Maternal Immunization and Antenatal Care Situation Analysis (MIACSA) Project

Results Dissemination Meeting
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RESULTS DISSEMINATION MEETING

Meeting Report ■ 12–14 March 2019 ■ Cape Town, South Africa
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“A single bracelet does not jingle.”

African Proverb
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AEFI</td>
<td>Adverse event following immunization</td>
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<td>AMI</td>
<td>Advancing maternal immunization</td>
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<tr>
<td>ANC</td>
<td>Antenatal care</td>
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<tr>
<td>ANC1</td>
<td>The proportion of pregnant women who received 1 ANC visit during their last pregnancy</td>
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<tr>
<td>ANC4+</td>
<td>The proportion of pregnant women who received 4 or more ANC visits during their last pregnancy</td>
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<td>BID</td>
<td>Better immunization data</td>
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<td>BMGF</td>
<td>Bill and Melinda Gates foundation</td>
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<td>CDC</td>
<td>Centres for Disease Control</td>
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<td>DHS</td>
<td>Demographic health survey</td>
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<tr>
<td>DPT1</td>
<td>The first dose of diphtheria, pertussis, and tetanus vaccine</td>
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<tr>
<td>DPT3</td>
<td>The third dose of diphtheria, pertussis, and tetanus vaccine</td>
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<td>EAP</td>
<td>Expert advisory panel</td>
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<td>EPI</td>
<td>Expanded programme on immunization</td>
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<td>GAVI</td>
<td>Global alliance for vaccines and immunization</td>
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<td>GBS</td>
<td>Group B Streptococcus</td>
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<td>HMIS</td>
<td>Health monitoring information system</td>
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<td>HPV</td>
<td>Human papilloma virus</td>
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<td>IMR</td>
<td>Infant mortality rate</td>
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<td>IPAC</td>
<td>Immunization practices advisory committee</td>
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<td>LCA</td>
<td>Latent class analysis</td>
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<td>LMIC</td>
<td>Low- and middle income countries</td>
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<td>M&amp;E</td>
<td>Monitoring and evaluation</td>
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<td>MI</td>
<td>Maternal immunization</td>
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<td>MIACSA</td>
<td>Maternal immunization and antenatal care situation analysis</td>
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<td>MMR</td>
<td>Maternal mortality ratio</td>
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<td>MNTE</td>
<td>Maternal and neonatal tetanus elimination</td>
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<td>MoH</td>
<td>Ministry of health</td>
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<td>MTI</td>
<td>Maternal tetanus immunization</td>
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<td>NITAG</td>
<td>National immunization technical advisory group</td>
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<td>NMR</td>
<td>Neonatal mortality rate</td>
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<td>NT</td>
<td>Neonatal tetanus</td>
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<td>PAB</td>
<td>Protection at birth</td>
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<td>RSV</td>
<td>Respiratory syncytial virus</td>
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<td>SAGE</td>
<td>Strategic advisory group of experts on immunization</td>
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<td>SIA</td>
<td>Supplementary immunization activities</td>
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<tr>
<td>Td</td>
<td>Tetanus and diphtheria</td>
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<tr>
<td>Tdap</td>
<td>Tetanus, diphtheria, and acellular pertussis</td>
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<tr>
<td>TT</td>
<td>Tetanus toxoid</td>
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<tr>
<td>TT2+</td>
<td>At least 2 doses of tetanus toxoid vaccine during pregnancy</td>
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<td>TTCV</td>
<td>Tetanus toxoid containing vaccine</td>
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<td>UHC</td>
<td>Universal health coverage</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>VACVA</td>
<td>Vaccines for Africa Initiative</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>WUENIC</td>
<td>WHO/UNICEF Estimates of National Immunization Coverage</td>
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Executive Summary

From 12 to 14 March 2019, representatives from the World Health Organization (WHO) Maternal, Newborn, Child and Adolescent Health (MCA) and Immunization Vaccines and Biologicals (IVB) departments jointly hosted the Maternal Immunization and Antenatal Care Situation Analysis (MIACSA) results and dissemination meeting in Cape Town, South Africa. In total, 66 participants attended, including representatives from WHO headquarters in Geneva, the MIACSA Expert Advisory Panel (EAP), WHO regional offices, WHO country offices, Ministries of Health, the Bill and Melinda Gates Foundation (BMGF), PATH, UNICEF, US Centres for Disease Control (CDC) and the University of Cape Town. The meeting was co-chaired by Dr. Flor Muñoz and Dr. Michelle Giles.

The objectives of the meeting were to (1) present and validate the MIACSA project findings, (2) share lessons from case studies on maternal immunization (MI) and antenatal care (ANC), (3) review how the MIACSA results may be used to optimise the introduction of new vaccines, (4) plan next steps, and (5) gather comments and feedback to finalise the MIACSA project report. Presentations were held on various aspects of the organisation and implementation of the MIACSA project, MIACSA project results, successes and challenges of ANC and MI, new vaccine development, progress on maternal and neonatal tetanus elimination (MNTE), a country readiness checklist for new maternal vaccine introduction, and novel perspectives on programmatic design and integration.

The meeting objectives were successfully achieved, and an action plan was agreed upon.

Country level partners will:
- Access information shared at this meeting via an online repository;
- Use the shared information and tools to strengthen the argument of integrated service delivery of ANC and maternal immunization (MI) in countries;
- Develop expert networks, exchanging information between EPI and ANC programmes.

WHO and partners will:
- Disseminate the MIACSA project report among global community at scientific fora and through peer-reviewed publications;
- Collaborate with PATH on the planning of approaches to improve the design of health systems to optimize maternal vaccination and integration with ANC;
- Consider review of country MI readiness checklist by relevant WHO advisory body (e.g., Immunisation Practices Advisory Committee) and explore the subsequent use of the tool in countries;
- Provide recommendations for home-based records based on MIACSA findings;
- Consider integration of ANC aspects in a Missed opportunities in vaccination (MOV) module;
- Promote MIACSA data and results on WHO website with relevant stakeholders to inform planning and introduction of future vaccines;
- Consider linking WHO preconception care package to both ANC and maternal vaccination at next update;
- Consider digital health strategies for both ANC and EPI, based on upcoming WHO guidance and global good (ANC module to be released);
- Support PATH in planning an advancing MI (AMI; Advancing Maternal Immunization) design thinking workshop for systems design approach to improve quality, efficiency and equity of public health systems related to ANC and MI.
Overall meeting objectives and participants

From 12–14 March 2019 the World Health Organization (WHO) MCH and IVB departments hosted the Maternal Immunization and Antenatal Care Situation Analysis (MIACSA) results and dissemination meeting in Cape Town, South Africa.

The objectives of the meeting were to (see Annex II):

1. Present and validate the results from the MIACSA project;
2. Share lessons from case studies on ways to optimize the delivery of MI and ANC;
3. Discuss how MIACSA findings can be used for new vaccine introduction;
4. Agree on an action plan for next steps;
5. Gather comments and feedback to finalise the MIACSA research report.

In total, 66 participants attended, including representatives from WHO headquarters in Geneva, the MIACSA Expert advisory panel (EAP), WHO regional offices, WHO country offices, Ministries of Health, the Bill and Melinda Gates Foundation (BMGF), PATH, UNICEF, United States CDC and the University of Cape Town (see Appendix III for full participant list). Representatives from Gabon could not attend the meeting due to force majeure.
Day 1 – 12 March 2019

For an overview of the overall agenda for the meeting, please see appendix II.

Opening remarks
The meeting was opened with welcoming remarks by Dr. Theresa Diaz and Dr. Philipp Lambach, an overview of the meeting agenda by Dr. Nathalie Roos, and an introduction by meeting co-chairs Professors Flor Muñoz and Michelle Giles. Key points highlighted in the opening session were:

- Addressing neonatal mortality will be a key part of 21st century health care;
- A revised WHO mission will focus on equitable, affordable, quality health care;
- There is a need to gather evidence on how MI can facilitate this;
- Strategic advisory group of experts on immunization (SAGE), BMGF have requested that WHO review how MI can be expanded within ANC.

A minute of silence was observed for the Ethiopian Airline tragedy on 10 March 2019.

MORNING SESSION 1 – ANC

The global need to strengthen maternal immunization

By Dr. Philipp Lambach, IVB Department, WHO Geneva, Switzerland

Main topics presented
Aligning WHO direction to SDGs includes addressing preventable neonatal mortality.

Maternal immunization is a targeted intervention with proof of concept in maternal tetanus immunization (MTI).

Current vaccines that are in development for MI include vaccines against respiratory syncytial virus (RSV) and Group B streptococci (GBS).

Universal health coverage (UHC) includes improving ANC coverage and quality, and leveraging MNTE and routine vaccination programmes.

Key take-home points
- SDGs are apt to accelerate progress towards reduction in child mortality;
- The MIACSA project aims to identify how ANC can be used to strengthen MI, determine the current status of MTI, and exploring the performance of vaccine delivery strategies.
How do countries deliver ANC services and ensure quality of care – global and country information needs

By Dr. Nathalie Roos, MCA Department, WHO Geneva, Switzerland

Main topics presented
WHO envisions a world where every pregnant woman and newborn receives quality care throughout the pregnancy, childbirth and the postnatal period.

Global reporting suggests that there are challenges in coverage and quality of visits, due to financial and geographical barriers as well as lack in competences and equipment.

New WHO ANC guidelines published in 2016 give priority to patient-centred care, reduction of mortality and morbidity through emphasis on the content of care and increasing the number of contact from four to eight, with emphasis on the third trimester, and optimising service delivery within ANC.

Strategies are needed to integrate ANC with other health services for continuity of care.

Key take-home points
- ANC delivery needs to be improved through increased coverage and quality of care;
- Evidence is needed to evaluate the best ways of implementing ANC guidelines.

The BMGF view on relevance of MI in the context of ANC service delivery

By Dr. Tasleem Kachra, BMGF, Seattle, United States of America

Main topics presented
MI has a high return on investment for improving maternal and child health.

BMGF vaccine development, vaccine delivery and family planning teams work together to identify the optimal MI service delivery models.

Key priorities include prioritising both the mother and child, and reaching every district.

