Regional meeting on reducing newborn mortality with a focus on birth defects

New Delhi, India, 8-10 August 2018
Regional meeting on reducing newborn mortality with a focus on birth defects

New Delhi, India

8-10 August 2018
# Table of Contents

## Background

## Objectives

## Introduction

### Proceedings of the Meeting

- Session 1 - Setting the Stage
- Session 2 - Progress in Birth Defects plans in the Region
- Session 3 - Demonstration project on wheat flour fortification in Haryana
- Session 4 – NBBD Surveillance Related issues
- Session 5 - SEAR-NBBD: Birth defects surveillance
- Session 6 - Stillbirth surveillance
- Session 7 - Country Plans of Action (Annex)
- Session 8 - Face to face with birth defects
- Session 9 – Neural Tube Defects
- Session 10 – Closing of WHO Meeting (IF continues)

## Conclusions and Recommendations

## Annexes

1. Message from Regional Director, WHO South-East Asia Region
2. Country Progress
3. Country Action Plans
4. Programme
5. List of Participants
Background

In 2014, WHO-SEARO in collaboration with CDC-USA created an online system to gather data on newborn-birth defects via a web-based database (SEAR-NBBD) with the objectives:

- To define the magnitude and distribution of birth defects by time, person and place
- To identify high-risk populations or identify clusters (aggregation of cases)
- To refer affected infants to appropriate services in a timely manner
- To monitor trends in the prevalence of different types of birth defects in a defined population

Selected high delivery load hospitals in the countries of the Region are registered with SEAR-NBBD in consultation with the respective Ministry of Health (MoH). Their capacity is built and supported for birth defects surveillance. They collect and report data and information on birth defects (some hospitals also report data on newborns and stillbirths) to the regional SEAR-NBBD database managed by WHO-SEARO. The surveillance network was launched in July 2014 with 44 hospitals from India, Bangladesh and Nepal. Since then, there has been a steady increase in the number of hospital registered with the NBBD, reaching 221 registered by June 2018 out of which 137 hospitals are consistently reporting data to the online platform. SEAR-NBBD expanded from 3 to 10 countries with Indonesia and Sri Lanka joining the network offline by the end of 2016; and Timor-Leste in 2018 with the support from WHO-SEARO.

This system has helped establishment of a standardised hospital-based birth defects surveillance. A particularly unique strength of the system is monitoring of hospital reporting performance as well as maintenance of quality of data as each case form is verified for completeness and accuracy.

Through this WHO-CDC birth defects initiative, nine Member States of South East Asia region have developed national plans on prevention and control of birth defects.
Objectives

The overall objective of the Regional Program Managers’ meeting was to strengthen the country capacity for reducing newborn mortality and stillbirths; specific objectives:

- To review regional and national progress on birth defect surveillance and prevention
- To improve quality of newborn, stillbirths and birth defects surveillance and discuss scaling up and integration into national health information systems
- To strengthen approaches for prevention and management of birth defects
- To provide updates on improving quality of care and perinatal death surveillance
- To identify key country actions to strengthen surveillance, prevention and management of birth defects
Introduction

The Regional Meeting on Reducing Newborn Mortality with a Focus on Birth Defects was organised by WHO-SEARO in collaboration with Centre for Disease Control and Prevention, USA was held at New Delhi, India on 8-10 August 2018.

The meeting was inaugurated by the Director-Programme Management, WHO SEARO. The meeting brought together CDC members, national programme managers for birth defects from ministries of health from 10 of the 11 SEAR Member States, national coordinators for hospital-based birth defects surveillance, experts from WHO Collaborative Centers, CDC staff, representatives from partner agencies, and WHO staff members from country and regional office (see Annex for full list of participants). This meeting also provided an opportunity to collaborate with the International Federation on Spina Bifida, through joint sessions on the last day as a part of their international conference. This provided opportunity for interactions with the advocates, civil society members and experts affiliated with the International Federation.

