

Strengthening National and Sub-national Capacity in Equity-Informed Immunization Microplanning

UNICEF MIDDLE EAST AND NORTH AFRICA REGIONAL WORKSHOP
SEPTEMBER 25 - 27 DEAD SEA | JORDAN



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ACRONYMS

2YL: Second Year of Life

AEFI: Adverse Events Following Immunization

DHS: Demographic and Health Survey

DQA: Data Quality Assessment

DTP3: Diphtheria-tetanus-pertussis

EIP: Expanded Program for Immunization

EMPHNET: Eastern Mediterranean Public Health Network

EMRO: Eastern Mediterranean Regional office of World Health Organisation

EPI: Expanded Programme for Immunization

GAVI: GAVI the Vaccine Alliance

GIS: Geographic Information System

GVAP: Global Vaccine Action Plan

HCP: Health Care Provider

ICT: Information, Communications, Technology

IDP: Internally Displaced Person

JSI: John Snow Inc.

MDG: Millennium Development Goal

MENA: Middle East and North Africa

MICS: Multi-Indicator Cluster Survey

MOH: Ministry of Health

MOV: Missed Opportunities for Vaccination

MVC2: Measles-containing vaccine 2nd dose

NIP: National Immunization Program

NSO: National Statistical Office

PENTA3: Diphtheria-tetanus-pertussis-hepB-Hib

PHC: Primary Health Centers

SDG: Sustainable Development Goal

SWOT: Strengths, Weaknesses, Opportunities, Threats

UHC: Universal Health Coverage

UNHCR: United Nations High Commission for Refugees

US CDC: United States Centers for Disease Control

VPD: Vaccine Preventable Disease

WHO: World Health Organization





EXECUTIVE SUMMARY

From 25 to 27 September 2017, UNICEF Middle East and North Africa Regional Office (MENARO) conducted a capacity-building workshop on Equity-Informed Immunization Microplanning in Jordan, in partnership with GAVI the Vaccine Alliance (GAVI), US Centers for Disease Control (US CDC), World Health Organization (WHO), Eastern Mediterranean Public Health Network (EMPHNET), and John Snow Inc (JSI).

The workshop invited participants from eight countries: Djibouti, Egypt, Iraq, Jordan, Lebanon, Sudan, Syria and Libya. It built on progress from WHO's November 2016 Workshop on Improvement of Immunization Data Quality and UNICEF's July 2017 Workshop on Equity-Informed National Planning and Evidence-Based Policy Making.

This workshop sought to improve the quality and availability of social and immunization-related data of special populations, engage effectively with non-public sector actors, address missed opportunities for vaccination and immunization during the second year of life, and enhance the use of data for equity-informed microplanning, decision-making and resource allocation.

The workshop addressed several inter-connected agenda items: 1) MENA Data analysis with an equity lens; 2) Data quality process improvement; 3) Accounting for special populations (e.g. transient, conflict-affected and urban slums); 4) Better engagement with service providers from outside the public sector; 5) Immunization during the second year of life and missed opportunities; 6) Equity-informed immunization microplanning; and 7) Information, Communications and Technology.

The workshop engaged the participants in presentations on key topics, followed by working group discussions in which participants analyzed their own country-specific issues and proposed solutions based upon the guidance generated through the presentations and discussions.

In the final session on next steps, participants from all countries affirmed their intentions to take specific, concrete steps to address interconnected issues that will advance equity, based upon strengthened data analysis and the inclusion of all types of populations in microplanning for service delivery. There was a strong demand for support from UNICEF and partners to follow up on activity implementation at the country level.



BACKGROUND

As the international community shifts from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs) era, it is critical to promote Universal Health Coverage (UHC) and equity as the central elements to advancing global and regional prosperity. In the MENA region, this shift has been difficult during the past decade with the proliferation of political conflicts leading to massive numbers of internally displaced people and refugees, as well as economic austerity, environmental degradation and strained health systems.

Despite these ongoing challenges, the MENA region has achieved remarkable improvement in routine immunization coverage. In recent decades, many national immunization programs have matured, achieving their basic vaccination coverage goals and increasing the number of vaccines in their immunization schedules. These countries have set increasingly ambitious goals, for instance extending coverage to hard-to-reach population groups and improving equity in coverage across geographic, socio-economic and demographic groups.

These goals require health workers and program managers at the local and district level to have reliable information about their target population and to track the vaccination status of all residents. Moreover, at the national level, high-quality data are needed to monitor program performance, determine priority areas to support, detect disease outbreaks, guide strategic decisions about whether and how to introduce new vaccines and document the impact of these vaccines to ensure sustained financing.

However, in a number of MENA countries the limited quality and utilization of immunization data is hampering progress towards achieving improved coverage and equity-related goals. Inaccurate data at the local level – for example, immunization coverage rates that are higher than 100%, negative dropout rates between vaccine doses, or identical numbers of infants vaccinated month to month – are often passed along with limited critical thinking and analysis, feedback or corrective action. While a few countries in the MENA region organize regular programs and data review meetings at the national and district levels, the analysis and use of data for decision-making and operational improvement within immunization programs are often lacking or insufficient.

In addition, current data systems in many countries were not designed with the goals of universal health coverage and equity in mind and often focus on populations already reached by programs. Consequently, there is often a lack of information about those who are never vaccinated (the “left-outs”), those who do not complete their vaccinations (“defaulters or drop-outs”) and those who opt out – likely contributing to the stagnation in immunization coverage rates in the region.

Information that can be used to improve equity – such as rural versus urban residence, mothers’ education, religious affiliation, ethnicity and household income – are collected in most countries through periodic large-scale surveys, such as the Demographic and Health Surveys (DHS) and the Multi-Indicator Cluster Surveys (MICS). While these large-scale surveys are useful in monitoring broad trends in vaccination coverage, they are less useful for operational decision-making because surveys such as the DHS occur once every five years. This situation limits countries’ ability to track equity measures in real-time or on a more frequent basis and to make program adjustments based on these data.

Moreover, in many countries microplans are updated or developed without a particular focus on equity. In places where the private sector and civil society sector have a major role in providing health services, there is often a lack of coordination and communication with these actors and their data often do not get reported, recorded and incorporated as part of the country’s overall planning process. A number of countries in the MENA region are currently experiencing extensive population movements. This makes it difficult for immunization program planners to accurately calculate population denominators in a given catchment area. Accurate population denominator estimates are essential to efficiently plan and allocate immunization resources and ensure all children are reached. Finally, the existing plans and tools for registering, recording and reporting coverage do not always take into account immunization during the second year of life (2YL) and missed opportunities.

In recognition of these gaps and priorities, UNICEF MENARO in close collaboration with WHO, CDC, GAVI and other key partners, intends to improve the capacity of countries at national and sub-national levels to analyze immunization data with an equity lens, assess their data quality

and existing tools and improve immunization outcomes by developing equity-informed microplans and resource allocation decisions.