Description of the MIACSA project process and implementation

By Dr. Nathalie Roos, MCA Department, WHO Geneva, Switzerland

Main topics presented
The MIACSA project aims to close the information gaps on maternal vaccine delivery, increase awareness for improving MI and preparedness for new vaccines, and explore benefits of strengthened ANC.

Strong partnerships exist between WHO departments and the multidisciplinary EAP.

The MIACSA project has four overarching research questions:
1. Which service delivery models are in place?
2. How do service delivery models influence coverage of tetanus containing vaccine (TTCV)?
3. What are the health system factors which influence MI?
4. How do delivery factors and system factors affect coverage of TTCV?

The MIACSA project consists of a global desk review, global online survey answered by 95 countries, in-depth telephone interviews with 26 countries, and 10 country visits including stakeholder interviews and facility visits (Figure 1).
QUESTIONS, COMMENTS & DISCUSSION

Which criteria were used to select countries for visits? Countries were selected by considering different characteristics (based on electronic records), availability of country staff and key informants. The process might have been associated with some selection bias, as multiple practical aspects needed to be taken into consideration when selecting countries.

What were the lessons learned from country visits, and how did they affect other country visits? The main lesson learned was how programmes are implemented differently from country to country (results to be presented later). The approach to country visits did not vary between country visits as the methodology was standardized. Having at least one project member in each country visit team ensured that the methodology remained the same at each country visit.

Excluding the European and North America regions may have been a missed opportunity for understanding strengths of MI delivery. However the scope of the project was to only low- and middle-income countries (LMICs).

The Southeast Asian region initially opted out of the project, but changed their mind after agreeing that research on MI delivery models could provide important lessons.

Despite high ANC coverage and a focus on quality of care in Bhutan, neonatal deaths in the country remain high, and MIACSA results will thus be of interest.

Will MIACSA produce country-specific situational analyses? Country level data will be reviewed, and adequacy of data will need to be determined prior to country-level analyses.

What were the predictors or correlates of non-participation for country visits? This aspect was not included in the data collection/analyses.

How were qualitative and quantitative data sources correlated and analysed? Country selection attempted to include both low and high performers to enable learning from strengths as well as weaknesses for achieving high performance.
Measuring maternal tetanus immunization performance in the MIACSA project

By Dr. Sonja Merten, Swiss Tropical and Public Health Institute, Basel, Switzerland

Main topics presented

The following indicators (reflecting both ANC and EPI) were used to measure MTI performance by latent class analysis (LCA): PAB, TT2+, DPT3, ANC1, ANC4+, NMR, and MMR.

LCA is an approach developed in the social sciences and has over the past 5 years been used increasingly in public health. LCA calculates the highest probability of belonging to a group based on selected indicators (without ranking). Countries within each group have similar characteristics and there are no pre-defined cut-off values.

Coverage is usually reported as "TT2+", i.e. the proportion of (pregnant) women who have received their second or superior TT dose in a given year. An additional approach used by WHO and UNICEF is to estimate the proportion of births in a given year that can be considered as having been protected against tetanus – "Protection at Birth (PAB)".

Unlike TT2+ coverage, PAB accounts for women who have previously received protective doses, women who received one dose without documentation of previous doses received, and women who received doses in TT (or Td; tetanus diphtheria) supplemental immunization activities (SIA). In addition, girls who have received DTP during childhood and are entering childbearing age may be protected with TT booster doses. The indicator TT2+ may miss these different aspects and hence reflect a false low coverage.

Project countries were grouped by LCA (Figure 2) in order to get an idea of countries with similar EPI and ANC indicators:

Figure 2. Grouping of countries by latent class analysis
Group 1 countries had very limited potential for protection;
Group 2 countries had limited potential for protection;
Group 3 countries had moderate to high potential for protection;
Group 4 countries had high potential for protection.

The post-hoc country group profile shows a gradient between countries with high and low potential for protection. The same gradient is observed when looking at the socio-economic profiles of countries in each group.

QUESTIONS, COMMENTS & DISCUSSION

Was ANC1 or ANC4 used as an indicator for ANC, and how was the issue of countries with low PAB and TT2+ coverage but high ANC coverage addressed? Both ANC1 and ANC4 were used as well as PAB performance to categorise countries.

How can the potential of countries be classified where TT coverage is high but this is not reflected by the PAB coverage? The PAB indicator was developed due to the recognition of the weakness inherent in TT2+. Countries with high PAB also have high DTP3 coverage. There is less scalability for TT2+ compared to PAB, and an increase from low potential to high potential is observed for most indicators, other than TT2+.

Which estimates were used for performance? WHO performance indicators were used where available, otherwise demographic health surveys (DHS) or other data sources.

Policy and leadership of maternal immunization

By Dr. Carsten Mantel, MMGH Consulting GmbH

Results presented

In total, 88 out of 95 countries had a written maternal tetanus immunization policy or guideline in place; however, no association was found between having a policy in place and PAB.

About half of the countries (46 countries) had set an MI target for tetanus toxoid containing vaccine (TTCV) of ≥90% coverage and this was associated with high PAB.

Based on data from the online survey, 27 out of 95 of countries administered other vaccines during pregnancy, e.g. against influenza and pertussis.

Based on the desk review, all countries had guidelines for the number of ANC visits – 22 out of 137 of countries have adopted the new recommendation of 8 visits.

Based on the desk review, 90 out of 137 countries had a National Immunization Technical Advisory Group (NITAG).

Reporting of coverage was done annually in about half of the countries (n=46) and monthly in another 16 countries.

Sub-national MI targets were investigated in 10 country visits. In total, 80 out of 92 health facilities visited had a vaccination target at facility level – usually aligned with the national level targets. Denominator issues sometimes complicated coverage estimation. In addition, private providers usually did not report to the national programme, potentially leading to underestimation of national coverage.

Key take-home points

- Almost all countries had a MTI policy or guideline in place and more than a quarter of countries also provide other maternal vaccines;
- Countries with MTI target of ≥90% and countries recommending >4 ANC visits were more likely to also have high PAB coverage;
Based on the desk review, 90 out of 137 countries had a NITAG, and having a NITAG was more common in counties with a high PAB.

**QUESTIONS, COMMENTS & DISCUSSION**

**Are there any issues with providing vaccines in the first trimester?** Policies usually do not specify the trimester for tetanus vaccine administration. However, in reality, vaccine administration often occurs late in gestation, if women present late for ANC. Other vaccines, e.g. influenza are mostly administered during the third trimester. The WHO MNCAH policy survey has been ongoing on a regular basis since 2013, and plans are to soon publish data from a new survey round from 2018. This will provide the possibility to compare and validate responses on MNCH and immunization related policies with the MIACSA survey.

**Was the duration of existence of a NITAG assessed?** No, and neither was the functionality of a NITAG, as assessed against WHO-agreed criteria. The latter, however, is likely to be important. GAVI-eligible countries (mostly group 1 and 2) are mandated to have a NITAG in place in order to get support for new vaccine introduction.

**COUNTRY EXAMPLE: THAILAND**

Mr. Noparat Wihanthong, Division of vaccines preventable disease, MoPH, Thailand.

Dr. Amporn Benjaponpitak, Deputy DG, Department of health, MoPH, Thailand.

Thailand has a total population of 66.4 million, an MMR of 26.6/100,000 and an IMR of 6.4/1,000. The country provides universal health coverage (UHC) free of charge.

ANC is provided by nurses available at all levels. Mothers keep an MCH record, or so-called pink book. ANC coverage during the first trimester ranges from 67–86%. The country has had an MI policy in place since 1977, with dT offered since 2005. Vaccines are offered free of charge, and MI coordinates its work with the EPI team through annual to biannual meetings. Influenza vaccination is provided separately from tetanus. Thailand has achieved MNTE. Td coverage in pregnancy is 98%, whereas influenza coverage in pregnancy is 5%. There are plans to integrate influenza vaccination into ANC services.

Challenges include introduction of new vaccines, such as influenza. From June 2019, influenza vaccination will be provided for free, and preventive health care information will be provided through a mobile app. Maternal and Child Health (MCH) in border areas is challenging, including vaccine hesitancy for influenza MI.

Strengths of the MI system include good community acceptance of dT, electronic tracking system, integration of MI into ANC, early stakeholder engagement and health promotion.

The way forward must involve engaging and coordinating MI and ANC with local government, empowering health care providers, and expanding health services to Northern Thailand. MI will require simplifying decision-making processes for new vaccine introduction, and collecting safety data to gain the trust of the population.
Management of maternal immunization and service delivery models

By Dr. Philipp Lambach, IVB Department, WHO Geneva, Switzerland

Main topics presented

Information is needed on service models, division of responsibilities between ANC and EPI, national to local level responsibilities, and the value of integrating MI into MCH.

Service delivery governance consists of responsibilities in procurement, programme planning and management, training and supervision, and vaccine administration.

The online survey showed that the EPI programme is responsible for procurement and distribution in 88 and 86 of 95 countries, respectively, and that in 39 of 95 countries, planning and management are shared responsibilities between ANC and EPI programmes (Figure 3). There is no correlation between PAB and the programme responsible for service delivery.

In 72 of 95 countries, static ANC services delivered the vaccines to pregnant women (i.e. vaccinated pregnant women at the point of care), and in 62 of 95 countries, static EPI services delivered vaccines.

Programme responsibilities for tetanus administration among pregnant women are not the same compared to other vaccines.

MIACSA showed that overall, management structures are in place to ensure regular interaction between EPI and ANC. However, institutional structures or formal mechanisms do not guarantee close collaboration on MI.

Key take-home points

■ Service delivery models are specific to each vaccine, and the tetanus approach may not be applicable to new vaccines;
■ There is a correlation between the one-stop ANC/MI service approach and higher PAB; however, may be limited by waiting time, transport costs and women having to return to the clinic on different days for various other ANC services.

Figure 3. Service delivery responsibilities

Global online survey analysis – Service delivery responsibilities
National level distribution of responsibilities of service delivery process components between EPI and ANC in 95 countries

None of the strategies emerged as superior over others as regards MI performance
QUESTIONS, COMMENTS & DISCUSSION

The data match the coverage deficits presented earlier. The next steps would be to: (1) identify the missed opportunities for MI, (2) identify the gaps in both ANC and EPI services, and (3) communicate with community health workers about how to address these gaps.

