IPV, bOPV	IPV 2,3,4 mos(DTP-IPV-Hib-HepB); bOPV 18 mos, 5 yrs		
IL	7	IPV, bOPV	IPV 2,4 mos; IPV+bOPV 6 mos; IPV 12 mos; bOPV 18 mos; IPV 7 yrs		
JO	8	IPV, bOPV	IPV 3,4,5 mos(DTP-IPV-Hib) + bOPV 4,5 mos; bOPV 9, 18 mos, 6 yrs		
MD	5	tOPV**	tOPV 2,4,6,22 mos, 7 yrs	tOPV 15 yrs	
MK	5	IPV, bOPV	2,6 mos (DTP-IPV-Hib-HepB); 3.5,18 mos (DTP-IPV-Hib); bOPV 7 yrs	bOPV 14 yrs	
PS	7	IPV, OPV	IPV 1mos; IPV+OPV 2 mos; OPV 4,6,18 mos, 6 yrs		
RS	5	IPV, bOPV	IPV 2,4,6 mos, 2 yrs; bOPV 7 yrs	bOPV 14 yrs	
TN	6	IPV, bOPV	bOPV 2,3 mos; IPV+bOPV at 6mos; bOPV 18 mos, 6 yrs	bOPV 12, 18 yrs	
UA	5	IPV, OPV	combined vaccine including IPV 3,4 mos; OPV at 5,18 mos, 6 yrs	OPV 14 yrs	
XK	5	IPV, bOPV	IPV 2,3,4 mos; bOPV 12 mos, 6 yrs	bOPV 13 yrs	bOPV (1 dose)

Country abbreviation; TV: Type of Vaccine
* depending on which product is available
** bOPV is going to replace tOPV. Since 2017 IPV+bOPV at 6 mos. Booster at 15 years will be removed.

Immunization strategies against diphtheria, tetanus and pertussis

A number of doses varying by 4 to 6 is offered to children by scholar age, with different schedules and vaccines used; in most countries 5 doses are offered (Table 2).

Table 2. DIPHTHERIA, TETANUS AND PERTUSSIS: immunization strategies in Countries from Mediterranean Basin and Black Sea

C#	Children		Adolescents	Adults
	Doses by scholar age	Schedule	Schedule	Schedule
AL	5	DTP-Hib-HepB 2,4,6 mos; DTP 2 yrs; DT 6 yrs	Td 14, 18 yrs	Td one dose
AM	5	DTP-Hib-HepB 6,12,18 wk, 18 mos; Td 6 yrs	Td 15-16 yrs	Td every 10 yrs
BA	4/5	BIH*: 2,4,6 mos; 5 yrs Srpska, Brcko*: 2,3,4,18 mos; 6 yrs	Td 14 yrs	TT 18 yrs in BIH and Srpska
DZ	4	DTP-Hib-HepB 2,4,12 mos; DTP 6 yrs	Td 11-13, 16-18 yrs	Td every 10 yrs
EG	6	DTP-Hib-HepB 2,4,6 mos; DTP 18 mos; DT 7, 9 yrs		
GE	5	DTP-IPV-Hib-HepB 2,3,4 mos; DTP 18 mos; DT 5 yrs	Td 14 yrs	Td every 10 yrs**
IL	5	DTP 2,4,6,12 mos; dTP 7 yrs	dTP 13 yrs	Td every 10 yrs
JO	5	DTP-IPV-Hib 3,4,5 mos; DTP 18 mos; dT 6 yrs	Td 16 yrs	
MD	5	wDTP-Hib-HepB 2,4,6 mos; wDTP 22 mos; DT 7 yrs	Td 15 yrs	Td every 5 yrs (since 2016 every 10 yrs)
MK	6	DTP-IPV-Hib-HepB 2, 6 mos; DTP-IPV-Hib 3.5, 18 mos; DTP 4 yrs; DTorTd 6/7 yrs	Td 14 yrs	TT 18 yrs
PS	5	DTP-Hib-HepB 2,4,6 mos; DTP 18 mos; DT 6 yrs	Td 15 yrs	
RS	5	DTaP-IPV-Hib 2,4,6 mos, 2 yrs; DT 7 yrs	Td 14 yrs	TT every 10 yrs
TN	5	DTP-Hib-HepB 2,3,6 mos; DTP 18 mos; dT 7 yrs	Td 12, 18 yrs	Td every 10 yrs
UA	5	3,4,5,18 mos, 6 yrs***	Td 14 yrs	
XK	5	DTP-Hib-HepB 2,3,4 mos; DTP 12 mos; DT 6 yrs	Td 13, 17 yrs	Td 1 dose

Country abbreviation
*different combined vaccines are used depending on tender and age. **paid by recipients. ****information on type of vaccines (or combined vaccine) is not available

All countries but one offer one or two doses of dT vaccine to adolescents. Eight countries offer dT booster in adult age: only one booster dose in Algeria and Kosovo and periodically (generally every 10 years) in the other countries. In three states TT booster is offered (*see* Table 2).

Immunization strategies against hepatitis B

A number of doses varying from 3 to 5 is offered to children with different schedules; in most countries 4 doses are offered. In all countries but Bosnia and Herzegovina the first dose is given at birth. In most countries (12, 15) the vaccination series is completed by 6 months (Table 3).

Table 3. HEPATITIS B: immunization strategies in countries from Mediterranean Basin and Black Sea

Country	Doses	Schedule
AL	4	birth; 2,4,6 mos (DTP-HepB-Hib)
AM	5	birth; 6,12,18 wks,18 mos (DTP-HepB-Hib)
BA	3	birth; 1, 6 mos*
DZ	4	birth; 2,4,12 mos (DTP-HepB-Hib)
EG	4	birth; 2,4,6 mos (DTP-HepB-Hib)
GE	4	birth; 2,3,4 mos (DTP-IPV-HepB-Hib)
IL	3	birth; 1, 6 mos (monovalent)
JO	3	3,4,5 mos (monovalent)*
MD	4	birth; 2,4,6 mos (wDTP-HepB-Hib)
MK	3	birth; 2, 6 mos (DTP-IPV-HepB-Hib)
PS	4	birth; 2,4,6 mos (DTP-HepB-Hib)
RS	4	birth; 4 wks; 5, 12 mos (monovalent)
TN	4	birth; 2,3,6 mos (DTP-HepB-Hib)
UA	3	birth, 1,6 mos*
XK	4	birth; 2,3,4 mos (DTP-HepB-Hib)

* information on type of vaccines (or combined vaccines) is not available

Immunization strategies against measles and rubella

In 13 out of 15 countries, two MMR (Measles, Mumps, Rubella) doses are offered: in 10 countries the first dose is given at 12 months and the second dose at scholar age (6 or 7 years), while in 3 countries (Algeria, Egypt and Palestine) the cycle is completed by 18 months.

In Jordan, children at 9 months are vaccinated with measles monovalent vaccine and two MMR doses are offered at 12 and 18 months. In Tunisia two doses are given at 12 and 18 months and a booster dose will be given at 6 or 12 years until 2018; bivalent vaccine against measles and rubella (MR) is used in this country (Table 4).

Immunization strategies against other vaccines

Fourteen countries provided information regarding the whole immunization calendar (not only strategies for the 6 selected diseases). All of them offer vaccination against tuberculosis and Hib. Combined vaccines including Hib are used in all countries but Israel. Pneumococcal conjugate vaccine is offered in 7 countries with 3 doses in the first year of life. Vaccination against rotavirus is offered in 6 countries. Israel also offers vaccinations against varicella, hepatitis A and HPV. HPV vaccination is also offered in the Republic of Macedonia-FYROM (Table 5).

Table 4. MEASLES AND RUBELLA: immunization strategies in countries from Mediterranean Basin and Black Sea

Country	Schedule	Vaccine type
AL	12 mos, 5 yrs	MMR
AM	12 mos, 6 yrs	MMR
BA	12 mos, 6 yrs	MMR
DZ	11, 18 mos	MMR
EG	12, 18 mos	MMR
GE	12 mos, 5 yrs	MMR
IL	12 mos, 6 yrs	MMR/MMRV
JO	M 9 mos, MMR 12 and 18 mos	M + MMR
MD	12 mos, 7 yrs*	MMR
MK	12 mos, 6 yrs	MMR
PS	12, 18 mos	MMR
RS	12 mos, 7 yrs	MMR
TN	12, 18 mos; 6 or 12 yrs**	MR
UA	12 mos, 6 yrs	MMR
XK	12 mos, 6 yrs	MMR

*catch up at 15 years MMR since 2011; **3rd dose at 6 or 12 yr until 2018

Table 5. OTHER VACCINES: immunization strategies included in countries from Mediterranean Basin and Black Sea

C#	BCG	Hib vaccine	PCV	RV	VZV	Hep A	anti-HPV vaccine
AL	birth	2,4,6 mos (DTP-HepB-Hib)	2,4,10 mos*				
AM	birth	6,12,28 wks; 18 mos (DTP-HepB-Hib)	6,12,18 wks*	16, 12 wks			
BA	birth	BIH: 2,4,18 mos Srpska and BD**: 2,3,4 mos					
DZ		2,4,12 mos (DTP-HepB-Hib)	2,4,12 mos				
EG	0-15 days	2-4-6 mos					
GE	3-5 days	2,3,4 mos (DTP-IPV-HepB-Hib)	2,3,12 mos	2, 3 mos			
IL		2,4,6,12 mos	2,4,12 mos	2,4,6 mos	12 mos, 6 yrs	18, 24 mos	13 yrs
JO	birth	3,4,5 mos (DTP-IPV-Hib)		3,4,5 mos			
MD	birth	2,4,6 mos (wDTP-HepB-Hib)	2,4,12 mos	2, 4 mos			
MK	birth	DTP-IPV-HepB-Hib 2, 6 mos; DTP-IPV-Hib 3.5, 18 mos					12 yrs
PS	birth	2,4,6 mos (DTP-HepB-Hib)	2,4,12 mos***	2, 4 mos			
RS	birth	2,4,6 mos, 2 yrs (DTaP-IPV-Hib)					
TN	birth	2,3,6 mos (DTP-HepB-Hib)					
XK	birth	2,3,4 mos (DTP-HepB-Hib)					

Country abbreviation
*PCV 10 valent ** different combined vaccines ***PCV 13 valent

Supplementary immunization activities

Ten of 15 countries reported to have conducted several SIAs in the last 5 years. As reported in the following table, measles, rubella and poliomyelitis, all targeted for elimination, represent the priority. Jordan and Egypt are the countries where poliomyelitis campaigns have been more frequently conducted in the last five years. In all countries, but three, coverage data from immunization campaigns are not merged with data from routinary coverage assessment (Table 6).

Table 6. Supplementary Immmunisation Activities conducted in the last five years in countries from Mediterranean Basin and Black Sea

Vaccine	National/ subnational level	Time period	Sites for vaccine delivery	Target group	SIA+RCD
Albania					
Hep B	National	2009-2011	Health centre, Universities and Hospitals	Adolescent born in 1992- half 1994; students of medicine faculty; health care staff	
MR/MMR	National	2016	Health centres	Adults born in 1980-1990 and who missed revaccinations in 2000-2001	no
All missing vaccines	Subnational: areas with high Roma population concentration	Continuously	Health centres or organised events	0-18 years	
Egypt					
MR	National	2015: 31 Oct - 20 Nov	Health facilities, schools, nurseries and public places	9 months - 10 years	
MR	Subnational: frontier areas	2016: 9-19 Apr		11-20 years	
tOPV	National	2011-2016: 4-5 days campaigns, one or twice a year	from home to home	less than 5 years	no
tOPV	Subnational *(see country profile)*	2011-2016: 4-5 days campaigns, one or twice a year		less than 5 years	
Georgia					
MMR	National	2013-2015	Vaccination services	unvaccinated or not fully vaccinated persons under 30 years	yes

to be continued

continues

Vaccine	National/ subnational level	Time period	Sites for vaccine delivery	Target group	SIA+RCD
Israel					
bOPV	National	2013: at 5 different dates	Mother and child health centres	6-18 months	no
MMR	Subnational	2012		9-12 month old babies of migrants	
Hep A	Subnational	2015		people born in the years 1988-1997	
Hep A	Subnational	2015	At site by Ministry of health nurses	Injecting Drug Users at a certain neighborhood in Tel Aviv	
Jordan					
MR	National	2013: 2-21 Nov	Fixed and mobile teams	6 months - 20 years	no
tOPV	National	2013: 2-21 Nov		0-5 years	
tOPV	National	2014: 4-6 days campaigns, approximatively every two months		0-5 years	
tOPV	National	2015-2016: 4-6 days campaigns, once a year		0-5 years	
Kosovo					
MMR, OPV	National	2014: March-Sept	Vaccination services	less than 5 years	no
Macedonia (Rebublic of)-FYROM					
MMR	National	2010-2011	Vaccination services	6-12 months	no
Palestine					
MMR	National	not reported	Not reported		yes
OPV	National	2014	Primary health care governmental centres and UNRWA centres	less than 5 years	
Serbia					
MMR	National	2015	All vaccine sites	2nd year	yes
Ukraine					
tOPV	National	2015-2016: three 20-30 days campaings (Oct-Nov, Nov-Dec and Jan-Feb)	Vaccination services, schools	children, adolescents	No

SIA+RCD: Merge of SIAs coverage data with routinary coverage data

National vaccination coverage estimates

National vaccination coverage estimates for poliomyelitis, diphtheria-tetanus-pertussis, hepatitis B, measles-rubella (1 or 2 doses) in children were provided by all participating countries (Table 7).

Table 7. POLIOMYELITIS VACCINE: national vaccination coverage estimates in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Numerator *(no. of children vaccinated with X doses by age)*	Denominator *(surviving infants or no. of children at X months)*	Assessment	
					method	frequency
AL	2015	99	3 doses by 12 mos	surviving infants	Administrative	Quarterly
AM	2014	95	3 doses at 11 mos 29 day	at 11 mos 29 days	Administrative	Monthly
BA	2014	86	3 doses by 12 mos	at 12 mos	Administrative	Quarterly
DZ	2014	95	3 doses by 12 mos	at 12 mos	Administrative	Quarterly and yearly
EG	2015	94	3 OPV doses by 6 mos	at 6 mos	Administrative*	Monthly
GE	2014	91	3 doses by 12 mos	surviving infants	Administrative	Monthly
IL	2015	97	3 doses by 24 mos	at 24 mos	Computerized system reports	Once a year
JO	2014	98	3 doses by 12 mos	at 12 mos	Administrative	Monthly
MD	2015	91	3 OPV doses by 24 mos	at 24 mos	Administrative	Once a year
MK	2014	96	3 IPV doses in 2014	children born from Nov 2013 to Oct 2014	Administrative	Once a year
PS	2014	98	4 OPV and 2 IPV doses by 24 mos	at 24 mos	Administrative	Once a year
RS	2014	95	3 doses by 24 mos	at 24 mos	MICS** by UNICEF	Once a year
TN	2014	98	3 doses by 12 mos	at 12 mos	Administrative	Twice a year
UA	2014	63	3 doses by 24 mos	at 24 mos	Administrative	Once a year
XK	2015	94	3 doses by 12 mos	at 12 mos	Administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
* coverage also assessed each 5 years by field coverage survey (DHS).
** Multiple Indicators Cluster Survey

Definitions of numerator and denominator vary among countries, depending on immunization schedule. In all countries but one the administrative method is used to assess vaccination coverage; in one country a survey is yearly conducted. Although data cannot be compared among countries, due to different method of vaccination coverage assessment, the

following tables give an idea of the performance of vaccination programmes in the countries. The vaccine for which a higher proportion of countries have achieved a coverage ≥ 95% is poliomyelitis vaccine. Nine countries reported an estimated coverage for primary series of poliomyelitis vaccine ≥ 95%; 4 countries between 90 to 95%; 1 country between 85 to 90% and one country reported coverage of 63%. Republic of Macedonia-FYROM is the only country that, other than coverage for the primary series at 12 months, estimates coverage for the first booster dose at 36 months and for the second booster dose at 7 years (92 and 96% in 2015 respectively) (*see* Table 7).

Six countries reported an estimated coverage for primary series of DT containing vaccine ≥ 95%; 7 countries between 90 to 95%; 1 country between 85 to 90% and one country reported coverage of 76% (Table 8).

Table 8. DIPHTHERIA-TETANUS VACCINE: national vaccination coverage estimates in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Numerator *(no. of children vaccinated with X doses by age)*	Denominator *(surviving infants or no of children at X mos)*	Assessment	
					method	frequency
AL	2015	99	3 doses by 12 mos	surviving infants	Administrative	Quarterly
AM	2014	93	3 doses at 11 mos 29 days	at 11 mos 29 days	Administrative	Monthly
BA	2014	86	3 doses by 12 mos	at 12 mos	Administrative	Quarterly
DZ	2014	95	3 doses by 12 mos	at 12 mos	Administrative	Quarterly and yearly
EG	2015	94	3 DPT or DT doses at 6 mos	at 6 mos	Administrative*	Monthly
GE	2014	91	3 doses of DT containing vaccine by 12 mos	surviving infants	Administrative	Monthly
IL	2012	94	4 doses by 24 mos	at 24 mos	Computerized system reports	Once a year
JO	2014	98	3 doses by 12 mos	at 12 mos	Administrative	Monthly
MD	2015	90	3 doses of DT containing vaccine by 24 mos	at 24 mos	Administrative	Once a year
MK	2014	95	3 DTP doses in 2014	born from Nov 2013 to Oct 2014	Administrative	Once a year
PS	2013	98	3 doses by 12 mos	at 12 mos	Administrative	Once a year
RS	2014	95	3 doses by 24 mos	at 24 mos	MICS** by UNICEF	Once a year
TN	2014	98	3 doses by 12 mos	at 12 mos	Administrative	Twice a year
UA	2012***	76	3 doses by 24 mos	at 24 mos	Administrative	Once a year
XK	2015	94	3 doses by 12 mos	at 12 mos	Administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
* coverage also assessed each 5 years by field coverage survey (DHS).
** Multiple Indicators Cluster Survey
***data from WHO website

Republic of Macedonia-FYROM, other than coverage for the primary DT series at 12 months, also estimates coverage for the first booster dose at 36 months and for the second booster dose at 7 years (91 and 96% in 2015 respectively).

Seven countries reported an estimated coverage for complete series of HBV vaccine ≥ 95%; 4 countries between 90 to 95%; 2 countries between 85 to 90% and 2 countries reported coverage below 80% (Table 9).

Table 9. HEPATITIS B VACCINE: national vaccination coverage estimates in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Numerator *(no. of children vaccinated with X doses by age)*	Denominator *(surviving infants or no. of children at X months)*	Assessment	
					method	frequency
AL	2015	99	3 doses by 12 mos	surviving infants	Administrative	quarterly
AM	2014	93	4 doses at 11 mos 29 days	at 11 mos 29 days	Administrative	Monthly
BA	2014	89	3 doses by 12 mos	at 12 mos	Administrative	quarterly
DZ	2014	95	3 doses by 12 mos	at 12 mos	Administrative	Quarterly and yearly
EG	2015	94	4 doses by 6 mos	at 6 mos	Administrative*	Monthly
GE	2014	91	3 doses by 12 mos	surviving infants	Administrative	Monthly
IL	2012	97	3 doses by 24 mos	at 24 mos	Computerized system reports	Once a year
JO	2014	98	3 doses by 12 mos	at 12 mos	Administrative	Monthly
MD	2015	88	3 doses by 24 mos	at 24 mos	Administrative	Once a year
MK	2014	97	3 doses in 2014	surviving infants	Administrative	Once a year
PS	2014	98	4 doses by 12 mos	at 12 mos	Administrative	Once a year
RS	2014	78	3 doses by 24 mos	at 24 mos	MICS** by UNICEF	Once a year
TN	2014	98	4 doses by 12 mos	at 12 mos	Administrative	twice a year
UA	2014	46	3 doses by 24 mos	at 24 mos	Administrative	Once a year
XK	2015	94	3 doses by 12 mos	at 12 mos	Administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
* coverage also assessed each 5 years by field coverage survey (DHS)
** Multiple Indicators Cluster Survey

Coverage for the first dose of measles-rubella containing vaccine is reported by 14 countries. Seven countries reported an estimated coverage for one dose of measles-rubella containing vaccine ≥ 95%; 3 countries between 90 to 95%; 3 countries between 85 to 90% and one country reported coverage of 79% (Table 10).

Table 10. MEASLES-RUBELLA VACCINE (first dose): national vaccination coverage estimates in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Numerator *(no. of children vaccinated with X doses by age)*	Denominator *(surviving infants or no. of children at X months)*	Assessment	
					method	frequency
AL	2015	97	1 MMR dose at 12 mos	at 12 mos	Administrative	Quarterly
AM	2014	97	1 MMR dose at 23 mos 29 days	at 23 mos 29 days	Administrative	Monthly
BA	2014	89	1 MMR dose at 24 mos	at 24 mos	Administrative	Quarterly
EG	2015	93	1 MMR dose at 12 mos	at 12 mos	Administrative*	Monthly
GE	2014	92	1 MMR dose aged 12-24 mos	at 24 mos	Administrative	Monthly
IL	2012	96	1 MMR dose at 24 mos	at 24 mos	Computerized system reports	Once a year
JO	2014	97	1 MMR dose at 24 mos	at 24 mos	Administrative	Monthly
MD	2015	88	1 MMR dose at 24 mos	at 24 mos	Administrative	Once a year
MK	2014	93	1 MMR dose at 12-15 mos	at 12-15 mos	Administrative	Once a year
PS	2013	98	1 MMR dose at 24 mos	at 24 mos	Administrative	Once a year
RS	2014	86	1 MMR dose at 24 mos	at 24 mos	MICS** by Unicef	Once a year
TN	2014	98	1 MR dose at 12 mos	at 12 mos	Administrative	Twice a year
UA	2012***	79	1 MMR dose at 24 mos	at 24 mos	Administrative	Once a year
XK	2015	95	1 MMR dose at 12 mos	at 12 mos	Administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
* coverage also assessed each 5 years by field coverage survey (DHS).
** Multiple Indicators Cluster Survey.
*** data from WHO website.

Coverage for the second dose of measles-rubella containing vaccine is reported by 13 countries (all but Serbia and Ukraine). Nine countries reported an estimated coverage for 2 doses of measles-rubella containing vaccine ≥ 95%; 2 countries between 90 to 95%; 2 countries between 85 to 90% (Table 11).

Vaccination coverage is measured in adolescents in few countries, mainly for DT, MMR and poliomyelitis.