Dignitaries and participants appreciated the support provided by WHO-SEARO and recognized the incredible opportunity provided by the regional meeting to share surveillance and prevention experiences and progress across the SEAR Member States (see Annex for detailed programme and agenda).
Proceedings of the Meeting

Session 1: Setting the Stage

1.1. Global overview of birth defects situation and prevention

Dr Coleen Boyle, Director, National Centre on Birth Defects and Developmental Disabilities, CDC Atlanta USA provided a global overview of overall burden of birth defects and provided a glimpse of SEAR NBBD collaborative initiative taken on birth defects with WHO-SEARO and the CDC BD-COUNT initiative. She pointed out that one of the biggest global challenges to addressing birth defects is lack of awareness of the burden of birth defects, that in turn is due to lack of reliable data to drive policy action and support prevention interventions. CDC’s BD COUNT in collaboration with the WHO, WHO-SEARO, the International Clearinghouse for Spina Bifida and Hydrocephalus, and other partners is working to change this by helping to build and strengthen birth defects surveillance capacity and expand availability of complete, accurate, and timely BD data.

This initiative supports the 63rd World Health Assembly (WHA) resolution on BDs – the resolution calls on Member States to prevent birth defects wherever possible, to implement screening programs, and to provide ongoing support and care to children with birth defects and their families. WHA resolution was a game changer to raise awareness and promote international cooperation, promote development of surveillance systems for birth defects, advocate to strengthen research on etiology, diagnosis and recommend programmes for prevention and care of major BD. This also formed the foundation of collaboration between CDC and WHO SEARO.

1.2. Regional progress in Birth Defects surveillance and prevention

Dr. Neena Raina, Director a.i. (FGL) described the remarkable progress in improving child survival in the region and initiatives as Regional Flagship initiative, SEAR-TAG, Regional H6 Summit which are focused on reducing newborn mortality taking birth defect on priority. She highlighted that WHO SEAR achieved the MDG 4 target of under-five mortality reduction. With this progress however, the proportionate share of mortality due to birth defects has become more prominent.
Her presentation emphasised upon the overall strategy for birth defects prevention and control and provided an overview of SEAR-NBBD hospital-based surveillance of birth defects. Six countries of the Region have been certified for controlling rubella and congenital rubella syndrome that is associated with multiple birth defects. Regional strategic framework for BD prevention and control was prepared that recommends developing and strengthening birth defects surveillance, design prevention programmes with consideration to integrate these within existing public health programmes and establish appropriate services for care and management of the children born with birth defects. It emphasizes the need for capacity building for multi-dimensional actions and importance of broad partnerships.

Strategies of food fortification as well as supplementation with folic acid and vitamin B-12 for prevention of neural tube defects received much attention from the delegates in the discussions in this session.

**Session 2: Progress in Birth Defects Plans in the Region**

**2.1. Regional progress: Summary of progress reported by countries**

A significant overall progress has been made in SEAR-NBBD hospital-based birth defect surveillance. There is a progressive improvement in implementation of interventions for prevention of birth defects through RMNCAH, Immunization and nutritional programmes (supplementation and fortification).

Dr Rajesh Mehta, Regional Adviser for Newborn, Child and Adolescent Health WHO-SEARO presented a summary of progress in surveillance and prevention of birth defects as reported by the countries. He highlighted that SEAR-NBBD system constantly provides support to sustain the quality of birth defects surveillance in the regional network of hospitals located in the countries. There is a need to consolidate the birth defect surveillance and integrate it into the national information system. At the same
time WHO-SEARO engages and addresses challenges that are being faced in prevention & care of birth defects. Three key points from the regional summary of progress were:

- Significant overall progress has been made in BD surveillance
- Need to focus on Stillbirths because there is a higher burden of birth defects there.
- Surveillance: Need to consolidate, and expand to make it nationally representative,
- Surveillance is to be integrated in the existing national HIS
- Prevention and Care of birth defects: More progress is needed

Main issues and challenges in prevention and care of birth defects as per the survey conducted with the countries before the meeting to review progress include:

- Birth defect interventions are distributed in different programmes – coordination is difficult unless there is a designated focal person exclusively for birth defects
- Countries need to define Preconception care package and prepare guidelines
- Incorporate / strengthen screening of birth defects in the training package for ANC (Prenatal ultrasound), SBA and newborn
- Need to build capacity in diagnosis of birth defects including prenatal anomaly scan, genetic screening, lab diagnosis
- Care and management services for common birth defects need to be strengthened

2.2. Country highlights and discussions

Details are provided in the form of tables (see Annex on country plans). Hospital based birth defect surveillance has been stabilised in about 140 hospitals across the region, the error rates have decreased, and more efforts are being done for improving the quality of data. Proper monitoring and supportive supervision (mentoring) has contributed in improving the performances of the countries.