In India combined maternal and child health and nutrition days are held at village level and could be a platform to address missed opportunities also in other countries.

COUNTRY EXAMPLE: BHUTAN

Mr. Pema Lethro, Senior programme manager, MoH, Bhutan.
Dr. Sonam Ugen, Head of department in community health, MoH, Bhutan.

Bhutan has a total population of just under 1 million, an MMR of 89/100,000 and an IMR of 15.1/1,000. A web-based MCH system tracks mother and child in the health care system.

ANC4 coverage is currently 77%, and the ANCB coverage 26%. MI is provided through ANC. Regular meetings are held between MCH and EPI teams. There are no private providers of ANC in Bhutan. Procurement, planning and coordination, distribution and delivery of MI are jointly handled by MCH and EPI. Health assistants, auxiliary nurses and village health workers at health facility level deliver MI. They support mobilization and defaulter follow up. In addition, ANC and EPI outreach activities include MI.

The main challenges regarding MI are capacity building of health workers, training and refresher training of community health workers, monitoring and supervision, financing, and the acceptance of new vaccines among the population (2009 introduction of pentavalent vaccine).

For the future, a better understanding of new technologies is warranted. The challenges with the electronic system is related to health care workers sensing an increase of work load and insecurity due to lack of computer skills. The benefits of the electronic system are finally being appreciated, for example in cases where women drop out.
Afternoon Session

The quality of ANC service delivery
By Dr. Nathalie Roos, MCA, WHO Geneva, Switzerland

Main topics presented

ANC plays an important role as a platform for MI. Group 1 and 2 countries have a higher proportion of women with fewer than recommended visits. Whereas Group 4 countries were more likely to recommend >4 ANC visits – see Figure 4.

The timing of ANC visits is important because both new vaccines as well as key ANC interventions require specific timing, e.g. during the 3rd trimester. The number of recorded ANC visits is inconsistent across countries, timing of visits by trimester is rarely available, and timing of tetanus administration is not recorded.

Based on the online survey, 55 of 95 countries reported having ANC outreach service in place. ANC outreach services are more common in group 2 countries. There was no association between the presence of ANC outreach services and PAB.

New vaccine introduction will require a well-functioning ANC referral system to address adverse events following immunization (AEFI). The existence of referral systems was noted; however, inadequacies were observed, in particular in group 2 countries.

The most common services offered in the ANC package are iron and folic acid supplementation, dietary counselling, and HIV counselling and testing. A higher number of services are included in group 4 countries but there was no association with PAB coverage.

Key take home points

- ANC outreach needs to be more rigorous, especially in terms of service delivery package and monitoring and evaluation (M&E);
- Documentation of timing of ANC visits was scarce and must be strengthened.

Figure 4. Number of ANC visits by country group from national level data (Q2)
QUESTIONS, COMMENTS & DISCUSSION

Should ANC be considered as a platform for immunization or immunization as part of ANC services? There may be benefits to positioning immunization as a key component of the ANC package, given the association with high PAB with the one-stop approach (i.e. receiving TT vaccination at the same time as the ANC visit); however, this would require coordination, e.g. for cold chain.

Global guidance on AEFI reporting tools that take into account pregnant women exist and need to be implemented. Appropriate training of ANC staff is required.

Recommending outreach services as a main platform for MI must be done with caution and only after considering the severe limitations of cost of transport.

COUNTRY EXAMPLE: SRI LANKA

Dr. Kapila Jayaratne, MNCH, MoH Sri Lanka.
Dr. Thilanga Ruwanpathirana, EPI, MoH Sri Lanka.

Sri Lanka has a total population of 21 million. Of 26,000 live births in 2018, 127 mothers died. Most deliveries were carried out in a specialized hospital where OB/GYN available. Primary causes of maternal deaths are dengue, heart disease, and respiratory disease (influenza), and infant deaths by intrauterine growth restriction (IUGR), prematurity and low birth weight (LBW). MNTE was achieved in 2016.

ANC is provided on the basis of packages, with each household being allocated a public health midwife responsible for conception care, pre-pregnancy care, ANC and postnatal care. Tetanus toxoid is part of ANC package. Although, there are two separate focal institutions of EPI and MCH at the central level, they work closely. Even at the grassroots level, all interventions are delivered through MCH network involving public health midwife and public health inspector, two officers who collaborate closely – both certified as vaccine competent. In 2008 a technical working group was established to review evidence to introduce influenza vaccine among pregnant women. But the report negated the need due to lack of evidence.

The main strengths of MI in Sri Lanka are free health care and education leading to increased health seeking behaviour, strong political leadership, technically competent programme leadership, accountability, regular evaluation and ground level established mechanisms.

The main challenges are financial (the curative health sector is allocated 98% of funds), rapid staff turnover, rising cost of vaccines, rising public demand for new vaccines, vaccine hesitancy and limited bargaining power at global market.

Areas for improvement include: evidence based decision-making and further advocacy in introducing new vaccines, regulating private sector vaccine procurement and information sharing, and legalise mandatory vaccination.
WHO ANC 2016 Recommendations on ANC for a positive pregnancy experience: from dissemination to implementation

By Maria Barreix, Consultant Reproductive Health and Research, WHO Geneva, Switzerland

Main topics presented

The previously WHO recommended ANC care model, was the focused ANC model (FANC). The FANC model included four goal-oriented or targeted visits. Among others, the rationale for the 2016 WHO ANC guidelines was new evidence, which suggests decreased ANC visits could lead to increased perinatal mortality. The WHO 2016 recommendations on antenatal care for a positive pregnancy experience consist of a model of care with an essential core package of interventions that all pregnant women and adolescent girls should receive.

The major changes include:

- Eight quality contacts during pregnancy, including five visits in the third trimester to identify pre-eclampsia and reduce stillbirths;
- Early ultrasound before 24 weeks of gestation;
- Health systems approach and strengthening, including strengthening task shifting;
- As of Dec 2018, the TT recommendation has been updated to include Td vaccination.

WHO has promoted the new guidelines regionally and 21 countries in Africa and Asia have already adopted the new WHO ANC guidelines.

COUNTRY EXAMPLE: SOUTH AFRICA – IMPLEMENTING NEW ANC GUIDELINES

Dr. Makgodi Ellence Mokaba, MoH, South Africa.

Life expectancy in South Africa has increased by 10 years; however, IMR is 32.8/1,000. The primary causes of perinatal death in South Africa include intra-partum asphyxia, unexplained stillbirths, and deaths associated with hypertensive conditions of pregnancy.

In 2008, the WHO basic ANC model with 5 goal-oriented visits was introduced, including tetanus toxoid and seasonal influenza vaccination. In 2017, a free-of-charge BANC plus model was rolled out and includes:

- A total of 8 visits: <14 weeks, 20, 26, 30, 34, 36, 38, 40;
- Counselling and baseline analysis (RPR, BP, weight, Hb, HIV, urinalysis);
- Tetanus toxoid, seasonal influenza vaccination;
- Iron, folic acid, calcium, vitamin A supplementation.

Lessons learned. Pre-implementation assessment of acceptability and feasibility was essential, strong political will, demand creation and communication was critical, including digital feedback via MomConnect and NurseConnect, education of health workers, clarified referral pathways, and a monitoring framework.

The main strengths include EPI and BANC plus services offered free of charge, coordinated EPI and MCH teams (office co-location, joint cluster meetings) and advisory committees, integration of PHC, Child, HIV/AIDS and TB services, highly experienced and active NITAG, outreach programmes, and Mom-connect and Nurse-connect.

Challenges include lack of appropriately allocated human and material resources including specialists, and late bookings of pregnant women.
WHO is currently developing an ANC monitoring framework, including a policymaker toolkit, testing of different models of care (e.g., task-shifting, midwife lead care), and an ANC decision support and digital patient record tool.

**Update on RSV vaccine development and research**

*By Dr. Daniel Feikin, IVB Department, WHO Geneva, Switzerland*

**Main topics presented**

RSV causes 118,000 adult and infant deaths yearly and 3 million RSV-related hospitalizations (50% of deaths occur in the community).

More than 40 RSV candidate products are being tested. Protein vaccines can be used in RSV-antigen experienced pregnant women, and data suggest there is minimal difference in administering the vaccine in the late second trimester versus the third trimester.

Results of the Novavax Phase III trial of RSV MI of 4,636 study participants (50% in South Africa, 25% in US, 25% in nine other countries) showed 39% reduction in medically significant lower respiratory tract illness (primary outcome; vaccine efficacy), which was not statistically significant. However, the trial did show statistically significant reduction of hospitalization for RSV- lower respiratory tract illness with severe hypoxemia. Efficacy varied between the US and South Africa, with higher efficacy in South Africa.

Group B streptococcus is the leading cause of perinatal disease in mothers and newborns. WHO has published guidelines for group B streptococcus vaccines during pregnancy.

The route from the laboratory to vaccination of human beings follows seven pre-defined steps:

1. Pre-clinical phase;
2. Clinical phase;
3. Licensure (regulatory authority of country where vaccine is manufactured);
4. Strategic advisory group of experts on immunization (SAGE);
5. Pre-qualification;
6. Financing;
7. Country decision.

SAGE recommendations become the published WHO vaccine position. SAGE’s possible actions include: (1) recommendation of a vaccine (in all or some countries), (2) possible recommendation pending more evidence, (3) not recommended. UNICEF and GAVI cannot buy vaccines unless they are pre-qualified, an evaluation of vaccine quality, safety and efficacy.

Challenges at country level include programmatic delivery platforms, safety concerns for pregnant women, low demand, and/or competing EPI priorities.
Day 2 – 13 March 2019

For an overview of the overall agenda for the meeting, please see appendix II.

MORNING SESSION

Human resources and maternal immunization

By Ms. Jayani Pathirana, PhD fellow, University of Witwatersrand, South Africa

Main topics presented

At national level, EPI and MCH are often run as independent programmes, although 19 of 25 countries reported coordination of MI, and 14 of 25 countries reported that they share staff. At health facility level there is greater staff sharing due to lack of human resources.

Trained nurses and midwives most often vaccinate women at all levels of the health care system.