This workshop builds on the November 2016 WHO Eastern Mediterranean Regional Workshop on Improvement of Immunization Data Quality and UNICEF’s July 2017 Regional Workshop on Equity-Informed National Planning and Evidence-Based Policy Making. As a follow-up and per request from several countries, UNICEF MENARO conducted this capacity building workshop with to improve the quality and availability of social and immunization-related data of special populations, engage effectively with non-public sector, address missed opportunities for vaccination and immunization during the second year of life and enhance the use of data for equity-informed microplanning, decision-making and resource allocation.



MAIN PURPOSE AND OBJECTIVES

The main purpose of this workshop was to build expertise at national and sub-national levels in A) routine immunization program monitoring; B) assessing and improving data quality; and C) using quality data for equity-informed microplanning and decision making.

Objectives

1. Improve awareness and knowledge of the importance of quality, availability and use of immunization, social and health data in equity-informed microplanning
2. Build competency in the use of essential tools, strategies and technologies in monitoring and improving immunization and social data
3. Increase capacity for equity-informed and evidence-based microplanning and effective advocacy and communications to enhance programming, planning, costing and resource mobilization

DAY 1 AGENDA

MONDAY, SEPTEMBER 25

Time	Sessions	Objectives
08:00	Registration	
08:30	Opening and introductions Lead: Kamel Senouci, MENARO	
09:00	Session 1: Data analysis with an equity lens Including 10 minutes discussions/Q&A Lead: Nahad Sadr-Azodi, MENARO	Objective: Set the stage and build on the MENARO July workshop by reviewing inequities in health and immunization and addressing inequities from moral, economic and performance lens.
09:30	Countries reports Panel moderator: Kamel Senouci, MENARO	Objective: Countries to discuss and present key challenges facing them in terms of data quality/availability and microplanning/budgeting.
11:00	Break and group photo	
11:30	Session 2: Review of salient topics/ discussions from 2016 WHO DQ workshops Including 10 minutes of discussions/Q&A Lead: Lora Davis, CDC	Objective: Ensure continuity from 2016 DQ WHO-led workshops. Overview of key sessions and discussions (e.g. coverage survey, administrative system, dashboard) as they related to equity-focused data analysis and microplanning.
01:00	Lunch	
02:00	Session 3: Accounting for transient, refugees/conflict-affected, urban/street populations 3 hours session including country best practices and group work Lead: Mamadou Diallo, UNICEF HQ	Objective: Working group format (SWOT) to discuss the challenges. Discuss, learn and apply mathematical methods and tools in estimating special populations. Taking into considerations social data as well.
05:00	Closing 15 minutes facilitators meeting	

DAY 2 AGENDA

TUESDAY, SEPTEMBER 26

Time	Sessions	Objectives
08:30	Recap of day 1	
09:00	<p>Session 4: Outside the public sector (i.e. private, NGOs, etc) immunization service delivery reporting and recording</p> <p>3.30 hours session including country best practices and group work</p> <p>Lead: Margaret Watkins, CDC</p>	<p>Objective:</p> <p>Discuss, learn and apply mathematical methods and tools in reporting and re-cording immunization services delivered outside the public sector. Discuss legal frameworks for reporting.</p>
10:30	Break	
11:00	Continue: Outside the public sector (i.e. private, NGOs, etc) immunization service delivery reporting and recording	
01:00	Lunch	
02:00	<p>Session 5: Immunization during second year of life (2YL) and missed opportunities for vaccination (MOV)</p> <p>3 hours session including country best practices and group work</p> <p>Lead: Mawuli Nyaku, CDC</p>	<p>Objective:</p> <p>Review global MOV assessment findings and discuss the 2YL concept and platform (both to address MOV and deliver beyond infancy immunization). Discuss and learn about improving existing tools to accommodate 2YL service delivery recording, monitoring and reporting.</p>
05:00	<p>Closing</p> <p>15 minutes facilitators meeting</p>	

DAY 3 AGENDA

WEDNESDAY, SEPTEMBER 27

Time	Sessions	Objectives
08:30	Recap of days 1 and 2	
09:00	Session 6: Equity-Informed Microplanning 3.30 hours session including country best practices and group work Leads: Julian Bilous and Nahad Sadr-Azodi, MENARO. Magid Al-Gunaid, EMPHNET. Rebecca Fields and Gerald Kalule, JSI	Objective: Discuss and learn microplanning with an equity lens, taking into account special populations and various service delivery and life-stage platforms.
10:30	Break	
11:00	Continue: Equity-Informed Microplanning	
01:00	Lunch	
02:00	Session 7: Information and Communications Technology (ICT) 1.30 hours session including country best practices/ applications Lead: Jan Grevendonk, WHO HQ	Objective: Discuss existing ICT applications and tools which can be adapted to improve data quality, recording and reporting in the context of this workshop. Particular discussion and presentation on ICT applications and tools pertaining to registries, GIS/ microplanning and campaigns.
3:30	Next steps Lead: Kamel Senouci, MENARO	Objective: Discuss and agree on next steps: strategies for incorporating costed equity-informed microplans into the national EPI planning and budgeting processes.
05:00	Closing	



SESSION 1 DATA ANALYSIS WITH AN EQUITY LENS AND COUNTRIES REPORTS

Leads: Nahad Sadr-Azodi and Kamel Senouci, MENARO

Objectives

1. Improve awareness and knowledge of the importance of quality, availability and use of immunization, social and health data for equity-informed micro planning
2. Set the stage and build on the UNICEF MENARO July 2017 workshop by reviewing inequities in health and immunization coverage and addressing inequities from moral, economic and performance lens