Table 11. MEASLES-RUBELLA VACCINE (second dose): national vaccination coverage estimates in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Numerator *(no. of children vaccinated with X doses by age)*	Denominator *(surviving infants or no. of children at X months)*	Assessment	
					method	frequency
AL	2015	98	2 MMR doses at 5 yrs	at 5 yrs	Administrative	Quarterly
AM	2014	97	2 MMR doses at 6 yrs 11 mos 29 days	at 6 yrs 11 mos 29 days	Administrative	Monthly
BA	2014	89	2 MMR doses at 6 yrs	at 6 yrs	Administrative	Quarterly
DZ	2014	95	2 MMR doses at 24 mos	at 24 mos	Administrative	Quarterly and yearly
EG	2015	93	2 MMR doses at 18 mos	at 18 mos	Administrative*	Monthly
GE	2014	87	2 MMR doses at 5 yrs	at 5 yrs	Administrative	Monthly
IL	2015	97	2 MMR doses at 6 yrs	at 6 yrs	Computerized system reports	Once a year
JO	2014	96	2 MMR doses at 5 yrs	at 5 yrs	Administrative	Monthly
MD	2015	95	2 MMR doses at 7 yrs	at 7 yrs	Administrative	Once a year
MK	2014	96	2 MMR doses at 6 yrs	at 6 yrs	Administrative	Once a year
PS	2013	98	2 MMR doses at 24 mos	at 24 mos	Administrative	Once a year
TN	2014	95	2 MR doses at 24 mos	at 24 mos	Administrative**	Twice a year
XK	2015	92	2 MMR doses at 6 yrs	at 6 yrs	Administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
*coverage also assessed each 5 years by field coverage survey (DHS).
**coverage also assessed every 5 years by survey using a multistage stratified cluster sampling approach (MICS, Multiple Indicators Cluster Survey)

Coverage for hepatitis B vaccination in adolescents is assessed only in Republic of Serbia as number of adolescents at 14/18 years vaccinated with the appropriate number of doses for age (78% in 2014) (Table 12).

Vaccination coverage is not routinely assessed in adult population. Only Armenia reported vaccination coverage estimate for DT (number of people > 18 years vaccinated with appropriate number of doses of DT containing vaccine of 7%).

No country performs the assessment of vaccination coverage of risk groups.

Table 12. DIPHTHERIA-TETANUS, MEASLES-RUBELLA AND POLIOMYELITIS VACCINES: national vaccination coverage estimates in scholar-age children and adolescents in countries from Mediterranean Basin and Black Sea

C[#]	Year	VC (%)	Denominator *(no of scholar-age children or adolescents at X years)*	Assessment	
				method	frequency
Diphtheria-tetanus					
AL	2015	97	at 14 yrs	administrative	quarterly
AM	2014	82	at 15-16 yrs	administrative	monthly
KM	2015	96	at 15 yrs	administrative	Once a year
RS	2014	91	at 14/18 yrs	MICS* by UNICEF	Once a year
XK	2015	95	at 12 yrs or 6 grade of primary school	administrative	Monthly
MMR 2 doses					
RS	2014	89	at 14/18 yrs	MICS* by Unicef	Once a year
MMR 3 doses					
MK	2015	96	at 15 yrs	administrative	Once a year
Poliomyelitis					
KM	2015	97	at 15 yrs	administrative	Once a year
RS	2014	91	at 14/18 yrs	MICS* by Unicef	Once a year
TN	2014	99	number of children to be vaccinated in the school at 6 yrs	administrative	twice a year
TN	2014	99	number of children to be vaccinated in the school at 12 yrs	administrative	twice a year
TN	2014	97	number of children to be vaccinated in the school at 18 yrs	administrative	twice a year
XK	2015	95	at 12 yrs or 6 grade of primary school	administrative	Monthly

[#] Country abbreviation; VC: Vaccine Coverage
*Multiple Indicators Cluster Survey

Subnational vaccination coverage estimates

Coverage data at subnational level was provided by 12 countries.

There is a certain degree of coverage variability among subnational units in all countries for all vaccines (Table 13). Of course data should be interpreted in view of the subnational units' population size; maps reported in country profiles show a better overview of this variability.

Table 13. ESTIMATES BY VACCINE: variability of subnational vaccination coverage, in countries from Mediterranean Basin and Black Sea (range %, year)

C#	Poliomyelitis	DT	HBV	MMR1	MMR2
	VC range % (year)	VC range % (year)	VC range % (year)	VC range % (year)	VC range % (year)
AM	92-99 (2014)	91-98 (2014)	90-98 (2014)	95-99 (2014)	94-99 (2014)
BA	68-100 (2014)	61-100 (2014)	72-99 (2014)	51-100 (2014)	62-99 (2014)
EG	95-98.5 (2015)	95-98.5 (2015)	92-98.5 (2015)	62-98 (2015)	65-98 (2015)
GE	86-96 (2014)	87-99 (2014)	87-99 (2014)	88-97 (2014)	70-98 (2014)
IL	94-99 (2015)	87-97 (2015)	96-99 (2015)	87-98 (2015)	not reported
JO	95-100 (2015)	94-100 (2015)	94-100 (2015)	85-100 (2015)	91-100 (2015)
MD	80-100 (2015)	79-99.5 (2015)	84-99 (2015)	78-100 (2015)	85-100 (2015)
MK	92-100 (2014)	91-100 (2014)	94-100 (2014)	87-100 (2014)	92-100 (2014)
RS	95-96 (2014)	94.5-96 (2014)	74-90 (2014)	86-86 (2014)	not reported
TN	95-99.5 (2014)	95-99.5 (2014)	95-99.5 (2014)	91-100 (2014)	86-100 (2014)
UA	34-93 (2014)	23-84 (2014)	53-76 (2014)	55-91 (2014)	not reported
XK	87-100 (2015)	87-100 (2015)	87-100 (2015)	not reported	89-100 (2015)

[#] Country abbreviation; VC: Vaccine Coverage

Immunization strategies targeting newly arrived migrants

Seven out of 15 countries reported not to have regulations/procedures supporting immunisation of newly arrived migrants (BA, EG, MD, MK, TN, UA, XK). Egypt, Moldova, Republic of Macedonia-FYROM, and Tunisia, although reporting that no specific policies for migrants are in place, provided all the requested information on vaccination offer targeting newly arrived migrants as described below.

Four countries (AL, IL, PS, RS) reported to have regulations/procedures targeting migrants at the national level, while Algeria reported to have regulations/procedures only in southern borders.

Four countries reported to have regulations for specific conditions, for example people from specific countries of origin. Israel reported to have specific indications for people aged 0-14 years arriving from horn of Africa and Jews from Ethiopia and for undocumented migrants aged 0-17 years held in detention facilities. Armenia has indications for catching up unregistered people, including migrants, through door to door visits twice a year. Georgia has specific indications for persons coming from Nigeria, Pakistan, Afghanistan and Syria. Jordan has specific indications for Syrian refugees.

The following descriptive analysis is referred to the 11 countries that replied to the other questions regarding immunization strategies targeting migrants (AL, AM, EG, GE, IL, JO, MD, MK, PS, RS, TN).

Three countries (AM, MD, PS) reported to routinely check immunisation status of newly arrived migrants, generally through anamnesis and verification of immunisation card. Only Moldova reported to use serological testing for Hepatitis B, MR and DT. Three countries reported to check immunisation status only in some conditions: Israel in case of children arriving from countries endemic for tuberculosis or meningitis; Tunisia in case of students coming from certain African countries and GEORGIA in case of people coming from Nigeria, Syria, Afghanistan and Pakistan are checked for poliomyelitis immunity.

Four countries (AL, JO, MK, RS) do not routinely check immunisation status of newly arrived migrants (Figure 1).

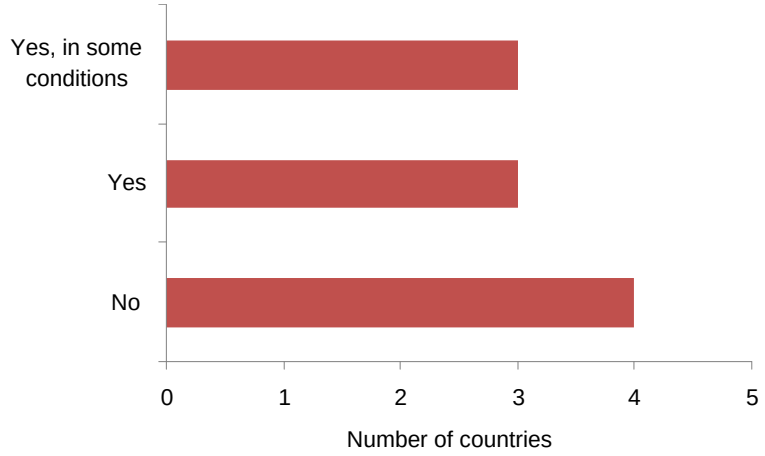

Figure 1. Checking of migrants' immunization status, in countries from Mediterranean Basin and Black Sea (n. 10)

Eight countries (AM, AL, EG, IL, JO, MD, PS, TN) offer to children all the vaccination included in the NIP. Three countries reported to offer selected vaccinations to migrants: Republic of Macedonia-FYROM offers poliomyelitis and MMR vaccines; Serbia offers poliomyelitis, MMR and DTP vaccines; Georgia offers Poliomyelitis vaccine to people arriving from Nigeria, Pakistan, Afghanistan and Syria (Figure 2).

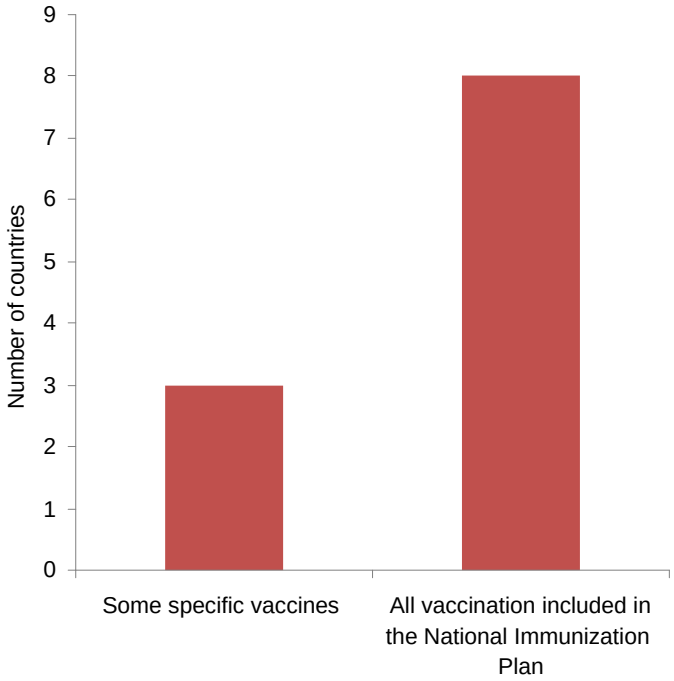

Figure 2. Pediatric vaccinations offered to newly arrived migrants, in countries from Mediterranean Basin and Black Sea (n. 11)

Four countries (AL, IL, JO, MD) offer some vaccines at the community level and others in the holding centres. In the holding centres, MMR, poliomyelitis and DT vaccines are offered in Albania; MMR and poliomyelitis vaccines in Jordan; MMR, poliomyelitis and DTP in Moldova; the Israeli government established public health clinics in Ethiopia where meningococcal vaccine is given to Jews arriving from Ethiopia, before leaving the country. In Egypt childhood vaccinations are given at the community level, while an extra-dose of bOPV vaccine is administered at entry site to migrants at any age coming from countries considered at risk for poliomyelitis according to the last updated report of the international health emergency committee (according to International Health Regulations 2005), and if they do not have a certificate of being vaccinated during the last 12 months. Three countries (AM, PS, RS) deliver vaccinations only at the community level. The Republic of Macedonia-FYROM offers MMR and poliomyelitis vaccines at entry level and Georgia gives OPV to migrants arriving from risk territories (Nigeria, Syria, Afghanistan and Pakistan) in the vaccination service points settled in the airports and seaports (Figure 3).

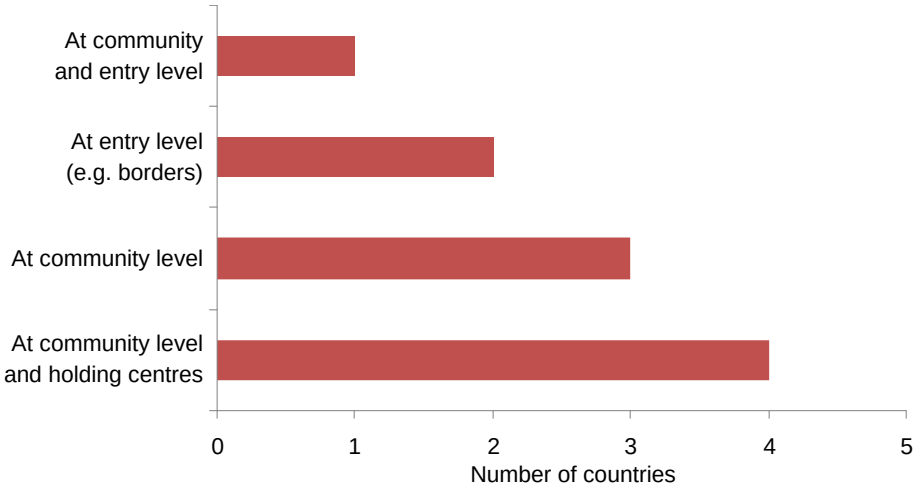

Figure 3. Sites for vaccination delivery, in countries from Mediterranean Area and Black Sea Basin (n. 10)

Out of the 10 countries that provided information on how data in vaccination administered to migrants are recorded, 7 countries (AL, AM, GE, IL, JO, MD, PS) deliver an immunization card to migrants and enter data into immunisation registries; two countries (EG, MK) only records vaccination in the routinary immunisation registries and another one (RS) only delivers an immunization card to migrants.

Discussion and conclusions

The added value of the ProVacMed project is the establishment of a new network of non EU countries of the Mediterranean Basin and Black Sea experts working in the field of vaccination. The creation of an active network of people from this area, collecting and sharing experiences

and expertise on vaccination, is an important step for health threats preparedness involving these Regions.

Partial information of immunization strategies and coverage of these countries are yearly collected and published on the WHO website, together with data from all the other world countries (7,8). While for EU countries, information on immunization strategies, schedules and coverage are available on the ECDC (European Centre for Disease Prevention and Control) website (9) and the site of the VENICE (Vaccine European New Integrated Collaboration Effort) project (10), no specific documents regarding the Mediterranean Basin and Black Sea were available until now.

This report represents the product of the collaboration of the Network and includes specific country profiles, depicting an exhaustive overview of immunization policies and coverage data in the Mediterranean Basin and Black Sea.

The main points of the report are summarized below.

- Vaccination strategies for the six diseases selected for the project (poliomyelitis, diphtheria-tetanus, measles, rubella and hepatitis B) are well consolidated in all the countries of the Network, with immunization schedules that vary among countries in terms of number of doses and type of vaccine offered. These vaccines are free of charge in all countries (with the exception of Georgia, where dT booster in adults is fully paid by recipients). Immunization schedules for poliomyelitis and diphtheria-tetanus-pertussis show the higher variability among countries in terms of number of doses, age groups and type of product.
- According to WHO indications (recommending to introduce inactivated poliomyelitis vaccine before the shift from tOPV to bOPV) (11), almost all countries have introduced or are going to introduce IPV vaccine, that in EU countries is the only vaccine used since a long time.
- A part of vaccination for the six selected VPDs, all countries offer vaccination against tuberculosis and Hib. PCV is offered in 7 countries, vaccination against rotavirus in 6 countries, HPV in 2 countries and varicella and hepatitis A in one country.
- Ten of 15 countries reported to have conducted several SIAs in the last 5 years, mainly for improving coverage rates for measles-rubella and poliomyelitis, both target of global elimination/eradication plans (11,12).
- Definitions of numerator and denominator vary among countries, depending on immunization schedule. Although data should be interpreted and compared among countries with caution, due to different method of vaccination coverage assessment, a coverage $\geq$ 95% is achieved in 9 countries for the primary cycle of poliomyelitis, in 6 countries for the primary series of DT and 9 countries for 2 MMR doses.
- This report firstly provides coverage data for paediatric vaccination at subnational level for 12 countries. There is a certain degree of coverage variability among sub-national units in all countries and for all vaccines.
- As well as in EU, still a very few countries assess vaccination coverage in adolescents (DT in 6 countries, poliomyelitis in 4 countries, MMR in 2 countries, hepatitis B in one country).
- Vaccination coverage is not routinely assessed in adult population. Only Armenia reported vaccination coverage estimate for DT among adults.
- No country performs the assessment of vaccination coverage of risk groups.
- Given that most migrants come from countries where vaccination programmes have been interrupted by civil unrest and war and pockets of susceptible people remain in the host countries, immunization of migrants represents an important issue.

- The frequency of vaccinations related activities, potentially in relation to migratory pressure, support the idea of a conceptual shift from a Eurocentric vision of migration with a predominant South-North trend to a more regional "migration system-like" approach. As not all migrants reaching northern Africa or the Balkans manage to reach their final destinations in Europe, some may opt to stay in the "transit country" or move to another country within the Region. For this reason, all EU neighbouring countries have been associated with transit migration and are increasingly becoming long term or final destinations for a growing number of mixed migrants. In this perspective, migration, and its management, is also a concern for the "transit countries".
- This report firstly provides an overview of immunization policies targeting newly arrived migrants. Eight out of 15 countries have regulations supporting vaccination of newly arrived migrants. Ten countries, independently of regulations, offer some vaccinations to migrants. Seven countries offer to children all the vaccination included in the NIP, in the other countries MMR and poliomyelitis vaccinations represent the priority. Recording and transmission among public health authorities of information on administered vaccines to migrants remains a crucial aspect.
- As observed, vaccination programmes are well consolidated across the Mediterranean Basin and Black Sea. However, the findings also highlights that there may be areas for improvement of vaccination programmes in this Region and there may be a need for further guidance or official documents on this topic.

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APPENDIX
Country profiles

A. ALBANIA

In Albania the National Immunization Plan includes children, adolescents and risk groups.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table A1 and Table A2.

Table A1. National immunization calendar: 0-24 months of age, Albania

VPD	Birth	Months				
		2	4	6	10	12
Tuberculosis	BCG					
Poliomyelitis		IPV	IPV	IPV/bOPV*		
Diphtheria		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Tetanus		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Pertussis		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Hepatitis B	HepB	DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Haemophilus influenzae type b		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Pneumococcus**		PCV	PCV		PCV	
Measles						MMR
Rubella						MMR
Mumps						MMR

*It can be IPV or bOPV. It depends on vaccine availability;
**Conjugate pneumococcal vaccine 10-valent

Table A2. National immunization calendar: infants from 2 years of age, adolescents and adults, Albania

VPD	Years					Adults
	2	5	6	14	18	
Tuberculosis						
Poliomyelitis	IPV/bOPV*		IPV/bOPV*			
Diphtheria	DTP		DT	dT	dT	dT - one dose
Tetanus	DTP		DT	dT	dT	dT - one dose
Pertussis	DTP					
Hepatitis B						
Haemophilus influenzae type b						
Pneumococcus**						
Measles		MMR				
Rubella		MMR				
Mumps		MMR				

*It can be IPV or bOPV. It depends on vaccine availability;
**Conjugate pneumococcal vaccine 10-valent

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Vaccination against diphtheria-tetanus and one dose of MR/MMR vaccine are offered to unimmunized adolescents and adults.

In the period 2009-2011 a national mop-up campaign was conducted to vaccinate against hepatitis B unimmunized adolescents born in 1992-1994, students of Medicine faculty and health care staff. Vaccination was offered at health centres, universities and hospitals.

A national catch up campaign was started in 2016 (still on-going at the time of the survey) by offering at health centres MR/MMR vaccine to adults born in 1980-1990 and individuals who have missed revaccination in 2000-2001.

In some areas with high Roma minorities' concentration, supplementary immunization activities are continuously carried out by offering, at health centres or during organized events, all the missed vaccines to children and adolescents up to 18 years.

Coverage data from SIA are not merged in the routine assessment of vaccination coverage.

Recommendations to risk groups

Poliomyelitis vaccination

One dose of OPV vaccine is offered to travellers to risk areas every 10 years and to people who come in close contact with those who may be excreting poliovirus (e.g. people working with refugees), funded by government.

Measles-rubella vaccination

One dose of MR/MMR vaccine is offered to non-immune military personnel and non-immune students attending colleges or other post-high school educational institutions.

On request, it is offered to non-immune health care workers and non-immune household and close contacts of immunocompromised persons.

Hepatitis B

Four doses of hepatitis B vaccine (birth, 2-4-6 months) are offered to all newborns in order to protect babies born to mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy.

Three doses of Hepatitis B vaccine (at 0-1-6 months) are offered to travellers to HBV endemic areas, household contacts of persons with chronic HBV infection, injection-drug users, men who have sex with men, commercial sex workers, inmates of custodial institutions and correctional facilities, healthcare workers (including students and trainees), laboratory staff exposed to blood, individuals receiving regular blood or blood products, haemodialysis patients or patients with chronic renal failure.

Recommendations to newly arrived migrants

Migrant children are offered all the vaccination included in the NIP. Adolescents and adults are offered vaccinations against poliomyelitis, tetanus, diphtheria and MMR at holding centres (detention centres) and/or at the community level.

Information regarding the administered doses is recorded in a national immunization registry for migrants (separate from routine immunization registry). An immunization card is delivered to migrants after vaccination.

National vaccination coverage estimates

National vaccination coverage is assessed quarterly through the administrative method. Coverage estimates are reported in Table A3.

Table A3. National vaccination coverage estimates, Albania

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2015	98.8	children 12 mos vaccinated with 3 doses	surviving infants
Diphtheria-Tetanus (children)	2015	98.8	children 12 mos vaccinated with 3 doses	surviving infants
Diphtheria-Tetanus (adolescents)	2015	97.4	14 yrs vaccinated with dT booster	adolescents 14 yrs
Hepatitis B (children)	2015	98.8	children 12 mos vaccinated with 3 doses	surviving infants
MMR - 1 dose (children)	2015	97.1	children 12 mos vaccinated with 1 dose	children 12 mos
MMR - 2 doses (children)	2015	97.8	children 5 yrs vaccinated with 2 doses	children 5 yrs

B. ALGERIA

In Algeria the National Immunization Plan includes children, adolescents and risk groups.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table B1 and Table B2.