The greatest shortage of staff capacity is at primary level in countries with PAB<90% and group 1 and group 2 countries. Group 3 and group 4 countries have uniform staff shortage.

Most countries expressed an interest in refresher training, with group 2 and 3 countries making more requests for ANC staff to have EPI capacity training. Facilities in 76 of 95 countries received supervisory visit, and in 71 of 75 countries these visits were seen as useful.

Key take home points

- Interaction between ANC and EPI programmes needs strengthening;
- Staff sharing at health facility level enables collaboration;
- Vaccination by registered nurses is associated with higher PAB – although this may be a reflection of higher socioeconomic status of the country;
- Overall staff shortages predominate in group 2 and 3 countries;
- Training is needed for ANC staff on EPI with continuous development for all staff.

Record keeping and maternal immunization

Dr. Martina Baye, Ministry of Health, Cameroon

Main topics presented

Home-based ANC records held by the pregnant woman were the most frequently used medical record, followed by a clinic-based vaccination card. Some countries use electronic record systems.

In 72 of 95 countries, health facilities retain MTI records. There was no association between facility-based maternal record keeping and PAB coverage.

Tracking and reminders are through community health workers or less often by phone contact (cost implications). Written reminders are associated with higher PAB. In Bhutan, a messaging system allows real time ANC record keeping and sharing between the various health care facilities the pregnant woman might visit during the ‘1,000 golden days’.
QUESTIONS, COMMENTS & DISCUSSION

Optimal record keeping is vital for a successful MI programme. Currently, the system is mostly dependent on mothers retaining paper records of their own and the child’s records.

WHO recently released recommendations on home-based records, including both maternal and child records. Home-based records pose many challenges, including data accuracy and availability, and coordination with facility-based registers.

WHO is currently developing recommendations for digital records of ANC and MI. Challenges include aligning paper-based and digital records. From PATH’s perspective, the current and future focus is on digitalization of patient data and introducing electronic systems, enabling the linkage between maternal and child records, without compromising the current paper-based systems. Results from the Better Immunization Data (BID) project in Tanzania may help inform this process.

COUNTRY EXAMPLE: FIJI

Ms. Litiana Volavola, EPI, MoH Fiji.
Mr. Abdul Riyaz Hussain, MNCH, MoH Fiji.

Fiji consist of 330 islands, of which 2/3 are inhabited, and has a population of nearly 1 million. The MMR is 35.6/100,000 and IMR 18.3/1,000 live births.

The coverage of ANC4 is 80%. MI is provided through ANC, and PAB is 90% and TT2+ coverage 73%. Vaccines are distributed monthly. Facilities and mothers retain immunisation records, and electronic records are kept for national data purposes.

Strengths include high clinic and ANC visit attendance, coordination of MI between ANC (vaccine administration and records) and EPI (logistics), awareness among health care workers on the value of vaccination, improving Td coverage and reporting through supportive supervision and on-the-job training. Health clinics are located strategically in order to address the challenge of reaching the most remote women. Vaccine safety training, enhanced disease surveillance will ensure health care provider commitment.

Challenges include overburdened human resources, costs of training of health care workers with high turnover, maintaining quality of care in ANC, record keeping (accuracy, consistency, delays from health facility level), and vaccination recording and tracking (improved reporting template is needed).
Health financing and user fees
By Dr. Nathalie Roos, MCA Department, WHO Geneva, Switzerland

Main topics presented
National governments fund MI programme to a varying extent (Figure 5).

Most group 1 countries did not receive the full amount of government financing to carry out immunization activities, whereas all group 4 countries received the full amount of financing. Countries with PAB >90% were significantly more likely to receive the requested financing.

External financing for MI comes mainly from WHO, UNICEF, GAVI and other donors. Countries with PAB <90% have a greater probability of receiving GAVI support. GAVI is the biggest funder of group 1 and group 2 countries. Some countries, like some Group 4 countries, do not receive any donor funding.

Most countries used national funds to finance ANC, but 13 of 26 countries received external donor funding (main funders World Vision & UNFPA). In 2 countries used funding from national health insurance schemes, and 1 country required user fee funding.

In 72 of 95 countries, there is a policy where pregnant women are exempt from paying for ANC services or tetanus vaccination, and this was associated with PAB coverage >90%.

Key take home points
- Funding of MI services may be domestic, external, out-of-pocket, or private;
- Most countries use national funds to finance ANC;
- Higher government contributions and user fee exemption both lead to higher PAB.

Figure 5. Health financing for routine immunization

Contribution (%) to the financing of routine immunization by government funds.

Desk review data (137 LMICs)

Telephone interviews (n=26): All countries but two government contributes to the maternal immunization program

- Percentage of total expenditure on routine immunization financed by government funds (average %)
- Percent of GAVI eligible countries by subgroup in 2016 (%)

Results Dissemination Meeting
Experience from Morocco shows that user fee exemptions may lead to increased waiting times and some women opt to visit private facilities instead. To address this challenge, the government introduced referral sheets for pregnant women. If pregnant women want an appointment at the hospital, they don’t need to wait.

Which services are prioritised when immunization services are not fully funded? In some cases, outreach services were compromised due to lack of funding.

**COUNTRY EXAMPLE: BENIN**

Dr. Robert Frank Zannou, MCH, MoH Benin.
Dr. Franck Hilaire Bete, Director General, National vaccination agency (EPI), Benin.

Benin has a total population of 11.5 million, and an IMR of 55/1,000 live births. Overall, 55% of women and 32% of men aged 15-69 years do not have formal education.

ANC1 coverage is 83% and DTP3 coverage is 73%. Maternal and infant TCCV is financed through EPI funds and MI provided through ANC. New vaccines will be co-funded through GAVI (80%) and domestic (20%) funds. Rotavirus and hepatitis B vaccines are planned to be introduced in July 2019, and the country is in a demonstration phase for human papilloma virus (HPV) vaccine.

Challenges include coordination between MCH and EPI programmes (not co-located, no formal meetings), user fees for ANC, reaching 90% TCCV coverage, ensuring continuity of care for vaccination of women, human resources in rural areas, logistics and cold chain of vaccines, and capacity building and funding for new vaccination introduction.

Moving forward, resource mobilisation is enhanced through directorates being transformed into agencies, health systems reforms aim to improve coordination between MCH and EPI. A pilot programme is exploring subsidies for ANC services. The MIACSA results should be shared with relevant national stakeholders in order to strengthen MI.

**Demand creation for maternal immunization**

By Dr. Sara Rendell MD PhD fellow, University of Pennsylvania, United States of America

Main topics presented

The MIACSA project explored how MI could be improved, and results come from qualitative and quantitative data, including meetings with health officers in Ethiopia and Tanzania.

Interviews found that health officers are not always involved in demand creation in all countries, but that health care facilities implement, with or without the support of NGOs. Few countries target demand creation for tetanus vaccination.

MI and ANC awareness may be ensured during ANC. Community agents collaborating with health care workers encourage women to get vaccinated and counteract the spread of rumours about vaccines and disease through health information networks. In a few cases, neighbours and family members would encourage the pregnant woman.
COUNTRY EXAMPLE: SENEGAL

Dr. Aliou Diallo, WHO Senegal.

Senegal has limited coordination between MCH and EPI services (not co-located, no formally organised meetings); however, organise common vaccination training. The EPI department is responsible for MI vaccination procurement and distribution. Senegal has a good school immunisation programme, potentially also a platform for rolling out HPV.

A network of journalists are trained in health and invited to health-related activities. ‘Wise women’, initially trained for demand creation by the immunisation programme, raise awareness and encourage women to attend health care.

Girls are targeted for vaccination at school in order to address the issue of young women who do not attend health clinics for abortion, and who develop tetanus. Tetanus risk is analysed on a regular basis according to WHO guidance, and any emergency response, although rare, is coordinated between the various levels of the health care system.

Challenges include lack of funding for and recruitment of human resources particularly in rural and understaffed areas, demand creation by community health officers, including ‘wise women’ who practically operate as volunteers. Community relays act as contact points at facility level to involve and recruit young individuals for volunteer work.
AFTERNOON SESSION

Safety and surveillance of maternal immunization

By Dr. Michelle Giles, Associate Professor, Department of Obstetrics and Gynaecology, Monash University, Australia

Main topics presented

MI may have safety issues for the mother, foetus and the newborn, and requires a safety surveillance system that can detect, report, investigate, implement corrective action, educate and communicate adverse events following immunization (AEFI). WHO reporting forms and guidance tools exist for the management of AEFI in pregnant women.

Systems to detect AEFI are important with the introduction of any immunization programme to (1) detect any new safety signal (woman, foetus, newborn) and (2) to maintain confidence in the safety of an immunization programme.

Results from the MIACSA study reported that 81 of 95 countries had an AEFI surveillance system in place, with 69 of 95 health facilities visited having an AEFI system available. However, of the 69 facilities, only 8 of 69 (12%) could distinguish pregnant women. Group 1 countries were less likely to have a system in place. Many safety surveillance systems had limited functionality as measured by the extent to which managers could describe the most recent AEFI reported based on available records.

Passive surveillance was the most common type of maternal and neonatal tetanus surveillance. Community-based reporting was associated with higher PAB. In terms of stillbirth reporting, 71 of 95 health facilities visited reported recording stillbirths.

The findings suggest that existing surveillance systems need to be strengthened, need to be disease specific, and that pregnancy outcome data (stillbirths, congenital abnormalities, preterm birth, low birth weight) may be important when introducing new maternal vaccines.

COUNTRY EXAMPLE: MOROCCO

Dr. Mohammed Benazzouz, EPI, MoH Marocco.
Dr. Noureddine Malmouze, MCH, MoH Marocco.

Morocco has an MMR is 72.6/100,000 and an IMR 18/1,000.

The current MNCH programme was initiated in 1987, and includes ANC and tetanus vaccination. ANC4+ coverage is 88%. Nurses administer tetanus vaccination during ANC. Patient records (pink booklets) are retained by the pregnant women, and facility-level paper-based registers provide data for provincial and national levels. Electronic monitoring systems ensure maternal mortality surveillance and neonatal audit reports.