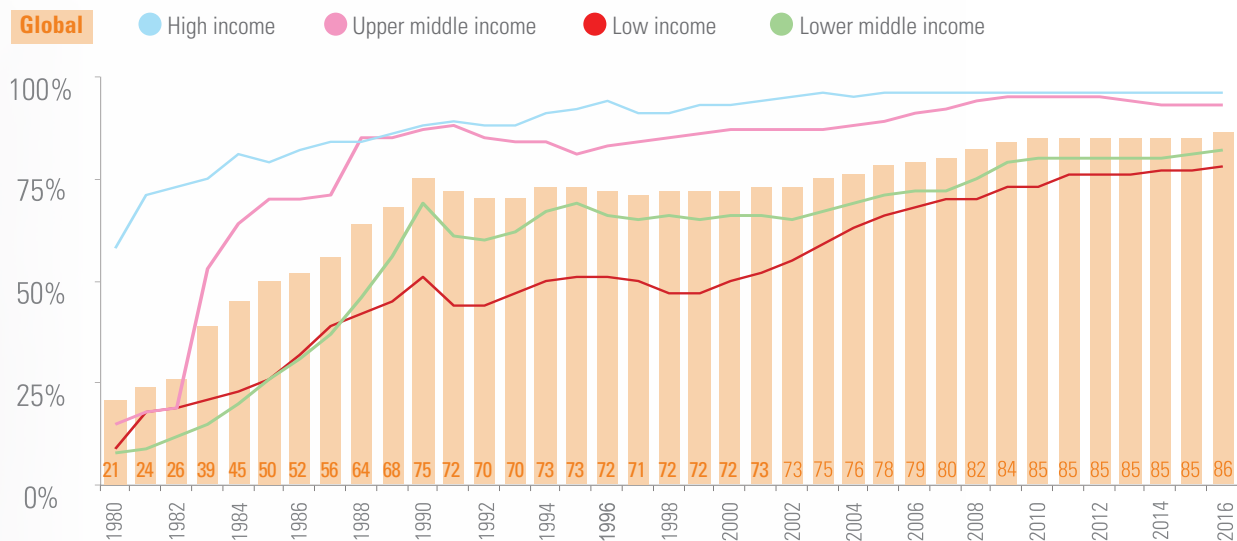
Presentation

Global Vaccine Action Plan 2011 -2020 Strategic Objective 3: The benefits of immunization are equitably extended to all people

The “Reaching Every District” strategic approach should be recast as “Reaching Every Community.” Disease burdens tend to be disproportionately concentrated in more marginalized populations. Therefore reaching more people will not only achieve a greater degree of equity but also achieve greater health impact and contribute to economic development.

Global DTP3 Coverage by Income Status in 2016

96% DTP 3 Coverage for High Income, **78%** For Low Income



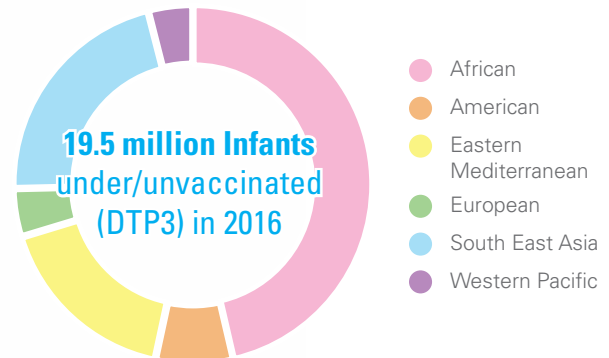
* World Bank list of economies (March 2017): Income classification not available for: Cook Islands and Niue
 Source: WHO/UNICEF coverage estimates 2016 revision, July 2017.
 Immunization Vaccines and Biologicals, (IVB), World Health Organization.
 194 WHO Member States. Date of slide: 25 July 2017.

Eastern Mediterranean Vaccine Action Plan 2016 - 2020

Vision: a region in which all individuals enjoy lives free of vaccine-preventable diseases.

Mission: ensure equitable access for all communities and individuals, especially those marginalized and in hard-to-reach areas, to a sustainable supply of quality-assured vaccines.

Data Analysis to show Inequities



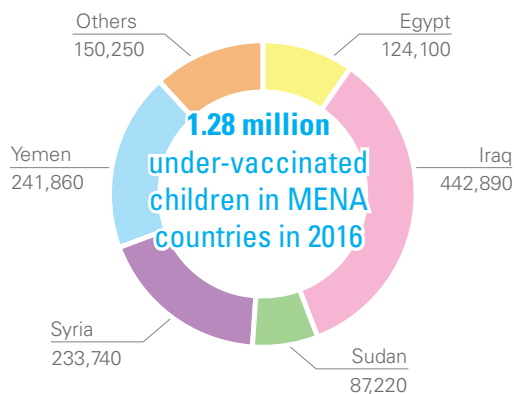
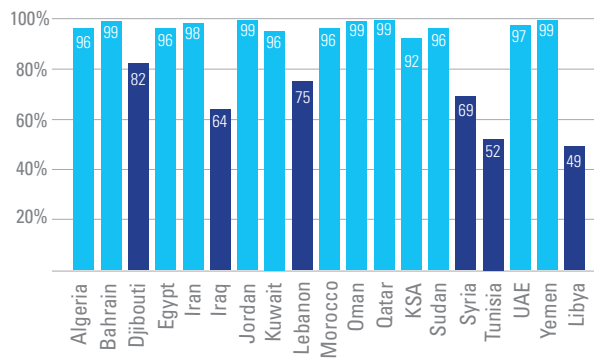
Source: WHO/UNICEF coverage estimates 2016 revision, July 2017. United Nations, Population Division.
 The World Population Prospects - 2017 revision. New York, 2017.
 Immunization Vaccines and Biologicals, (IVB), World Health Organization.
 194 WHO Member States. Date of slide: 17 July 2017.

An Increasingly Urbanized Region

The urban population in 2014 accounted for 54% of the total global population, up from 34% in 1960, and continues to grow. The urban population growth, in absolute numbers, is concentrated in the less developed regions of the world. It is estimated that by 2017, even in less developed countries, a majority of people will be living in urban areas. Many countries have very high urban populations, which are expected to continue to grow significantly. Additionally, many people live in urban slum conditions.

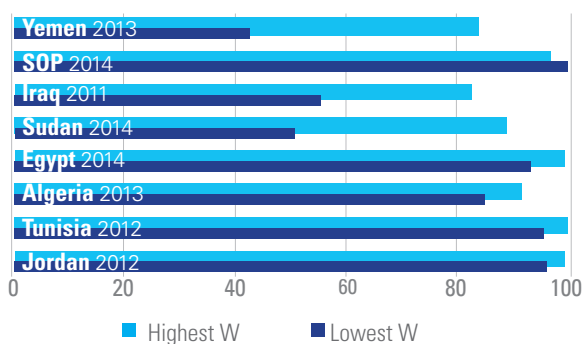
National Coverage for MCV2 in MENA Region 2016

Coverage shows inequalities among countries; the MENA region reports 85% MCV2 regional coverage but this masks a range from 99% to 49%.



Wealth, residence and mother's education are all major predictors of inequity

DPT3 coverage by wealth



WORK GROUP ACTIVITY

Participant countries were requested to discuss problems and solutions for their key challenges in terms of data quality and availability, and micro planning and budgeting.

PROBLEMS IDENTIFIED	SOLUTIONS PROPOSED
IDPs: IDP data may be disconnected from national data.	Incorporate data managed by UNHCR and other UN agencies.
Slum and urban street populations.	Conduct local surveys/screening.
Transient/nomadic population are not included in census or survey data.	Enhance transit point data collection.
Mobile populations are difficult to locate.	Improve mapping of mobile populations.
Private sector does not provide complete reports or may selectively report on government funded vaccines.	Strengthen engagement with private sector for example through medical associations.
School immunization programs have shown good progress, but pre-schools are more difficult to access.	Promote legislation for school entry vaccination requirements.
Second Year of Life and missed opportunities are common problems leading to high drop-out rates.	Produce and disseminate technical guidelines.

