World Health Organization
REGIONAL OFFICE FOR Europe

EUROPEAN REGIONAL MEETING OF NATIONAL IMMUNIZATION PROGRAMME MANAGERS (PMM)

24–26 October 2017
Budva, Montenegro

Abstract

The Immunization Programme Managers' Meeting (PMM) is organized biannually by the Vaccine-preventable Diseases and Immunization Programme (VPI) of the WHO Regional Office for Europe. The meeting offers participants an opportunity to interact with each other and the WHO staff on a myriad of immunization topics, to review progress and share experiences on issues related to the European Vaccine Action Plan (EVAP).

Keywords

COMMUNICABLE DISEASES
IMMUNIZATION|
IMMUNIZATION PROGRAMS
MEASLES
POLIOMYELITIS ROTAVIRUS VACCINES RUBELLA

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Abbreviations

AEFI adverse event following immunization
BCG Bacillus Calmette–Guérin – tuberculosis vaccine
DTP3 third dose of diphtheria-tetanus-pertussis vaccine
ETAGE European Technical Advisory Group of Experts on Immunization
EVAP European Vaccine Action Plan, 2015–2020
GAPIII Global Action Plan to minimize poliovirus facility-associated risk after eradication of wild polioviruses and sequential cessation of oral polio vaccine use
GVAP Global Vaccine Action Plan
HCW healthcare worker
HPV human papillomavirus vaccine
JRF WHO/UNICEF annual joint reporting form
LIC lower-income country
MIC middle-income country
NVC national verification committee for measles and rubella elimination
NCC national committee for the certification of poliomyelitis eradication
NITAG national immunization technical advisory group
PAHO Pan-American Health Organization
PCV pneumococcal conjugate vaccine
PEF polio essential facility
POSE polio outbreak simulation exercise
RCC Regional Commission for the Certification of Poliomyelitis Eradication
RVC Regional Verification Commission for Measles and Rubella Elimination
RVV rotavirus vaccine
SAGE Strategic Advisory Group of Experts on Immunization
TIP tailoring immunization programmes
VPD vaccine-preventable disease
VPI Vaccine-preventable Diseases & Immunization Programme, WHO Regional Office for Europe
WHA World Health Assembly

Introduction

This biennial meeting brings together national immunization programme managers from all Member States in the WHO European Region to discuss progress made towards achieving immunization goals and objectives and to share knowledge and experience gained in the provision of immunization services. The meeting also provides participants with the opportunity to discuss key issues, challenges, and new approaches to immunization. Participants have the opportunity to present country-specific case studies and share promising practices and approaches related to the most challenging immunization issues being faced. The meeting plays a critical role in furthering a collaborative relationship between WHO and Member States, and outcomes of the meeting help prioritize and focus the planned work schedule of the vaccine-preventable diseases and immunization programme (VPI).

Opening remarks and welcome

The meeting was opened by Dr Kenan Hrapović, Minister of Health of Montenegro, who welcomed participants to Montenegro. Dr Hrapović underlined the importance of maintaining high routine vaccine coverage in protecting populations from epidemic diseases and the risks faced as a consequence of decreased vaccination coverage in recent years. He also emphasized the importance of conducting targeted supplementary immunization activities to address immunity gaps in hard-to-reach populations and epidemic risk in neighbouring countries. Vaccine hesitancy is a growing challenge in the Region and urgent action is required to guide public opinion more effectively towards active support of immunization services and vaccine acceptance. Montenegro remains fully supportive of a full and active immunization service and welcomed the opportunity to host this important meeting of international experts and national immunization managers.

Dr Nedret Emiroglu, Director, Division of Health Emergencies and Communicable Diseases and acting Director of Programme Management, welcomed participants on behalf of the WHO Regional Director. Dr Emiroglu emphasized the importance of recognizing and celebrating the successes and achievements of immunization services in the European Region. These include the Regional certification of polio eradication in 2002 and the maintenance of polio-free status since then, and the progressive interruption of transmission of measles and rubella resulting in a dramatic and sustained decline in the number of vaccine-preventable deaths over the past 20 years. A number of challenges to full achievement of immunization goals remain, however, and WHO, together with its international partners is committed at the highest level to addressing these challenges and supporting Member States to overcome them.

Mr Robb Butler, VPI Programme Manager, provided the introduction to the meeting and outlined the meeting programme and format, agenda and desired outcomes.