Vaccines are provided free of charge and Morocco was the first country in the region to eliminate tetanus. The country plans to switch to tetanus diphtheria (Td) vaccine and introduce HPV and influenza vaccine. Reporting systems for AEFI will be updated to include pregnant women.

Strengths of the MNCH programme include a well-structured ANC and vaccination programme offered free of charge, domestic funding and committed policy makers. Challenges include adaptation of health care provision to new guidelines, health care staff shortage in the public sector, recall systems, lack of coordination with private sector, and geographic, educational and socio-economic limitations to access.
Key take home points
- There is a need to ensure the functionality of the AEFI system, not just its presence;
- Awareness and capacity needs strengthening to identify AEFI in pregnant women;
- Community-based reporting was associated with higher PAB coverage.

Vaccine Hesitancy and confidence

By Dr. Michelle Giles, Associate Professor, Department of Obstetrics and Gynaecology, Monash University, Australia

Main topics presented
Data from interviews with health care professionals and community health workers during the country visits found that there was no hesitancy towards tetanus vaccination, whereas there were rumours and hesitancy towards other vaccines.

This included incorrectly attributing causality to an adverse event or death occurring in relation to vaccination. In addition, rumours of sterilization as an ulterior motive, generated fear among some populations.

Interviews with healthcare workers suggested that immunization campaigns, including school-based campaigns, may generate more hesitancy than when immunizations are administered in a healthcare setting.

In the setting of vaccine hesitancy, a strong presence of community health workers was required to re-establish confidence.

For the introduction of new vaccines, it will be important to ensure education of women, families and health care providers, communicate indication and safety of vaccines, and ensure a robust safety surveillance system for reference if vaccine hesitancy/rumours arise.

COUNTRY EXAMPLE: TANZANIA: EXPERIENCE WITH VACCINE HESITANCY AND CONFIDENCE

Strengths of the MCH and EPI programmes include national Immunization and vaccine development communication strategy, appointing official champions, annual CCHP, availability of health boards, health facility committees, a large cadre of community health workers within council, village and ward governance structures, and availability of media, theatre groups, and IEC material for community communication;

Challenges include high staff turnover and sufficient training of health care providers, limited funding for MNCH programmes, IVD communication activities, monitoring and supportive supervision, and limited availability of IEC/BCC material specific to MI;

Suggested steps to counter vaccine hesitancy and to improve confidence:
- Ensure political support and funding for communication activities;
- Strengthen communication between health care facilities and the community through community health workers, faith-based and local leaders;
- Include civil society organizations in defining messaging;
- Address differences in hesitancy between rural/urban areas;
- Develop a risk-communication strategy;
- Personalised health education of individuals who may be driving the hesitancy.
Logistics and infrastructure
By Flor Muñoz, MD, Associate Professor, Baylor College of Medicine, United States of America

Main topics presented
Data from telephone interviews found no differences between country groups in self-perceived satisfaction in quality of vaccine procurement, transportation, or storage.

Data from country visits found that countries with low PAB coverage reported less satisfaction with quality of cold chain at health facilities and at vaccination sites, mainly due to insufficient supplies. Health facilities in group 2 countries were less likely to have functional cold chain, or safe waste disposal.

Observation for adverse events following vaccination and temperature monitoring were other limitations.

COUNTRY EXAMPLE: PANAMA: EXPERIENCE WITH LOGISTICS AND INFRASTRUCTURE

Vaccines are procured through the Pan American Health Organization Revolving Fund, ensuring access to vaccines at reduced prices, syringes and other supplies;

Vaccines are distributed by the Ministry of Health (MoH) to both private and public facilities. Vaccines are transported from national to regional to local level storage and health facilities;

Waste from vaccination is managed through a centralized incineration;

Strengths of the maternal and neonatal immunization programme in Panama include the immunization law (2007) that obliges health workers to explain the benefits of vaccination to pregnant women, the availability of guidelines and manuals for maternal and neonatal immunization, and inter-programmatic collaboration between stakeholders;

Challenges related to infrastructure include minor adjustments to the quality of ANC waiting area. Work is ongoing towards strengthening supervision capacity at all levels of the health system and standradize the immunization training for new personnel.

Suggested steps to strengthen vaccine logistics and infrastructure:
- Ensure available funding for additional investment in supply chain for the introduction of new vaccines, e.g. by determining annual budget line by law;
- Leverage existing mechanisms and opportunities for price negotiation, such as PAHO Revolving Fund for the Americas Region and, Gavi for eligible countries;
- Consider cold chain accreditation as part of quality improvement of vaccination.
BREAKOUT SESSION – KEY POINTS FROM PRESENTATIONS AND DISCUSSIONS

During the breakout session countries were asked to discuss opportunities, challenges and needs related to maternal immunization and ANC capacity in assigned topic areas.

GROUP 1 (BENIN, MOROCCO, SENEGAL)

Main successes include the procurement of vaccines, partnerships and co-financing, demand creation through local leaders and community peers, the development and use of surveillance tools and support mechanisms.

Main challenges

Health financing challenges include ensuring continuity in financing of free of charge vaccination and introduction of new vaccines, mobilisation of domestic resources, and identifying and securing new sources of funding.

Demand creation challenges include ensuring effective communication, successfully taking cultural issues and local context into consideration to determine needs, creating demand for mothers and health care workers, and ensuring readiness to provide new vaccines.

Safety and surveillance challenges include ensuring AEFI surveillance specifically for pregnant women, and developing sensitive notification systems.

Main needs moving forward

- Explore innovative funding options and consider financial incentives;
- Ensure availability, quality and capacity of maternal health programme as part of demand creation;
- Target health care workers and community peers for quality and demand creation;
- Develop an integrated information system for maternal and child immunization.

GROUP 2 (ETHIOPIA, PANAMA, SOUTH AFRICA, TANZANIA)

Main successes include the use of alternative energy sources (solar, gas), alternative ways of transport, tailor-made communication for the community, use of local media, community involvement, in-service training, integration, task sharing as opposed to task shifting, and implementation of pre-service practical training.

Main challenges

Logistics and infrastructure challenges include ensuring cold chain capacity, optimal maintenance plants, road infrastructure, sustainable power supply, building infrastructure, and appropriate supply chain systems.

Vaccine hesitancy and confidence challenges are related to religious beliefs, need for cultural and context-specific communication material. Other challenges include anti-vaccination lobby groups, and minimal knowledge amongst healthcare providers (maternal immunization).

Human resources challenges include high staff turnover, inadequate number and capacity of healthcare workers, low motivation, and poor integration and programme organization. Demand creation – importance of community health workers.

Main needs moving forward

- Secure sustainable funding and improve premises for maternal care and MI;
- Strengthen forecasting, logistical management and improve capacity of cold chain;
- Improve interpersonal and communication skills to address hesitancy;
- Appoint additional staff, and improve capacity building;
- Strengthen collaboration.

**GROUP 3 (BHUTAN, FIJI, SRI LANKA, THAILAND)**

**Main successes** include provision of vaccines free of charge, and centralisation of EPI vaccine procurement.

**Main challenges**

**Policies and political leadership** challenges include inconsistent implementation of present policies, e.g., first visit less than 12 weeks.

**Training** challenges include brain drain, rotation of staff, lack of training calendars, and lack of in-service training.

**Supervision** challenges include lack of field checklist or guidelines, training of supervisors, and integration of M&E into routine practice.

**ANC delivery** challenges include a high number of recommendations (49), discontent with current status in country; and accessing vulnerable populations, in particular migrants, due to geographical and seasonal issues.

Information systems challenges are common and include ensuring real-time reporting, accurate data, denominator issues, too much data collected, not much used for decision and planning, relying on survey data, and ensuring that health monitoring information system (HMIS) includes MI.

**Main needs moving forward**

- Improve quality, quantity and content of ANC;
- Strengthen collaboration between MCH and EPI at each strategic level;
- Introduce pre-conception care to capture pregnant mothers early;
- Address data confidentiality.
MORNING SESSION 1: PANEL DISCUSSION – CURRENT AND FUTURE VACCINES

Facilitated by Dr. Michelle Giles, Associate Professor, Department of Obstetrics and Gynaecology, Monash University, Australia.

Maternal and neonatal tetanus elimination (MNTE)
By Dr. Nasir Yusuf, IVB Department, WHO Geneva, Switzerland

Main topics presented
Neonatal tetanus related deaths have gone down from close to 800,000 in 1988 to a target of elimination of neonatal tetanus (NT) by 2020. MNTE is defined as <1 NT case per 1,000 live births in any district per year. As of 2017, globally reported NT deaths have drastically been reduced to about 30,000 (96% reduction). Globally, 46 countries eliminated MNT between 2000 and March 2019, and 13 countries have yet to eliminate MNT: African Region (AFR) 7, Eastern Mediterranean Region (EMR) 5 West Pacific Region (WPR) 1.

NT occurs among marginalized populations, and WHO has developed a standard for addressing MNT in high-burden countries, which uses the high-risk approach. The three key strategies for MNTE include: (1) clean delivery and cord care practices, (2) TTCV to all pregnant women and women of reproductive age, and (3) NT surveillance (currently weak).

Critical challenges to achieving MNTE are financing, integrating MCH and EPI platforms, and security constraints, fragile health systems, and health emergencies.

Lessons learned: National commitment is key to MNTE, timely availability of resources, good planning, early and active community engagement, monitoring and supervision of implemented activities and a robust health system with integrated delivery of ANC and EPI. SAGE recommendations are closely monitored, providing support to countries, developing guidelines, fundraising via the MNTE partnership.

Missed opportunities include TT vaccination during ANC, country-level record keeping and monitoring, and new technologies, e.g. PAB calculators and Uniject (pre-packed single dose tetanus injections).

Missed opportunities for vaccination and integration (MOV)
By Dr. Laura Nic Lochlainn, IVB Department, WHO Geneva, Switzerland

Main topics presented
Missed opportunities for vaccination (MOV) are any visits to a health facility by a person eligible for vaccination that do not result in the person receiving all the vaccine doses for which s/he is eligible. Globally, 1 in 2 women of reproductive age have a MOV.