SESSION 2 REVIEW OF SA-LIENT TOPICS/ DISCUSSIONS FROM 2016 WHO DQ WORKSHOPS

Lead: Lora Davis, CDC

Objectives

The goal of the session was to orient the participants to the topics covered in the 2016 EMRO Regional Workshops on Immunization Data Quality. The objectives of the session were:

1. Briefly summarize various methods for assessing immunization data quality
2. Discuss the limitations of these methods to recognize missed populations
3. Be able to identify common discrepancies in immunization data and relate these to challenges with 'special' or missed populations

Presentation

The session began with presenting an overview of key topics covered in the EMRO Data Quality Workshops held in 2016. Upon questioning the participants, none had attended the EMRO Data Quality Workshop. The session then presented the types and uses of immunization-related data.

Administrative data:

- Important for making program improvements and for accountability
- When calculating administrative vaccination coverage, ensure that everyone included in the numerator is also part of the denominator or target population
- With regard to special populations:
 - » Coverage is a challenge because children who are undocumented refugees, IDPs, living in a pastoral community or from other mobile populations are often not included as part of the target population
 - » Including large numbers of children from special populations in the numerator without also including them in the denominator creates an inflated coverage rate
 - » This practice may create a false sense of security and detracts from identifying and assessing missing children from the target population
 - » In most countries, immunization data collection tools are not designed to capture children from special or mobile populations

Data quality assessment:

- Various methods exist for routine assessment of immunization data. It is recommended that data quality be reviewed during regular EPI meetings at all levels and during supervisory visits to include:
 - » Monitoring completeness and timeliness
 - » Internal consistency: review coverage rates over time
 - » Use information from multiple sources (disease surveillance, stock data)
- Newer components of the WHO Data Quality Assessment (DQA) or Data Quality Review methodology were introduced last year, to include:
 - » Reviewing of the immunization information system, including the data collection and reporting tools
 - » Linking findings to action, and
 - » Integrating recommendations to an annual plan of action
- Population-based coverage surveys complement administrative coverage data and are conducted to answer specific questions, with increasing interest in assessing coverage disparities
- WHO drafted new coverage survey methods in 2015 that are more aligned with well-accepted household cluster survey methods and are aimed at improving survey accuracy by including probability sampling and weighted analyses
 - » Without good microplanning or having information about special populations, coverage surveys often miss children from these groups and street populations/homeless children
 - » Some of the newer methodologies introduced in the past 2 years are more likely to detect missed populations. For example the new selection criteria for the WHO survey and DQA components that involve reviewing data collection and reporting tools in conjunction with data verification

Discussions:

Countries need to assess and know their special populations and ensure all eligible children are vaccinated – even if coverage is >100%

- Several countries requested guidance on how to manage information/data from special populations

WORK GROUP ACTIVITY

Be able to detect common discrepancies in data and describe possible reasons, focusing on those that are equity-related.

The most senior members from each group, such as EPI managers and senior data managers, were assigned to a separate work group, otherwise country team members worked together. The groups reviewed fictitious administrative data to assess discrepancies and identify reasons and corrective courses of action.

The activity included a review of Penta3 doses by district and province, Penta3 coverage rates by province, coverage survey data for Penta3 and vaccine preventable disease (VPD) surveillance data of the number of measles cases by district.

The key messages included:

- Always assess for common errors in data (accidental too high or low, repeated values, or reported values that consistently end in 0, 5 or 9 – intentional falsification)
- Need to assess numerator and denominator when reviewing coverage rates to determine if/where a problem lies. The example provided demonstrated downward revision of the denominator and not a challenge with the numerator, which indicates movement of the target population, possibly from an insecure region. This trend was especially prominent in two provinces
- Course of actions should be to assess the situation in the two provinces and determine reasons for decreasing population. This may help in identifying special target populations for immunization
- When comparing to VPD surveillance data most measles cases were in two provinces with coverage rates that were substantially higher using administrative data than found in the MICS. However when interpreting the number of cases one needs to be cognizant of age, because older age groups might not have been protected if immunization was low previously

SESSION 3 ACCOUNTING FOR TRANSIENT, REFUGEES/ CONFLICT-AFFECTED, URBAN/ STREET POPULATIONS

Lead: Mamadou Diallo, UNICEF HQ

Objective

To focus on techniques for estimating special populations.

Background

Special populations encountered in the MENA region are mostly transient and nomad communities such as Bedouins in Egypt, Somali and Afar; Urban populations in Egypt; refugees and other conflict-affected groups in Syria, Iraq, Lebanon or Jordan. Most countries in the MENA region are affected by significant numbers of special population groups. Evidence of lagging immunization coverage and services among special populations as compared to the general population is not well-developed across the region. Nonetheless, there are indications that some special populations are not covered at the same level as the general population. For instance, a 2014 polio outbreak in Rasafa, on the east side of Baghdad, Iraq, highlighted polio vaccine coverage gaps in the urban slums of the city. Also, some of the countries capturing special population status in their routine systems have identified disparities. One of the barriers to producing evidence around immunization coverage and services for special populations is the difficulties in determining the exact size of these groups.

Presentation

The first part of the session presented an overview of methods aimed to estimate population size. Populations estimation methods were classified into three classes. The first class included traditional methods such as the census and surveys. The second class included microcensus techniques and the third class included satellite-based methods.

The discussion on traditional methods such as surveys and censuses emphasized that countries should use traditional methods to the maximum extent possible to estimate special populations. The censuses, especially recent censuses, should be used as the baseline where possible. For example, the 2015 Jordan census collected information on refugees. When used properly,

surveys can capture urban populations and other hard to reach yet settled communities, but this requires good communication, advocacy and community outreach to ensure accuracy. Urban populations, refugee camps, refugees living in households with the general population, remote communities and other socially distant groups can be covered by population-based surveys, but rigorous implementation of survey procedures are necessary to accurately capture these special populations.

The second class, microcensuses, are clearly underused, however in many situations they can be an effective tool for estimating special populations. In the context of immunization programs, a microcensus is a local enumeration of the population of interest i.e. newborns, surviving infants and pregnant women. Conducting a microcensus in every catchment area can be expensive, therefore it may be more strategic to use microcensuses in areas known to have unreliable denominators.

The third class of population estimation methods, satellite-based techniques, have been used effectively in Nigeria to identify special populations and ensure that all children are reached and vaccinated. Within the polio eradication effort to reach every community, satellite imagery has been instrumental in identifying settlements missed by traditional census maps. Sophisticated imaging techniques and other machine learning methods can help provide estimates of populations of interest in both in urban and rural areas. For more accurate predictions, satellite-based models can be calibrated and fine-tuned using microcensus data.