Executive summary

The previous immunization programme managers meeting was conducted in 2015 and was instrumental in developing the areas of focus for the VPI programme of work over the past two years. The current meeting will be instrumental in furthering the collaborative relationship between

WHO and Member States, not only in focussing VPI work programme activities, but also in developing the format, scope, expectations and targets of the next iteration of the European Vaccine Action Plan (EVAP), due to come into use in 2020. A number of innovative approaches to meeting management were introduced during the meeting, including the use of Impulse Statements (brief presentations on key technical issues in immunization), and launch of an interactive meetings app for use on mobile devices that provided essential information about the meeting and encouraged real-time engagement through media postings and polling. A series of Meet the Expert sessions encouraged participants to present questions of their choice to key immunization experts in an informal face-to-face setting. The meeting also engaged the services of journalists to conduct on-camera interviews with participants and provide summary videos of activities from the previous day. Members of the European Technical Advisory Group of Experts on Immunization (ETAGE) also participated in the meeting, chaired some of the sessions and took part in the discussions.

Regional overview and progress towards achieving EVAP goals

By the end of 2016 the disease-specific goals of sustaining polio-free status and control of hepatitis B were on track, but the Regional goal of eliminating measles and rubella by the close of 2015 had not been achieved. Despite failing to meet the measles and rubella elimination goal, there has been steady progress, with 79% of Member States achieving interruption of endemic measles transmission, and 70% achieving interruption of rubella transmission. The immunization systems-related goals of establishing evidence-based decision-making processes for introduction of new vaccines and achieving financial susceptibility of national immunization programmes were on track. Increasingly countries are introducing new vaccines based on recommendations from their national immunization technical advisory groups (NITAGs), and by the end of 2016, 40 Member States had introduced pneumococcal conjugate vaccine (PCV), 32 had introduced human papillomavirus vaccine (HPV), and 18 had initiated universal immunization with rotavirus vaccine. Forty-seven Member States had achieved financial sustainability in procuring routine vaccines and a further four are in the process of transitioning from donor support. However, regional vaccination coverage levels remained suboptimal, and of great concern is the fact that coverage with a third dose of diphtheria-tetanus-pertussis vaccine (DTP3) has declined by 4% since 2013. Eighty percent of the Region's unvaccinated infants are from nine countries, with Ukraine presenting the lowest coverage rate and the greatest challenge. Key to addressing the challenges will be establishment and strengthening of ownership of and political commitment to immunization. Further targeted actions will be needed to maintain and achieve high vaccination coverage, close immunity gaps through innovative and locally tailored approaches, ensure high-quality vaccine-preventable disease (VPD) surveillance and establishment of better understanding of barriers to vaccination in underserved populations. Innovative approaches to raising awareness of the benefits of vaccination include the development of a school-level approach and using game-based learning to encourage early understanding of the aims and community benefits of vaccination programmes and encourage conversion of theoretical knowledge into practical understanding.

The road to measles and rubella elimination

Although the World Health Assembly (WHA) and Global Vaccine Action Plan (GVAP) targets towards measles and rubella elimination have not been achieved, progress has been made in reducing measles-associated deaths by 79% since 2000. Four of the six WHO regions have established measles and rubella verification commissions, and the Region of the Americas has certified elimination of both measles and rubella. Reported number of measles cases in the European Region in 2016 was at an all-time low; available data for 2017, however, suggests there may be an ongoing resurgence of measles cases. Challenges to achieving elimination of both diseases include reducing population immunity gaps (particularly at subnational level, among specific population groups and among adolescents and adults), overcoming vaccine hesitancy, increasing national capacities to detect and respond to outbreaks timely and adequately and ensuring sufficient and sustainable resources for full implementation of elimination strategies.

The European Regional Verification Commission for Measles and Rubella Elimination (RVC) at its meeting in June 2017 determined that according to 2016 data 42 Member States had interrupted endemic transmission of measles for at least 12 months, and of these, 33 had sustained interruption for at least 36 months and were therefore verified as having eliminated the disease. Based also on 2016 data, endemic rubella transmission was interrupted in 37 Member States, of which 33 were verified as having eliminated the disease. Thirty-One Member States provided evidence for the elimination of both measles and rubella. Although the verification process has been considerably strengthened over the past five years, with national verification committees (NVCs) established and providing annual update summaries in 51 of 53 Member States, there remains considerable variation in completeness and quality of immunization data provided by countries, in particular with regard to information on the sources of information provided and methods used for calculation of rates. Although WHO recommends that all specimens for measles and rubella testing be tested in WHO-accredited laboratories or laboratories of documented accreditation status, several countries continue to provide information on specimens tested in laboratories of unknown proficiency.

Well-established measles surveillance systems in the United Kingdom and Russian Federation provide good examples of best practices utilizing strategic aims to establish effective practical experience. Both countries collect and utilize data from comprehensive subnational-level surveillance systems, focussing on the laboratory testing of all suspected cases, making use of integrated epidemiological and laboratory data and mapping territorial distribution of cases, and using molecular epidemiology, through genomic sequencing, to fully characterize any positive specimens and establish any chains of transmission that may arise.