MOV in children has been found to most commonly occur due to reasons related to caregivers, health systems or health care workers. Examples of reasons include low home-based record retention, lack of awareness of the immunization schedule among caregivers, hesitancy, failure by health workers to screen records, vaccine wastage concerns, knowledge gaps, stock-outs, lack of integration, poorly designed records, restrictive policies and age-limits for catch-up vaccination.
Beyond improving immunization coverage, the benefits of addressing MOV are increased coverage, by as much as 15%, synergy between programmes, user satisfaction, and increased demand.

Integration of ANC and immunization would ensure that everyone receives the full infant tetanus series and required booster doses for lifelong protection. This would mean that, over time, the ANC contact will focus more on screening for TTCV status, and only provide TTCV when the required number of TTCV doses has not been documented. Also, as new maternal vaccinations become available, the importance of integration between ANC and immunization will increase.

The potential benefits to integrating immunization with other services include increased coverage, improved system efficiency, improved user satisfaction and increased demand. However, the risks when integrating immunization with another service need to be considered, such as the potential negative impact on the overall coverage rates, equity, or quality of care, and non-acceptance by either health care workers and/or beneficiaries.
PATH RSV roadmap

By Dr. Jessica Fleming, PATH, Seattle, United States of America

Main topics presented

RSV is widespread but under-recognized globally. At-risk individuals are the very young who are not able to mount an immune response to a vaccine. Available treatment is multi-dose monoclonal antibodies (mAb) for high-risk infants, but has high costs and is complex to administer.

AMI is a global collaboration of experts from immunization and MNCH sectors. PATH and the World Health Organization (WHO) coordinate AMI, which supports global, regional, national, and sub-national decision-making around RSV MI introduction and uptake. A analysis conducted by AMI identified and prioritized evidence gaps in enabling efficient, well-informed decision making around maternal RSV vaccine introduction in LMICs. AMI’s A Roadmap for Advancing RSV Maternal Immunization identifies critical activities to fill those gaps. Activities identified in the roadmap as most urgently needing action are termed ‘near-term activities’ and span the following areas of work:

■ Ensuring the availability of safe, effective, and affordable maternal RSV vaccines. Work in this area calls for technical assistance to manufacturers to make sure that RSV vaccines meet performance, supply, and delivery needs for LMICs and to support LMICs in ensuring that systems are in place to track the safety and impact of maternal immunization.

■ Enabling evidence-based global and country decision-making around maternal RSV vaccines. This work includes increasing stakeholder awareness of the burden of RSV disease and the public health case for the vaccine and ensuring informed policy and financing decisions around its introduction in LMICs.

■ Enabling systems and services to routinely, efficiently, and equitably deliver maternal RSV vaccines. Through formative research and demonstration projects, activities in this area support coordination between immunization and maternal, newborn, and child health (MNCH) programs to ensure that operations and logistics are in place to optimally deliver the vaccine, health care personnel are empowered to provide it to pregnant women, and systems are prepared to monitor its implementation and resulting outcomes. Figure 7 describes the timeline for activities in relation to key vaccine development to introduction milestones.

Lessons learned around maternal tetanus vaccine delivery will not necessarily apply to other maternal vaccines because of important nuances, including:

■ Different target populations (WCBA vs. pregnant women)
■ Potentially tighter vaccine administration windows
■ Delivery modality; SIAs, campaigns vs. routine delivery
■ Seasonality
■ Low disease awareness and demand for prevention

Additional potential benefits of maternal vaccines include:

■ Supporting women’s agency
■ Providing an opportunity for a mother to protect her infant
■ Encouraging pregnant women to attend ANC visits
■ Leveraging resources to improve ANC and vaccine service delivery
■ Establishing vaccine surveillance systems that also monitor pregnancy and other MCH outcomes
■ Supporting life-course vaccination efforts
■ Supporting pandemic preparedness.
How can integration of ANC and EPI programmes best be achieved? One possibility is to build a people-centred approach. Successful integration across all health care system levels will require people to take on board a new way of thinking.

How are recommendations for the introduction of new vaccines best developed? The recommendations are by large the same that apply to any vaccine.

Does WHO have any guidance on the introduction of maternal influenza? WHO is in the process of developing such guidance and will share widely once ready.

Do PATH, WHO have any updates on new technologies for immunization? There are groups working on micro-needles, spray technologies, and prototype micro-aerate patches.

How is integration of services, resources and planning being addressed? Within WHO, there is a shift towards the life course approach and how this aligns with UHC. Therefore, considerations for a more people-centred-approach to health are being adopted.

How is tetanus through male circumcision being addressed? Tetanus disease and deaths in adolescent males have revealed an immunity gap. Therefore, in countries where voluntary medical male circumcision is offered to adolescent males, a policy is required on the prevention of tetanus through offering TTCV for adolescent males to be circumcised.

What is meant by supporting a woman’s agency? There is a shift to more holistic ANC, centred around the woman and giving her choices to be empowered.

Could RSV be regarded as an altruistic vaccine, compared to tetanus? Even if it is not of direct benefit to women, mothers will do anything to protect their children.
How can bundling of mother and child health services be addressed? Outreach services are among the areas where mother and child are able to get services at same time. Bundling health care could save time and resources, for all parties involved.

How can political will and funding be improved for immunization and ANC? Funding is linked to political will. The EPI budget typically consists of cost of vaccines and cold chains. Other budget lines are for health systems (human resources, supervision, etc.), giving opportunities for integrated training and supervision, but this would require a change of mentality.

MORNING SESSION 2: PRESENTATION AND VALIDATION OF MIACSA RESULTS

Results from the latent class analysis.

By Dr. Sonja Merten, Swiss Tropical and Public Health Institute, Basel, Switzerland.

Main topics presented

Countries are grouped according to the potential to protect pregnant women and children from vaccine-preventable diseases (Figure 8).

MTI targets were higher in countries with high PAB coverage, and countries with strong health systems had policies of greater than 4 recommended ANC visits. There was a clear gradient of number of visits and number of services provided as part of the ANC service package.

Outreach services occurred less in group 1 compared to group 2 and less in group 3 compared to group 4 countries. Referral systems differed with regard to functionality.

Health care professionals with less training were more likely in group 1 and 2 countries. All country groups lacked sufficiently trained staff and were in need of supervision.

Women retaining past immunization details was mixed across country groups. Group 4 countries were more likely to have electronic information systems for record keeping.

The number of surveillance indicators followed a clear gradient from low in group 1 to high in group 4 countries. AEFI reporting was a challenge across all country groups.

Figure 8. Grouping of MIACSA project countries

Groups of countries according to their potential to protect pregnant women and children from vaccine-preventable diseases

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1: Very limited potential for protection</td>
<td>Currently very limited potential to protect mothers and their young children from vaccine-preventable infections. Limited ANC and EPI performance.</td>
</tr>
<tr>
<td>Group 2: Limited potential for protection</td>
<td>Limited potential to protect mothers and their young children from vaccine-preventable infections. Moderate ANC and EPI performance.</td>
</tr>
<tr>
<td>Group 3: Moderate to high potential for protection</td>
<td>Moderate potential to protect mothers and their young children from vaccine-preventable infections. Mostly successful ANC and EPI performance.</td>
</tr>
</tbody>
</table>
Country readiness checklist for new maternal vaccine introduction

By Dr. Michelle Giles, Associate Professor, Department of Obstetrics and Gynaecology, Monash University, Australia

Co-developed with Dr. Carsten Mantel and Dr. Elizabeth Mason

Main topics presented

The checklist aims to assist countries in decision-making about their readiness for introduction of new maternal vaccines. It has been developed based on indicators already contained in other checklists, such as the WHO Guidance for Adding a New Vaccine to a National Immunisation Programme, and the guidance on the introduction of influenza vaccines, MIACSA project findings and a planning document on the implementation of HPV vaccines.

The proposed checklist is not specific to any individual maternal vaccine, rather it is intended to be used together with other checklists, and has the capacity to include additional items. Checklist elements and criteria include:

- **Policy and governance** – Definition of a functional NITAG with MCH expertise;
- **Tetanus programme** – PAB ≥90%; TT2+ and DTP3 meeting coverage targets defined in the NIP;
- **Recent vaccine introduction experience** included in the strategy development;
- **ANC** – Assessment of ANC visits, including system to record the timing of visits, ANC quality, and any incurred ANC fees;
- **Programme coordination** – Definition of roles and responsibilities of EPI and ANC programs;
- **Pharmacovigilance** – Availability of an AEFI system with capacity to identify and report adverse events in pregnant women.

Participants at the meeting had the ability to get a hard copy of the draft checklist in order to make suggestions and comments. Their feedback as well as written feedback received after the meeting is summarised below.

**QUESTIONS, COMMENTS & DISCUSSION**

How could the checklist be used as an actual decision-making tool? The checklist has not been designed to prioritise any of its indicators, or to provide an overall score with a cut-off. No single indicator should be a deal-breaker for the introduction of a maternal vaccine. The introduction of new vaccines often in itself provides resources and impetus for the necessary improvement of health care delivery systems. In India for example, following a NITAG decision to introduce a new vaccine, checklists were used to identify and fill assessed gaps.

**Suggested amendments to the checklist**

- Suggestions should be provided for the investigation of and establishment of other preventative strategies in addition to the new vaccine introduction;
- Guidance should be provided in case of identified weaknesses;
- Guidance should be added on how the checklist could be applied at a sub-national versus national level.
**Human-centred approach to innovation**

*By Dr. Keneilwe Munyai, University of Cape Town, South Africa*

**Main topics presented**

Design may solve complex problems and could be used in the context of immunization. Design is an innovation process, a strategy for community organization and transformation.

The concept of UBUNTU stands for Universal, Inter-cultural brotherhood, Respectful and Compassionate behaviour, United community, Negotiation for consensus, Tolerance, and Understanding empathy.

Design thinking provides a framework for bringing together story-based ethnographic research with evidence-based, rigorous decision-making to create more meaningful functional solutions. Design thinking in the health space puts the user at the centre.

Aspects of design thinking may support problem-solving in health care, e.g. accepting ambiguity, not judging new ideas, embracing time as a positive constraint, being visual and envisioning solutions, and failing early, fast, and often.

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**Applying design to vaccine challenges**

*By Dr. Benjamin Kagina, VACFA, University of Cape Town, South Africa*

**Main topics presented**

The Vaccines for Africa Initiative (VACFA) is based at the University of Cape Town and has as mission to increase awareness of benefits and uptake of vaccines in Africa through courses, postgraduate training, and technical support to NITAGs.