WORK GROUP ACTIVITY

In the second part of the session, a list of questions was prepared for each country to answer. The questionnaire encouraged participants from each country to work together to better understand the issues of their special populations related to the delivery of immunization services. The exercise also encouraged participants to reflect on the availability of evidence and data regarding the situation of their special populations.

During the working group sessions, the countries identified the following special populations:

- Refugees and internal displaced populations, e.g. Syrian and Iraqi refugees
- Nomads and other mobile populations, e.g. about 20% of the population in Djibouti, Bedouin in Egypt and Jordan
- Urban populations, e.g. in Cairo

- Urban slums, e.g. East Amman, Baghdad Rasafa
- Street children, e.g. 2nd generation “street mothers” – young women who have grown up on the streets and now have children of their own

All countries attending the workshop confirmed formal collaboration between the EPI and the National Statistical Office (NSO) or the national office in charge of the health statistics. Djibouti has put in place a specific partnership between EPI and the “Direction de information Sanitaire” to improve the quality of immunization data. Most countries are also collaborating with research institutions and other data related organizations outside the public sector. Only Jordan expressed a lack of collaboration between the EPI and non-public sector data related organizations. Jordan’s participants are interested in expanding such collaboration to update and validate immunization data, identify bottleneck and solutions to current immunization services and to develop policies to improve coverage.

SESSION 4 OUTSIDE THE PUBLIC SECTOR (I.E. PRIVATE, NGOS, ETC) IMMUNIZATION SERVICE DELIVERY REPORTING AND RECORDING

Lead: Margaret Watkins, CDC

Objectives

1. Describe considerations related to engaging non-government for-profit and not-for-profit immunization providers
2. Identify potential strategies to better engage non-government immunization providers in immunization delivery

Background

The session presented considerations related to non-government immunization providers. The terms “private” or “non-governmental” providers include both for-profit and not-for-profit providers such as NGOs and faith-based organizations. The goal is not to advocate for an increased or decreased role for private providers in immunization delivery. Rather the goal is for immunization programs to optimize communication and coordination with non-government providers. Specific country contexts are different, therefore there is no universal ‘one size fits all’ standard for engagement with private providers. Disadvantages of not engaging non-governmental providers are that na-

tional immunization programs (NIPs) have limited knowledge about immunity status and immunity gaps of the population without understanding the contribution from non-government providers and missed opportunities to expand the reach of immunization via collaboration.

Presentation

Literature is relatively scarce on the topic of non-government providers but some findings include:

- The contribution of non-government (private) providers to immunization coverage varies across countries. Their contributions are often difficult to measure. Generally not-for-profit facilities offer vaccinations more often than for-profit facilities. Not-for-profit providers (typically NGOs) often have existing agreements with governments, this is less common among for-profit providers
- There are documented problems with service quality related to non-profit providers, such as cold chain, vaccine management, recording and reporting and missed opportunities. However, these service quality problems can also exist with government providers
- Reporting of vaccinations to the NIP is often not done, or is inconsistent from non-governmental health facilities. Providing vaccines to non-government providers can offer opportunities to incentivize or require reporting as a condition of receiving free vaccine from the NIP
- Reporting of adverse events following immunization (AEFI) and vaccine preventable diseases is often suboptimal. Many non-government providers are unaware or unclear about reporting requirements

The findings of an informal pre-workshop survey of participants from seven countries were presented. In two of the seven countries, Iraq and Libya, non-government providers are not involved in immunization.

- About half of the participating countries with non-government providers had a database on non-government providers
- About half of the countries reported that non-government providers report doses, but do so inconsistently
- The estimated proportion of total doses given by non-government providers ranged from 3% - 50%
- Four of the five countries provide training to nongovernment providers
- Three of the five countries face challenges with reporting AEFI and vaccine preventable

diseases from non-governmental providers

- Satisfaction with non-government performance on a scale of 1 to 10 averaged 4.75 (range 1-7)
- Operational challenges with non-government providers include service quality and vaccine schedule issues, fees for service, new vaccine introduction, defaulter tracking, rumor generation about the government EPI program, and risk of service stoppage if the flow of government funds to non-governmental providers is interrupted

Country Presentations:

Sudan and Lebanon gave short presentations on immunization by non-government providers in their countries. Summary of key points:

Sudan:

- A large proportion of vaccinations are given by private providers (47% in Khartoum state)
- Private providers can increase access to areas without a government presence
- Mapping exercises have been done to map private providers
- Private providers are involved in planning, receive vaccine from the MOH and report doses to the MOH

Lebanon:

- 27- 45% of vaccines are given by private providers
- Private providers receive vaccines from pharmaceutical companies, not the government. Therefore private providers do not report doses to the MOH. The MOH receives reports on the number of doses sold from pharmaceutical companies and makes some estimates based on that data

WORK GROUP ACTIVITY

Recent WHO guidance document on non-government immunization providers includes an overall recommendation: "National immunization programmes should optimize collaboration and communication with nongovernmental providers regardless of the relative contribution of nongovernmental providers to the delivery of vaccination."

The six specific recommendations in the guidance document were used as a framework for an interactive breakout work group activity "world café" style (one station per recommendation, changing every ten minutes). Countries described what could be done in their countries relative to each recommendation. The six facilitators then

summarized the findings. The recommendations used as the framework were:

1. Assess nongovernmental providers' contribution in immunization service delivery
2. Determine the optimal model of public private engagement and optimization of service delivery
3. Facilitate dialogue and establish agreements/contracts for collaborative activities, including decision-making
4. Ensure adequate data management and reporting
5. Provide adequate training and capacity building
6. Facilitate accountability and performance oversight

SESSION 5 IMMUNIZATION DURING SECOND YEAR OF LIFE (2YL) AND MISSED OPPORTUNITIES FOR VACCINATION (MOV)

Lead: Mawuli Nyaku, CDC

Objectives

1. Review global MOV assessment findings and discuss the 2YL concept and platform as it relates to both MOVs and immunization beyond infancy
2. Discuss and learn to improve existing tools to accommodate 2YL service delivery recording, monitoring and reporting

Background

A missed opportunity for vaccination as "...any visit to a health facility by a child or adult who is eligible for vaccination (unvaccinated, partially vaccinated or, not up-to-date, and free of contraindications to vaccination), AND which does not result in the person receiving all the vaccine doses for which he or she is eligible."