Concerns remain over the sensitivity of surveillance in many countries, with the suspicion that measles is not always suspected in cases presenting with rash and fever and measles cases are not detected early in the course of outbreaks. It is essential that even after interruption of measles transmission, surveillance system sensitivity must be maintained and every country should be reporting a minimum of two suspected cases that are fully investigated and discarded per 100 000 of population. Further education of health care workers, particularly paediatricians, is necessary in many countries, possibly with the collaboration of professional associations. Also of concern is the apparent increase in the incidence of measles in infants less than six months of age in remaining measles endemic countries and during outbreaks. Further analysis of disease epidemiology using

case-based data with age of cases in months would be useful for countries that are facing this situation to define and assess the severity of the problem. This will improve data reporting to the Regional Office and facilitate further discussion on interventions, as well as exchange of best practices.

Tailoring immunization programmes based on behavioural insights

Suboptimal vaccination coverage threatens to jeopardize progress towards disease elimination and allow vaccine-preventable diseases to re-emerge in the European Region. To help Member States understand the factors influencing vaccination intentions, decisions and behaviours, the WHO Regional Office in 2013 developed the Guide to Tailoring Immunization Programmes (TIP), comprising proven methodologies and tools and offering countries a process through which to diagnose barriers and motivators to vaccination in susceptible groups and design tailored interventions. Since then, the TIP methodology has been partly or fully applied in nine Member States across the Region. Research and experience from several countries has shown that a multitude of factors affect vaccination behaviours, including individual, social and institutional opportunity factors. These include national legislation, access to services, equity and convenience of service provision. The theoretical model which guides the TIP processes helps consider these various factors.

Meeting participants expressed concerns that only few Member States have high-quality knowledge, insights and data concerning undervaccinated groups, barriers and drivers to vaccination, and many rely on assumptions or limited studies that do not describe the complexity of the situation. Based on this realization, many Member States are planning to conduct behavioural insights work in the future. Several Member States will require both technical and financial support to conduct this work and have called on WHO to continue developing guidance and provision of technical support in this field.

Consultation with middle-income country (MIC) representatives

Concerns over suboptimal performance of vaccine-preventable diseases and immunization programmes in MICs have existed for some time. While international donors have focused predominantly on low-income countries (LICs), MICs have not benefitted from donor support for the introduction of new vaccines and strengthening of immunization systems. There have been repeated calls from the Strategic Advisory Group of Experts (SAGE) and WHA to investigate and identify obstacles to the mobilization of resource for MICs. In 2012 SAGE recommended the establishment of a MICs Task Force with a mandate to define the strategy and develop an action plan to address challenges faced by MICs. The Task Force identified four major bottlenecks to progress, including inadequate mechanisms for evidence-based vaccine introduction decision making; insufficient political commitment and financial sustainability of the immunization programmes; poor demand and underperforming immunization services, and; unaffordable vaccine prices and unreliable supply. The Task Force developed a global-level strategy for 2016–2020 for the 63 MICs not in receipt of donor support. Unfortunately, the global MICs strategy has failed to develop a compelling case capable of convincing the donor community to provide support to MICs.

Review of MICs' performance in the European Region with no donor support has revealed they are significantly behind other country groups in the Region in terms of protecting individuals against targeted VPDs; and the performance levels of MICs remain well below those required to achieve the EVAP targets by 2020. Principle challenges identified during the meeting include: inadequate political commitment to immunization; financial sustainability constraints; lack of equitable access to and adequate demand for immunization services; challenges in accessing quality-assured vaccines at optimum prices. While some challenges are common, others are country specific, and in-country assessments of specific challenges and potential interventions to address those challenges may provide a way forward. Several of the MICs without donor support are in the south-west of the European Region and greater use could be made of the subregional network of countries (South-eastern Europe Health Network) to discuss shared problems, share experiences and develop a subregional approach to elicit increased partner agency input and support.

Poliomyelitis: approaching global certification

While the WHO European Region has maintained its polio-free status for 15 years, the Region remains under threat of importation and subsequent spread, and there is no place for complacency. Three Member States in the Region are considered to be at high risk for spread of poliovirus due to low population immunity, but many other countries are considered to be at intermediate risk because of suboptimal surveillance quality, gaps in routine immunization and lack of preparedness. The Regional Certification Commission for Polio Eradication (RCC) is now focused on Member States' compliance with the certification requirements and capacity to assess risks at national level and address gaps. This approach requires Member States to provide more detailed information than was previously required, and the consistency of that information with data received through other sources is now scrutinized more closely than ever. In line with this change, the terms of reference of national certification committees (NCCs) have been reviewed and updated to focus on risk assessment and risk preparedness. All countries are required to develop national preparedness plans and test them by conducting polio outbreak simulation exercises (POSE).