Bangladesh: Monitoring and review for improvement

The national coordination hospital at BSMMU Dhaka has undertaken ongoing process of monitoring and supervising the participating hospitals in the Bangladesh Network. BSMMU has put more efforts on training of staff members in the hospitals, review
meetings with the hospitals, site visits to selected hospitals and remote follow-up and assistance by telephone and emails.

BSMMU has been discussing with the MOH (HMIS-DHIS2 section) regarding possibilities of integrating it with National HMIS were discussed. Innovative programmes that can contribute to prevention of birth defects e.g. newly married couple strategy of Bangladesh started 20 years ago with funding from World Bank but later the project was closed.

**Bhutan: Burden of congenital heart defects**
Provided a glimpse of facility-based birth defect surveillance of Bhutan and emphasized on congenital heart disease which is the most common birth defect in the country. This may be related to a common cultural practice of alcohol consumption among women, even during pregnancy leading to Fetal Alcohol Syndrome in Bhutan. Process of surveillance in Bhutan was discussed which included the babies at birth and follow-up to one-year age. This has led to detection and reporting of congenital heart defects accounting for 44 percent of all birth defects.

**India: Scale-up of BD and Stillbirths surveillance (ICMR)**
MoH presented highlights of the project for Birth defects and Stillbirth Surveillance for 3 years. The plan is to build upon the SEAR-NBBD experience and expand to all states in the country with 1-2 hospitals each. This will include cytogenetic testing for confirmation of selected genetic birth defects and test for Zika virus when the infection is probable.

**Indonesia: BD surveillance: Updated analysis and expansion**
In Indonesia, a significant decline in children mortality has been reported over last 10-15 years because of various policies related to newborn through the continuum of care approach. Indonesia birth defects surveillance uses their own web-based system and do not report online to SEAR-NBBD (Hence considered offline). Unlike SEAR-NBBD system, the mechanisms for data quality, supervision and monitoring of surveillance system are not built-in Indonesia is considering including additional hospitals from the mining
districts / islands where potential for birth defects occurrence is high because of exposure to mercury used in gold mining.

**Maldives: Using data for advocacy and policy action**

Maldives shared their experience of an attempt to use birth defect surveillance data for advocacy and policy action. Maldives has established a successful birth defects surveillance in 10 including IGMH in Male, regional and atoll hospitals – covering more than 60% of births. They used Regional communication strategy for birth defects and a ‘Trans theoretical model’ for well-planned advocacy for using data for collaborative approaches to address birth defects. For managing babies born with congenital heart disease an NGO, Little Hearts has helped arranging diagnostic and treatment services.

**Myanmar: Challenges in BD surveillance**

Myanmar presented the national Five-year strategic plan for prevention and control of birth defects. Birth defects surveillance is an essential activity included in the national plan. They have initiated a network of 8 big hospitals and training in birth defects surveillance was supported by WHO. The challenges they have are related to busy schedule and high work load in the hospitals. No hospital has been willing to take the role of national coordinator. The internet connectivity is also unreliable. Therefore, They have requested a desktop version of SEAR-NBBD.