Presentation

Key points from the MOV session were:

- Reducing MOVs will contribute to addressing equity issues related to immunization
- Parents/caregivers and healthcare workers both contribute to MOVs
- Specific factors that contribute to MOVs include the failure to review the immunization history for a child presenting for a non-immunization related visit, healthcare provider

(HPC) unwillingness to open a new vaccine vial, forgetfulness by the HCP or parents/caregivers, a falsely perceived contraindication by the HCP or parent/caregiver, logistical issues including stock outs and cold chain failure and economic barriers

- The estimated global prevalence of MOVs in 2014 was 32%, and was unchanged from when the assessment was first conducted in 1993. There are differences between countries, regions, vaccine antigens, children vs. adults/women, but as a whole, no ground has been gained on MOVs from a global standpoint
- A ten-step strategy has been developed by WHO to guide countries to implement MOV assessments. This process is organized into three phases - planning and preparation, conducting field work and implementing and monitoring interventions. The final step of this strategy provides guidelines for incorporating the MOV strategy into long-term health systems strengthening and plans for sustainability
- UNICEF in collaboration with WHO, US CDC, EMPHNET, MEDAIR and Jordan Ministry of Health is conducting the first Missed Opportunities in Vaccination Assessment and Costing Analysis in the MENA Region
- Simple tools such as the second dose measles and Meningitis A flow chart developed by Ghana's EPI Programme for their frontline healthcare providers might contribute to reducing MOVs
- The second year of life (2YL) immunization platform provides an opportunity to reduce MOVs through catch-up vaccinations

Immunization delivery in the second year of life (2YL):

The session then examined immunization delivery during 2YL. Key points from this presentation were:

- The 2YL immunization platform could potentially bridge the stagnation gap observed in most regions for DTP coverage, even if protection is provided late as more and more countries are providing immunization during 2YL
- 2YL immunizations should not be perceived as stand-alone or a separate intervention, but rather as part of the concept of immunizations as a continuum with a goal of fully immunizing people throughout life
- There are challenges on both the delivery and supply sides for the introduction of a new immunization visit during 2YL. Strategies that

worked to provide immunizations during the first year of life might not work for 2YL immunizations

- » Challenges on the demand side include: lack of culture/awareness of the need for vaccines beyond 12 months, perceptions of low disease risk beyond infancy, lack of communication and outreach for 2YL immunizations, and logistical challenges such as mothers often separated from older children during the day
- » Challenges on the supply side include: inadequate planning during MCV2 introduction, lack of culture/awareness to vaccinate beyond 12 months, lack of HCP trainings, missed opportunities, vaccine wastage concerns and poor estimation of vaccine needs, reporting and coverage monitoring 2YL vaccines using systems that were built to monitor only infant doses, unclear policies regarding catch-up and MCV2 age ranges and HCP workload
- Strengthening the 2YL platform provides opportunities for reaching measles/rubella elimination goals, providing booster doses and new vaccines and catching-up children who missed vaccine doses during their first year

Data recording and reporting tools:

Country examples were provided to illustrate data recording and reporting tools that were poorly designed and contribute to inequities in immunization or missing special populations. Examples included:

- A community register indicating a child is “fully immunized” before receiving a second dose of measles
- A child vaccination card that indicates “measles at 9 months” and “measles at 18 months” makes it challenging for a health care providers to correctly record doses when a child outside these age ranges presents for a measles shot

Considerations for improving data recording and reporting include:

1. Involving all stakeholders
2. Planning the revision process including considering availability of financial resources
3. Revising all data tools

WORK GROUP ACTIVITY

Using a SWOT analysis to improve data recording and reporting tools:

Each participating country except Libya and Syria working together, used the strengths, weaknesses, opportunities and threats (SWOT) concept to attempt to revise their current immunization registers by identifying how each of these four areas contributed to the process. Presentations on this exercise were then given to the group by Lebanon, Djibouti and Iraq.

Themes that emerged from this group activity included encouraging countries to:

- Include special populations such as refugees, IDPs, nomadic populations and others
- Ensure all vaccines currently included in a country’s immunization schedule are captured in the data collection tools, and that tools are robust enough to also capture new vaccine introductions

SESSION 6 EQUITY-INFORMED MICROPLANNING

Leads: Julian Bilous and Nahad Sadr-Azodi, MENARO. Magid Al-Gunaid, EMPHNET. Rebecca Fields and Gerald Kalule Sekitto, JSI

Objectives

1. Discuss and learn microplanning with an equity lens, taking into account special populations and various service delivery and life-stage platforms
2. Review and discuss microplanning tools for Reaching Every Community, with an emphasis on equity for all populations

Background

The Global Vaccine Action Plan’s (GVAP) Strategic Objective 3 calls for the “Reaching Every District” approach to be recast as “Reaching Every Community”. This is to specifically target inequities in immunization coverage, and the recognition that many children within districts who are currently missed are found in marginalized and underserved communities outside traditional social and government structures. Addressing immunization inequities is particularly relevant today, with the introduction of many new life saving vaccines, whose benefits will be maximized only when the most vulnerable children are reached.

The Reaching Every District approach is largely based upon analysis of coverage data to identify low performing areas and prioritize corrective action. This approach has worked well by helping countries move from low coverage to perhaps 80% coverage, but may not be adequate to raise coverage to the >90% required to achieve disease reduction goals.

The main reason for this inadequacy lies in the reliance on coverage data. In many countries there are up to 30% of the population who are not included in the denominator, especially if they are urban poor and migrant populations. In order to make a full account of the underserved, the Reaching Every Community approach does not rely upon reported coverage data.

The Reaching Every Community approach first requires the Health Centre or sub-district level to list all their communities/villages and identify those who are under-served on the basis of their local knowledge of the population. The social characteristics are identified and a simple analysis made of the barriers the communities face and how to overcome them. Another vital feature of the Reaching Every Community approach is the action that takes place within the communities, monitoring results, identifying priorities and involving community representatives for mapping and planning, service delivery and follow up support.

Microplanning should take place at the health centre level (sub/district) with support from the district level and engagement of community representatives. This is in contrast to the Reaching Every District approach where planning is often done by the district without the detail needed to identify the underserved and ensure every community is reached. Equally, a budget for service delivery, including outreach services should be based upon the real costs faced by the health centre.

The district level should facilitate microplanning at health centre level and carry out regular supportive supervision, prioritizing health centres serving high risk communities and making joint visits to high risk communities together with health centre staff.

Presentation

The presentation introduced the five components of Reaching Every Community, compared to the previous strategy of Reaching Every District, making the point that high population immunity can only be achieved when every community is fully immunized on an equitable basis, which includes high risk and marginalized communities.

The five components of a “Reaching Every Community” approach are:

- Identify the marginalized communities in which immunization inequities occur
- Update Health Centre microplans to include all marginalized communities
- Implement actions to reduce social distance between Health Centres and marginalized communities
- Monitor immunization performance within all marginalized communities
- Prioritize resources for marginalized community immunization activities

Each component has an equivalent action in the microplan developed by health centres.