Success in the current phase of poliovirus eradication will require sustained and painstaking effort on the part of every Member State in the Region to minimize the risk of a polio outbreak. This includes ensuring high vaccination coverage to prevent possible circulation of the virus, high-quality disease surveillance to detect any cases and effective poliovirus containment.

All Member States are required to decide on the fate of their remaining poliovirus-infectious materials held in laboratories and vaccine production facilities. There are only three options: to destroy all infectious and potential infectious materials; to store them in designated poliovirus essential facilities (PEFs), or to transfer them to PEFs for storage. The WHO Global Action Plan to minimize poliovirus facility-associated risk after eradication of wild polioviruses and sequential cessation of oral polio vaccine use (GAPIII) provides a risk-based and practical framework to ensure organizations that will handle and/or store stocks of poliovirus do so with due regard for biorisk management. As long as poliovirus is retained anywhere, laboratory containment will be required. At present, 12 Member States in the Region have provided notification that they intend to establish PEFs. Not all Member States have yet decided on the number of facilities they will require, but the

provisional regional total is 37. It is possible that this number will increase due to commercial interest to start polio vaccine production in several countries.

A concerted effort of national governments and international regulatory bodies is needed to address the particular challenge for the European Region since the majority of polio vaccine production facilities are located within the Region and these facilities will also need to meet appropriate containment requirements. Currently, of the 12 Member States intending to establish PEFs, six host polio vaccine manufacturing facilities.

The importance of ensuring biorisk management procedures are in place was illustrated by a recent containment breach in a polio vaccine facility in the Netherlands. In April 2017, a vaccine production spillage resulted in unintended release of wild poliovirus type 2 that infected one of the staff. This incident should serve as a reminder to the Member States hosting PEFs of their responsibility to ensure their compliance with GAPIII requirements to prevent containment failures in the future.

With the significant progress to-date towards eradicating poliomyelitis globally and the fewest number of cases in 2017 ever recorded globally, there is confidence that 2018 will be the first year with no transmission of wild poliovirus. The post-certification strategy being developed currently has identified goals to mitigate the risks to sustaining the polio-free world and is focusing on containing polioviruses, protecting populations and maintaining efficient systems to detect and respond to polio events.

Delayed vaccination and missed opportunities due to false contraindications

There is ongoing concern that in many countries in the region application of false contraindications for vaccination is delaying timely administration of paediatric vaccines and creating missed opportunities to achieving high vaccine coverage. This is particularly in evidence for the newer vaccines, such as rotavirus vaccine (RVV). The primary reason identified is the application of outdated, inaccurate or erroneous information on the part of health care workers (HCWs), particularly vaccinators. Training materials on vaccine safety and true contraindications for vaccine administration have been prepared, targeted at HCWs, which address vaccine skepticism among HCWs, covering identified knowledge gaps and providing for establishment of training chains down to frontline medical workers. The training materials include interactive presentations (over 300 slides) which can be adapted to local requirements, case studies, training manual, pre- and post-tests, and evaluation forms. Training-of-trainer workshops have been held and there is growing experience and interest in use of these training materials, particularly within a cascade-training framework, in the Region.

Facing vocal vaccine deniers

Coordinated campaigns and individual initiatives that advocate against vaccination, originating from a number of different positions and using a broad range of arguments, present an increasing challenge in the Region. International coordination of these anti-vaccination initiatives is particularly evident in some of the Balkan countries, where information generated in one country is often

distributed and used in neighbouring countries. Contributors range from clinical 'experts' who may, or may not, have vested commercial interests in promoting 'alternatives' to vaccination, through social and philosophical activists who promote alternative views on social and religious ideals, to worried parents distrustful of government-provided health services and anxious for the wellbeing of their children. Vaccine deniers now constitute a significant threat to achieving vaccine goals in the Region, and are a serious challenge to maintaining high routine vaccination coverage rates in many countries.

Using a populist approach, the anti-vaccine lobby has become successful in setting the media agenda on vaccination, often placing vaccination programme proponents on the defensive in public debate, and making use of misinformation, misuse of data and misdirection in attempts to discredit both the immunization programme staff and immunization services. In response, WHO has produced best practice guidance on how to respond to vocal vaccine deniers in public; how to recognize the techniques being used by the deniers, and how to effectively engage with the audience, rather than the vaccine deniers. The guidance also furnishes information on how best to provide evidence-based information to replace the misinformation from the denier in a way that is most appropriate to the audience. WHO is offering subregional training workshops on the issue with exercises simulating media interviews and public debates with vocal vaccine deniers.