A review of innovations in immunization programmes in LMICs from 2007–2017 showed that the majority of innovations were technology-based and mostly at a micro-scale level.

A collaboration with design students found ways of redesigning the EPI programme of South Africa, issues with low coverage and a system that had not changed in the last 40 years. Common themes for innovation emerged on data quality, service delivery, education and communication.
Summary of meeting and next steps

By Dr. Philipp Lambach on behalf of the core WHO MIACSA team

Meeting outcomes
MIACSA study findings have been shared and validated by countries and key partners, highlighted findings from case studies have been reviewed, and country needs and means of using MIACSA findings for new vaccine introduction have been identified.

Next steps
- Dr. Merten will update the MIACSA report after received input from this meeting and the EAP and will complete draft by May 2019;
- The WHO team and EAP will conduct a final review of the report;
- MIACSA countries will receive final draft of the report;
- Publication of the report is projected for mid-2019 with subsequent dissemination of findings in peer-reviewed journals.

SUMMARY OF ACTIONS PLANS

Global level partners will
- Update tools and recommendations;
- Promote the use of digital systems;
- Enhance visibility of existing tools;
- Conceptualize MI specific tools.

Country level partners will
- Access information shared at this meeting via online repository;
- Use the shared information and tools to strengthen the argument of integrated MI/ANC service delivery in countries;
- Develop expert networks, exchanging information between EPI and ANC.

WHO and partners will
- Disseminate the MIACSA report among global community at scientific fora and through peer-reviewed publications;
- Collaborate with PATH on the planning of approaches to improve the design of health systems to optimize maternal vaccination;
- Consider review of country MI readiness checklist by relevant WHO advisory body (e.g., IPAC) and explore subsequent use of tool in countries;
- Provide recommendations for home-based records based on MIACSA findings;
- Consider integration of ANC aspects in a MOV (Missed opportunities in vaccination) module;
- Promote MIACSA data and results on WHO website with relevant stakeholders to inform planning and introduction of future vaccines;
- Consider linking WHO preconception care package to both ANC and maternal vaccination at next update;
- Consider digital health strategies for both ANC and EPI, based on upcoming WHO guidance and global good (ANC module to be released);
- Support PATH in planning an AMI design-thinking workshop for systems design approach to improve quality, efficiency and equity of public health systems.
Meeting documents are available at
https://workspace.who.int/sites/VaccinesResearch/MIACSA%20EAP/SitePages/Welcome.aspx

**Login details:** Username: ads\ivr, Password: ivrmeeting

**WHO recommendations on home-based records for maternal, newborn and child health**
available at
https://apps.who.int/iris/bitstream/handle/10665/274277/9789241550352-eng.pdf?sequence=1&isAllowed=y
To be revisited in April/May – MIACSA findings to inform discussions.

**Missed opportunities for vaccination in women of reproductive age**
A dedicated MOV module for women of reproductive age could be useful for sustaining MNTE, increasing ANC coverage or for introduction of new maternal vaccines – In press (courtesy of Laura Nic Lochlainn). Other information related to MOV available at

**New Vaccine Post Introduction Evaluations (PIE)** available at
Programme evaluation to help national implementers optimize implementation of influenza vaccination. Joint WHO / US CDC tool to systematically assess implementation processes through in-country evaluations at national, district and HCF levels. MIACSA results can be integrated into the tool that is adaptable to each country context.

**Preconception care to reduce maternal and childhood mortality and morbidity** available at
https://apps.who.int/iris/bitstream/handle/10665/78067/9789241505000_eng.pdf?sequence=1
Linking with ANC and maternal immunization, may be an opportunity to mainstream MI efforts. WHO is interested in driving this forward but would need to look into resources for this, has moved up in terms of priority and will explore how to take this further.

**Guidelines for recommendations on digital health interventions** in press (courtesy of Maria Barreix)

**WHO ANC decision support and digital registry tool** – for health care providers to have a tool to support decision making at the point of care, ANC module will be developed for countries to adapt and implement according to their needs – in press (courtesy of Maria Barreix)

**Protecting all against tetanus** available at
https://www.who.int/immunization/diseases/tetanus/Protecting_All_Against_Tetanus_final_draftV4_23Jan_web.pdf?ua=1
Support to national programme managers and staff, and immunization partners involved in providing implementation support to countries. (L Nic-Lochlainn and N. Yusuf)

**How to implement influenza vaccination of pregnant women** available at
https://apps.who.int/iris/bitstream/handle/10665/250084/WHO-IVB-16.06-eng.pdf?sequence=1
Catalogue of tools relevant to MI. Flag availability of AEFI standardized form template including pregnant women. (Philipp Lambach); will ensure this guidance is more easily accessible on WHO website

Checklist to assist decision of whether to introduce influenza from How to implement influenza vaccination of pregnant women available at https://apps.who.int/iris/bitstream/handle/10665/250084/WHO-IVB-16.06-eng.pdf?sequence=1

Appendices
Appendix I: Concept Note

MATERNAL IMMUNIZATION AND ANTENATAL CARE SITUATION ANALYSIS (MIACSA)
Results Dissemination Meeting
12–14 March 2019, Cape Town, South Africa

Background

Overall, progress in preventable perinatal and neonatal mortality during the last decades has been slow with almost half of all deaths attributed to infections and prematurity. Maternal immunization is a cost-effective strategy for preventing infectious diseases in mothers and their babies during the vulnerable time during pregnancy and the first months of life with the Maternal and Neonatal Tetanus Elimination (MNTE) initiative having demonstrated 94% reduction in tetanus-related neonatal mortality over the past 30 years.

Antenatal care (ANC) is considered an optimal platform to deliver lifesaving maternal interventions, such as maternal vaccines. However, little is known about the best strategies to deliver vaccines to pregnant women and the quality and capacity of antenatal care services provided, beyond just the minimum four contacts of antenatal care visits. Knowing more about the mechanisms of vaccine delivery strategies and capacity of antenatal care may be crucial for strategic decisions on how to optimally deliver vaccination to pregnant women and ensure functioning of antenatal care services in low resource settings.

The Maternal Immunization and Antenatal Care Situation Analysis (MIACSA) project aims to provide a better understanding of the factors contributing to optimal delivery of vaccines during pregnancy. This may include strategies such as antenatal care, immunization weeks, routine immunization or using supplementary immunization activities (SIAs). An independent expert advisory panel (EAP) has provided advice at critical points throughout the project.

The MIACSA project started in November 2016 and includes four data collection phases of the project: (1) A desk review of pre-existing globally available data, (2) an online global survey to Ministry of Health (MoH) and WHO country offices of 136 low- and middle income countries (LMIC) to understand how maternal vaccines are delivered to pregnant women, (3) a telephone survey with MoH programme managers in 30 selected LMICs to ascertain higher level of detail towards the delivery of tetanus vaccine to pregnant women and the extent of integration into antenatal care services, (4) a qualitative in-depth assessment through country visits to 10 countries to identify barriers and enablers to delivery of immunization to pregnant women at different levels of the health delivery system.

To validate and discuss the data collected within the project, a global validation meeting is planned for 12–14 March 2019 is an opportunity for WHO headquarters to unite countries, experts and partners to share the findings from this global situation analysis, validate the results and agree on plan of action for the way forward to strengthen maternal immunization and prepare countries for new vaccine introduction.

On 15 March 2019, the day following the MIACSA results dissemination meeting, PATH will hold a one-day planning meeting with the six African country teams that attended the MIACSA meeting in order to get feedback on the structure and approach for a series of maternal immunization systems design workshop planned for late 2019.
Introductory statement
The Maternal Immunization and Antenatal Care Situation Analysis (MIACSA) project aims to provide a better understanding of the factors contributing to optimal delivery of vaccines during pregnancy. A global dissemination meeting is planned to take place from 12–14 March 2019 in Cape Town, South Africa as an opportunity for WHO headquarters to unite countries, experts and partners to share the findings from the project and to agree on ways to strengthen maternal immunization and antenatal care services in view of preparing countries for new vaccine introduction for pregnant women.

Meeting Objectives
To convene a 3-day global dissemination meeting with representatives from 12 countries, experts and partner organizations in order to present the findings from the maternal immunization and antenatal care situation analysis (MIACSA) project and to discuss next steps for strengthening countries’ vaccine delivery systems.

Specific objectives
- To present and validate the results from the MIACSA project
- To discuss integration of maternal immunization and antenatal care services, share best practices and lessons from the field and facilitate exchange among countries,
- To engage in discussion about how to prepare/support countries in view of introducing new vaccines,
- To agree on an action plan for next steps for all stakeholders involved.

Expected Outcomes
- Validated results from the global MIACSA study
- Opportunities for integration of MI & ANC agreed upon
Appendix II: Agenda

MATERNAL IMMUNIZATION AND ANTENATAL CARE SITUATION ANALYSIS (MIACSA) PROJECT
Results Dissemination meeting
12–14 March 2019
Venue: AC Hotel Marriott Cape Town Waterfront
Dockrail Road, Foreshore, Cape Town
8001 South Africa

Meeting Objective
To convene a 2,5-day global dissemination meeting with representatives from 12 countries, experts and partner organizations in order to present the findings from the maternal immunization and antenatal care situation analysis (MIACSA) and discuss the way forward.