This was followed by a presentation on the eight steps for microplanning at health centre level:

1. Identify and map high risk/under-served communities, engaging community representatives in this process
2. Detailed analysis of one under-served community, local health centre providing services and available community resources
3. Identify the obstacles to full immunization from community demand side and health service supply side. Identify the root causes of problems and prioritize the problems whose resolution will have the biggest impact
4. Prioritize high risk/under-served communities in updated health facility microplans
5. Connect health centres and high risk communities to reduce social distance
6. Monitor high risk communities with immunization card check in community
7. Provide and track adequate resources for high risk communities activities
8. Advocate and incorporate equity-informed microplans into the national EPI program and budgeting processes

WORK GROUP ACTIVITY

Country participants were requested to practice using the microplanning forms provided as much as possible based upon health centre data that they had brought with them. For each of the eight steps, participant comments were elicited. Most countries were familiar with the eight components, but had not always used them together to make microplans. Comments on how to modify the forms for country-specific microplanning use were very welcomed. Participants were finally asked to comment on the use of the microplanning tools to include special populations and the suitability of the tools for use at health centre level.

SESSION 7 INFORMATION, COMMUNICATIONS, TECHNOLOGY (ICT)

Lead: Jan Grevendonk, WHO

Objectives

1. Take stock of the available and promising ICT solutions that can help programme managers understand and improve inequities in immunization
2. Brainstorm on interventions that would work best for improving coverage and equity in the MENA region, in terms of impact and feasibility
3. Plan for the adoption of selected technologies in MENA countries

Presentation

The session began with an overview of available technologies that are currently being used in an immunization context worldwide. Key points from presentation were:

- A closer look at the inequalities in immunization outcomes across the world highlight access as a bigger issue than service utilization, and socio-economic determinants are a bigger issue than other factors such as the gender of the child. This should inform which kinds of ICT to prioritize to help alleviate equity issues
- Many initiatives are taking place in low and middle income countries to see how the benefits of ICT can be harnessed to improve immunization programs. This includes the use of:
 - » Geographical Information Systems (GIS) for microplanning, evaluating access to health services, tracking vaccination sessions and campaigns and improving demographic estimates
 - » Mobile devices and remote temperature monitors, for better management of supply chains, including stock, equipment and temperature control
 - » ICT to better track the vaccination status of individuals, track defaulters, and assess population coverage through Electronic Immunization Registries and reminder systems
- However, ICT doesn't provide "magical solutions", and there are large barriers to the uptake and maintenance of new systems and technologies, ranging from the lack of infrastructure, to lack of governance and processes, to

legal impediments. What is missing most is the link between technological progress and usability / adaptation of specific technology platforms within immunization programmes. We need to find out what is useful and can be implemented, scaled and maintained in a sustainable way by national health systems and immunization programmes

WORK GROUP ACTIVITY

Participants were divided into four groups and engaged in an interactive breakout work group activity "world café" style (one station per topic, changing every ten minutes). They described what experiences existed in their country, and brainstormed on the main initiatives that would be most relevant and feasible for their context. Four facilitators were assigned to ensure continuity between groups and summarize the findings at the end. The key take-away by group were:

Group One: Geographic Information Systems (GIS)

Experiences:

- Mapping of Health facilities, public and private hospitals, camps and shelters (Lebanon)
- Enumeration of families in catchment areas (Iraq – Red Cross)
- Identification and mapping of low/high coverage and hard to reach areas, for campaign and micro planning (Sudan)
- Identification of high-risk groups (Egypt)
- Monitoring of mobile teams and service delivery in refugee camps (Jordan)

Considerations and recommendations:

- Frequent updates are required as populations shift
- Staff turnover requires constant training
- In security compromised areas, smart phones are not always allowed so alternatives may be needed
- Need for greater advocacy / involvement of local authorities
- Use GIS for triangulation of coverage and vaccine preventable diseases

Group Two: Supply Chain

Experiences:

- Many countries in the region use VSSM and w-VSSM for stock management
- Use of phones and tablets for mobile data collection, remote temperature monitor and online cold chain inventories

Considerations and recommendations:

- Digital online systems are already well established at the central level. More work is needed to extend their reach and use to local levels to increase visibility on vaccine availability and cold chain status at the “last mile”

Group Three: Coverage Monitoring

Experiences:

- Some countries have started using electronic registration and SMS reminders, including within refugee camps (Iraq)
- Some countries use barcodes on special vaccination cards
- WhatsApp and email are used for monthly reporting

Considerations and recommendations:

- Web based systems for electronic registration
- Mobile apps to remind families
- Mobile apps to allow private providers to send reports
- Unique ID numbers will be needed for this to work

Group Four: Challenges and barriers

Experiences:

- All countries experienced challenges in different phases of project cycles when implementing ICT
- When developing/selecting software the EPI program must clearly define its requirements and objectives. When programmers/computer engineers take control of the project without consistent input from the public health users, it often goes in directions the programme people had not envisioned
- When implementing the software, challenges with infrastructure still exist such as internet connectivity, or lack of support
- Health workers and users of the new software might not be adequately trained, or resist change
- When maintaining the system, continued financing for upgrades and technical support

are needed. However the people who were involved with the software development or introduction may no longer available for provide fixes and upgrades. Continued technical support beyond the implementation of the system must be considered at the beginning of the project

Considerations and recommendations:

- Programmes need to plan ahead for a project involving ICT. The document “Planning an information systems project – A toolkit for public health managers” is a useful resource





SESSION ON NEXT STEPS

Lead: Kamel Senouci, MENARO

Objective

To discuss and agree on next steps for participant countries

Presentation

The 'next steps' session covered all material presented and discussed in the workshop.

The participating countries were asked four questions:

1. What have you heard in the last three days that has urged you to decide to add, or modify, or prioritize your work?
2. What are those 1-2 work activities?
3. What are the next steps?
4. What assistance, if any, do you need to do this?

Countries responded well by including all subject matter discussed during the workshop.


Key words highlighted in the table (next page) indicate interest in the subjects addressed in the workshop.

Participants expressed clear commitment to making their own efforts to focus on the issues covered by the workshop within their national immunization programs. All countries requested some form of follow up technical assistance with implementing changes or reforms, and in some cases with financial assistance.