**Nepal: Coordination of surveillance network by MoH**

Nepal network of hospitals for birth defects surveillance is a god example of revival through MoH commitment and support. The NBBD surveillance started in 2014 with assignment of a national coordinator hospital in Kathmandu. Unfortunately, this arrangement did not work effectively. Since 2017 the data division in MOH has directly taken the role of coordination with the identified hospitals in the national network which has 14 hospitals. An additional motivation is to add surveillance of stillbirths from the same hospitals within SEAR-NBBD database. The network hospitals are now being financially and technically supported by MoH for birth defects and stillbirth surveillance as well as maternal death surveillance and response.
Sri Lanka: Folic acid supplementation programme

Birth defects accounts for one fourth of child mortality in Sri Lanka as it has achieved low levels of under-five mortality. Programmes mainly targeting first pregnancies are undertaken which included pre- and peri-conception care package for the newly wed couples and through school health program reaching out to adolescent girls and boys. Coverage of iron-folic acid supplementation for adolescents has gradually increased and peri-conceptional folic acid supplementation has reached above 60% coverage through the newly wed programme. Micronutrient supplementation programme for pregnant and lactating women has been sustained at high level of coverage. Food fortification program is currently limited to voluntary fortification of rice with iron and folic acid.

The chairpersons summarised the session by acknowledging and appreciating achievements in the countries especially in establishing birth defects surveillance. There is an important role of infrastructure and training for improving birth defect surveillance through better coverage, quality and connecting the surveillance outcomes to interventions. They emphasized the role of mentorship in sustaining the hospital networks and maintaining quality of surveillance. We need champions from the hospitals who can help in sustaining the surveillance. The surveillance results must be disseminated strategically to define and instigate public health actions for preventive interventions and better services for care and management. Identification of problems and challenges related to surveillances need to be addressed. They recommended collaborative and multisectoral actions for prevention and management of birth defects and emphasized that food fortification is an effective strategy for prevention of neural tube defects.

Session 3: Demonstration Project on Wheat Flour Fortification in Haryana

3.1. Wheat flour fortification in Haryana

Government of Haryana made a presentation on a demonstration project for wheat flour fortification undertaken by the state government in collaboration with World Health Organization (WHO) and US Centers for Disease Control and Prevention (CDC) which was launched in 2015. The project will be implemented in three phases over 5
years. The baseline (first) phase has been completed that included a formative research and biomarker assessment in women of reproductive age. Implementation of wheat flour fortification has been started with the completion of the baseline assessment. Political will and government commitment for providing subsidized wheat flour fortified with iron, folic acid and B-12 vitamin.

3.2. Population based surveillance and long-term follow-up of birth defects

SWACH Foundation, a local NGO has undertaken population-based surveillance of neural tube defects and other birth defects that will help assess the effectiveness of wheat flour fortification with folic acid. The project has highlighted the feasibility of detection of birth defects cases through a population-based birth defect surveillance using ASHAs (village level health volunteers who work for the National Health Mission, Haryana). They have also undertaken long term follow up of the babies born with birth defects in addition to facilitating treatment and care services including surgery. The long-term follow up has revealed that 30 percent of children with birth defect unfortunately die by 3 to 6 months of birth.

3.3. Biomarker survey in Haryana, India

Under the Haryana demonstration project on wheat flour fortification biomarker assessment was undertaken in women of reproductive age. Markers of anemia and iron deficiency as well as serum B-12 and red cell folate levels were measured, as folic acid insufficiency is associated with neural tube defects. PGI, Chandigarh established microbiological assay for folic acid with the support of CDC, USA. The preliminary findings were presented revealing that a large proportion of non-pregnant women of reproductive age in Haryana are anemic. B-12 deficiency and folic acid insufficiency was detected in more than 60 % of the subjects. This further strengthens the case for food fortification strategy using multiple micronutrients for prevention of anemia and neural tube defects and folate deficient.

Session 4: Surveillance and related issues

4.1. Emerging issues in birth defects prevention: Zika and Dolutegravir

Dr Coleen Boyle (Director of NCBDDD, US CDC) provided an update on Zika virus infection and its outcomes. Anti-retroviral drug Dolutegravir is now being considered as
new teratogen and possible risk factor for neural tube defects in the fetus of women taking anti-retroviral treatment including DTG.

WHO recognizes that dolutegravir (DTG) has established efficacy, tolerability and a high genetic barrier to resistance.