Table B1. National immunization calendar: 0-24 months of age, Algeria

VPD	Birth	Months					
		2	3	4	11	12	18
Tuberculosis	BCG						
Poliomyelitis	bOPV	bOPV	IPV	bOPV		bOPV	
Diphtheria		DTP-HepB-Hib		DTP-HepB-Hib		DTP-HepB-Hib	
Tetanus		DTP-HepB-Hib		DTP-HepB-Hib		DTP-HepB-Hib	
Pertussis		DTP-HepB-Hib		DTP-HepB-Hib		DTP-HepB-Hib	
Hepatitis B^	HepB	DTP-HepB-Hib		DTP-HepB-Hib		DTP-HepB-Hib	
Haemophilus influenzae type b		DTP-HepB-Hib		DTP-HepB-Hib		DTP-HepB-Hib	
Pneumococcus		PCV		PCV		PCV	
Measles^^					MMR		MMR
Rubella^^					MMR		MMR
Mumps					MMR		MMR

^until 2014 a 3-dose schedule for Hepatitis B was planned, at birth, 1 and 5 months
^^unitl 2016 monovalent vaccines were used, given at 9 months and 6 years

Table B2. National immunization calendar: infants from 2 years of age, adolescents and adults, Algeria

VPD	Years			Adults
	6	11-13	16-18	
Tuberculosis				
Poliomyelitis	bOPV	bOPV		
Diphtheria	DTP	dT	dT	every 10 years
Tetanus	DTP	dT	dT	every 10 years
Pertussis	DTP			
Hepatitis B				
Haemophilus influenzae type b				
Pneumococcus				
Measles^				
Rubella^				
Mumps				

^unitl 2016 monovalent vaccines were used, given at 9 months and 6 years

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

MMR vaccine is offered to all unimmunized adolescents and adults. A MMR booster is planned during outbreaks. No SIAs have been conducted in the last 5 years.

Recommendations to risk groups

No recommendation for risk group are considered.

Recommendations to newly arrived migrants

The following analysis is based on two different movements of people in Algeria, both with a regular and/or irregular status. The first migration flow consists of cross-border migrations, especially from southern neighbouring countries (Niger and Mali) and other Maghreb countries (Morocco and Tunisia). The second is an economic migration flow for international cooperation (technical, civil) among Algeria, France, Arab countries and Eastern European countries.

A migratory flow increase was observed in Algeria from the mid-1970s, linked in particular with the arrival of refugees from the Western Sahara territory: about 10,000 migrants were recorded in 1975, there are more than 150,000 in 2010.

Algeria is, in relative terms, the central Maghreb country that hosted, and still is hosting, the largest number of foreigners compared to its neighbourhood countries (Morocco, Tunisia).

In 2010, the foreign population in Algeria is estimated around 318,000 migrants, as maximum hypothesis, or 0.9% of the total resident population of Algeria. These estimates are based on a range of sources and available data: the greatest difference comes from the breakdown of refugees provided by the Department of the Ministry of Foreign Affairs (MFA) and that from the High Commissioner for the United Nations Refugee Agency (UNHCR). The Algerian border with Mali and Niger in the Northern Sahel is porous. People in the 18-40 age group commonly use tribal alliances and/or cross-border family ties to migrate to the "Grand Sud" urban agglomerations and other Saharan agglomerations.

The situation of foreigners in Algeria deserves constant observation as flows become more and more complex.

In 2011, the Arab Spring affected migration flows in Algeria with a return of Algerian migrants as well as an increase in inflows of Tunisian and Libyan families. At the southern borders, in addition to sub-Saharans of several nationalities, nearly 30,000 people from Mali were escaping to Algeria. Among those, many were Algerian nationals that had been living in Mali for a long time.

Recently the Ministry of Foreign Affairs has set up a multidisciplinary committee for the migrant population and the Ministry of Health is involved in order to have the profile of the migrant population.

There are transition centres in all the national territory, especially in the South, where migrants receive systematic medical visits, care and immunization. There are also vaccination campaigns for the migrant population. Every migrant has the right to medical care in any health facility.

National vaccination coverage estimates

National vaccination coverage is assessed quarterly and yearly through the administrative method. Coverage estimates are reported in Table B3.

Table B3. National vaccination coverage estimates, Algeria

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	95	children 12 mos vaccinated with 3 doses	children 12 mos
Diphtheria-Tetanus (children)	2014	95	children 12 mos vaccinated with 3 doses	children 12 mos
Hepatitis B (children)	2014	95	children 12 mos vaccinated with 3 doses	children 12 mos
MMR - 2 doses (children)	2014	95	children 24 mos vaccinated with 2 doses	children 24 mos

C. ARMENIA

In Armenia the National Immunization Plan includes children, adolescents, adults and risk groups.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table C1 and Table C2.

Table C1. National immunization calendar: 0-24 months of age, Armenia.

VPD	Birth	Weeks				Months	
		6	12	18	24	12	18
Tuberculosis	BCG						
Poliomyelitis		bOPV	bOPV	bOPV	IPV		bOPV
Diphtheria		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP-HepB-Hib
Tetanus		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP-HepB-Hib
Pertussis		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP-HepB-Hib
Hepatitis B	HepB	DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP-HepB-Hib
Haemophilus influenzae type b		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP-HepB-Hib
Pneumococcus*		PCV	PCV	PCV			
Rotavirus		RV	RV				
Measles						MMR	
Rubella						MMR	
Mumps						MMR	

*Conjugate pneumococcal vaccine 10-valent

Table C2. National immunization calendar: infants from 2 years of age, adolescents and adults, Armenia.

VPD	Years	Adults
	15-16	
Tuberculosis		
Poliomyelitis		
Diphtheria	Td	Td, every 10 years
Tetanus	Td	Td, every 10 years
Pertussis		
Hepatitis B		
Haemophilus influenzae type b		
Pneumococcus		
Rotavirus		
Measles		
Rubella		
Mumps		

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Special schedules are in place to catch up unimmunized individuals up to 16 years. No SIA has been conducted in the last 5 years

Recommendations to risk groups

Poliomyelitis vaccination

Poliomyelitis bOPV vaccine is free-of-charge offered to newly arrived migrants under 15 years, with 4 doses for children aged 1-6 years and 3 doses for children/adolescents aged 6-15 years. Additionally, one dose of IPV is offered if they have never received tOPV.

Tetanus-diphtheria vaccination

Vaccination against diphtheria-tetanus is free-of-charge offered to newly arrived migrants, according to NIP.

Hepatitis B

Three doses of hepatitis B Vaccine (0-1-6 months) is recommended in risk groups: health care workers, who are in contact with blood, individuals who are in contact with patients with acute or chronic hepatitis B patients, who receive dialysis, children of special schools and their staff, patients with diabetes.

Recommendations to newly arrived migrants

Door to door visits are planned twice a year in order to identify unregistered population including migrants. Once identified migrants or unregistered population they are invited to health care facilities for registration and check-up of their health and immunization status. Immunization status is checked through verification of immunization cards for poliomyelitis, diphtheria, tetanus, hepatitis B, MMR, Hib, HAV, influenza and pneumococcal vaccine. If necessary individual immunization plans are developed for children, adolescents and adults; vaccinations are delivered at the community level. Information on administered vaccinations is recorded on individual immunization cards and in the routine (paper) immunization registries.

National vaccination coverage estimates

National vaccination coverage is monthly assessed through the administrative method. Coverage estimates are reported in Table C3.

Table C3. National vaccination coverage estimates, Armenia

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	95	children 11 mos 29 day vaccinated with 3 doses	children 11 mos 29 day
Diphtheria-Tetanus (children)	2014	93	children 11 mos 29 day vaccinated with 3 doses	children 11 mos 29 day
Diphtheria-Tetanus (adolescents)	2014	82	adolescents 15-16 yrs vaccinated with appropriate number of doses for age	adolescents 15-16 yrs
Diphtheria-Tetanus (adults)	2014	7	adult s >18 yrs vaccinated with appropriate number of doses for age	Adults >18 yrs
Hepatitis B (children)	2014	93	children 11 mos 29 day vaccinated with 4 doses	children 11 mos 29 day
MMR - 1 dose (children)	2014	97	children 23 month 29 day vaccinated with 1dose	children 23 mos 29 day
MMR - 2 doses (children)	2014	97	children 6 yrs 11 mos 29 day vaccinated with 2 doses	children 6 yrs 11 mos 29 day

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures C1-C5.

Figure C1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age. Armenia, 2014

Figure C2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Armenia, 2014

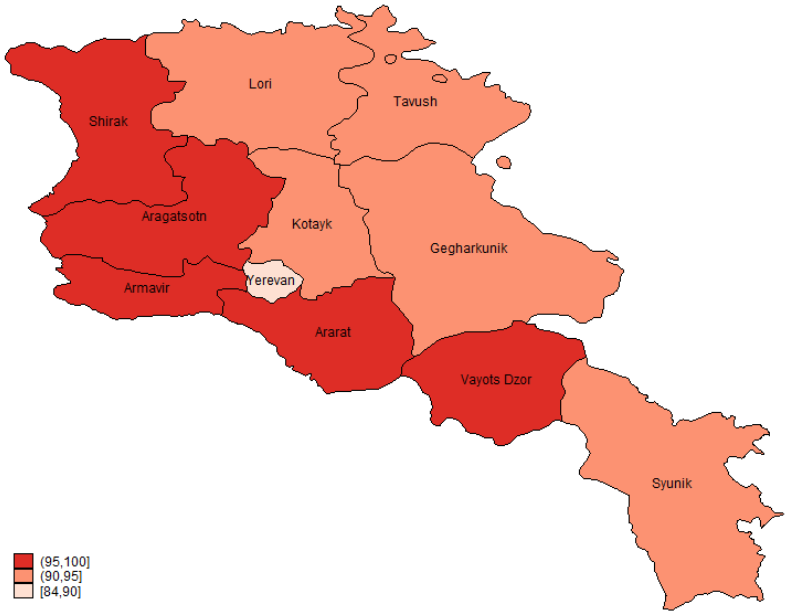

Figure C3. Sub-national coverage for 4 doses of hepatitis B vaccine at 12 months of age. Armenia, 2014

Figure C4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Armenia, 2014

Figure C5. Sub-national coverage for 2 doses of MMR vaccine at 7 years of age. Armenia, 2014

D. BOSNIA AND HERZEGOVINA

In Bosnia and Herzegovina there are three different Immunization Plans in three different areas (Federation BiH, Republic of Srpska and Brcko District), including children, adolescents and risk groups.

According to regional organization, vaccines are fully funded by government in the Federation BiH and Brcko District (BD); they are fully funded by Health Insurance Funds in the Republic of Srpska.

Schedules vary at sub-national level as reported in Tables D1-D4.

Table D1. National immunization calendar: 0-18 months of age, BiH Federation, Bosnia and Herzegovina

VPD	Birth	Months					
		1	2	4	6	12	18
Tuberculosis	BCG						
Poliomyelitis*			IPV	IPV	IPV		tOPV
Diphtheria*			DTaP	DTaP	DTaP		
Tetanus*			DTaP	DTaP	DTaP		
Pertussis*			DTaP	DTaP	DTaP		
Haemophilus influenzae type b*			Hib	Hib			Hib
Hepatitis B	HepB	HepB			HepB		
Measles						MMR	
Rubella						MMR	
Mumps						MMR	

*different combined vaccines are used depending on tender and age.

Table D2. National immunization calendar: infants from 2 years of age, adolescents and adults, BiH Federation, Bosnia and Herzegovina

VPD	Years			
	5	6	14	18
Tuberculosis				
Poliomyelitis*	DTaP-IPV		tOPV	
Diphtheria*	DTaP-IPV		dT	TT**
Tetanus*	DTaP-IPV		dT	
Pertussis*	DTaP-IPV			
Haemophilus influenzae type b*				
Hepatitis B				
Measles		MMR		
Rubella		MMR		
Mumps		MMR		

*different combined vaccines are used depending on tender and age. **TT booster will be removed in 2017.

Table D3. National immunization calendar: 0-18 months of age, Republic of Srpska and Brcko District, Bosnia and Herzegovina

Vaccine	Birth	Months						
		1	2	3	4	6	12	18
Tuberculosis	BCG							
Poliomyelitis*			IPV	IPV	IPV			tOPV
Diphtheria*			DTP	DTP	DTP			DTP
Tetanus*			DTP	DTP	DTP			DTP
Pertussis*			DTP	DTP	DTP			DTP
Haemophilus influenzae type b*			Hib	Hib	Hib			
Hepatitis B	HepB	HepB				HepB		
Measles							MMR	
Rubella							MMR	
Mumps							MMR	

*different combined vaccines are used depending on tender and age.

Table D4 National immunization calendar: infants from 2 years of age, adolescents and adults, Republic of Srpska and Brcko District, Bosnia and Herzegovina

Vaccine	Years				
	2	5	6	14	18
Tuberculosis					
Poliomyelitis*			tOPV	tOPV	
Diphtheria*			DTP	dT	
Tetanus*			DTP	dT	TT**
Pertussis*			DTP	dT	
Haemophilus influenzae type b*					
Hepatitis B					
Measles			MMR		
Rubella			MMR		
Mumps			MMR		

*different combined vaccines are used depending on tender and age. **TT booster in Republic of Srpska

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

A full series of poliomyelitis vaccine is offered to all unimmunized adolescents up to 14 years. MMR vaccine is offered to all adolescents 15-18 years who are not immunized or not completely immunized (one or two doses depending on vaccination status).

In Federation BiH, diphtheria-tetanus vaccine is offered to all unimmunized adolescents up to 14 years. Unimmunised children below 5 years are offered 3 doses of DT vaccine at 0,1,2 months plus a booster one year later. Unimmunised children aged 5-14 years are offered 2 doses of diphtheria-tetanus vaccine (DT or dT depending on age) at 0, 1 months plus one booster after one year.

No SIAs have been conducted in the last 5 years.

Recommendations to risk groups

Hepatitis B

A full 3-doses series of monovalent hepatitis B vaccine (0-1-6 months) is offered to: household contacts of persons with chronic HBV infection, developmentally disabled persons in long-term-care health institutions, injection-drug users, healthcare workers (including students and trainees), laboratory staff exposed to blood, staff of residential and other accommodation for developmentally disabled persons, public safety or emergency workers (such as police, fire and rescue services…), other occupational risk groups, individuals receiving regular blood or blood products. For individuals at occupational risk vaccination is usually paid by the company which is organizing vaccination for their employees.

A full 4-doses series (0-1-2-6 months) of monovalent hepatitis B vaccine is offered to patients with immunosupression.

Monovalent hepatitis B vaccine is offered to babies born to mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy and hemodialysis patients or patients with chronic renal failure with a 3-doses (0-1-6 months) or 4-doses (0-1-2-12 months) schedule (varying by areas).

Travellers to HBV endemic areas are recommended to be vaccinated with 3 doses of hepatitis B vaccine; vaccine is paid by recipients.

Recommendations to newly arrived migrants

No specific immunization strategies are in place for newly arrived migrants.

National vaccination coverage estimates

National vaccination coverage is assessed quarterly through the administrative method. Coverage estimates are reported in Table D5.

Table D5. National vaccination coverage estimates, Bosnia and Herzegovina

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	86	children 12 mos vaccinated with 3 doses	children 12 mos
Diphtheria-Tetanus (children)	2014	86	children 12 mos vaccinated with 3 doses	children 12 mos
Hepatitis B (children)	2014	89	children 12 mos vaccinated with 3 doses	children 12 mos
MMR - 1 dose (children)	2014	89	children 24 mos vaccinated with 1 dose	children 24 mos
MMR - 2 doses (children)	2014	89	children 6 yrs vaccinated with 2 doses	children 6 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures D1-D5

Children of two local units of the Federation of BiH (Posavski kanton, Zapadno-hercegovački kanton) are also vaccinated in Republic of Croatia (share borders); in this case, coverage data are not always included in the reports of these countries, thus reducing the level of coverage in the Federation of BiH.

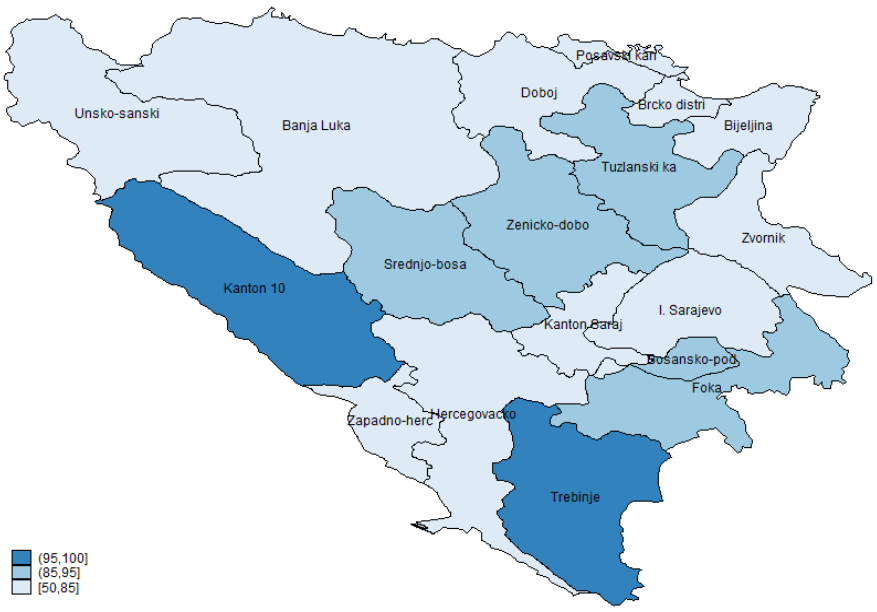

Figure D1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age. Bosnia and Herzegovina, 2014

Figure D2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Bosnia and Herzegovina, 2014

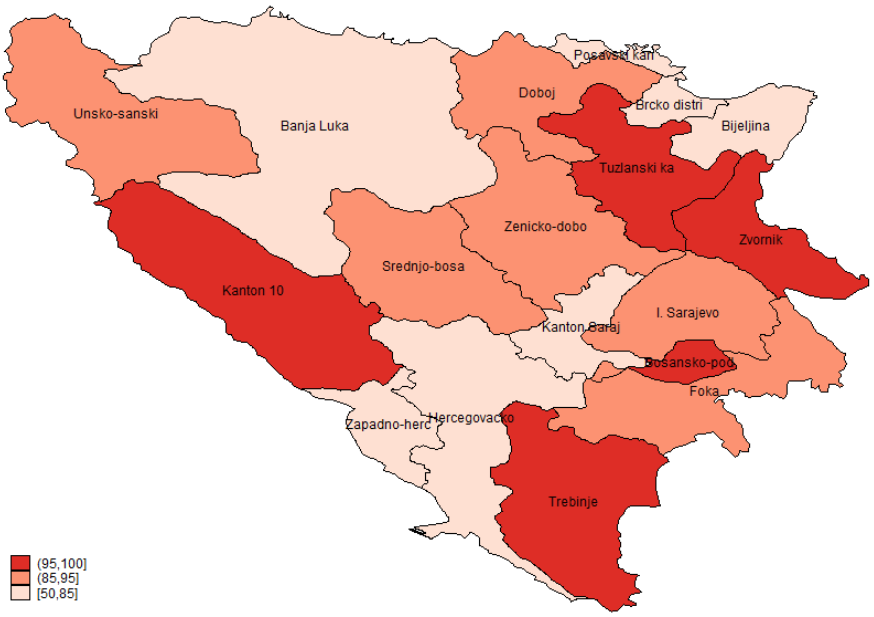

Figure D3. Sub-national coverage for 3 doses of hepatitis B vaccine at 12 months of age. Bosnia and Herzegovina, 2014

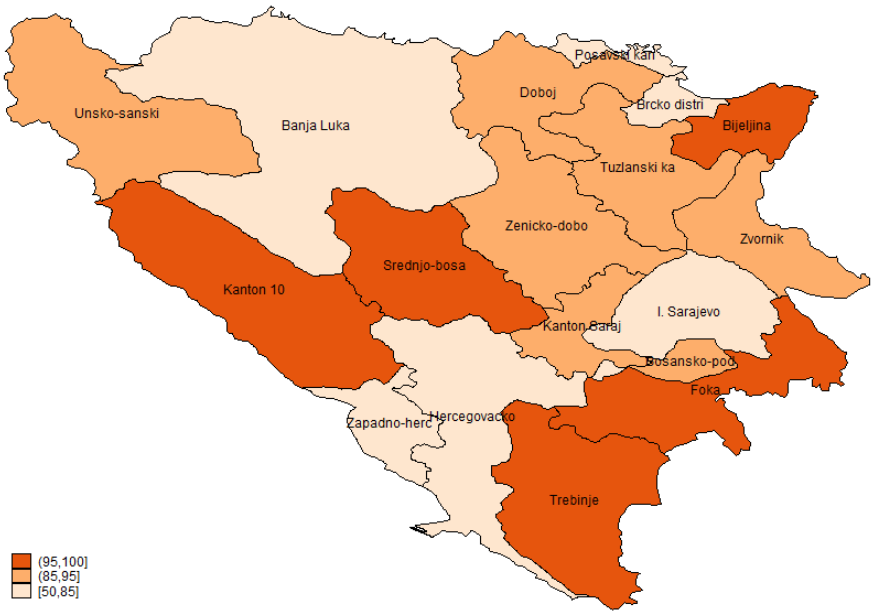

Figure D4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Bosnia and Herzegovina, 2014

Figure D5. Sub-national coverage for 2 doses of MMR vaccine at 6 years of age. Bosnia and Herzegovina, 2014

E. EGYPT

In Egypt there is a National Immunization Plan targeting children.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table E1 and Table E2.

Table E1. National immunization calendar: 0-24 months of age, Egypt

VPD	Birth	From birth to 15 days	Months					
			2	4	6	9*	12	18*
Tuberculosis		BCG						
Poliomyelitis	bOPV		bOPV	bOPV	bOPV	bOPV	bOPV	bOPV
Diphtheria			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP
Tetanus			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			DTP
Hepatitis B	HepB		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			
Haemophilus influenzae type b			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib			
Measles							MMR	MMR
Rubella							MMR	MMR
Mumps							MMR	MMR

*at 9 and 18 months also Vitamin A is offered

Table E2. National immunization calendar: infants from 2 years of age, Egypt

VPD	Years	
	7	9
Tuberculosis		
Poliomyelitis		
Diphtheria	DT	DT
Tetanus	DT	DT
Hepatitis B		
Haemophilus influenzae type b		
Measles		
Rubella		
Mumps		

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Very intense efforts for improving vaccination coverage were done. Several 4-5 days of vaccination with tOPV were carried out, at national and sub-national level, to cover children less than 5 years through visits from home to home. Vaccination coverage achieved in the campaigns was 98-100%. Coverage data from SIAs are not merged in the routine assessment of vaccination coverage. Details on the catch-up and follow-up campaigns are reported in Table E3.