SYNTHESIS OF COUNTRY NEXT STEPS SESSION AT THE END OF THE WORKSHOP

COUNTRY	WHAT HAVE YOU HEARD IN THE LAST THREE DAYS THAT HAS URGED YOU TO DECIDE TO ADD, OR MODIFY OR PRIORITIZE YOUR WORK?	WHAT ARE THOSE 1-2 WORK ACTIVITIES?	WHAT ARE THE NEXT STEPS?	WHAT ASSISTANCE, IF ANY, DO YOU NEED TO DO THIS?
Djibouti	<p>The importance of equity in vaccination</p> <p>The use of electronic methods for the quality and reliability of data</p> <p>The use of satellite methods for locating and monitoring special populations such as "migrants and nomads"</p> <p>The use of electronic methods for cold chain temperature monitoring and control</p>	<p>Improving microplans to cover the entire population including special populations</p> <p>The use of electronic methods for cold chain temperature monitoring and control</p>	<p>To be discussed with a wider set of stakeholders in country</p>	<p>Technical assistance for the mapping of remote areas and difficult access, including satellite systems for localization and follow up of special populations</p> <p>Special assistance for the implementation of the electronic system (D4 action)</p>
Egypt	<p>Use of electronic system (EIR)</p> <p>Develop guidelines to monitor and control vaccinations in the private sector</p> <p>Improve supply management including cold chain and vaccine supply (from paper work to electronic system)</p> <p>Improvement of data collection and implementing trend analysis to confirm the consistency of data</p>	<p>Analyze the situation for immunization in the private sector</p> <p>Improve data collection and analysis particularly data collected at lower level</p>	<p>Propose to conduct meetings with the medical syndicate and the Egyptian Paediatric Association to agree on future steps to regulated private sector involvement in immunization</p> <p>To review data reporting collection sources and update methodology</p>	<p>Financial and technical support from UNICEF and WHO</p>
Iraq	<p>Focus on priority areas based on equity</p> <p>Adopting new methods in calculation denominators</p> <p>Implement comprehensive microplanning to reach unreached communities</p>	<p>Expand microplanning to all PHCs and communities</p> <p>Implement coverage surveys in the priority remote areas, and areas with variable performance</p>	<p>Review the training materials</p> <p>Identify the training needs</p>	<p>Request external support to help in sampling, weighting and to conduct coverage survey.</p> <p>UNICEF Regional Office support in GIS training as an element in microplanning.</p> <p>Support in coverage survey aspects (sampling, weighting, TOR and training).</p> <p>UNICEF Country Office Financial and logistic support to conduct those activities.</p> <p>MOH support for activity approvals and meeting human resource needs.</p>

Jordan	<p>Importance of conducting microplanning for all health centres</p> <p>Improving vaccination data collection from all sectors especially private sector</p> <p>Continue training</p> <p>Advocacy with decision makers</p>	<p>Mobile data collection</p> <p>Training</p>	<p>Data collection</p> <p>Advocacy</p> <p>Meeting with financial response-persons</p>	<p>NITAG support</p> <p>UN Agencies support</p>
Lebanon	<p>The importance of microplanning to achieve equity</p> <p>The cost effectiveness of equity</p> <p>Adequacy of tools to capture MOVs</p> <p>Methods to identify high risk communities</p> <p>Importance of new technology to have accurate and updated data</p>	<p>Microplanning</p> <p>New software or application for the reporting from the private sector and cold chain status</p>	<p>Microplanning on district level, specifically prioritizing PHCs serving high risk communities</p> <p>Accelerated immunization activities targeting high risk communities</p> <p>Advocate at the level of the Ministry on the need to initiate discussion with the private sector on reporting on vaccination</p>	<p>Microplanning assistance to map vulnerable areas (technical support)</p> <p>Mobile application (technical training and implementation support) to gather data from the private sector and on cold chain</p>
Sudan	<p>Reaching Every Community Approach</p> <p>Missed opportunities</p> <p>Private sectors</p>	<p>Review the micro-plans to ensure inclusion of the Reaching Every Community approach</p> <p>M&E</p>	<p>Missed opportunities for Vaccination</p> <p>Update the guidelines for 2018</p> <p>Training for all EPI staff on MOV.</p> <p>Private sector</p> <p>Develop one national guidelines/ policy</p>	<p>Reaching Every Community</p> <p>Financial support to help health facilities develop micro plans</p> <p>Missed opportunities</p> <p>Technical support in updating guidelines</p> <p>Financial support for training</p> <p>Technical support to develop a nation policy for private sector</p>
Syria and Libya	<p>Engagement of non-government sectors in immunization services (Syria).</p> <p>Improving EPI data quality</p> <p>Microplanning for specific populations</p>	<p>Involving the private sector in EPI reporting systems</p> <p>Working on vaccine supplies stock management VSSM</p> <p>Strengthen the Capacity of MOH staff on microplanning at the Governorate and Districts levels</p>	<p>Orientation with MOH colleagues</p> <p>Securing financial support for the suggested activities</p> <p>Implement pilot projects in specific districts.</p>	<p>Technical support from WHO and UNICEF</p> <p>Close Follow up from WHO and UNICEF during the implementation phase</p> <p>Fund raising support</p>



PARTNERS' AND FACILITATORS' COMMENTS ON NEXT STEPS:

At the end of the meeting facilitators and partners had a short meeting to discuss how the needs of participating countries will be met. There was a considerable variation in the current status of the countries with regard to their implementation of the subjects under discussion.

1. The issue of 'special populations' varies from country to country and each country will need to define and identify their under-served populations for the purpose of equity
2. There is a lack of policy and usable information on the private sector in many countries. Surveys of the private sector may be a useful first step in some circumstances
3. New policies and guidelines on i2YL and missed opportunities are not available in some countries. Support is needed for policy development (case studies)
4. A few countries may need capacity building for advocacy, especially in dealing with various ministries in efforts to support equitable immunization
5. A few countries may need technical support for developing Reaching Every Community strategies for equity

WORKSHOP EVALUATION FORM

NOW, AT THE END OF THE WORKSHOP				EVALUATION STATEMENTS	BEFORE THE WORKSHOP			
1 Poor	2 Fair	3 Good	4 Excellent	I am clear on why I was invited to participate in this workshop.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I see the importance of the topics discussed during this workshop.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand that addressing immunization inequities makes moral, economic and performance sense.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand our region's (my country and the other participating countries) data quality and availability challenges.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the various internal and external methods of assessing immunization data quality.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the various limitations of these methods to recognize missed populations and the impact on overall data quality.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the various methods and tools for analyzing socio-economic data for equity programming.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I can apply existing mathematical methods and tools for estimating special populations.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the considerations related to engaging non-government (for-profit and not-for-profit) immunization providers.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I can plan potential strategies to engage (or better engage) non-government immunization providers in recording and reporting.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the Strengths, Weaknesses, Opportunities and Threats (SWOT) that exist in my country for improving data quality in the second year of life immunization schedule.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I can adapt immunization data collection and reporting tools at the health facility level to accommodate vaccination beyond the first year of life.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I understand the various steps of equity-informed microplanning.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I can incorporate the various topics (i.e. special populations, second year of life, private sector, etc) in our microplanning process.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I can apply what I learned during the workshop to improve and/or update our microplans.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I learned about the various available technologies that have been implemented in an immunization or public health context.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	I have a more clear idea about how I can use the various available technologies to improve our data quality and availability.	1 Poor	2 Fair	3 Good	4 Excellent
1 Poor	2 Fair	3 Good	4 Excellent	In follow up to this workshop, I understand what I can do to help our immunization program when I return to my country.	1 Poor	2 Fair	3 Good	4 Excellent

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