WHO advises that countries follow the existing 2016 WHO consolidated ARV Guidelines, and consider:

- Pregnant women who are taking DTG should not stop their ARV therapy and should discuss with their health provider for additional guidance.
- Antiretroviral (ARV) therapy for women of childbearing age, including pregnant women should be based on drugs for which adequate efficacy and safety data are available; an efavirenz-based regimen is a safe and effective first-line regimen.

### 4.2. CRS surveillance and Rubella immunization in SEAR

Dr Sudhir Khanal, Medical Officer for Measles and Immunization WHO-SEARO, shared the experience and plan for surveillance of congenital rubella syndrome (CRS). In a significant win against childhood killer diseases, six SEAR countries have been certified for controlling rubella and congenital rubella syndrome, under the regional measles and rubella strategy 2020.

- Bangladesh, Bhutan, Maldives, Nepal, Sri Lanka and Timor-Leste are the first six countries in the WHO South-East Asia Region to control rubella and congenital rubella syndrome.
- Bhutan, Maldives and Timor-Leste, have become the first three countries in the Region to achieve both elimination of measles.

He observed that SEAR-NBBD birth defects surveillance has potential to pick up clinical markers of CRS related defects like microcephaly and cataract and countries would benefit from using the BD surveillance hospitals and their capacity for undertaking CRS surveillance as well.

### 4.3. Birth defects in stillbirths and previable births

India presented experience from prospective stillbirths’ surveillance from 10 hospitals, led by PGI, Chandigarh. Higher prevalence of birth defects, especially anencephaly is seen in stillbirths. Autopsy was the only way for capturing internal birth defects in stillbirths. PGI also presented a study of previable birth screening which was started in
2014 and described that a high proportion are associated with birth defects. Parents and families chose medical termination of neural tube defects are detected prenatally through anomaly scans that are now quite commonly resorted to.

**Session 5: SEAR-NBBD: Birth Defects Surveillance**

In this session the learnings at the regional level in surveillance of birth defects at regional and country level were presented.

**5.1 Regional level experience in birth defects surveillance:**

Dr Neerja Gupta, WHOCC-AIIMS presented summary of achievements, major actions of support, challenges and way forward. Since 2014 nine countries have undertaken national training in birth defects surveillance, more than 1000 doctors and nurses have been trained since 2014. The roles and responsibilities at hospital, level, country level and regional level have been defined and are getting into practice. With support of WHOCC the quality of data in terms of completeness, accuracy and timeliness has been improved and sustained.

**5.2 NBBD Evaluation**

Dr Yan Ping, CDC Atlanta US briefly presented the plan for evaluation of birth defects surveillance mechanism in South-East Asia Region. Through a collaborative effort between CDC’s Prevention Research Team, WHO-SEARO, and WHOCC-AIIMS, the proposed evaluation will apply CDC’s standard framework for program (and surveillance) evaluation. It is proposed to conduct a process and outcome evaluation of the SEAR-NBBD surveillance system in two phases.

**I. Process Evaluation:** The objective is to conduct a process evaluation with the primary goal of program improvement, aiming to: Determine the extent to which and how activities described in the logic model for birth defects surveillance are being implemented at the regional, country, and hospital levels in South-East Asia.

**II. Outcome Evaluation:** The objective is to conduct an outcome evaluation with the following primary aims (to be developed further):

- Determine the quality (e.g. completeness, accuracy, timeliness) of data collected
- Assess the overall performance of the NBBD surveillance system
• Evaluate the effectiveness of the system to support decision-making around service planning for affected populations and birth defects prevention policy to decrease birth defects in the region.

Initially a concept framework was prepared collaboratively by CDC team in consultation with SEARO and WHOCC. Following this a set of data collection tools have been prepared. Currently the regional level evaluation is in progress.

1. **Partnerships are critical for surveillance**

Drawing on the lessons from past disease an outbreak, the Regional Network for Newborn Health and Birth Defects (SEAR-NBBD) has been sustained through constant communication and partnerships.

• We maintain a listserv that includes over 1500 recipients – network hospitals, academic experts and medical institutions.

• Websites at WHO-SEARO and WHO collaborating center (AIIMS, New Delhi) have been maintained and updated with posting of recent products and events.