Table E3. Immunization catch-up and follow-up campaigns. Egypt, 2011-2016

Vaccine	National / subnational level	Time period	Modality/site of vaccine delivery	Target group
MR	national	31 Oct - 20 Nov 2015	health facilities, schools, nurseries and public places	9 mos - 10 yrs
MR	subnational (fronteer governorates)	9-19 Apr 2016	health facilities, schools, nurseries and public places	11-20 yrs
tOPV	subnational (Aswan)	23-26 May 2011	from home to home	less than 5 yrs
tOPV	national	2-5 Oct 2011	from home to home	less than 5 yrs
tOPV	national	21-24 Apr 2012	from home to home	less than 5 yrs
tOPV	subnational (Hagana Nasr, Salam 172)	3-6 Feb 2013	from home to home	less than 5 yrs
tOPV	subnational (Cairo, Qualiobeya, Giza)	10-14 Mar 2013	from home to home	less than 5 yrs
tOPV	subnational (Cairo , Qualiobeya, Giza)	14-18 Apr 2013	from home to home	less than 5 yrs
tOPV	national	17-20 Nov 2013	from home to home	less than 5 yrs
tOPV	national	29 Dec 2013 - 1 Jan 2014	from home to home	less than 5 yrs
tOPV	subnational (North Sini)	3-6 Mar 2014	from home to home	less than 5 yrs
tOPV	national	4-6 Apr 2014	from home to home	less than 5 yrs
tOPV	national	26-29 Oct 2014	from home to home	less than 5 yrs
tOPV	national	19-22 Apr 2015	from home to home	less than 5 yrs
tOPV	Subnational (Red sea)	17-20 Aug 2015	from home to home	less than 5 yrs
tOPV	Subnational (Cairo, Giza)	27-30 Dec 2015	from home to home	less than 5 yrs
tOPV	national	21-24 Feb 2016	from home to home	less than 5 yrs
tOPV	Subnational (Cairo, Giza)	21-24 Mar 2016	from home to home	less than 5 yrs
tOPV	Subnational (South Sinai)	30 Apr – 3 May 2016	from home to home	less than 5 yrs

Recommendations to risk groups

Poliomyelitis vaccination

One dose of poliomyelitis bOPV vaccine is recommended to:

- newly arrived migrants at entry site, fully funded by government;
- international travellers (4 weeks – one year before the travel), fully in charge of the recipients.

Vaccination is recommended to international travellers only if the travel is to or from one country of those declared by International Health Regulation (IHR) updates.

Hepatitis B

A 3-doses series of monovalent Hepatitis B vaccine (0-1-6 months) is offered and fully funded by government to health care workers, haemodialysis patients or patients with chronic renal failure and HCV infected patients.

Recommendations to newly arrived migrants

Migrants of all ages are recommended to get one dose of bOPV at the entry site, fully funded by government, if they are coming from one of those countries announced at the last updated reports by the international health emergency committee (according to IHR 2005), and if they don't have a certificate of being vaccinated during the last 12 months.

Migrants at the age of vaccination (less than 2 years old) are vaccinated according to the national immunization schedule and children less than 4 years get all missed doses according to the national schedule (Table E1). An extra dose of bOPV is given to children, adolescents and adults at any age if coming from a country declared to have polio epidemic at the last updated report of the international health emergency committee (according to International Health Regulations 2005), and if don't have a certificate of being vaccinated during the last 12 months.

National vaccination coverage estimates

National vaccination coverage is monthly assessed through administrative method. Coverage estimates are reported in Table E4. Every five years, coverage is also assessed by conducting a field coverage survey.

Table E4. National vaccination coverage estimates. Egypt, 2015

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2015	94	children 6 mos vaccinated with 3 doses OPV	children 6 mos
Diphtheria-Tetanus (children)	2015	94	children 6 mos vaccinated with 3 doses DPT or DT	children 6 mos
Hepatitis B (children)	2015	94	children 6 mos vaccinated with 4 doses of Hep B or pentavalent vaccine	children 6 mos
MMR - 1 dose (children)	2015	93	children 12 mos vaccinated with 1 MMR dose	children 12 mos
MMR - 2 doses (children)	2015	93	children 18 mos vaccinated with 2 MMR doses	children 18 mos

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations, assessed in children through administrative method, are reported in Table E5.

Table E5. Childhood vaccination coverage (%), by sub national area. Egypt, 2015

Subnational territory	Subnational population size out of national population size	Coverage for				
		3 doses of OPV at 6 mos	3 doses of DT/DTP at 6 mos	4 doses of Hep B at 6 mos	1 dose of MMR at 12 mos	2 doses of MMR at 18 mos
Cairo	11.1	65.0*	65.0*	65.0*	62.3*	64.9*
Alexandria	5.3	97.0	97.0	97.0	97.1	97.1
Port Said	0.7	96.1	96.1	96.1	95.9	95.9
Suez	0.7	97.8	97.8	97.8	97.1	97.3
Ismaeelya	1.3	98.1	98.1	98.1	97.7	97.2
Damietta	1.4	95.8	95.8	95.8	94.5	94.3
New Valley	0.3	97.5	97.5	97.5	96.6	96.6
Matroh	0.5	96.5	96.5	96.5	93.5	92.4
Red Sea	0.5	98.5	98.5	98.5	97.7	97.1
Behera	7.2	97.5	97.5	97.5	97.0	96.9
Gharbeya	5.5	97.1	97.1	97.1	96.9	97.0
K El Shekh	3.5	97.2	97.2	97.2	96.7	96.3
Menofeya	4.4	98.2	98.2	98.2	97.8	97.7
Dakahley	6.7	97.0	97.0	97.0	97.0	97.1
Sharkeya	7.4	97.6	97.6	97.6	97.0	96.8
Kalioubia	5.7	97.4	97.4	97.4	95.8	96.4
Giza	8.5	90.3**	90.3**	90.3**	86.9**	88.4**
Fayoum	3.5	96.7	96.7	96.7	96.7	96.8
Beni Sweef	3.1	97.0	97.0	97.0	96.6	96.5
Menya	5.9	97.2	97.2	97.2	96.6	96.2
Assiut	4.8	95.0	95.0	95.0	94.2	93.5
Sohaj	5.0	96.9	96.9	96.9	95.7	95.0
Qena	3.5	98.0	98.0	98.0	98.3	97.8
Aswan	1.6	96.1	96.1	96.1	95.7	94.6
S Sini	0.1	96.8	96.8	96.8	94.6	94.1
N Sini	0.5	92.2	92.2***	92.2***	89.8***	88.8***
Luxor	1.2	97.5	97.6	97.6	96.5	96.5

*low coverage due to registration of children at Cairo that were vaccinated at home governorates; field coverage not less than 95%, done by independent partners **low coverage due to registration of children at Giza that were vaccinated at home governorates; field coverage not less than 95%, done by independent partners ***outreach vaccination activities are done to increase accessibility to vaccination

F. GEORGIA

In Georgia there is a National Immunization Plan targeting children and adolescents.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table F1 and Table F2.

Table F1. National immunization calendar: 0-24 months of age, Georgia

VPD	Birth	3-5 days	Months				
			2	3	4	12	18
Hepatitis B	HepB 0		DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		
Tuberculosis		BCG					
Poliomyelitis			DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		bOPV
Diphtheria			DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		DTP
Tetanus			DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		DTP
Pertussis			DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		DTP
Haemophilus influenzae type b			DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV	DaPT-HepB-Hib-IPV		
Pneumococcus			PCV	PCV		PCV	
Rotavirus			RV	RV			
Measles						MMR	
Rubella						MMR	
Mumps						MMR	

Table F2. National immunization calendar: infants from 2 years of age, adolescents and adults, Georgia

Vaccine	Years		Adults
	5	14	
Hepatitis B			
Tuberculosis			
Poliomyelitis	bOPV		
Diphtheria	DT	dT	dT, every 10 years*
Tetanus	DT	dT	dT, every 10 years*
Pertussis			
Haemophilus influenzae type b			
Pneumococcus			
Rotavirus			
Measles	MMR		
Rubella	MMR		
Mumps	MMR		

*from 15 to 55 years, paid by recipients

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Poliomyelitis vaccination is offered to all unimmunized adolescents up to 15 years.

In the period 2013-2015, a national MMR mop-up campaign was conducted to achieve not vaccinated or not fully vaccinated persons under 30 years of age. MMR vaccine was offered at the vaccination services. A coverage of 25% was obtained; coverage data was merged in the routine assessment of vaccination coverage.

Recommendations to risk groups

Poliomyelitis vaccination

One doses of bOPV vaccine are offered to newly arrived migrants, funded by government.

Recommendations to newly arrived migrants

During the last decade, Georgia started to gradually shift from an emigration and transit country to a country of both emigration and immigration. Importantly, immigrants started to arrive in Georgia not only from neighbouring countries, but also from more distant regions, which did not have close cultural or economic ties with Georgia before, thereby bringing diversity to a country which has not experienced noticeable immigration inflows in the recent past.

Immigrants come to Georgia with a variety of aims: to study, work, invest, seek international protection or establish their families in the country, partly attracted by the liberal immigration regime active until 1 September 2014.

Among the educational immigrants, in the years 2004-2014 the main countries of origin of foreign countries were: Azerbaijan (2551), India (1245), Turkey (1084), Nigeria (775), Russia (678), Armenia (94), Iran (81), Iraq (54), Ukraine (50), USA (43), Syria (42), Kazakhstan (38), Germany (29), Israel (26), other countries (985).

Among the labour immigrants, in the years 2009-2013 the top ten countries of origin of foreign nationality coming to Georgia that got the residence permits were: Russia (6627), China (6421), Turkey (5153), India (4611), Iran (2550), Ukraine (1070), Azerbaijan (1004), Egypt (952), Armenia (750), USA (651).

The legislative framework regulating the legal status and treatment of asylum seekers in Georgia has been evolving since 1998. The main provisions related to protection are prescribed in the Constitution of Georgia, which declares that Georgia should grant asylum to foreign citizens and stateless persons in accordance with internationally recognized principles and norms. Presidential Decree No. 387 adopted in 1998 established the first provisions on granting asylum to aliens. In 1999, Georgia became a party to the 1951 UN Convention Relating to the Status of Refugees and its respective protocol from 1967. The Law of Georgia on Refugees (1998), which covered issues related only to asylum seekers and refugee statuses, was in 2011 replaced by the Law of Georgia on Refugee and Humanitarian Status (2011) that, together with the respective Decree of the MRA on the Procedures for Granting Refugee or Humanitarian Status, provide detailed provisions for treating asylum seekers from the moment they approach the Georgian authorities until the final decision. The recent Aliens Law also regulates certain aspects of asylum policy. Based on the existing legislative framework, Georgia recognizes two types of international protection: refugee and humanitarian status. Asylum seekers are protected from being returned during the asylum procedure and are eligible for state-sponsored accommodation. The MRA takes the decision on registering a person as an asylum seeker. The status of asylum seeker is the basis for granting rights and imposing responsibilities stipulated in article 18 of the Law on Refugee and Humanitarian Status. Refugee status is granted to a person who is not a citizen of Georgia or a stateless person permanently residing in Georgia, who articulates a well-founded fear that she/he may become a victim of a persecution on the basis of race, religion, faith, ethnicity, belonging to a certain social group or having certain political views (Law on Refugee and Humanitarian Status).

Humanitarian status, as defined by Georgian law, is similar to the European subsidiary protection status. Under humanitarian status, the Georgian state provides a relatively short form of protection to those who does not fall under the refugee definition. It covers foreign citizens who were forced to leave their country of origin due to violence, external aggression, occupation, internal conflict, mass violation of human rights or a significant breach of public order, and persons who may face serious risks to their life or other serious human rights violations in case of return to the country of origin and who cannot be returned due to the non-refoulement obligations undertaken under Georgian and international law (Law on Refugee and Humanitarian Status). Persons resettled from neighbouring countries due to natural disasters or Internally Displaced Persons (IDPs) who are not citizens of Georgia and are not eligible for the IDP status also qualify for the humanitarian status (Law on Refugee and Humanitarian Status).

Table F4 shows the number of asylum seekers applying in Georgia and positive asylum decisions (first instance) by country of origin, in the years 2009-2013.

Table F4. Number of asylum seekers applying in Georgia and positive asylum decisions (first instance) by country of origin, in the years 2009-2013

Country of origin	2009	2010	2011	2012	2013
Iran	1	1	0	443	478
Egypt	0	0	0	22	80
Syria	0	0	0	18	60
Russia	14	32	34	36	38
Iran	7	4	31	42	26
Total asylum seekers	**43**	**37**	**80**	**599**	**717**
Asylum or humanitarian protection granted	**6**	**5**	**16**	**44**	**31**

In 2014, refugees and persons with humanitarian status were mainly adults, as shown in Table F5.

Table F5. Age and gender distribution of refugees and persons with humanitarian status, February 2014

Gender	Age					
	0-4	5-11	12-17	18-59	60+	Total
Male	8	27	47	103	6	191
Female	9	14	43	98	2	166
Total	**17**	**41**	**90**	**201**	**8**	**357**

Housing and reception of asylum seekers remains a challenge. A reception centre in the village of Martkofi opened in 2010 but can house only 60 adults. A further enlargement of the centre in Martkofi is planned, while there are also plans to build new centres in regional areas such as Gori, Rustavi, Kutaisi, and Zugdidi. Most of them are to be built with the support of international donors. According to the law on Refugees and Humanitarian Status, asylum seekers have the right to receive accommodation from the state, either in the reception centre or, in exceptional cases, at other facilities allocated by the authorities. It is hard to verify whether all applicants who are not settled in the reception centre receive alternative accommodation.

The main ways of border crossing are airports and seaports (Airports of Tbilisi, Kutaisi, Batumi, Seaports of Batumi, Poti).

Immunization strategies targeting newly arrived migrants is based on and similar to WHO recommended international health regulatory and are managed by an Act of the State # 428 (Dec 31, 2010). According to regulation the arrivals from risk territories (Nigeria, Syria, Afghanistan and Pakistan) are checked on the polio immunization status. In case of absence immunization (documents or records) they are offered to get OPV vaccination. Vaccine is giving at entry level in airports and seaports, through the vaccination service points (there are medical service points at airports and seaports). Vaccination is fully covered by government.

All persons who get the vaccine against poliomyelitis at the airports and seaports medical service points receive an international vaccination card. This data are not entered in the general population vaccination registry (Electronic Module on immunization). Monthly reports of provided vaccination is sent and collected at the national level.

The cases of refusal of immunization promptly report to National Centre for Disease Control and Public Health.

Vaccination acceptance among migrants is quite high. In 2016 OPV vaccination had been offered to 173 persons and 123 persons (52 from Nigeria, 66 from Pakistan, 2 from Afghanistan and 3 from Syria)

got polio vaccine, with a coverage rate of 71.1%. Vaccination was refused by 50 persons (36 from Nigeria and 14 from Pakistan).

No particular issues in relation to vaccination, except for further tracking subsequent doses.

No check of immunization status for other VPDs of the newly arrived migrants is planned.

National vaccination coverage estimates

National vaccination coverage is assessed monthly through the administrative method. Coverage estimates are reported in Table F6.

Table F6. National vaccination coverage estimates, Georgia

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	91.2	children 12 mos vaccinated with 3 doses of Polio vaccine	surviving infants
Diphtheria-Tetanus (children)	2014	90.6	children 12 mos vaccinated with 3 doses DT	surviving infants
Hepatitis B (children)	2014	91	children 12 mos vaccinated with 3 doses	surviving infants
MMR - 1 dose (children)	2014	92	children 12-24 mos vaccinated with 1 dose	children 24 mos
MMR - 2 doses (children)	2014	86.6	children 5 yrs vaccinated with 2 doses	children 5 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures F1-F5.

Coverage data is not available for Abkhazia, which is not under Georgian regulation.

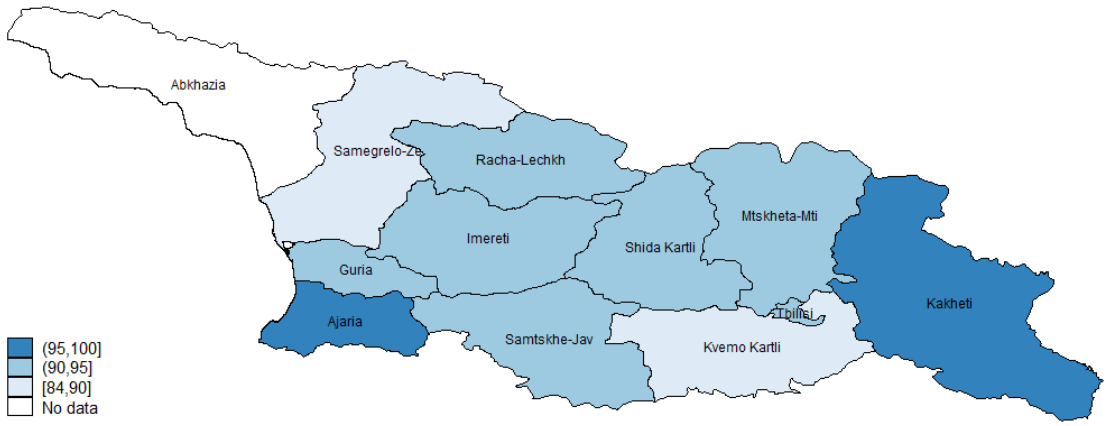

Figure F1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age. Georgia, 2014

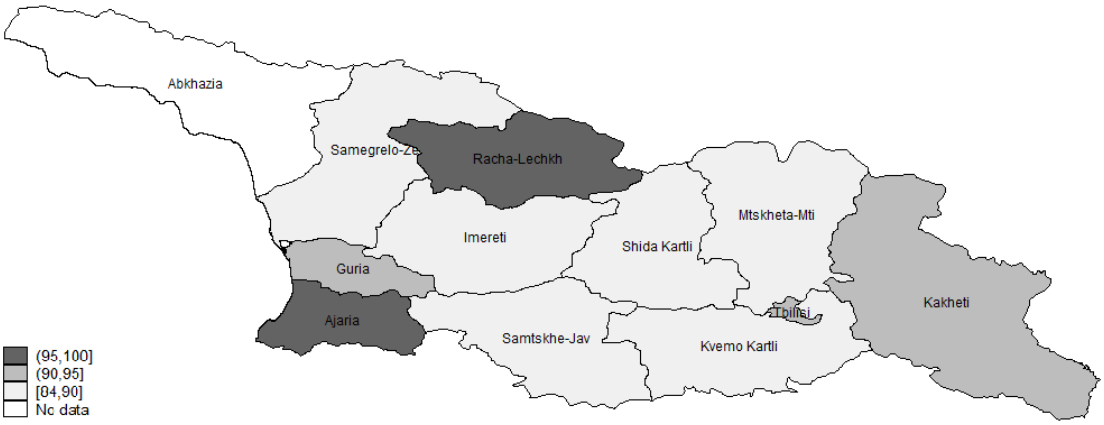

Figure F2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Georgia, 2014

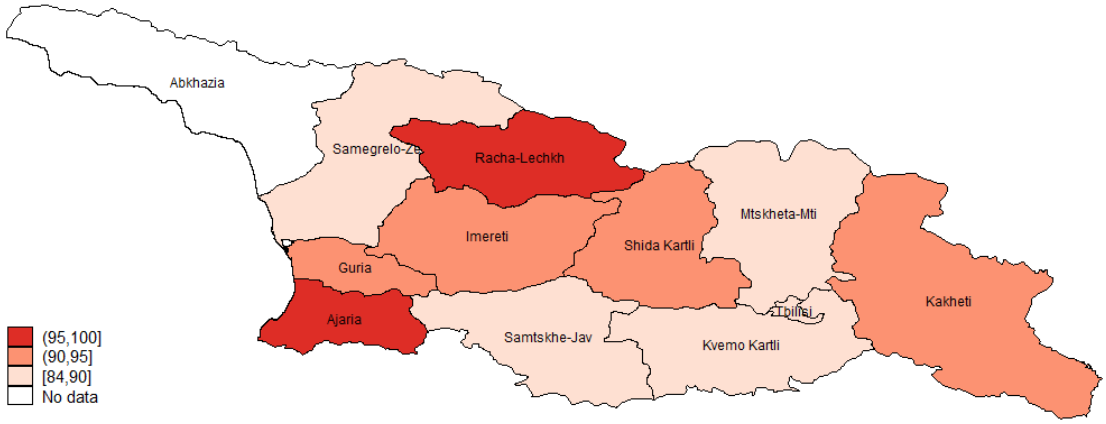

Figure F3. Sub-national coverage for 3 doses of hepatitis B vaccine at 12 months of age.Georgia, 2014

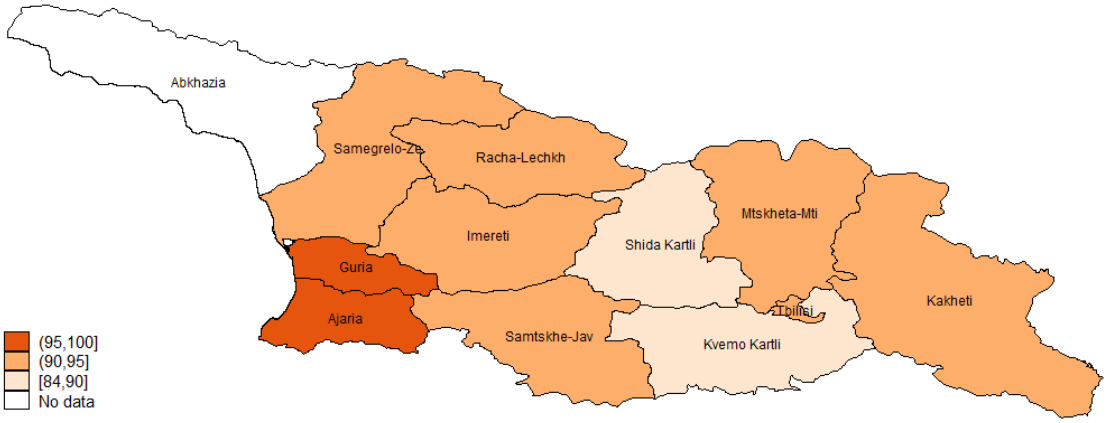

Figure F4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Georgia, 2014

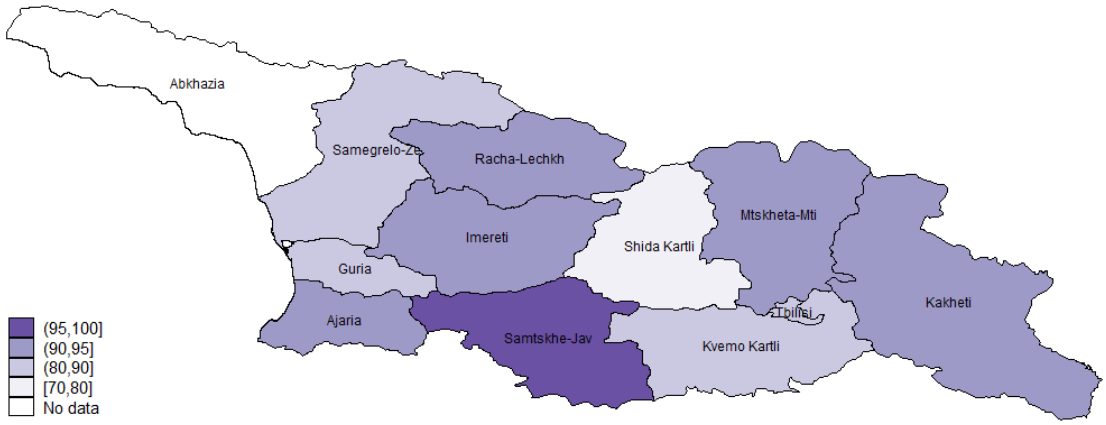

Figure F5. Sub-national coverage for 2 doses of MMR vaccine at 5 years of age. Georgia, 2014

G. ISRAEL

In Israel there is a National Immunization Plan targeting children, adolescents, adults and risk groups. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table G1 and Table G2.