Immunization-related stress reactions

Recent years have seen an apparent increase in reports of clusters involving stress and anxiety related adverse events following immunization (AEFI) that are not consistently related to any particular product and are spread globally[1]. The common pattern is the age of vaccine recipients – in particular older children and adolescents. A variety of symptoms and clinical conditions suggestive of organic illness but without an identified cause were reported, including hyperventilation, fainting, anxiety, hysteria and mass psychogenic illness. Frequently, clusters involved a new vaccine introduction or a change in the routine programme, such as new age group or new setting. This should not be regarded as any form of mental illness but as a rare and complex response to stress. Affected groups are often already under psychological stress and incidents are more prevalent in close communities and schools. There is often an index case, which extends the symptoms to others, usually by line of sight, often from older or respected persons to young people of lower status. The response to such clusters has varied in different countries, as has its impact on vaccination programmes. The public health response to regain community trust is potentially costly and resource intensive. Clear guidance is needed on how to prevent, identify and manage this type of event, both the immediate effects and any possible longer-term effects; how to prepare health services to respond; and how to communicate the event in an acceptable manner that does not harm individuals, communities or the health system.

[1] WHO Weekly epidemiological record No 3, 2016, 91, 21–32. Global Advisory Committee on Vaccine Safety, 2–3 December 2015, Clusters of anxiety-related reactions following immunization. Available online: http://www.who.int/vaccine_safety/committee/reports/wer9103.pdf?ua=1

Immunization and migration: cross-border coordination

The WHO European strategy and action plan for refugee and migrant health, adopted in 2016, emphasizes key principles including the right to health, equality and non-discrimination, equitable access to people-centred refugee and migrant-sensitive health systems and non-restrictive health practices. EVAP 2015-2020 proposes that all Member States ensure provision of equitable vaccination services to migrants and refugees.

A new WHO Health Evidence Network (HEN) synthesis report[2] is based on a scoping review of existing immunization policies and practices for refugees and migrants in the Region. WHO/Europe conducted the review to help better understand current practice. The report's findings show that vaccination services targeted to refugees and migrants vary greatly among Member States, but also reveal some commonalities across countries.

It is important to ensure, within available resources, that appropriate immunization programmes for refugees, asylum seekers and migrants are implemented by the host countries and that the immunization gap in recipient communities is closed. The children of the migrants and refugee population are considered as the group at the greatest risk of VPDs because they may have not been vaccinated in their countries of origin or may not have completed their full vaccination course. WHO recommends that Member States pay special attention to migrants and refugees to ensure their eligibility and access to culturally appropriate immunization services and information.

Member States, however, have different health structures, varied regulations covering vaccination of migrants and refugees, and different capacities to address the issues related to vaccination of these groups. Attempting to meet their international obligations, countries have undertaken a range of different initiatives to address these issues, including supplementary immunization campaigns, targeted outreach activities, and moves to integrate migrants and refugees into routine immunization services. Meeting participants proposed that WHO should consider development of operational technical guidelines on this subject to be used by Member States for further strengthening their national guidelines with a subnational implementation framework. A working group, consisting of representatives from interested Member States and development partners could guide this process. Development of a compendium of best practices and innovations, including lessons learned in the region, could also be of benefit.

Strengthening hepatitis B control in the European Region

It is estimated that in 2013 there were 13 million chronic hepatitis B infections in the Region, and 56,000 hepatitis B-related deaths annually. Hepatitis B vaccine is now used throughout the Region, with a range of immunization strategies, including universal vaccination of newborns, universal

[2] A review of evidence on equitable delivery, access and utilization of immunization services for migrants and refugees in the WHO European Region (http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/2017/review-of-evidence-on-equitable-delivery,-access-and-utilization-of-immunization-services-for-migrants-and-refugees-in-the-who-european-region-a-2017)

childhood/teenager vaccination, and vaccination of targeted risk groups. The challenges to control of hepatitis B include suboptimal coverage in some countries together with an increasingly vocal anti-vaccination lobby; absence of a mechanism to monitor coverage with hepatitis B screening of pregnant women; lack of data on timeliness of birth-dose administration, and; lack of reliable data on the burden of chronic hepatitis B infection. A global strategy for the elimination of viral hepatitis as a public health threat was launched in 2016, with the goal of elimination of chronic hepatitis infection by 2030. The global strategy was used to develop the European Action Plan, launched in draft format in September 2016. ETAGE will validate achievement of the regional targets laid out in the Action Plan. An ETAGE Working Group has been established to provide independent review and expert technical input to ETAGE. The Working Group objectives are to develop criteria and procedures for validation, review the data submitted by Member States, and advise ETAGE on reaching the regional hepatitis B control targets by countries and at regional level. The guidelines on validation of achieving regional hepatitis B control targets have been developed and will be submitted for the ETAGE approval. The Member States with well-established hepatitis control programmes are encouraged to validate the achievement of regional hepatitis B control targets.