• The Regional-National Networks have been effectively used to disseminate the critical information about Zika virus infection and its association with microcephaly and birth defects like eyes and central nervous system.

• Data was shared with the WHO-SEARO immunization team to support measles elimination verification in Maldives, Bhutan and Bangladesh. Line list of cases generated by the system were deemed critical in following up cases for the verification of elimination in these countries.

2. **SEAR member states rely on the regional office for guidance and NBBD has strengthened with evidence and relevant regional data**

• Status reports of the uploaded hospital data are periodically shared with the national coordinating centres and hospitals to describe the occurrence and prevalence of all birth defects. Concrete actions were taken during Zika outbreak due to NBBD support.

  - Thailand government issued Zika virus and microcephaly assessment guidelines with this support.
- India government is revisiting the 31cm cut off for microcephaly based on the data analysis and recommendations provided by SEAR_NBBD

- India National standards for food fortification with multiple micronutrients (including iron, folic acid and vitamin B12) have been updated in line with global standards and finalized with issue of government notification.

- Haryana demonstration project on wheat flour fortification has been initiated and baseline assessments are under way in Ambala district. CDC and WHO are providing technical support to the state government and the Principal Investigators PGIMER Chandigarh and SWACH Foundation, Panchkula.

3. Importance of verifying data at hospitals and national coordinator’s level was stressed for improving data quality.

   WHO Collaborating Centre at AIIMS explained how high quality of data is maintained in NBBD. There has been significant improvement in completeness and accuracy of data across the network over time because of progressive experience and monitoring by WHOCC and WHO-SEARO. The main challenges in quality control was highlighted and the way forward as proposed is to sustain the NBBD cell, improve and maintain data quality, perform periodic data analysis and dissemination, build a referral system with linking the available national programs for the management of birth defects, remedial actions for prevention like Folic acid fortification, risk factors and recurrence risk assessment, prenatal diagnosis by ultrasound and genetic evaluation.

5.3 Bangladesh: Experience with HMIS (DHIS2)

   Bangladesh shared experience of HMIS that collects facility level information. Real time Health Information Dashboard was successfully launched in 2016 with the help of UNICEF along with other development partners, presently having data coverage of more than 97 percent. Standardized data management has paved the way for integrating newborn and birth defects indicators in National HMIS in Bangladesh using DHIS-2 platform. The use of this platform across the government hospitals and health facilities is gradually expanding. Even though several challenges are being faced, the way forward is to build capacity in diagnosis and coding of birth defects, introduce GIS mapping of case tracking system, integrate and align better with the SEAR-NBBD format.
5.4 Sri Lanka: National web-based system

Sri Lanka presented the existing e-IMMR (electronic indoor morbidity and mortality records) that captures important maternal and neonatal data and elaborated their e-RHMIS (Reproductive Health Management Information System). They have tried an online system to collect birth defects data from birthing hospitals, but reporting has been incomplete. They are planning to revise the data abstraction form and simplify it for practical considerations.

5.5 Thailand: Progress in Birth Defects Surveillance

Thailand does not have a birth defects registry system at national level gathers birth defect data from a variety of sources: Birth Registry Online Database, files database, HDC database, and hospital-based data centers. They are not sure about complete=ness and accuracy of reporting of birth defects The country has adopted integrated strategies for birth defects prevention which are delivered with maternal and child health, nutrition and other relevant programmes. The Ministry of Public Health launched 1st phase of ‘Thai Girl Red Cheek Project campaign’ through digital media in September 2017 promoting that all reproductive women in the age group of 20 - 34 years would be able to acquire good nutritional status by receiving iron and folic supplement once a week.

5.6 Timor-Leste: The story of the beginning

Timor-Leste started to develop hospital database in 2017 with the support of WHO that covers Maternity and Neonatology wards of HNGV (national hospital in Dili). E-Records have been created for all women who are admitted in maternity, all newborns that get delivered there and sick newborns that are admitted in the hospital. The SEAR-NBBD data fields have been incorporated in the hospital database and it will be possible to export NBBD data to the regional database.