Table G1. National immunization calendar: 0-24 months of age, Israel

VPD	Birth	Months						
		1	2	4	6	12	18	24
Poliomyelitis			IPV	IPV	IPV + bOPV^	IPV	bOPV^	
Diphtheria			DTaP	DTaP	DTaP	DTaP		
Tetanus			DTaP	DTaP	DTaP	DTaP		
Pertussis			DTaP	DTaP	DTaP	DTaP		
Haemophilus influenzae type b			Hib	Hib	Hib	Hib		
Hepatitis B	HepB	HepB			HepB			
Pneumococcus			PCV	PCV		PCV		
Rotavirus			RV	RV	RV			
Measles						MMR/MMRV		
Rubella						MMR/MMRV		
Varicella						MMRV		
Hepatitis A							HAV	HAV
Human Papilloma Virus								

^ two supplementary doses of bOPV are given (6,18 months) since August 2013

Table G2. National immunization calendar: infants from 2 years of age, adolescents and adults, Israel

VPD	Years			Adults
	6	7	13	
Poliomyelitis		IPV		
Diphtheria		dTaP	dTaP	dT, every 10 years
Tetanus		dTaP	dTaP	dT, every 10 years
Pertussis		dTaP	dTaP	
*Haemophilus influenzae*type b				
Hepatitis B				
Pneumococcus				
Rotavirus				
Measles	MMR/MMRV			
Rubella	MMR/MMRV			
Varicella	MMRV			
Hepatitis A				
Human Papilloma Virus			HPV (2 doses)	

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Poliomyelitis vaccination (3 IPV doses) is offered to all unimmunized adolescents funded by government and to all unimmunized adults paid by recipients.

Three doses of dT vaccination are offered to all unimmunized adults as part of health basket provided by the Health Maintenance Organization (HMO).

Two MMR doses are offered and provided by government free-of charge to unimmunized adolescents, adults and women of childbearing age.

Three doses of hepatitis B vaccine are recommended to unimmunized adults (not belonging to risk groups), paid by recipients.

In 2012 a sub-national campaign delivering, at mother and child health centres, MMR vaccine to 9-12 month old babies of migrants was carried out (denominator was not available so coverage could not be measured). In 2013 a national campaign delivering, at mother and child health centres, bOPV to 6-18 months children was conducted, achieving a coverage of 74%.

At sub-national level, in 2015 a catch up campaign with HAV vaccine was performed, vaccinating people born in 1988-1997 in 5 different dates, achieving a coverage of 59%. An additional HAV vaccine campaign was carried out in a certain neighborhood in Tel Aviv, where Ministry of health nurses offered vaccination to Injecting Drug Users.

Coverage data from SIA are not merged in the routine assessment of vaccination coverage.

Recommendations to risk groups

Poliomyelitis vaccination

One booster IPV dose is offered to health care workers who have close contact with patients who might be excreting wild or vaccine type poliovirus, laboratory workers handling specimens that may contain poliovirus and People who come in close contact with those who may be excreting poliovirus (e.g. people working with refugees, sewage workers), paid by the employer.

One IPV dose is recommended to international travellers, paid by recipients.

Three doses (bOPV or IPV) are offered to newly arrived migrants aged 0-17 years; one dose if aged ≥ 18 years, funded by government.

Tetanus-diphtheria vaccination

One dose of dT vaccine is recommended to unimmunized international travellers paid by recipients; a booster every 5 years is recommended to high risk travellers (prone to injury).

Three doses are offered to newly arrived migrants aged 0-17 years, funded by government.

As part of health basket provided by HMO, one dose of dTap is offered to pregnant women at 27-36 weeks of pregnancy.

MMR vaccination

Two MMR doses are offered and funded by government also to susceptible women after delivery or pregnancy termination.

Two MMR doses are recommended, if not immune, to: international travellers, students attending colleges or other post-high school educational institutions and adults born after 1957, paid by recipients, and to health care workers, paid by the employer.

Two MMR doses are offered to newly arrived migrants aged 0-17 years, funded by government.

Hepatitis B

As part of health basket provided by HMO, three doses of hepatitis B vaccine are offered to:

- Household contacts of persons with chronic HBV infection,
- Babies born to mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy,
- Developmentally disabled persons in long-term-care facilities,
- Men who have sex with men,
- Commercial sex workers,
- Injection-drug users,
- Inmates of custodial institutions and correctional facilities, Individuals receiving regular blood or blood products,
- Hemodialysis patients or Patients with chronic renal failure,

- Persons with chronic liver disease,
- HIV-positive persons,
- Patients with immunosuppression.

Three doses of hepatitis B vaccine are recommended, paid by the employer, to: Healthcare workers, Laboratory staff exposed to blood, Staff of residential and other accommodation for developmentally disabled persons, Public safety or emergency workers, morticians.

Three doses of hepatitis B vaccine are recommended to international travellers paid by recipients.

Three doses are offered to newly arrived migrants aged 0-17 years, funded by government.

Recommendations to newly arrived migrants

Israel is a country in the Middle East. It has land borders with Lebanon to the North, Syria to the North-east, Jordan on the East, the Palestinian territories of the West Bank and Gaza Strip to the East and West, respectively, and Egypt to the South-west. Total population is 8.5 million people.

The Israeli healthcare system is based on the National health insurance law of 1995 which mandates all citizens to join one of four official health funds.

Patterns of immigration to Israel

1. Legal Jewish migrants arriving from many countries in the world. This is a unique property: Israel is following a Law from 1950 that declares the right of Jews to come to Israel. The Law of Return was modified in 1970 to extend the right of return to non-Jews with a Jewish grandparent, and their spouses. In 2015 27,908 migrants arrived from East and West Europe, Ukraine, Russia and the US. In addition, Jewish Ethiopians have been brought to Israel by the State through three major operations and some come on their own; there are total of 80,000.
2. Legal labour migrants arriving from South-East Asia and former USSR (total of ~100,000). These migrants hold working permits and come to Israel to work in nursing, agriculture and construction.
3. Undocumented migrants arriving from horn of Africa and entering Israel through Egypt. This immigration pattern started in 2006 and ended in 2013 when the border was closed by the Israeli government. Today there are ~53,000 migrants who work and live mostly in the Centre of the country and a few in the South.

Immigration Centres and vaccination offer

1. In Ethiopia, the Israeli government established a public health clinic with both Ethiopian and Israeli staff, screening for diseases and giving a meningococcal vaccine to the future migrants (Ethiopian Jews guidelines updated 2006).
2. Integration Centre for legal Jewish migrants is a residential institution where new immigrants live immediately after immigrating to Israel. This unique housing system aims to enable new immigrants to adapt to the new environment. All legal migrants up to age 17 are entitled to get all vaccines given as part of routine vaccination program. In addition, children under the age of 4 arriving from Ethiopia, will get the BCG vaccine. All adults are entitled to receive all vaccines that are given as part of the health fund they joined upon arriving in Israel.
3. Immigration Centre for undocumented migrants caught at the border with Egypt. Since closing the border there are no women and children at the centre, adults staying at the centre receive meningococcal vaccine and are screened for other diseases. Children of undocumented migrants who are integrated in the community may receive routine vaccination as all other children in Israel plus BCG vaccine for children under age 4. Adults will be vaccinated in case of outbreaks (undocumented migrants from the horn of Africa, guidelines 2012). In addition, there is a free clinic for undocumented migrants set up by Israeli Ministry of Health where if needed they may receive vaccinations and medical care.

Finally, the "Tipat Chalav" (literal translation: drop of milk) services, for all children up the age of 6 (citizens, legal migrants and undocumented migrants), are distributed around the country since 1922. Vaccinations, child development, promoting breastfeeding and healthy lifestyle are the major properties of these centres.

All information is recorded in a National computer based system which is useful for tracking, data analysis and vaccination coverage.

Practical experience LIV

- The meningococcal vaccine given to migrants arriving from Horn of Africa has significantly decreased morbidity due to meningitis.
- Vaccine preventable disease outbreaks (varicella, measles) in adults, have occurred and were handled by catch-up vaccination to all adults and children who were prone.
- Not all migrants adhere to vaccination schedule, this may be because of language barriers or moving to a new place, for this reason it may be difficult to record and track individual information. The Ministry of Health has hired translators to help with this problem.

Lessons learned and recommendations

- Outreach vaccination and health promotion at immigration centres
- Routine vaccination for all children ages 0-17 and free access to public health services (with or without insurance)
- Public health services are safe and friendly. In addition, no police for undocumented migrants

National vaccination coverage estimates

National vaccination coverage is assessed yearly through the administrative method (computerized system reports). Coverage estimates are reported in Table G3.

Table G3. National vaccination coverage estimates, Israel

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2015	97	children 24 mos vaccinated with 3 doses	children 24 mos
Diphtheria-Tetanus (children)	2012	94	children 24 mos vaccinated with 4 doses	children 24 mos
Hepatitis B (children)	2012	97	children 24 mos vaccinated with 3 doses	children 24 mos
MMR - 1 dose (children)	2012	96	children 24 mos vaccinated with 1 dose	children 24 mos
MMR - 2 doses (children)	2015	97	children 6 yrs vaccinated with 2 doses	children 6 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures G1-G5.

Figure G1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 24 months of age. Israel, 2015

Figure G2. Sub-national coverage for 4 doses of diphtheria-tetanus vaccine at 24 months of age. Israel, 2012

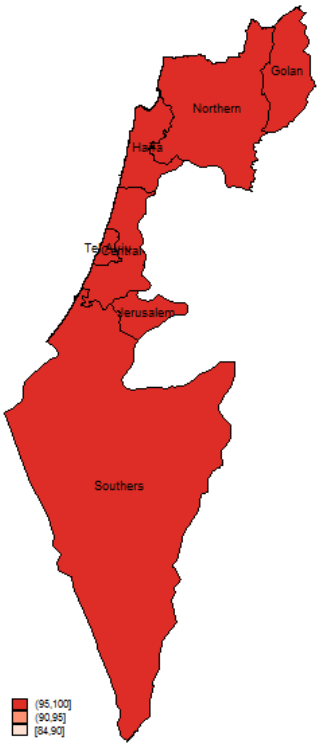

Figure G3. Sub-national coverage for 3 doses of hepatitis B vaccine at 24 months of age. Israel, 2012

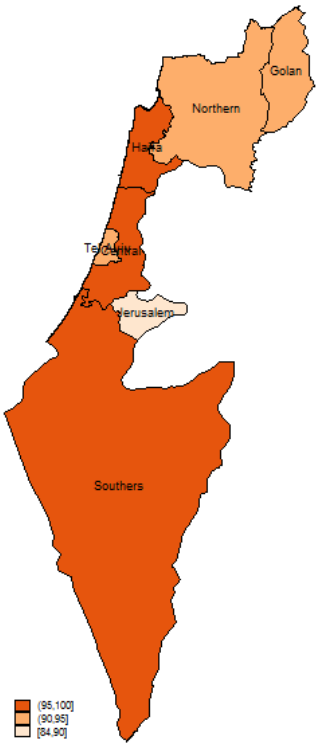

Figure G4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Israel, 2012

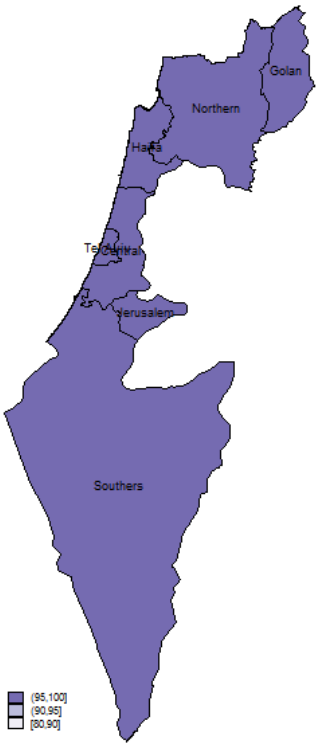

Figure G5. Sub-national coverage for 2 doses of MMR vaccine at 6 years of age. Israel, 2012

H. JORDAN

In Jordan there is a National Immunization Plan targeting children, adolescents and childbearing age females. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table H1 and Table H2.

Table H1. National immunization calendar: 0-24 months of age, Jordan

VPD	Birth	Months					
		3	4	5	9	12	18
Tubercolosis	BCG						
Poliomyelitis		DaPT-IPV-Hib	DaPT-IPV-Hib + bOPV	DaPT-IPV-Hib + bOPV	bOPV		bOPV
Diphtheria		DaPT-IPV-Hib	DaPT-IPV-Hib	DaPT-IPV-Hib			DTP
Tetanus		DaPT-IPV-Hib	DaPT-IPV-Hib	DaPT-IPV-Hib			DTP
Pertussis		DaPT-IPV-Hib	DaPT-IPV-Hib	DaPT-IPV-Hib			DTP
Haemophilus influenzae type b		DaPT-IPV-Hib	DaPT-IPV-Hib	DaPT-IPV-Hib			
Hepatitis B		HepB	HepB	HepB			
Rotavirus		RV	RV	RV			
Measles					Measles	MMR1	MMR2
Rubella						MMR1	MMR2

Table H2. National immunization calendar: infants from 2 years of age, adolescents and adults, Jordan

VPD	Year	
	6	16
Tubercolosis		
Poliomyelitis	OPV	
Diphtheria	dT	dT
Tetanus	dT	dT
Pertussis	dT	dT
Haemophilus influenzae type b		
Hepatitis B		
Rotavirus		
Measles		
Rubella		

To prevent maternal and neonatal tetanus, childbearing age females 15-49 years old are offered 5 tetanus toxoid (TT) doses at 0-1-6-12-18 months.

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Immunization status for two MMR doses is checked at school entry (through vaccination card) and MMR missing doses are given if necessary.

Very intense efforts for improving vaccination coverage were done. Several 4-5 days of vaccination with tOPV were carried out, at national level, to cover children less than 5 years. A national Measles-Rubella campaign was carried out in 2013 to immunize persons from 6 months to 20 years.

Vaccination coverage was very high (100%), showing an excellent acceptance from target population. Coverage data from SIAs are not merged in the routine assessment of vaccination coverage.
Details on the catch-up and follow-up campaigns are reported in Table H3.

TableH3. Immunization catch up and follow up campaigns. Jordan, 2013-2016

Vaccine	National / Subnational level	Time period	Target group
MR	National	2-21 Nov 2013	6 mos -20 yrs
t OPV	National	2-21 Nov 2013	0-5 yrs
t OPV	National	28 Dec 2013 - 5 Jan 2014	0-5 yrs
t OPV	National	2-6 March 2014	0-5 yrs
t OPV	National and high risk groups*	8-10 Jun 2014	0-5 yrs
t OPV	National and high risk groups*	10-12 Aug 2014	0-5 yrs
t OPV	National	26-30 Oct 2014	0-5 yrs
t OPV	National	30 Nov-4 Dec 2014	0-5 yrs
t OPV	National and high risk groups*	26-30 April 2015	0-5 yrs
t OPV	National	27-31 March 2016	0-5 yrs

*High risk groups consist of:
- Syrian children, inside and outside the camps
- children in geographically hard to reach areas (mountains, deserts)
- children in the inter-borders areas (inter-borders of governorates and provinces)
- children of frequent travellers families (farmers, bedews)
- children in low vaccination coverage areas (<90% in routine vaccination or campaigns)

Campaigns are carried out through fixed and mobile teams. The national immunization mobile teams have been activated to conduct weekly visits to all high risk areas in order to complete all routine immunization schedules for children and childbearing age females ("rec" approach: reach every community, reach every child).

Recommendations to risk groups

Tetanus Toxoid vaccination (TT) is recommended to unvaccinated females in childbearing age (15-49 years old). A total of 5 doses are given according to the following scheme: 0-1-6-12-18 months (interval among doses).

Recommendations to newly arrived migrants

Jordan is Middle East country of 89,341 Km2 area and 9.5 million populations (DS Census 2015) with borders with 4 countries around it, some of them having conflict and instability (Syria and Iraq).

Jordan has well established health system that meets the essential health needs; it includes preventable and curative health services. Jordan started its Expanded Programme for Immunization (EPI) program on 1979 with 5 vaccines (BCG, OPV, and DPT) funded from Ministry of Health budgets and offering vaccination for all children free of charge even with its limited resources.

As per WHO recommendations all new children coming to Jordan will be vaccinated with OPV (children below 5 years) and Measles and vit A supplementation (children aged 6 months-15 years) in the reception centres of the Syrian as an emergency vaccination. After that they are distributed to the camps and they can complete their vaccination schedule: inside the camps or outside the camps in the health centres as Jordanian children, free of charge (at the community level).

During these years Jordan tried to improve its program with very high coverage. In 2015, up to 15 vaccines are provided to children and childbearing females with the same strategy free of charge, including Syrian children and females (females 15-49ys old are vaccinated with TT) (taking in consideration that NITAG in 2012 recommended the introduction of 4 vaccines: pneumococcus, rotavirus, hepatitis A, chickenpox).

Information on vaccinations administered to migrants are recorded on individual vaccination cards and entered in immunization registries (paper and electronic).

Jordan estimated population is 6,670,574 and the UNHCR reported 632,120 Syrian; in fact Jordan DS conducted a real census in the end of 2015 and Jordan population was 9,531,712 with 1,265,514 (13.3%) Syrians.

Due to wise strategy and proper resources utilization, Jordan is free from polio since 1992 and still and free from measles in 2015 even if the risk of importation of wild polio virus is high due to Syrian crisis and outbreak of polio in Syria and Iraq.

Jordan is in real challenge to sustain its success with high vaccination coverage for all children with an increase demand for vaccination due to Syrian crisis and introduction of new vaccines to EPI program.

National vaccination coverage estimates

National vaccination coverage is assessed monthly through the administrative method. Coverage estimates are reported in Table H4.

Table H4. National vaccination coverage estimates, Jordan

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	98	children 12 mos vaccinated with 3 doses	children 12 mos
Diphtheria-Tetanus (children)	2014	98	children 12 mos vaccinated with 3 doses	children 12 mos
Hepatitis B (children)	2014	98	children 12 mos vaccinated with 3 doses	children 12 mos
MMR - 1 dose (children)	2014	97	children 24 mos vaccinated with 1 dose	children 24 mos
MMR - 2 doses (children)	2014	96	children 5 yrs vaccinated with 2 doses	children 5 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures H1-H5.

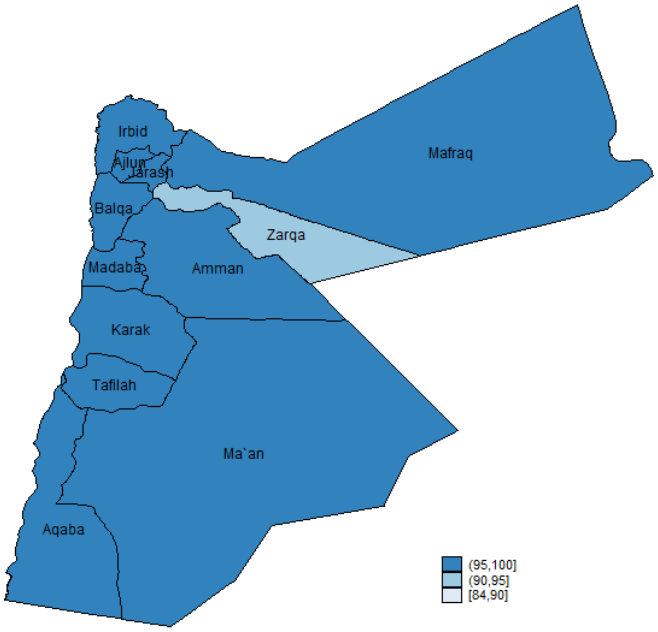

Figure H1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age.Jordan, 2014

Figure H2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Jordan, 2014

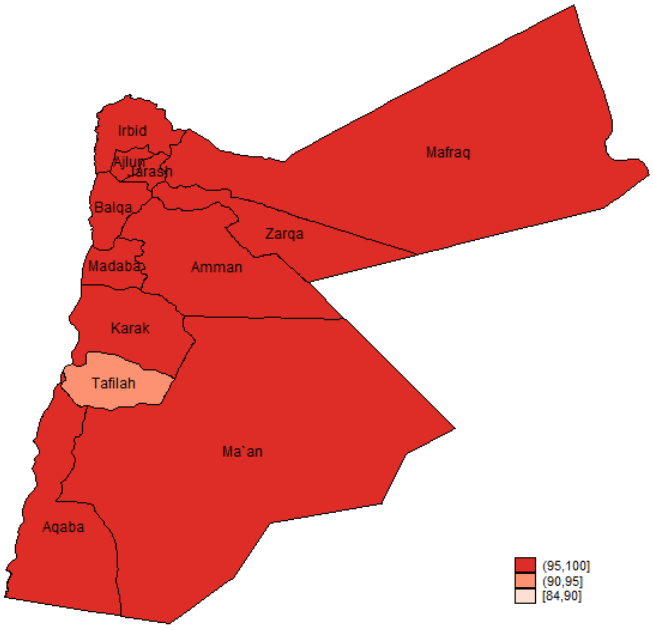

Figure H3. Sub-national coverage for 3 doses of hepatitis B vaccine at 12 months of age. Jordan, 2014

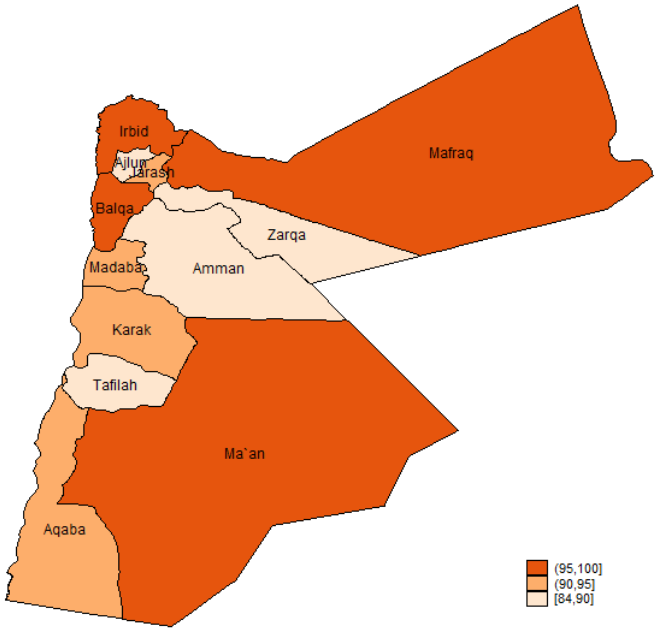

Figure H4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Jordan, 2014

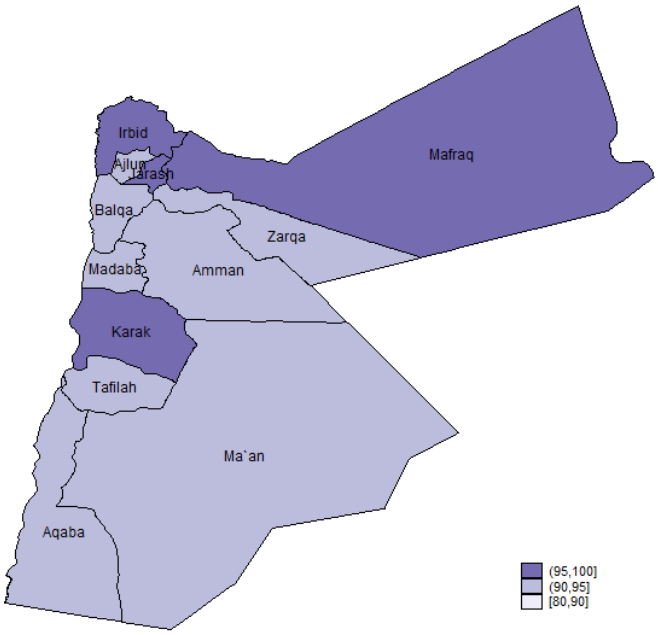

Figure H5. Sub-national coverage for 2 doses of MMR vaccine at 5 years of age. Jordan, 2014

I. KOSOVO

In Kosovo there is a National Immunization Plan targeting persons aged 0-18 years.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table I1 and Table I2.