Specific objectives
I. Validation of study findings
   ■ To present and finalize the results from the global MIACSA project
   ■ To present and validate the results from 10 + 1 MIACSA country visits,
II. Sharing of highlighted findings from case studies
   ■ To share lessons from the field on ways to optimize delivery of maternal immunization and antenatal care services
III. How MIACSA findings can be used for new vaccine introduction
   ■ To get an overview of the latest maternal vaccines in the pipeline
   ■ To discuss a proposed checklist for new vaccine introduction
   ■ To discuss country needs in view of potentially introducing new vaccines in the future
IV. Plans for dissemination and next steps
   ■ To agree on an action plan for the next steps for all stakeholders involved.
   ■ To discuss opportunities for dissemination

Expected Outcomes
■ MIACSA study findings shared with 11 MIACSA countries and key partners
■ Near final draft report from the global MIACSA study
■ An agreed action plan for use of MIACSA findings for new vaccine introduction
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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08.00 – 09.00</td>
<td>Registration</td>
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<tr>
<td>09.00 – 09.30</td>
<td>Opening remarks: Theresa Diaz (MCA/HQ) and Philipp Lambach (IVB/HQ), WHO</td>
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<td>09.30 – 10.45</td>
<td>Meeting overview: Nathalie Roos (MCA/HQ), WHO</td>
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<td><strong>Objectives:</strong> Flor Muñoz and Michelle Giles, Chairs</td>
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<td><strong>Rationale and introduction to MIACSA</strong></td>
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<td><strong>Objective of the session:</strong> to introduce the topics and significance of</td>
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<td>maternal immunization and antenatal care and the rationale for</td>
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<td>commissioning the global MIACSA project.</td>
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<td>■ Introduction, meeting rationale, MIACSA research questions &amp; project</td>
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<td>implementation:</td>
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<td></td>
<td>■ The global need to strengthen Maternal immunization: Philipp Lambach</td>
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<td>■ How do countries deliver ANC services and ensure Quality of Care –</td>
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<td>global and country information needs: Nathalie Roos</td>
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<td></td>
<td>■ BMGF view on relevance of Maternal Immunization in the context of</td>
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<td>Antenatal Care Service delivery: Tasleem Kachra (BMGF)</td>
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<td></td>
<td>■ Description of MIACSA project process and implementation: Nathalie Roos</td>
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<td><strong>COFFEE BREAK</strong></td>
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<tr>
<td>11.00 – 12.45</td>
<td><strong>Presentation and validation of MIACSA Results – Part I</strong></td>
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<td><strong>Objective of the session:</strong> To present and validate MIACSA project</td>
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<td>results by topic area and share</td>
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<td>lessons from the field</td>
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<td>■ Overview of MIACSA project methodology and country grouping: Sonja</td>
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<td>Merten</td>
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<td>■ Policy/leadership: Carsten Mantel</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme):</td>
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<td>Thailand</td>
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<td></td>
<td>■ Management of Maternal immunization and service delivery models:</td>
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<td>Philipp Lambach</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme):</td>
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<td>Bhutan</td>
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<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>14.00 – 15.00</td>
<td><strong>Presentation and validation of MIACSA Results – Part II</strong></td>
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<td><strong>Objective of the session:</strong> To present and validate MIACSA project</td>
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<td>results by topic area and share</td>
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<td>lessons from the field</td>
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<td>■ Quality of ANC service delivery: Nathalie Roos</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme):</td>
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<td>Sri Lanka</td>
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<td>15.00 – 16.15</td>
<td><strong>ANC capacity strengthening and Quality of care for pregnant women:</strong></td>
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<td>Maria Barreix</td>
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<td><strong>Objective of the session:</strong> The session will update participants on</td>
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<td>the latest ANC recommendations as well as provide an orientation around</td>
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<td>implementation research on strengthening ANC.</td>
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<td>■ Country example: Implementing the new WHO ANC guideline: South Africa</td>
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<td><strong>COFFEE BREAK</strong></td>
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<tr>
<td>16.30 – 17.15</td>
<td><strong>Update on vaccine development &amp; research:</strong> Danny Feikin (WebEx)</td>
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<td><strong>Objective of the session:</strong> this session will update participants on</td>
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<td>latest research in maternal vaccine development</td>
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<td><strong>Wrap-up:</strong> Flor Muñoz and Michelle Giles</td>
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<tr>
<td>17.15 – 17.30</td>
<td><strong>Welcome reception</strong></td>
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## DAY 2

**WEDNESDAY 13 MARCH 2019**

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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>08.45 – 09.00</td>
<td>Summary of Day 1: Flor Muñoz Rivas</td>
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<tr>
<td>09.00 – 10.45</td>
<td><strong>Presentation and validation of MIACSA Results – Part III</strong></td>
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<td><strong>Objective of the session:</strong> To present and validate MIACSA project results by topic area and share lessons from the field</td>
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<td></td>
<td>■ Human Resources: Jayani Pathirana</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Ethiopia</td>
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<td>■ Record keeping &amp; tracking: Martina Baye</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Fiji</td>
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<td><strong>COFFEE BREAK</strong></td>
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<tr>
<td>11.00 – 12.45</td>
<td><strong>Presentation and validation of MIACSA Results – Part IV (in French)</strong></td>
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<td><strong>Objective of the session:</strong> To present and validate MIACSA project results by topic area and share lessons from the field</td>
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<td></td>
<td>■ Health financing and user fees (including the private sector): Nathalie Roos</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Gabon and Benin</td>
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<td>■ Demand creation: Sarah Rendell</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Senegal</td>
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<td><strong>LUNCH BREAK</strong></td>
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<tr>
<td>14.00 – 15.45</td>
<td><strong>Presentation and validation of MIACSA Results – Part V</strong></td>
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<td><strong>Objective of the session:</strong> To present and validate MIACSA project results by topic area and share lessons from the field</td>
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<td>■ Safety &amp; surveillance: Michelle Giles</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Morocco</td>
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<td>■ Vaccine hesitancy &amp; confidence: Michelle Giles</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Tanzania</td>
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<td>■ Logistics &amp; infrastructure: Flor Muñoz</td>
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<td>■ Country example (moderated discussion between EPI and MNCH programme): Panama</td>
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<td>15:45 – 16:45</td>
<td><strong>Small group break out session</strong></td>
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<td><strong>Group 1: Benin, Gabon, Morocco, Senegal</strong> – health financing, demand creation, surveillance</td>
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<td><strong>Group 2: Ethiopia, Panama, South Africa, Tanzania</strong> – logistics, human resources, hesitancy, ANC model</td>
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<td><strong>Group 3: Bhutan, Fiji, Sri Lanka, Thailand</strong> – policy/leadership, service delivery models, quality of ANC delivery and service integration</td>
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<td>■ PPT template with questions to be shared with groups of countries to present in plenary</td>
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<td>■ Presentations to be prepared by note takers during the break out session</td>
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<td><strong>COFFEE BREAK</strong></td>
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<td>17.00 – 18.30</td>
<td><strong>Reporting back: Flor Muñoz (moderator)</strong></td>
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<td><strong>Objective of the session:</strong> Hearing from countries in regards to the main challenges, opportunities and needs in moving forward to strengthen maternal immunization, the ANC platform and possible new vaccine introduction (RSV)</td>
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<td>■ Using a PPT template 20 min per group + 10 min questions</td>
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<td>■ Questions, clarifications and discussion</td>
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<td>18.30 – 18.45</td>
<td><strong>Wrap-up: Flor Muñoz and Michelle Giles</strong></td>
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<tr>
<td>08.45 – 09.00</td>
<td><strong>Summary of Day 2: Michelle Giles</strong></td>
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| 09.00 – 10.00 | **Panel discussion: current and future vaccines: Michelle Giles**  
**Objective of the session:** To provide an overview of achievements in maternal tetanus vaccination, integration, missed opportunities in vaccination and the PATH RSV roadmap.  
- Maternal Tetanus: Nasir Yusuf  
- Integration & MOV: Laura Nic Lochlainn  
- PATH RVS Roadmap: PATH  
- Compare & contrast TT & RSV: Nasir Yusuf, Laura Nic Lochlainn, PATH |
| 10.00 – 10.40 | **Presentation and validation of MIACSA Results – Part VI**  
**Objective of the session:** To present the overall findings of the project in terms of probable early adopters of new maternal vaccines  
- Latent class analysis as an alternative way of grouping countries according to their potential for maternal immunization scale-up: Sonja Merten |
| 11.00 – 12.45 | **Next steps: Flor Muñoz Rivas**  
**Objective of the session:** To present a roadmap that will support countries in strengthening integration of ANC and MI and support the introduction of new vaccines.  
- Country readiness checklist and feedback from countries: Michelle Giles  
- Action plan & network of countries: Philipp Lambach  
- Health system design workshops: PATH and Cape town University  
- Summary of next steps: Flor Muñoz |
| 12:30 – 12:45 | **Closing session**  
**Nathalie Roos and Philipp Lambach** |
| 14.00 – 16.00 | **PATH preparatory workshop 15 March** for Benin, Ethiopia, South Africa, Tanzania, Gabon, Senegal |
| 16.15 – 18.00 | **PATH preparatory workshop 15 March** for Benin, Ethiopia, South Africa, Tanzania, Gabon, Senegal |
Appendix III: List of Participants

MATERNAL IMMUNIZATION AND ANTENATAL CARE SITUATION ANALYSIS (MIACSA)
Expert Results Dissemination Meeting
12–15 March 2019, Cape Town, South Africa

EXPERT ADVISORY PANEL (EAP)
EAP MEMBERS:

1. Flor MUÑOZ (Co-chair)
   Associate Professor
   Paediatrics, Molecular Virology and Microbiology
   Baylor College of Medicine
   Houston, USA
   Email: florm@bcm.edu

2. Michelle GILES (Co-chair)
   Associate Professor
   Department of Epidemiology
   Infectious Diseases Unit
   The Alfred Hospital
   Victoria, Australia
   Email: m.giles@alfred.org.au

3. MK AGGARWAL
   Deputy Commissioner (UIP)
   Ministry of Health & Family Welfare
   Government of India
   New Delhi, India
   Email: drmkagarwal2@gmail.com

4. Martina LUKONG BAYE
   Coordinator
   Programme to Combat Maternal, Newborn & Child Mortality in Cameroon
   Ministry of Health
   Yaoundé, Cameroon
   Email: tinabayel@yahoo.fr

   Elizabeth MASON (not present)
   Mercy AHUN (not present)
   Pradeep HALDAR (not present)
   Matthews MATHAI (not present)

EAP OBSERVERS:

5. Carsten MANTEL
   Independent Consultant
   MMGH Consulting GmbH,
   Zurich, Switzerland
   Email: mantelc@mmglobalhealth.org

6. Sonja MERTEN
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   Swiss Tropical & Public Health Institute
   Basel, Switzerland
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7. Jayani PATHIRANA
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   Soweto, South Africa
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8. Sara RENDELL
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   University of Pennsylvania
   Philadelphia, USA
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