Session 6: Stillbirth Surveillance

6.1 Stillbirth Review

Dr Anoma Jayathilaka, WHO-SEARO presented the importance of stillbirth surveillance and review and recent updates on global guidelines. She explained that counting the
numbers more accurately and gaining a better understanding of the causes of death are key to tackling the burden of nearly 1 million neonatal deaths and equal number of stillbirths that are estimated to occur each year in SEAR. Nearly half of babies do not currently receive a birth certificate; and most neonatal deaths and almost all stillbirths have no death certificate, let alone information on causes and contextual factors contributing to these deaths.

National and regional estimates of numbers and causes of death are useful, but they do not tell the whole story. Examination of individual cases identifies the underlying reasons why these deaths occurred and provides opportunities to learn what needs to be done to prevent similar deaths in the future. The majority of stillbirths, particularly those that occur in the intrapartum period, and three quarters of neonatal deaths are actually preventable. WHO has released guidance on perinatal death review and ICD-PM classification system to assign the causes of stillbirths and early neonatal deaths.

WHO definition of Stillbirth for international comparison was re-iterated - Stillbirth is defined by the World Health Organization (WHO) as **death before birth**, among fetuses that are **at least 1000g birthweight** or **at least 28 weeks gestation** or **at least 35cm long**

Based on the burden of stillbirths, there is a clear need:

- To establish a standardized method to assess the burden of stillbirths, including trends in numbers and causes of death.
- To generate information about modifiable factors contributing to stillbirths and to use the information to guide action in order to prevent similar deaths in the future.
- To provide accountability for results and compel decision-makers to give the problem of stillbirths due attention and response.

SEAR-NBBD stillbirth surveillance form has been updated to make it consistent with the WHO guidelines.

### 6.2. India: National plan and guidelines for SB surveillance

Dr P K Prabhakar, MOH India discussed need of expansion of still-birth surveillance for better estimates of stillbirth rates in the country. He presented the plan to reduce still births and Hospital based Sentinel Stillbirth Surveillance improving coverage and quality of all evidence-based interventions for reducing Stillbirths under the national RMNCH+A
strategy. The government has constituted Stillbirth Task Force to provide strategic oversight and technical guidance to strengthen the tracking system and implement appropriate measures to prevent stillbirths and review progress in addressing stillbirths. They have planned a network of national and regional resource centers under the leadership of MOH which will provide ongoing support for capacity building, monitoring, problem-solving and maintaining data quality.

6.3. India Pilot Study in Stillbirths

Prospective stillbirths’ surveillance from 10 hospitals in India, led by PGI, Chandigarh shared the analysis of status of antenatal care, possible causative factors and preventability of stillbirths. They shared the process followed for standardized data collection, ICD PM coding and analysis of the data as well as the challenges. The importance of country-specific context for causes and action to achieve single digit target for Indian national plan was highlighted and need of quality of data was emphasised.

6.4. Nepal Maternal and Perinatal Death Surveillance

The Ministry of Health of Nepal, with support from the WHO, UNICEF, Nepal Health Sector Support Programme / Department for International Development and other partners, has taken the lead and made a commitment to gradually scale up maternal and perinatal death surveillance and response to all hospitals across the country by 2020. They plan to ultimately include community-based maternal death surveillance and response. A series of planning meetings are taking place with experts to finalise the training modules, review processes, and develop implementation guidelines. MDSR guides them to take actions to reduce maternal mortality.

6.5. Thailand: Stillbirth review

One institute from Thailand shared its data from their own vital statistics database. They are using Wigglesworth classification for stillbirths and ICD 10 for perinatal deaths. The stillbirth rate in the country is fairly low, with nearly no intrapartum stillbirths.
Session 7 - Country Plans of Action
(see Annex-3)

Session 8: Face to Face with Birth Defects

This last day was organized jointly with International Federation for spina bifida and hydrocephalus (IF).

8.1. Dr. Margo Whiteford, IF President, Scotland narrated her journey of life from being born with spina bifida to becoming a doctor and going on to become the president of IF. She is a great inspiration for the families having spina bifida. She emphasised that such special children should be made independent with use of timely comprehensive treatment and interventions and technology.