Table I1. National immunization calendar: 0-24 months of age, Kosovo.

VPD	Birth	Months			
		2	3	4	12
Tuberculosis	BCG				
Poliomyelitis*		IPV	IPV	IPV	bOPV
Diphtheria		DTP-Hib-HepB	DTP-Hib-HepB	DTP-Hib-HepB	DTP
Tetanus		DTP-Hib-HepB	DTP-Hib-HepB	DTP-Hib-HepB	DTP
Pertussis		DTP-Hib-HepB	DTP-Hib-HepB	DTP-Hib-HepB	DTP
Hepatitis B**	HepB	DTP-Hib-HepB	DTP-Hib-HepB	DTP-Hib-HepB	
Haemophilus influenzae type b		DTP-Hib-HepB	DTP-Hib-HepB	DTP-Hib-HepB	
Measles					MMR
Rubella					MMR
Mumps					MMR

*IPV since 2016 **After 5 years, antibodies level is checked in order to decide if administering a Hep B booster dose.

Table I.2: National immunization calendar: infants from 2 years of age, adolescents and adults, Kosovo

VPD	Years			Adults
	6	13	17	
Tuberculosis				
Poliomyelitis*	bOPV	bOPV		bOPV, 1 dose
Diphtheria	DT	dT	dT	dT, 1 dose
Tetanus	DT	dT	dT	dT, 1 dose
Pertussis				
Hepatitis B**				
Haemophilus influenzae type b				
Measles	MMR			
Rubella	MMR			
Mumps	MMR			

*IPV since 2016; **After 5 years, antibodies level is checked in order to decide if administering a booster dose of Hep B vaccine.

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Poliomyelitis vaccination is offered to all unimmunized adolescents and adults (1 dose to adolescents that have completed the primary series and one dose to adults).

Two doses of dT vaccine are offered to all unimmunized adolescents and adults.

One dose of MMR vaccineis offered to all unimmunized adolescents and adults.

In the period March-September 2014, within a supplementary immunization campaign organized at the national level and implemented at sub-national level, MMR and OPV vaccines were offered to children under 5 years old at the public vaccination services, achieving a coverage of 90%. Coverage data from SIAs are not merged in the routine assessment of vaccination coverage.

Generally, Roma population is very well integrated in Kosovo society and there is no need for supplementary activities. In 2015 local immunization campaigns were conducted targeting Roma population.

During these campaigns, among the 1220 unvaccinated or partially vaccinated children from Roma community, 1098 have been vaccinated (90%).

EPI local team is obliged to report monthly number of children vaccinated. It is difficult to have a stable denominator because Roma people frequently move to other parts of Kosovo where they use Serbian health services because of benefits.

Recommendations to risk groups

Poliomyelitis vaccination

One bOPV dose is offered to international travellers.

Poliomyelitis vaccine is offered to newly arrived migrants, with priority to children 5 < years.

Tetanus-diphtheria vaccination

One dose of Td vaccine is offered to international travellers.

MMR vaccination

MMR vaccine is offered to newly arrived migrants, with priority to children 5 < years.

Hepatitis B

Three doses of hepatitis B vaccine (0-1-2 months) are offered to:

- Injection-drug users,
- Healthcare workers,
- Laboratory staff exposed to blood,
- Individuals receiving regular blood or blood products,
- Haemodialysis patients or Patients with chronic renal failure,
- Persons with chronic liver disease,
- HIV-positive persons,
- Patients with immunosuppression.

Four doses of hepatitis B vaccine (at birth, 2-3-4 months) are offered to babies born to mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy.

A booster dose (every 5 years) of hepatitis B vaccine is offered to international travellers to HBV endemic areas.

Recommendations to newly arrived migrants

Kosovo is a transit country for only few of migrants. Almost all of them are adults.

Thus no specific policies for migrants are in place.

In the plan prepared by Ministry of Health in case of migrants, vaccination against measles and polio for the children less than 5 years should be priority.

National vaccination coverage estimates

National vaccination coverage is assessed monthly through administrative method (routine report system). Coverage estimates are reported in Table I3.

Table I.3 National vaccination coverage estimates, Kosovo

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2015	94	children 12 mos vaccinated with 3 doses	children 12 mos
Poliomyelitis (adolescents)	2015	95	children vaccinated with the appropriate number of doses for age	children 12 yrs or 6 grade of primary school
Diphtheria-Tetanus (children)	2015	94	children 12 mos vaccinated with 3 doses	children 12 mos
Diphtheria-Tetanus (adolescents)	2015	95	children vaccinated with the appropriate number of doses for age	children 12 yrs or 6 grade of primary school
Hepatitis B (children)	2015	94	children 12 mos vaccinated with 3 doses	children 12 mos
MMR - 1 dose (children)	2015	95	children 12 mos vaccinated with 1 dose	children 12 mos
MMR - 2 doses (children)	2015	92	children 6 yrs vaccinated with 2 doses	children 6 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures I1-I4.

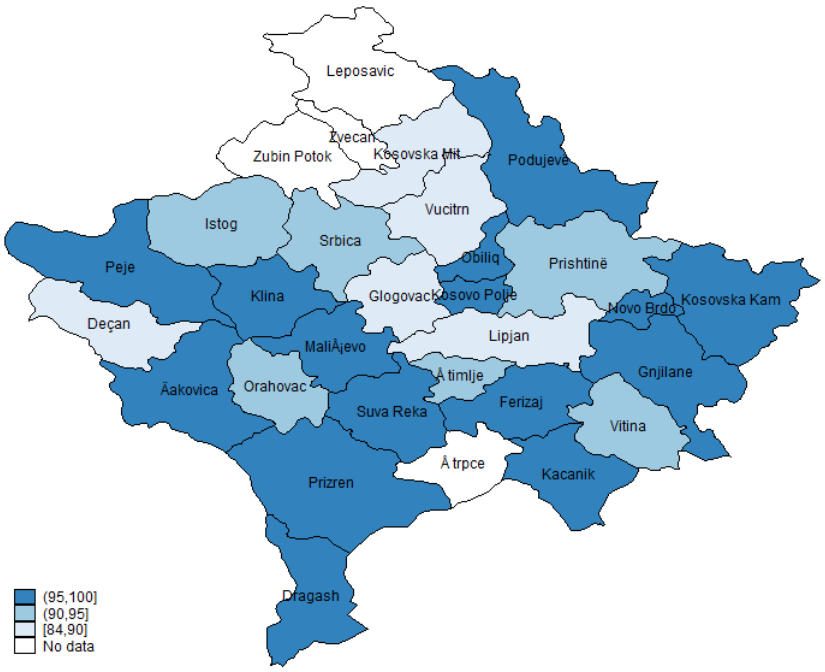

Figure I1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age. Kosovo, 2015

Figure I2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Kosovo, 2015

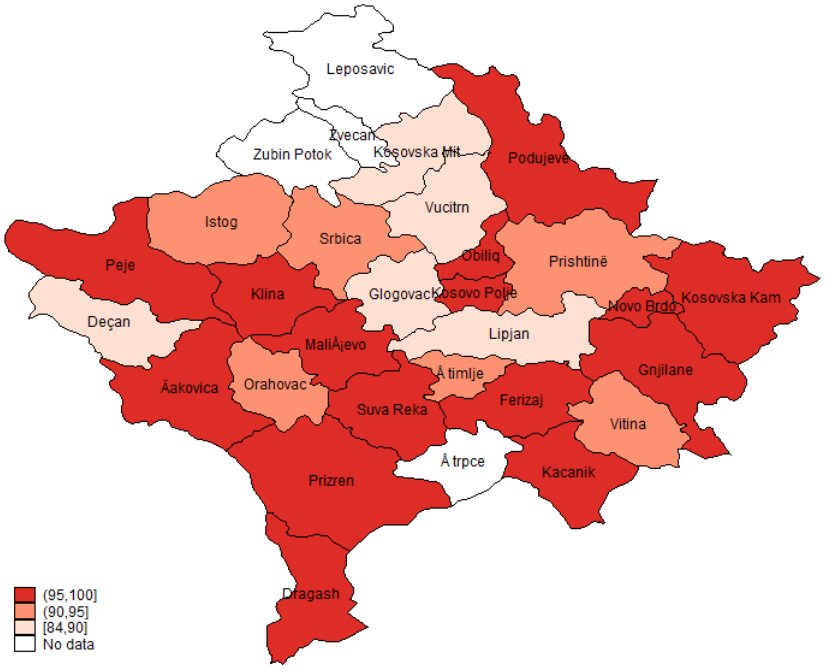

Figure I3. Sub-national coverage for 3 doses of hepatitis B vaccine at 12 months of age. Kosovo, 2015

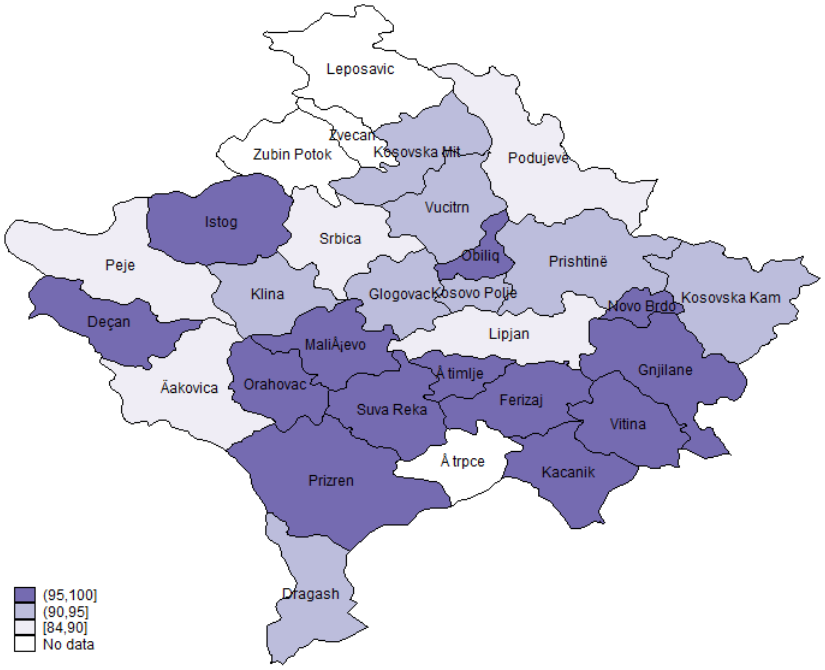

Figure I4. Sub-national coverage for 2 doses of MMR vaccine at 6 years of age. Kosovo, 2015

J. MACEDONIA (Republic of) - FYROM

In the Republic of Macedonia-FYROM there is a National Immunization Plan targeting children, adolescents, adults, risk groups. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table J1 and Table J2.

Table J1. National immunization calendar: 0-24 months of age, Republic of Macedonia-FYROM

VPD	Birth	Months				
		2	3,5	6	12	18
Hepatitis B	HepB	DTP-IPV HepB-Hib		DTP-IPV HepB-Hib		
Tuberculosis	BCG					
Diphtheria		DTP-IPV HepB-Hib	DTP-IPV-Hib	DTP-IPV HepB-Hib		DTP-IPV-Hib
Pertussis		DTP-IPV HepB-Hib	DTP-IPV-Hib	DTP-IPV HepB-Hib		DTP-IPV-Hib
Tetanus		DTP-IPV HepB-Hib	DTP-IPV-Hib	DTP-IPV HepB-Hib		DTP-IPV-Hib
Haemophilus influenzae type b		DTP-IPV HepB-Hib	DTP-IPV-Hib	DTP-IPV HepB-Hib		DTP-IPV-Hib
Poliomyelitis**		DTP-IPV HepB-Hib	DTP-IPV-Hib	DTP-IPV HepB-Hib		DTP-IPV-Hib
Measles					MMR	
Rubella					MMR	
Mumps					MMR	
Human Papilloma Virus						

* DT/dT depening on the age of children (DT for children less the 7 years , dT for children at age of 7)
**Since 2015, polyvalent vaccines were introduced which included IPV, since 2016 OPV were switched with bOPV

Table J2. National immunization calendar: infants from 2 years of age, adolescents and adults, Republic of Macedonia-FYROM

VPD	Years					
	4	6	7	12	14	18
Hepatitis B						
Tuberculosis						
Diphtheria	DTP		DT/dT*		dT	
Pertussis	DTP					
Tetanus	DTP		DT/dT*		dT	TT
Haemophilus influenzae type b						
Poliomyelitis**			bOPV		bOPV	
Measles		MMR				
Rubella		MMR				
Mumps		MMR				
Human Papilloma Virus				HPV		

* DT/dT depening on the age of children (DT for children less the 7 years , dT for children at age of 7)
**Since 2015, polyvalent vaccines were introduced which included IPV, since 2016 OPV were switched with bOPV

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Two doses of MMR vaccine are offered to all unimmunized adolescents until 14 years (at 0-1 months).

In the period 2010-2011, a national supplementary immunization campaign was carried out to vaccinate 6-12 months children with MMR vaccine. Vaccination coverage achieved was 89.4%. Coverage data from SIA are not merged in the routine assessment of vaccination coverage.

Recommendations to risk groups

Poliomyelitis vaccination

Poliomyelitis vaccination is offered to international travellers (with 1 to 3 tOPV doses depending on vaccination status), paid by recipients.

Hepatitis B

Three doses of hepatitis B vaccine (0-1-6 months) are offered to: household contacts of persons with chronic HBV infection, developmentally disabled persons in long-term-care facilities, injection-drug users, healthcare workers, laboratory staff exposed to blood, HIV-positive persons.

Four doses of hepatitis B vaccine are offered to babies born of mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy (0,1,2,12 months) and to haemodialysis patients or patients with chronic renal failure (0,1,2,6 months).

Recommendations to newly arrived migrants

Republic of Macedonia-FYROM is a country located in the Balkan peninsula in South-eastern Europe, it is situated directly on the Balkan route for migrants. The country is bordered by Greece in the South and Serbia in the North on the migrant's route. At both borders there are boarding transit centres which accept and take care of migrants coming from Greece allowing transport to the northern border with Serbia. In the South, the boarding transit centre is Gevgelija, in the North the transit centre is Kumanovo.

Actually the migrants in the Republic of Macedonia-FYROM have a very short stay, only 48 hours or less, because they only transit through the country. Most migrants come from Syria, Iraq, Afghanistan and other countries.

Preventive health care for migrants is performed by regional/local public health centres of Kumanovo and Gevgelija in cooperation with the Institute of Public Health. They conduct preventive measures and activities according to the action plan for managing the health care system at increasing number of migrants adopted by the Ministry of Health. Beside disinfection of transit wagons and facilities, there is active surveillance of communicable diseases and rapid field investigation, water monitoring, control of waste disposal, they also perform vaccination activities.

Poliomyelitis and MMR vaccination are offered to children and adolescents up to 18 years at entry level in transit centres. Medical staff from the regional/local Centres for Public Health (epidemiologists, medical technicians) usually provide vaccination.

Vaccination was offered at the very beginning of the migration crisis but migrants usually refused it because of their short stay in the country. No vaccination card was provided to migrants, but they were recorded in a paper immunization registry where any administrated vaccine is notified.

In the period 19-24 April 2016, vaccine campaign with tOPV was conducted. Vaccine was offered to all migrants. A total of 603 migrants were vaccinated, 55.8% of them aged 0-18 years.

National vaccination coverage estimates

National vaccination coverage is assessed once a year through the administrative method. Coverage estimates are reported in Table J3.

Table J.3 National vaccination coverage estimates, Republic of Macedonia-FYROM

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	95.9	children completely vaccinated with 3 IPV doses in 2014	Number of eligible children which were born from November 2013 to October 2014
Diphtheria-Tetanus (children)	2014	95.4	children completely vaccinated with 3 DTP doses in 2014	Number of eligible children which were born from November 2013 to October 2014
Hepatitis B (children)	2014	96.6	children vaccinated with 3 HepB doses in 2014	Surviving infants
MMR - 1 dose (children)	2014	93.3	children vaccinated with one dose at 12-15 months of age*	Number of children at 12-15 months of age*
MMR - 2 doses (children)	2014	95.7	children vaccinated with 2 doses at 6 years	Children at 6 years

*older than 12 months until they finished 15 months

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures J1-J5.

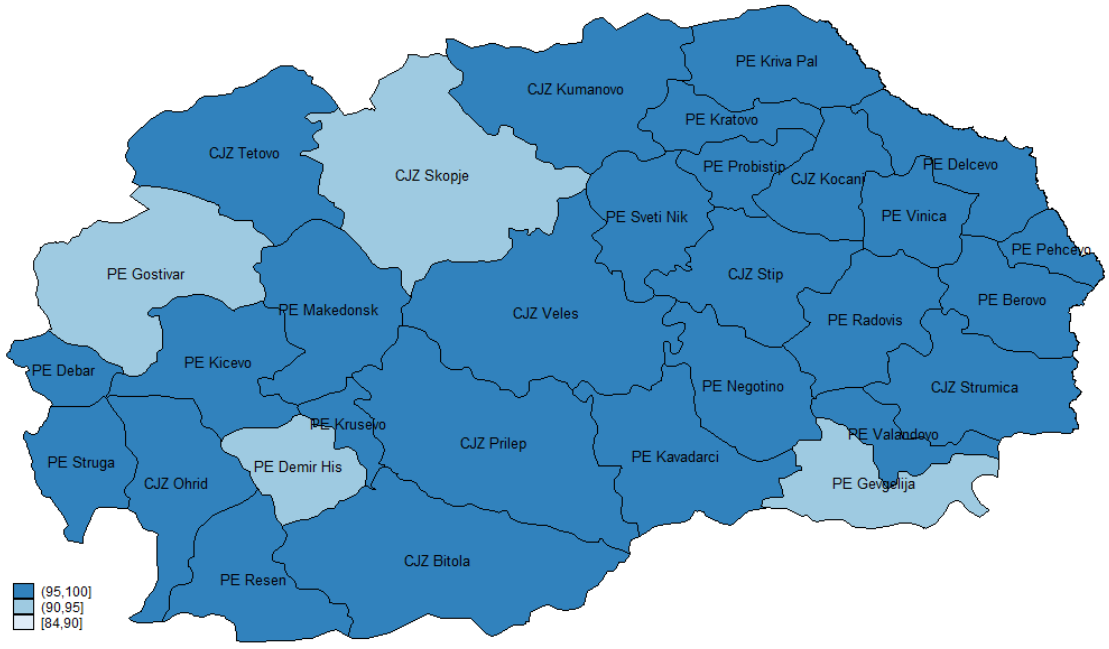

Figure J1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 6 months of age. Republic of Macedonia-FYROM, 2014

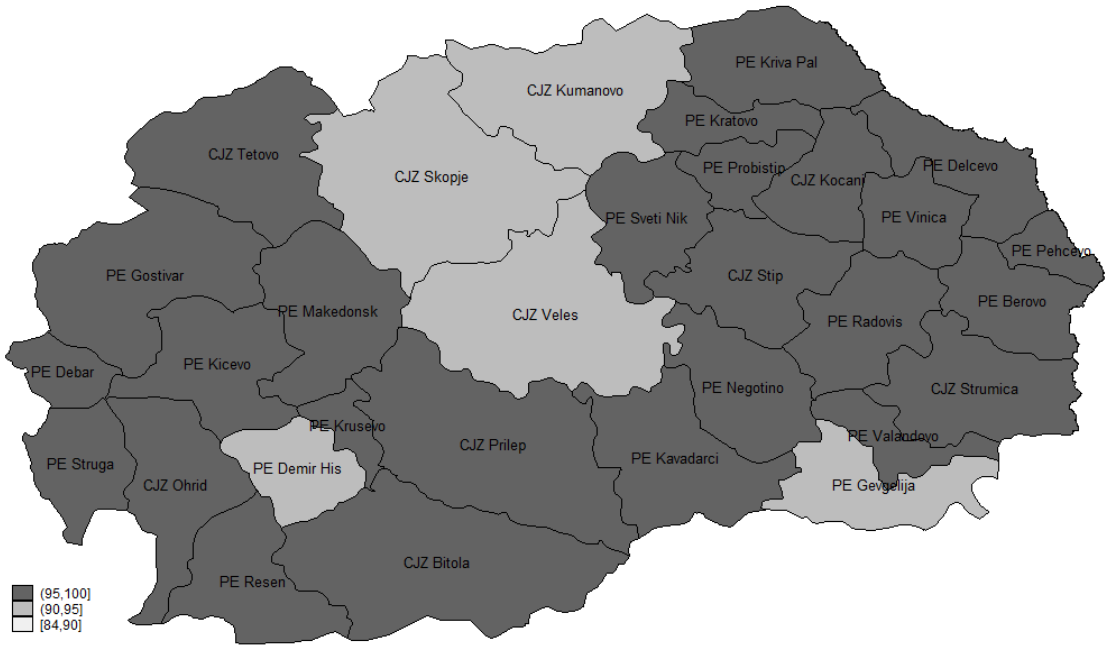

Figure J2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 6 months of age. Republic of Macedonia-FYROM, 2014