From responding to vaccine shortages to strategic supply management

According to data provided through the WHO/UNICEF annual joint reporting form (JRF) the number of countries reporting vaccine stock-outs in the Region has decreased steadily over the last decade. While the JRF data are important to monitor progress, they are retrospective and cannot reveal current or emerging vaccine supply challenges. In 2015, reports of vaccine supply disruptions that affected delivery of immunization services in a large number of middle- and high-income countries within the Region began to emerge, involving in particular BCG vaccine and acellular pertussis containing vaccines. Vaccine supply disruptions were also reported by the Pan-American Health Organization (PAHO). Globally, 15 out of 25 vaccines were in shortage or at risk. In April 2016, SAGE concluded that the reasons behind vaccine shortages were multiple and varied for different vaccines and markets. Some countries are more at risk of shortages, notably self-procuring countries and particularly the self-procuring MICs. SAGE recommended that WHO could play a key role in enhancing dialogue between country demand and global supply availability and risks[3]. Furthermore, the WHA 69.25 Resolution (May 2016) “Addressing the Global Shortage of Medicines and Vaccines” urges Member States to develop strategies to forecast, avert or reduce shortages/stock-outs; calls upon manufacturers, wholesalers, global, and regional procurement agencies to contribute to global efforts to address the challenges of medicines and vaccines shortages, including through participation in notification systems; and requests DG WHO to assess the magnitude and nature of the problem of shortages and develop a global medicine shortage notification system to better detect and understand the causes of shortages[4].

[3] WHO Weekly epidemiological record, No 21, 2016, 91, 265–284. Meeting of the Strategic Advisory Group of Experts on immunization, April 2016– conclusions and recommendations. Pre-empting and responding to vaccine supply shortages. (http://www.who.int/wer/2016/wer9121.pdf?ua=1)

[4] SIXTY-NINTH WORLD HEALTH ASSEMBLY WHA69.25. Agenda item 16.4 28. May 2016. Addressing the global shortage of medicines and vaccines. (http://apps.who.int/medicinedocs/documents/s22423en/s22423en.pdf)

Further discussions are now required to determine how to change the paradigm of handling vaccine shortages from reactive response to more proactive preventive approaches to align vaccine demand and supply; the potential mechanisms to share vaccine demand data (possibly through modification of the annual JRF dataset); and how best to establish an advanced warning system to notify WHO of potential vaccine shortages.

The Baltic States of Estonia, Latvia and Lithuania shared the lessons learned in establishing a vaccines joint procurement system aimed at reducing expenditure and ensuring continuity of supplies. The experience gained has exposed many of the challenges faced in establishing an effective joint procurement system, outlined the importance of long-term engagement and flexibility, as well as individual country commitment to overcome various obstacles (programmatic, regulatory, financing, procurement), and highlighted the importance of thorough market knowledge and research to inform decisions. Despite the challenges, the experience has been of benefit, cost savings have been made, and joint procurement of vaccines will be continued.

A study facilitated by National Institute for Health and Welfare, Finland, aimed to compare paediatric vaccine prices in 18 European Union/European Economic Area countries, without compromising the vaccine price confidentiality. The study found that vaccine prices were lower where the vaccines were tax-funded and nationally procured. Some of the countries with the lowest prices per child provide as many vaccinations per child as the countries with the higher prices and differences in cost were poorly explained by gross domestic product, per capita or birth cohort size. The study concluded that improved procurement systems and transparency could lead to substantial savings or the possibility to add more vaccines to national immunization programmes.

Improving the efficiency of immunization programmes

Developing financial sustainability of national immunization programmes has been a key area of concern for international partners since 2000. Three main strategies to achieving financial sustainability were initially identified as: mobilization of additional resources; increasing reliability of the resources, and improving programme efficiency. Technical guidance has been provided to Member States for the first two of these strategies in line with the developed normative guidance, and although some materials addressing the improvement of programme efficiency have been developed, these have yet to be presented in a systematic manner for use by national programme managers. Programme efficiency is defined as using the optimum amount of inputs to create the greatest amount of programme outputs.

National immunization programmes, particularly in MICs in the Region, currently face significant financial sustainability challenges to meet the cost of achieving current and future programme objectives. A range of intervention proposals to increase programme efficiency were presented and discussed at the meeting with the aim of developing an efficiency guide that provides a road map or methodology for national immunization programme managers to improve programme efficiency. To develop this efficiency guide, more elaboration and review of country experiences is required on each proposed intervention. Immunization programme managers agreed on the need to develop a technical guidance document in this financial sustainability strategy area that will help immunization managers to operationalize the relevant efficiency interventions in their country and programme

context. Discussions during the consultation highlighted the below key strategies for further elaboration:

- optimize vaccination schedule;
- improve vaccine procurement efficiency;
- choose the most appropriate vaccine presentation and characteristics;
- reduce missed opportunities;
- establish monitoring and tracking system;
- improve immunization information systems;
- choose the most appropriate mix of service delivery strategies;
- choose the most appropriate mix of inputs;
- optimize the use of staff time;
- improve communication to increase demand;
- incentivize immunization service providers;
- integrate private service provision;
- integrate the immunization programme in broader systems.

Equity in immunization

Health inequalities in immunization coverage are unfair and avoidable. Despite the accomplishments of immunization programmes, inequalities in vaccine uptake persist, resulting in suboptimal immunization coverage. This in turn forms the basis of the continued occurrence of vaccine-preventable diseases and even widespread disease transmission as often exemplified by measles outbreaks.

Equitable immunization policies, like all equitable health policies, generate wider health, social, political and economic benefits. As a result, improving equity in immunization can also improve coverage of other health interventions; help children achieve better school results and is linked to improved employment and increased earnings later in life. Even with existing inequalities in coverage, immunization has wide access to the population and is a powerful method to attract people into health care, especially the most vulnerable, who often have worse access to health care and are more vulnerable to disease.

Steps to achieving equity include ensuring that immunization policies do not increase inequalities; focusing immunization services on the most disadvantaged; reducing the gap between the least and most disadvantaged, and flattening the immunization gradient across the whole population.

Disaggregate data analysis has been shown to be a valuable tool in identifying inequalities and can support policies, programmes and practices to reach the most vulnerable. Data presented by Public Health Wales demonstrated the usefulness of analysing disaggregated data on socio-economic

status and vaccine uptake to show a clear difference in uptake between children from families with the highest and lowest income.

Tackling inequalities in health will involve addressing a range of policies in health and the social determinants of health, underlying conditions (including education), living standards and environmental exposures. To address many of the main issues it is necessary to collect health data disaggregated by ethnicity. It is not currently apparent how many countries of the Region are able to collect data by ethnicity, or indeed, how many are legally permitted to do so. Disaggregated data of this type would be highly beneficial for shaping both national and regional programme attempts to ensure everyone is reached by immunization services.

The WHO Regional Office for Europe is currently working on the production of a guidance document on how national immunization programmes could reduce inequalities and identify existing indicators to evaluate implementation of equity in immunization. It aims to address how inequalities in vaccine demand and supply will help countries to reduce the burden of vaccine-preventable diseases and meet goals established by WHO and the Gavi Alliance and the Sustainable Development Goals in achieving and sustaining high and equitable immunization coverage.

Life-course approach to immunization

EVAP envisions a Region free of vaccine-preventable diseases, where all countries provide equitable access to high-quality, safe, affordable vaccine and immunization services throughout the life course. Achievement of EVAP goals and objectives, as well as realization of this vision, relies on implementation of the Plan's values and principles. This includes implementing a life-course approach to immunization.

This session summarized the considerations, strategies and approaches (elaborated in the background paper) that countries can use in envisioning a life-course approach for their immunization programmes. The key objective of a life-course approach to immunization should be to promote and support healthy ageing for all, both from an individual and a broader societal impact perspective.

The panelists from Ireland and Switzerland shared experiences in implementing a life-course approach to their national immunization programmes. Ireland has introduced a number of innovations to improve uptake of influenza vaccine among HCWs, including development of a nurse-led programme in which nurses are trained to provide easily accessible vaccines. Each healthcare facility has an influenza vaccination team, overseen at senior management level. There is also engagement with unions of healthcare professionals to encourage support and ensure participation of professional organizations. Switzerland recently introduced a programme of pertussis vaccination among pregnant women and faces the challenge of persuading both HCWs and pregnant women that vaccination is safe and provides protection for their babies.

Seasonal influenza vaccination in the Region was also discussed by the panel with particular emphasis on how the life-course approach could support alleviating the barriers to achieving high coverage. A comprehensive life-course strategy for immunization would be a valuable contribution to overcoming these challenges, bringing together different stakeholders and encouraging

collaboration between different programmes and policies. In addition, there is a need to improve understanding of the barriers to vaccination, particularly adult vaccination, and develop interventions to specifically address these barriers. Universal provision of seasonal influenza vaccination, free of charge to all target groups, should also result in increased coverage.