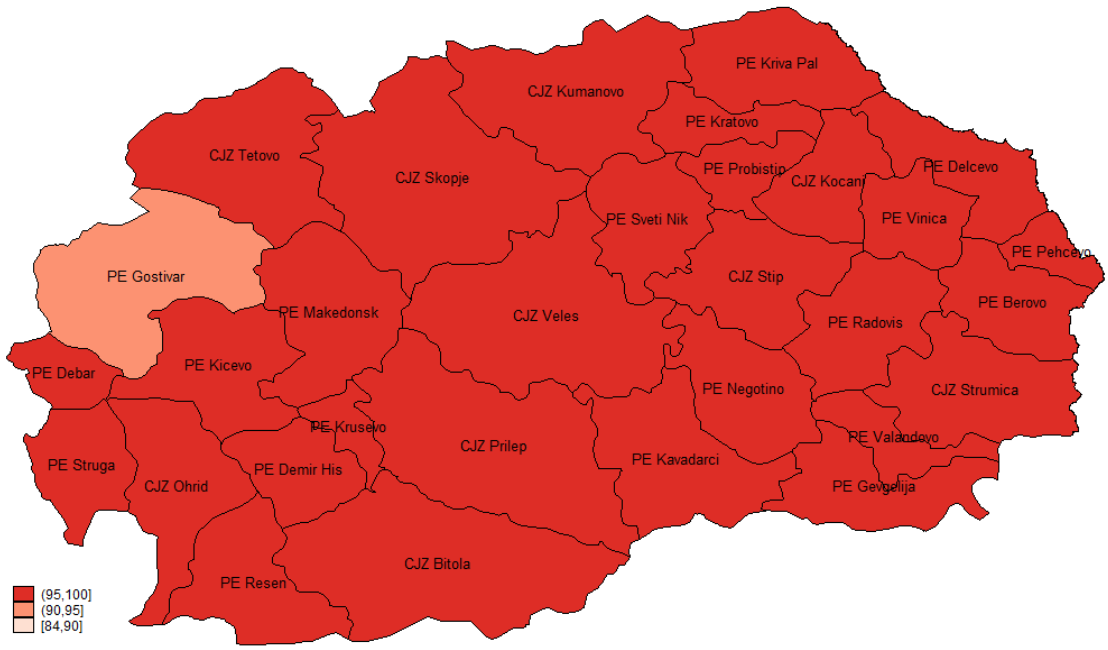

Figure J3. Sub-national coverage for 3 doses of hepatitis B vaccine at 6 months of age. Republic of Macedonia-FYROM, 2014

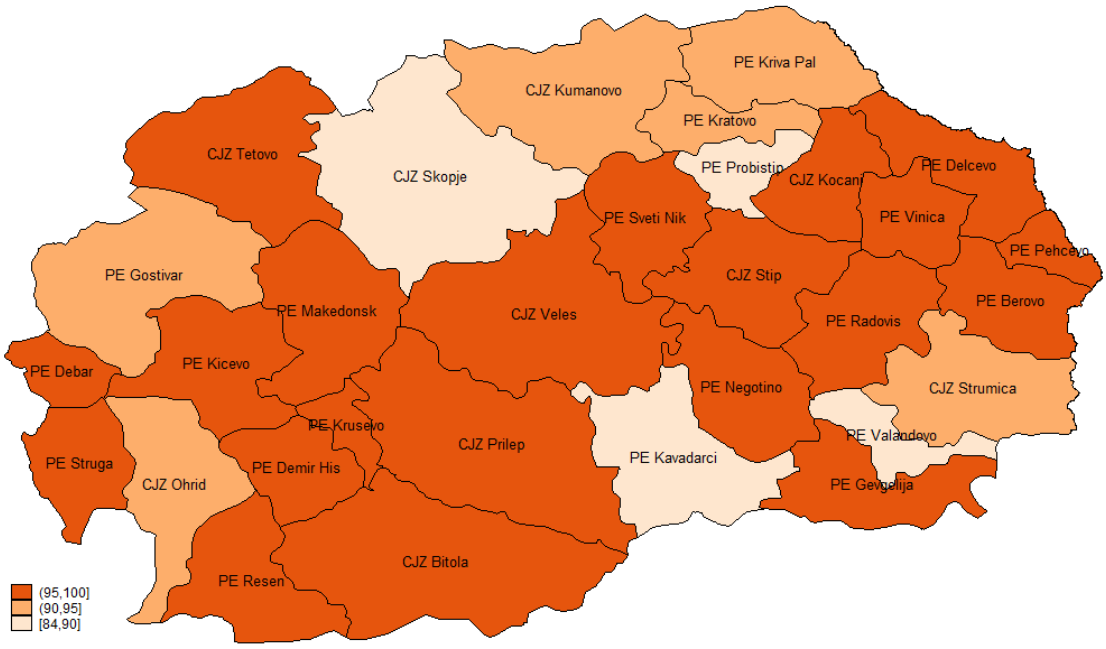

Figure J4. Sub-national coverage for 1 dose of MMR vaccine at 12 months of age. Republic of Macedonia-FYROM, 2014

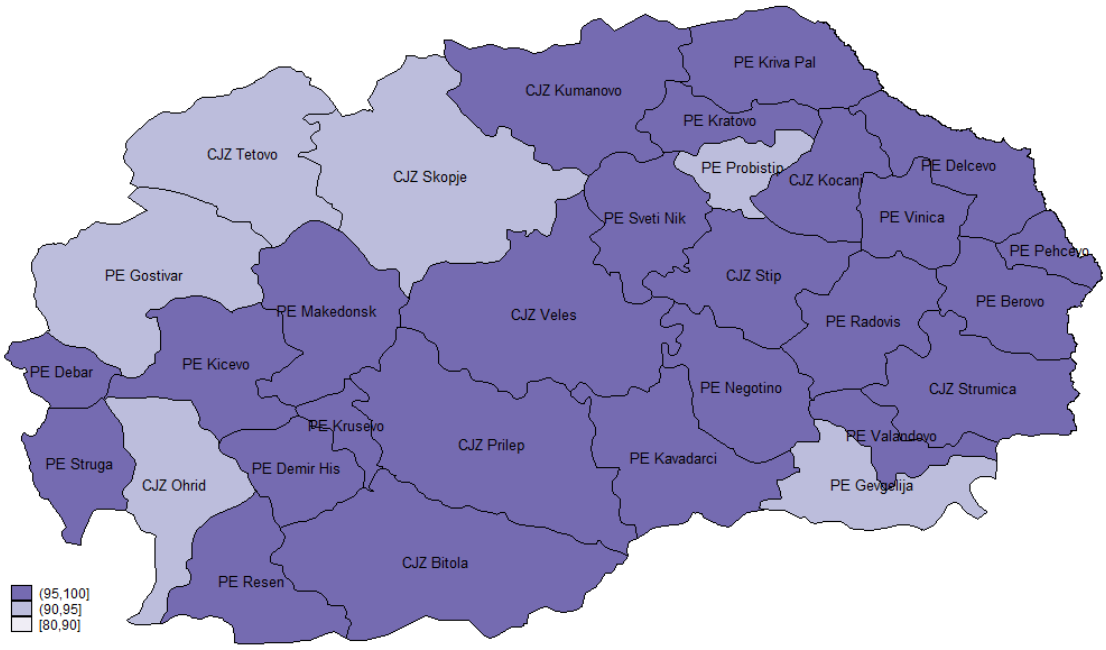

Figure J5. Sub-national coverage for 2 doses of MMR vaccine at 6 years of age. Republic of Macedonia-FYROM, 2014

K. MOLDOVA

In Moldova there is a National Immunization Plan targeting children, adolescents and adults. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table K1 and Table K2. Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Table K1. National immunization calendar: 0-24 months of age, Moldova

VPD	Birth	Months				
		2	4	6	12	22
Tuberculosis	BCG					
Poliomyelitis*		tOPV	tOPV	tOPV		tOPV
Diphtheria		DTwP-HepB-Hib	DTwP-HepB-Hib	DTwP-HepB-Hib		DTwP
Tetanus		DTwP-HepB-Hib	DTwP-HepB-Hib	DTwP-HepB-Hib		DTwP
Pertussis		DTwP-HepB-Hib	DTwP-HepB-Hib	DTwP-HepB-Hib		DTwP
Hepatitis B	HepB	DTwP-HepB-Hib	DTwP-HepB-Hib	DTwP-HepB-Hib		
Haemophilus influenzae type b		DTwP-HepB-Hib	DTwP-HepB-Hib	DTwP-HepB-Hib		
Rotavirus		RV	RV			
Pneumococcus		PCV	PCV		PCV	
Measles					MMR	
Rubella					MMR	
Mumps					MMR	

*bOPV will replace tOPV since may 2016. Since 01.01.2017 bOPV + IPV will be given at 6 months and OPV at 15 years will be removed
^Since 2016 - adults dT every 10 years ^^Catch up programme (since 2011)

Table K2: National immunization calendar: infants from 2 years of age, adolescents and adults, Moldova

VPD	Year		Adults
	7	15	
Tuberculosis			
Poliomyelitis*	tOPV	tOPV	
Diphtheria	DT	dT	dT every 5 years^
Tetanus	DT	dT	dT every 5 years^
Pertussis			
Hepatitis B			
Haemophilus influenzae type b			
Rotavirus			
Pneumococcus			
Measles	MMR	MMR^^	
Rubella	MMR	MMR^^	
Mumps	MMR	MMR^^	

^Since 2016 - adults dT every 10 years ^^Catch up programme (since 2011)

Catch up and supplementary immunization activities

No specific recommendations for unimmunized individuals are in place; no SIAs have been conducted in the last 5 years.

Recommendations to risk groups

Poliomyelitis vaccination

Poliomyelitis vaccination is offered to travellers to risk areas and newly arrived migrants, funded by government.

Measles and rubella

One dose of MMR is offered to non-immune women of childbearing age and newly arrived migrants, funded by government.

Recommendations to newly arrived migrants

Moldova, being one of the poorest countries in Europe, is not faced with an intensive flow of migrants. According to publicly available data, in 2015 4209 people arrived in Moldova from other states: 1201 people for employment, 819 people for studies, 1442 family reunion, 282 people for volunteer humanitarian activities and 460 people for other causes. Most immigrants arrived in Moldova from Ukraine (754 people), 646 from Romania, 567 from Russian Federation, 548 from Israel, 347 from Turkey, 180 from Italy. These people came to the country legally; they have all the necessary documents and legal permission to enter. Vaccination is not a question under which it would be banned from entering or living in Moldova. Moldova is also not attractive for refugees. Salary received by refugees constitutes 870 MDL per month (40 euro), which constitutes half of the minimum consumer basket. The issue of migrants and refugees in Moldova is under the Bureau of Migration and Asylum under the Ministry of Internal Affairs. In accordance with the Law of the Republic of Moldova no. 133 of 08.07.2011 on the protection of personal data, access to data about migrants and refugees is strictly limited. To get data on these persons a minimum period of 3 months is needed. All vaccinations included in the NIP are offered to migrants (children, adolescents, adults). Vaccination against poliomyelitis, diphtheria, tetanus, pertussis, measles, rubella and pneumococcus are administered at holding centre or in the community. Hepatitis B and tuberculosis vaccines are delivered at the community level. Information on vaccinations administered to migrants are recorded on individual vaccination cards and entered in (paper) immunization registries.

National vaccination coverage estimates

National vaccination coverage is assessed once a year through the administrative reports. Coverage estimates are reported in Table K3.

Table K3. National vaccination coverage estimates, Moldova

Vaccination	Year	VC (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children primary vaccination)	2015	91	children 24 mos vaccinated with 3 doses OPV	children 24 mos
Poliomyelitis (children first booster dose)	2015	92	children 36 mos received first booster dose OPV	children 36 mos
Poliomyelitis (children second booster dose)	2015	96	children 7 yrs received second booster dose OPV	children 7 yrs
Poliomyelitis (adolescent third booster dose)	2015	97	adolescents 15 yrs received third booster dose OPV	adolescents 15 yrs
Diphtheria-Tetanus (children primary vaccination)	2015	90	children 24 mos vaccinated with 3 doses DTP or DT or DTP-HepB-Hib	children 24 mos
Diphtheria-Tetanus (children first booster dose)	2015	91	children 36 mos received first booster dose DTP or DT	children 36 mos
Diphtheria-Tetanus (children second booster dose)	2015	96	children 7 yrs received second booster dose DT	children 7 yrs
Diphtheria-Tetanus (adolescent third booster dose)	2015	96	adolescents 15 yrs received third booster dose dT	adolescents 15 yrs
Hepatitis B (children primary vaccination)	2015	88	children 24 mos vaccinated with 3 doses HepB	children 24 mos
MMR (children primary vaccination)	2015	88	children 24 mo vaccinated with one dose MMR	children 24 mos
MMR-2 (children second dose)	2015	95	children 7 yrs received second dose MMR	children 7 yrs
MMR-3 (adolescent third dose)	2015	96	adolescents 15 yrs received third dose MMR	adolescents 15 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures K1-K5.

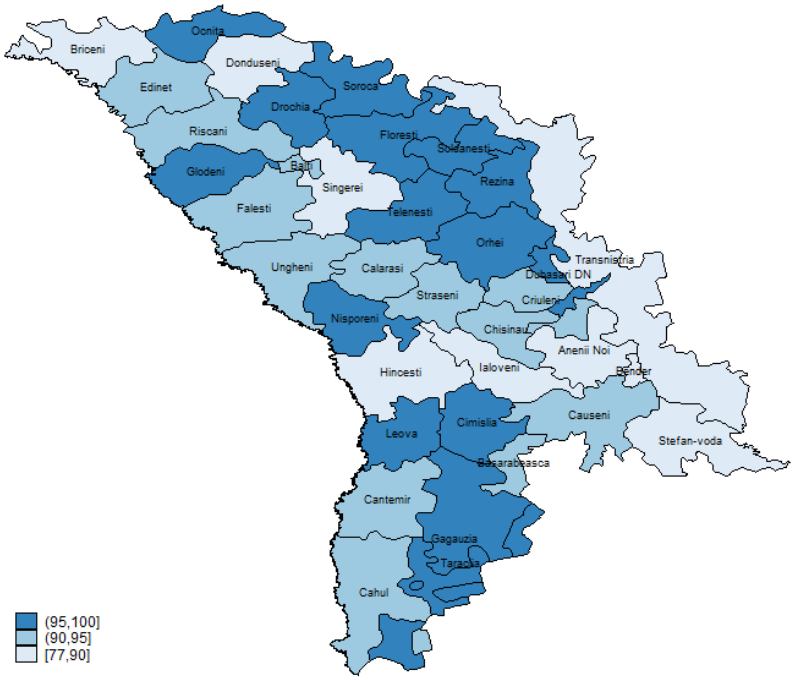

Figure K1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 24 months of age. Moldova, 2015

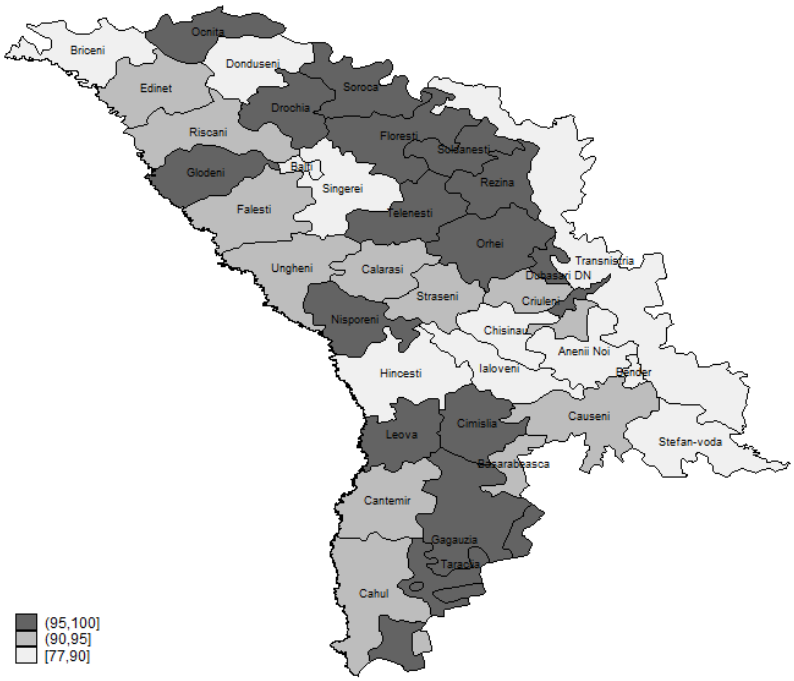

Figure K2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 24 months of age. Moldova, 2015

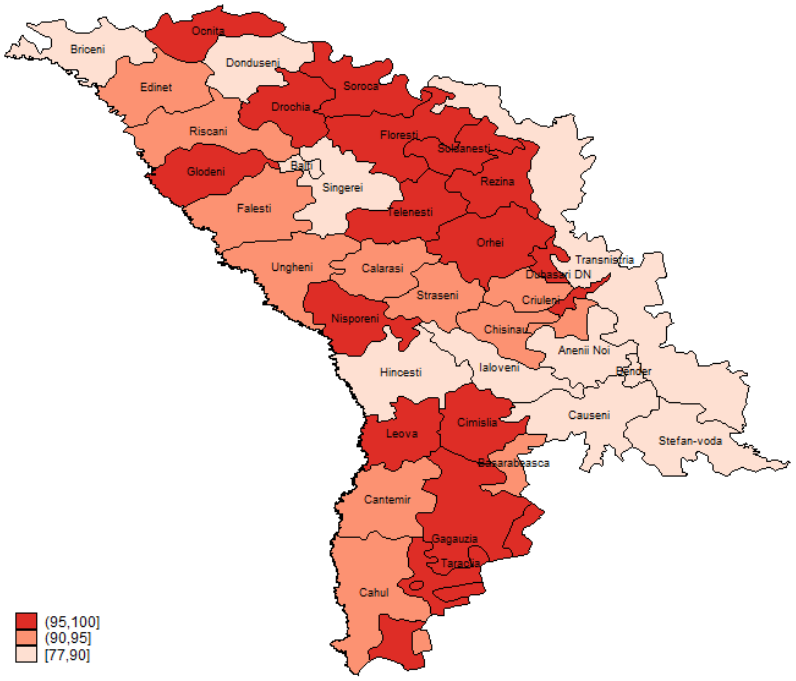

Figure K3. Sub-national coverage for 3 doses of hepatitis B vaccine at 24 months of age. Moldova, 2015

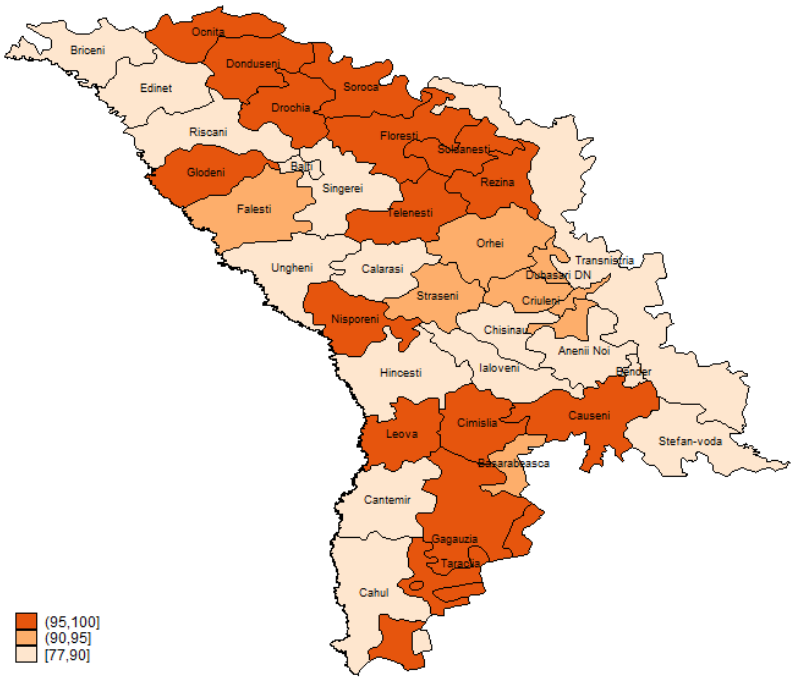

Figure K4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Moldova, 2015

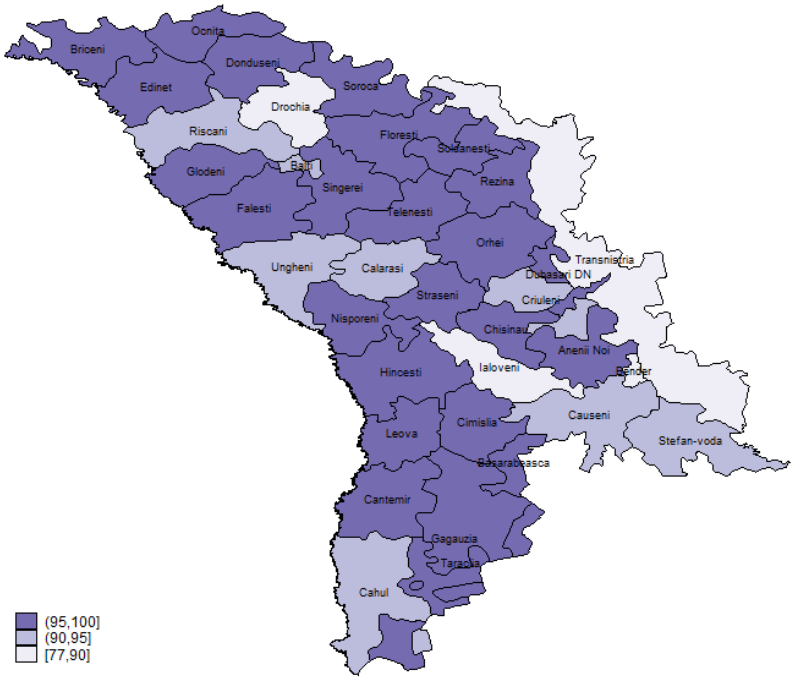

Figure K5. Sub-national coverage for 2 doses of MMR vaccine at 7 years of age. Moldova, 2015

L. PALESTINE

In Palestine there is a National Immunization Plan targeting children, adolescents, risk groups. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table L1 and Table L2.

Table L1. National immunization calendar: 0-24 months of age, Palestine.

VPD	Birth	Months					
		1	2	4	6	12	18
Tuberculosis	BCG						
Poliomyelitis		IPV	OPV + IPV	OPV	OPV		OPV
Diphtheria			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		DTP
Tetanus			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		DTP
Pertussis			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		DTP
Hepatitis B	HepB		DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Haemophilus influenzae type b			DTP-HepB-Hib	DTP-HepB-Hib	DTP-HepB-Hib		
Pneumococcus*			PCV	PCV		PCV	
Rotavirus			RV	RV			
Measles						MMR	MMR
Rubella						MMR	MMR
Mumps						MMR	MMR

*Pneumoccoccal conjugate vaccine 13-valent (Pneumococcal Polisaccaridic 23-valent vaccine used in specific conditions)

Table L2. National immunization calendar: infants from 2 years of age, adolescents and adults, Palestine.

VPD	Year	
	6	15
Tuberculosis		
Poliomyelitis	OPV	
Diphtheria	DT	dT
Tetanus	DT	dT
Pertussis		
Hepatitis B		
Haemophilus influenzae type b		
Pneumococcus*		
Rotavirus		
Measles		
Rubella		
Mumps		

*Pneumoccoccal conjugate vaccine 13-valent (Pneumococcal Polisaccaridic 23-valent vaccine used in specific conditions)

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

No specific recommendations for unimmunized individuals are in place.