Alignment of national vaccination policies with the global recommendations summarized in WHO vaccine position papers should be seen as a prerequisite in envisioning the life-course approach. Each EVAP objective provides guidance in operationalizing the approach in terms of commitment to immunization, demand generation, extending benefits of immunization to all people, integrating immunization systems and accessing quality-assured vaccines.

The technical advisory mechanism for immunization, both at regional and national level, plays an essential role in providing scientific recommendations that enable health authorities to make evidence-based immunization policy and programme decisions.

Based on the feedback and guidance received from the consultation session, VPI will work on developing a technical guidance document on the life-course approach to provide operational guidance to immunization programme managers in implementing the approach in the Region.

Annex 1: Programme

DAY 1: Tuesday, 24 October

Opening remarks and welcome

Kenan Hrapović, Minister of Health of Montenegro
Nedret Emiroglu, Director, DEC, Acting DPM, WHO/Europe

Introduction: the programme and format, agenda and housekeeping nnouncements

Robb Butler,VPI, WHO/Europe

Regional overview, European Vaccine Action Plan (EVAP) Progress

Robb Butler,VPI, WHO/Europe

Impulse statement: Game-based learning

Siff Malue Nielsen,VPI, WHO/Europe

Session 1: The road to measles and rubella elimination

Chair: Patrick O'Connor, VPI, WHO/Europe

Impulse statement: European Immunization Week: Ukraine

Tymofiy Badikov, Chair, Parents for Vaccination

Session 2a: Tailoring immunization programmes based on behavioural insights

Chair: Katrine Habersaat, VPI,WHO/Europe

Session 2b: Consultation with middle-income country (MIC) representatives

Chair: Niyazi Cakmak, VPI, WHO/Europe

Impulse statement: European Immunization Week: Austria

Peter Kreidl

Session 3: Poliomyelitis: approaching global certification

Chair: Shahin Huseynov, VPI, WHO/Europe

Keynote: Patrick O'Connor, VPI, WHO/ Europe

Eugene Gavrilin, VPI, WHO/ Europe

Impulse statement: Update on JRF data collection

Simarjit Singh, VPI, WHO/ Europe

Session 4: Delayed vaccination and missed opportunities due to false contraindications

Chair: Liudmila Mosina, VPI, WHO/ Europe

DAY 2: Wednesday, 25 October

Breakfast sessions:

- Meet the Expert *Adam Finn (Facilitator: Robb Butler)*
- JRF clinic *(Facilitator: Simarjit Singh, VPI, WHO/Europe)*

Impulse statement: Use of immunization and surveillance data for strategic decision-making

Siddhartha Datta, Danni Daniels, VPI, WHO/Europe

Session 5: Facing vocal vaccine deniers

Chair: Katrine Habersaat, VPI, WHO Regional Office for Europe

Impulse statement: Vaccine Safety Net

Catharina de Kat, VPI, WHO Regional Office for Europe

Session 6a: Immunization-related stress reactions

Chair: Oleg Benes, VPI,WHO/Europe

Session 6b: Immunization and migration: cross-border coordination

Chair: Siddhartha Datta, VPI, WHO/Europe

Impulse statement: HPV introduction planning: audience insights research

Alexei Ceban, Republic of Moldova

Session 7: Strengthening hepatitis B control in the European region

Chair: Liudmila Mosina, VPI, WHO Regional Office for Europe

Impulse statement: Reaching parents effectively

Evgeny Komarovsky, Ukraine

Session 8: From responding to vaccine shortages to strategic supply management

Chair: Oleg Benes, VPI, WHO/Europe

Meet the expert: *Evgeny Komarovsky, Ukraine*

DAY 3: Thursday, 26 October

Breakfast sessions:

- Meet the Expert *Thomas Cherian (Facilitator: Robb Butler, VPI)*

- JRF clinic *(Facilitator: Simarjit Singh, VPI, WHO/Europe)*

Impulse statement: Rotavirus surveillance: vaccine impact

Danni Daniels, VPI, WHO/Europe

Session 9: Improving the efficiency of immunization programmes

Chair: Niyazi Cakmak, VPI, WHO/Europe

Impulse statement: Vaccination and trust

Katrine Habersaat, VPI, WHO/Europe

Session 10a: Equity in immunization

Chair: Robb Butler,

Keynote: Tammy Boyce

Session 10b: Life-course approach to immunization

Chair: Nur Aksakal, ETAGE member

Keynote: John Spika

Concluding remarks *Robb Butler, VPI, WHO/Europe*

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The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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