National immunization campaigns with OPV and MMR vaccine were conducted.

The OPV campaign was conducted at the national level in 2014 targeting all children under 5 years, with 2 OPV doses (1 month interval between doses), in the primary health care governmental centres and the United Nations Relief and Works Agency for Refugees (UNRWA) centres.

Recommendations to risk groups

Hepatitis B

Three doses of hepatitis B vaccine (0-1-6 months) are offered to: household contacts of persons with chronic HBV infection, healthcare workers, laboratory staff exposed to blood, individuals receiving regular blood or blood products, haemodialysis patients or patients with chronic renal failure.

Recommendations to newly arrived migrants

Migrant children are offered all the vaccination included in the National Immunization Plan (full series or missed doses) at the community level. Information regarding the administered doses is recorded on immunization cards given to migrants and on a paper immunization registry.

National vaccination coverage estimates

National vaccination coverage is assessed once a year through the administrative method. Coverage estimates are reported in Table L3.

Table L3. National vaccination coverage estimates, Palestine

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	98	children vaccinated with 4 OPV and 2 IPV doses	children 24 mos
Diphtheria-Tetanus (children)	2013	98	children vaccinated with 3 doses	children 12 mos
Hepatitis B (children)	2014	98	children vaccinated with 4 doses	children 12 mos
MMR - 1 dose (children)	2013	98	children vaccinated with 1 dose	children 24 mos
MMR - 2 doses (children)	2013	98	children vaccinated with 2 doses	children 24 mos

M. SERBIA

In Serbia there is a National Immunization Plan targeting children, adolescents, risk groups. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table M1 and Table M2.

Table M1. National immunization calendar: 0-24 months of age, Serbia.

VPD	Birth	Weeks	Months				
		4	2	4	5	6	12
Tuberculosis	BCG						
Poliomyelitis			DTaP-IPV-Hib	DTaP-IPV-Hib		DTaP-IPV-Hib	
Diphtheria			DTaP-IPV-Hib	DTaP-IPV-Hib		DTaP-IPV-Hib	
Tetanus			DTaP-IPV-Hib	DTaP-IPV-Hib		DTaP-IPV-Hib	
Pertussis			DTaP-IPV-Hib	DTaP-IPV-Hib		DTaP-IPV-Hib	
Hepatitis B	HepB	HepB			HepB		HepB
Haemophilus influenzae type b			DTaP-IPV-Hib	DTaP-IPV-Hib		DTaP-IPV-Hib	
Measles							MMR
Rubella							MMR
Mumps							MMR

Table M2. National immunization calendar: infants from 2 years of age, adolescents and adults, Serbia

VPD	Years			Adults
	2	7	14	
Tuberculosis				
Poliomyelitis	IPV	bOPV	bOPV	
Diphtheria	DTaP-IPV-Hib	DT	dT	
Tetanus	DTaP-IPV-Hib	DT	dT	TT every 10 years
Pertussis	DTaP-IPV-Hib			
Hepatitis B				
Haemophilus influenzae type b	DTaP-IPV-Hib			
Measles		MMR		
Rubella		MMR		
Mumps		MMR		

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

Three doses of dT vaccine are offered to unimmunized adolescents, with an interval between doses of 4- 6 weeks. Two doses of MMR vaccine are offered to unimmunized adolescents, with an interval between doses of 1 month.

In 2015 national immunization campaigns targeting children in the second year of life were carried out, offering MMR vaccine at vaccination services. A coverage of 83.5% was achieved. Coverage data from SIAs was merged in the routine assessment of vaccination coverage.

Recommendations to risk groups

Poliomyelitis vaccination

It is offered to health care workers who have close contact with patients who might be excreting wild or vaccine type poliovirus and asylum seekers (number of doses depending on vaccination status).

Poliomyelitis vaccination is recommended to international travellers, paid by recipients (number of doses depending on vaccination status).

Tetanus-diphtheria vaccination

Tetanus-diphtheria vaccination is offered to asylum seekers (number of doses depending on vaccination status). It is recommended to unimmunized international travellers, paid by recipients (number of doses depending on vaccination status).

MMR vaccination

One dose of MMR vaccine is offered to non-immune household and close contacts of immunocompromised persons and to asylum seekers.

One dose of MMR vaccine is recommended to unimmunized international travellers, paid by recipients.

Hepatitis B

Three doses of hepatitis B vaccine (0-1-6 months) are offered to: household contacts of persons with chronic HBV infection, developmentally disabled persons in long-term-care facilities, men who have sex with men, injection-drug users, healthcare workers, laboratory staff exposed to blood, staff of residential and other accommodation for developmentally disabled persons.

Four doses (0-1-2-12 months) are offered to babies born to mothers who are chronically infected with HBV or to mothers who have had acute hepatitis B during pregnancy and haemodialysis patients or Patients with chronic renal failure.

Three doses are recommended to travellers to HBV endemic areas, paid by recipients.

Recommendations to newly arrived migrants

Migrant children and adolescents (asylum seekers) are offered vaccinations against poliomyelitis, tetanus, diphtheria, pertussis, MMR (full series or missed doses) at the community level. Information regarding the administered dosed is recorded only on immunization cards given to migrants; not recorded in any immunization registry.

National vaccination coverage estimates

National vaccination coverage is assessed once a year through the MICS by UNICEF. Coverage estimates are reported in Table M3.

Table M3. National vaccination coverage estimates, Georgia

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	95	children 24 mos vaccinated with 3 doses	children 24 mos
Poliomyelitis (adolescents)	2014	91	adolescents 14-18 yrs vaccinated with the appropriate number of doses for age	adolescents 14/18 yrs
Diphtheria-Tetanus (children)	2014	95	children 24 mos vaccinated with 3 doses	children 24 mos
Diphtheria-Tetanus (adolescents)	2014	91	adolescents 14-18 yrs vaccinated with the appropriate number of doses for age	adolescents 14-18 yrs
Hepatitis B (children)	2014	78	children at 24 mos vaccinated with 3 doses	children 24 mos
Hepatitis B (adolescents)	2014	78	adolescents at 14/18 years vaccinated with the appropriate number of doses for age	adolescents 14-18 yrs
MMR - 1 dose (children)	2014	86	children at 24 months vaccinated with 1 dose	children 24 mos
MMR - 1 dose (adolescents)	2014	89	adolescents 14-18 yrs vaccinated with the appropriate number of doses for age	adolescents 14-18 yrs

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one dose) vaccinations in children are reported in Table M.4.

Table M.4: Coverage estimates (%) for 3 vaccine doses at 24 months of age, by subnational area

Vaccine	Vojvodina*	Central Serbia**
Poliomyelitis	96.4	94.6
Diphtheria-Tetanus	96.4	94.5
Hepatitis B	96.2	93.1
MMR 1st dose	86.1	85.7

*Vojvodina: 1,912,095 inhabitants, representing 26.7% of the whole country population size
**Central Serbia: 5,252,037 inhabitants, representing 73.3% of the whole country population size

N. TUNISIA

In Tunisia there is a National Immunization Plan targeting children and adolescents. Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table N1 and Table N2. Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Table N1. National immunization calendar: 0-24 months of age, Tunisia

VPD	Birth	Months				
		2	3	6	12	18
Tuberculosis	BCG					
Poliomyelitis*		bOPV	bOPV	bOPV+IPV		bOPV
Diphtheria		DTP-HBV-Hib	DTP-HBV-Hib	DTP-HBV-Hib		DTP
Tetanus		DTP-HBV-Hib	DTP-HBV-Hib	DTP-HBV-Hib		DTP
Pertussis		DTP-HBV-Hib	DTP-HBV-Hib	DTP-HBV-Hib		DTP
Hepatitis B	HepB	DTP-HBV-Hib	DTP-HBV-Hib	DTP-HBV-Hib		
Haemophilus influenzae type b		DTP-HBV-Hib	DTP-HBV-Hib	DTP-HBV-Hib		
Measles					MR	MR
Rubella					MR	MR

*additional IPV booster at 6 months added in 2014

Table N2. National immunization calendar: infants from 2 years of age, adolescents and adults, Tunisia

VPD	Years				Adults
	6	7	12	18	
Tuberculosis					
Poliomyelitis	bOPV		bOPV	bOPV	
Diphtheria		dT	dT	dT	dT every 10 years^^
Tetanus		dT	dT	dT	dT every 10 years^^
Pertussis					
Hepatitis B					
Haemophilus influenzae type b					
Measles	MR^		MR^		
Rubella	MR^		MR^		

^ the 3rd dose at 6 or 12 years will be maintain until 2018 to cover all cohorts ^^booster every 10 years is reccomended, but not assessed

Catch up and supplementary immunization activities

Since 2013 the national immunization schedule includes two MMR doses at 12 and 18 months; however additional doses at 6 and 12 years (provided according previous schedules) are maintained until 2018 to cover unimmunized children from other cohorts. No SIAs have been conducted in the last 5 years.

Recommendations to risk groups

No recommendations for risk groups are in place.

Recommendations to newly arrived migrants

No specific recommendations for migrants are in place. All vaccinations included in the NIP are offered to newly arrived migrants, especially for foreigners from Libya and Syria. Immunization status for VPDs is checked for students coming from some countries as Africa by the scholar and university directorate.

National vaccination coverage estimates

National vaccination coverage is assessed twice a year through the administrative method. Coverage estimates are reported in Table N3.

Table N3. National vaccination coverage estimates, Tunisia

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	98	children vaccinated with 3 doses	children at 12 mos
Poliomyelitis (adolescents)	2014	99	children vaccinated at school	children 6 yrs to be vaccinated at school
Poliomyelitis (adolescents)	2014	99	children vaccinated at school	children 12 yrs to be vaccinated at school
Poliomyelitis (adolescents)	2014	97	adolescents vaccinated at school	adolescents 18 yrs to be vaccinated at school
Diphtheria-Tetanus	2014	98	children vaccinated with 3 doses	children at 12 mos
Hepatitis B	2014	98	children vaccinated with 4 doses	children 12 mos
MR - 1 dose	2014	98	children 12 mos vaccinated with 1 dose	children 12 mos
MR - 2 doses*	2014	95	children at 24 mos vaccinated with 2 doses	children 24 mos

*Other than administrative matter, a survey using a multistage stratified cluster sampling approach (MICS, Multiple Indicators Cluster Survey) is conducted every 5 years for collecting MR coverage data

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one and two doses) vaccinations in children are reported in Figures N1-N5.

Figure N1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 12 months of age. Tunisia, 2014

Figure N2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 12 months of age. Tunisia, 2014

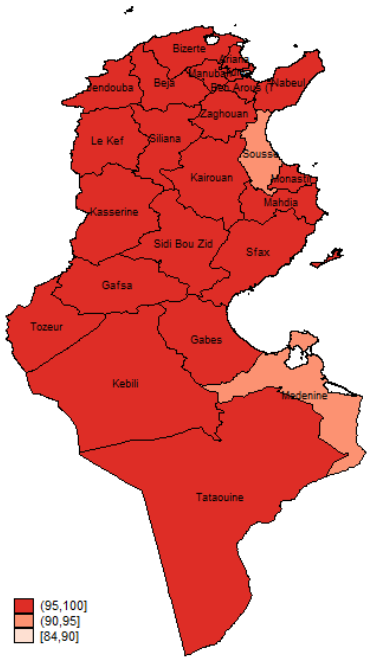

Figure N3. Sub-national coverage for 4 doses of hepatitis B vaccine at 12 months of age. Tunisia, 2014

Figure N4. Sub-national coverage for 1 dose of MMR vaccine at 12 months of age. Tunisia, 2014

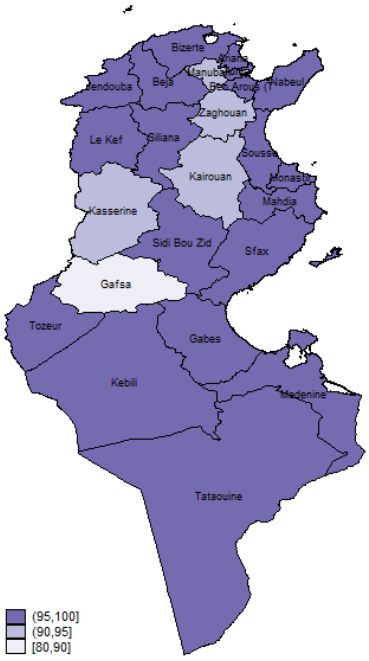

Figure N5. Sub-national coverage for 2 doses of MMR vaccine at 24 months of age. Tunisia, 2014

O. UKRAINE

The following data was transmitted by the Ukrainian contact point, but the final report was not validated.

Vaccines are offered at the national level funded by government, according to the immunization schedules reported in Table O.1 and Table O.2.

Table O1. National immunization calendar: 0-24 months of age, Ukraine

VPD	Birth	Months						
		1	3	4	5	6	12	18
Poliomyelitis			IPV*	IPV*	OPV			OPV
Diphtheria**			DT	DT	DT			DT
Tetanus**			DT	DT	DT			DT
Hepatitis B	HepB	HepB				HepB		
Measles							MMR	
Rubella							MMR	
Mumps							MMR	

*combined vaccine included IPV
**DT/dT: DT/dT or combined vaccines including DT/dT
(This Table only regards the 6 selected VPDs, not the full immunization schedule)

Table O2. National immunization calendar: infants from 2 years of age, adolescents and adults, Ukraine

VPD	Years	
	6	14
Poliomyelitis	OPV	OPV
Diphtheria**	DT	dT
Tetanus**	DT	dT
Hepatitis B		
Measles	MMR	
Rubella	MMR	
Mumps	MMR	

*combined vaccine included IPV
**DT/dT: DT/dT or combined vaccines including DT/dT
(This Table only regards the 6 selected VPDs, not the full immunization schedule)

Recommendations to risk groups and coverage data focus on the vaccinations for some selected diseases: poliomyelitis, diphtheria, tetanus, hepatitis B, measles and rubella.

Catch up and supplementary immunization activities

No specific recommendations for unimmunized individuals are in place.

Three supplementary immunization activities were conducted at from October 2015 to February 2016 at the national level, by offering tOPV vaccine to children and adolescents at vaccination services and schools, achieving a coverage of 53.7%, 75.1% and 81.7%. Coverage data obtained from SIAs were not merged to coverage assessed through routine immunization activity.

Recommendations to risk groups

No recommendations for risk groups are in place.

Recommendations to newly arrived migrants

No recommendations for newly arrived migrants are in place.

National vaccination coverage estimates

National vaccination coverage is assessed monthly through the administrative method. Coverage estimates are reported in Table O3.

Table O3. National vaccination coverage estimates, Ukraine

Vaccination	Year	Vaccination coverage (%)	Numerator (n)	Denominator (N)
Poliomyelitis (children)	2014	63	children 24 mos vaccinated with 3 doses	children 24 mos
Diphtheria-Tetanus (children)	2012*	76	children 24 mos vaccinated with 3 doses	children 24 mos
Hepatitis B (children)	2014	46	children 24 mos vaccinated with 3 doses	children 24 mos
MMR - 1 dose (children)	2012*	79	children 24 mos vaccinated with 1 dose	children 24 mos

*from WHO website

Sub-national vaccination coverage estimates

Sub-national coverage estimates for poliomyelitis, diphtheria-tetanus, hepatitis B and MMR (one doses) vaccinations in children are reported in Figures O1-O4.

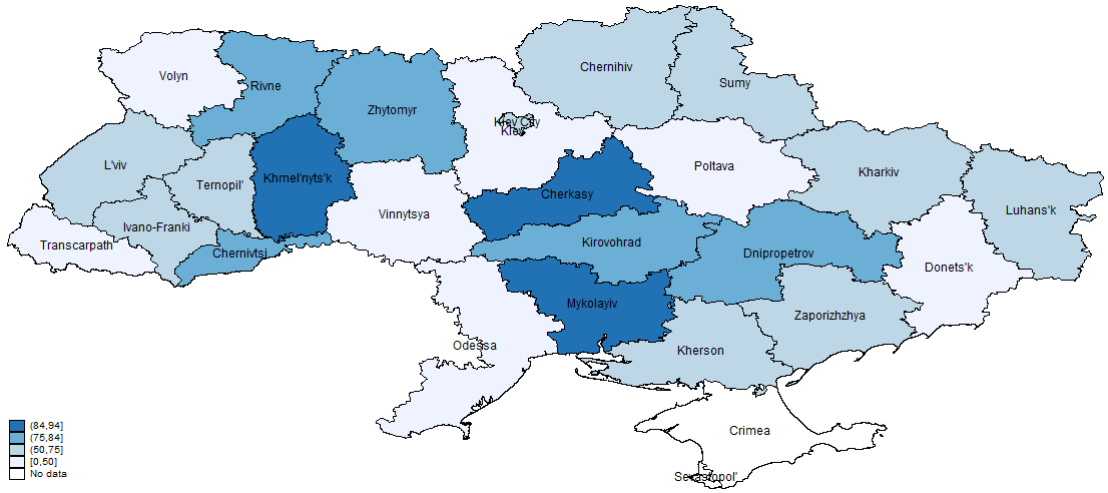

Figure O1. Sub-national coverage for 3 doses of poliomyelitis vaccine at 24 months of age. Ukraine, 2014

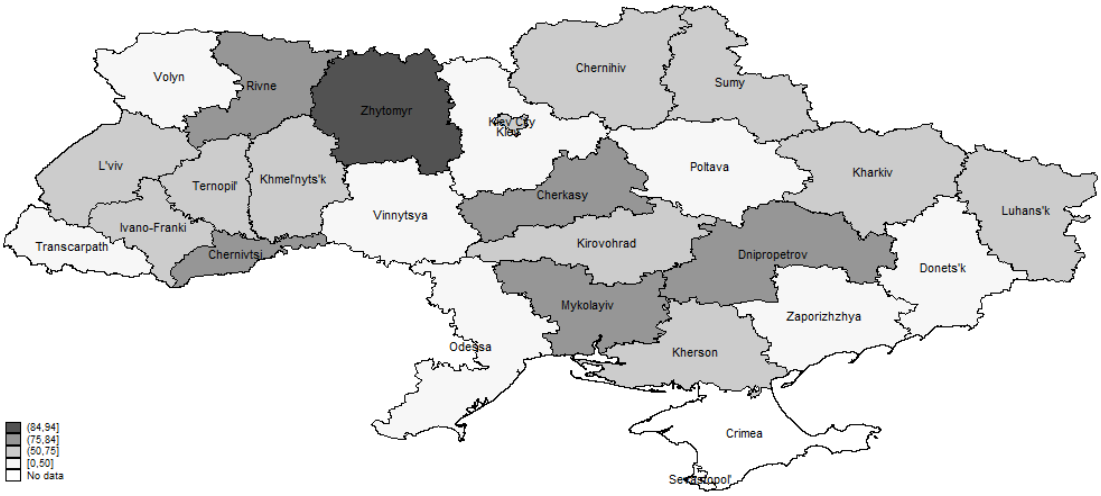

Figure O2. Sub-national coverage for 3 doses of diphtheria-tetanus vaccine at 24 months of age. Ukraine, 2014

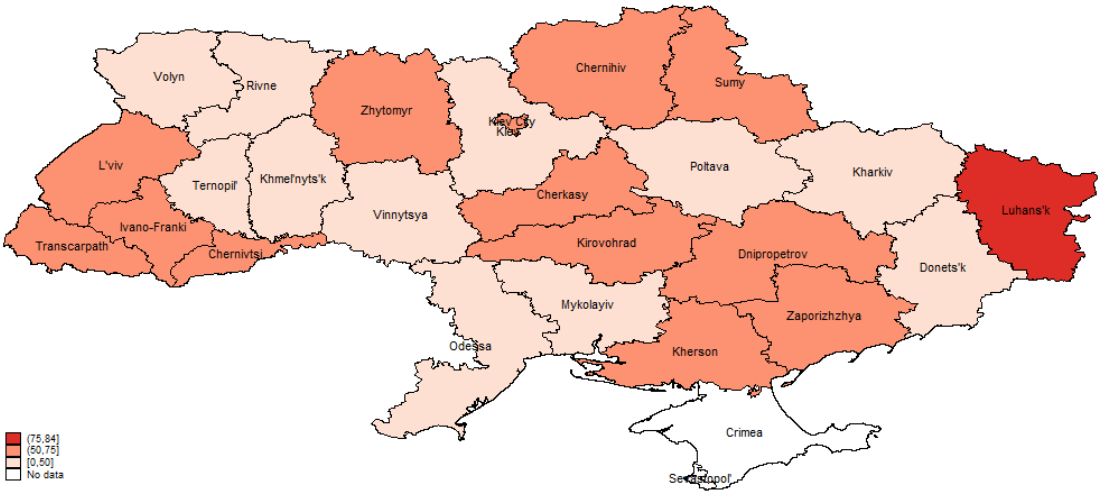

Figure O3. Sub-national coverage for 3 doses of hepatitis B vaccine at 24 months of age. Ukraine, 2014

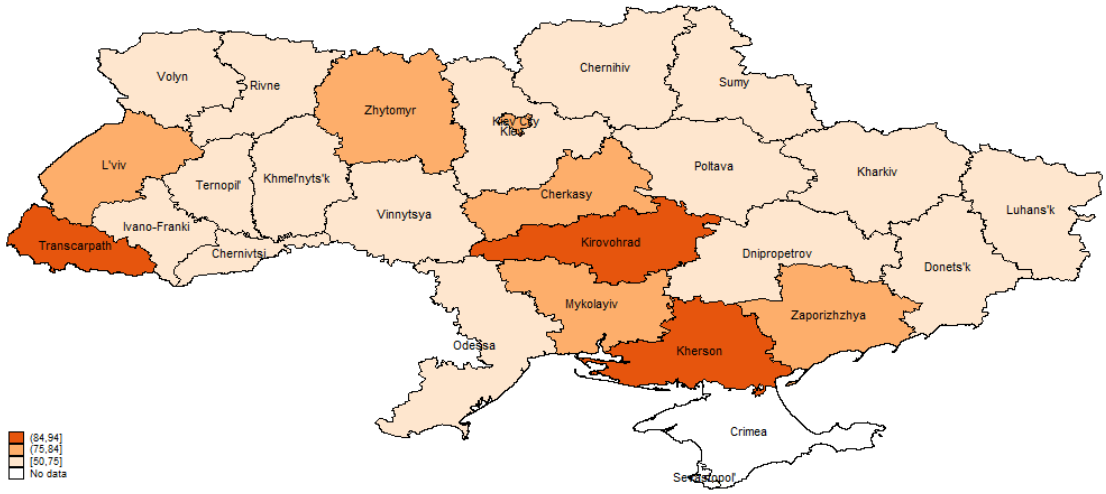

Figure O4. Sub-national coverage for 1 dose of MMR vaccine at 24 months of age. Ukraine, 2014

Serie Rapporti ISTISAN
numero di luglio 2017

Stampato in proprio
Settore Attività Editoriali – Istituto Superiore di Sanità

Roma, luglio 2017