8.2. Mr Pierre Mertens (Belgium) & Ms. Janet Manoni, (Tanzania) shared the experiences of raising children born with neural tube defects. The Mission Child Help International has commendable objective of improving quality of life of children and adults with spina bifida in global south with the help of Spina Bifida Hydrocephalus Interdisciplinary program (SHIP) and House of Hope. Initiatives taken by Child HELP International in partnership with Friends of children with cancer and SBH in Tanzania with establishment of House of Hope, in Mwanza. They provided a brief overview how this house offers supports to child with special needs in every realm including palliative care and respectful care at the end of life.

8.3. Dr. Mohan Abraham presented the advances in fetal surgery that are getting available to correct birth defects in the fetus while still in the uterus. As the technology and experience of its use increases the benefits could accrue to more and more affected foetuses.

8.4. Ms Elena Zappoli (Argentina) emphasised the importance of realising and supporting the Right to health of people with spina bifida and hydrocephalus. She described the role of national associations & support groups in promoting and supporting the comprehensive care of such people and shared the example of LATAM network which has done substantial work in South America.

8.5. Mr Parth Hendre from India shared his motivational story of becoming a national swimming paralympic champion despite having been born with spina bifida and
consequent paraplegia. He acknowledged wholesome support from his family as well as special efforts from his coach. Like Margo Whiteford, Parth Hendre was also able to prove the case that NTD affected individuals can accomplish great achievements with personal grit and multi-dimensional support the society could offer.

**Session 9: Prevention of Neural Tube Defects**

9.1. **Rajesh Mehta** (WHO-SEARO) informed that South-East Asia reports the 2nd highest estimated prevalence of NTDs among WHO region with the global burden estimated to be 300,000 annually. WHO and CDC have supported **SEAR-NBBD database** for hospital-based birth defects surveillance that includes NTDs in the core list of major visible birth defects that the enrolled hospitals from the countries in the Region are required to report. He shared the analysis of neural tube defects in the regional database. It has been observed that prevalence of NTDs are much higher in still-born and pre-viable births than among live birth. It was suggested that countries should invest in sustainable, multisource surveillance systems, in parallel to folic acid interventions, for gaining a more accurate knowledge of prevalence of NTD than we currently have. Such efforts will assist in both prevention of NTD and periodic evaluation of folic acid interventions for NTD reduction. Global NTD prevalence data can drive political will and accelerate the implementation and evaluation of NTD prevention programs.

9.2. **Ashok Antony (USA)** presented that that there has been underestimation of folate deficiency in developing countries due to misinterpretation of blood test results leading to propagation of an error in the magnitude of the problem in medical literature.

9.4. **Prof. Godfrey Oakley**, Center for Spina Bifida Prevention (USA) stressed on the fact that occurrence of Spina bifida-F and Anencephaly-F (F=Folic Acid preventable) in countries, especially in the developing countries has resulted in an ongoing global epidemic. It was emphasized that immediate mandatory Food Fortification for Prevention of Neural Tube Defects (NTDs) should be done without going for more studies. Up-to-date evidence on prevention of NTDs using flour fortification was highlighted. He proposed that provision should be made for addition of folic acid to interventions that are used at large scale like oral contraceptives, HIV and malaria medicines.
9.5. Dr. Vijaya Kancherla (USA) proposed a methodology of estimation of burden of spina bifida in India and the quantum of child mortality that could be averted by prevention of folic acid preventable spina bifida. She presented that Neural tube defects (NTD) are major congenital malformations; associated with life-long disability, significant medical care costs, and child mortality. Her review showed that most low- and middle-income countries do not track NTD and indicate a high prevalence of these malformations where data are available.

Challenges in NTD prevalence estimation include (1) quality of surveillance methods, (2) existing risk factors (including geographic or socioeconomic factors, availability and use of folic acid, and racial-ethnic and genetic factors), and (3) limitations in education and access to care.

**Session 10: Management of Birth Defects**

Santosh Karmarkar (India) moderated a panel discussion with global and regional experts to highlight the multiple dimensions in addressing the public health burden of birth defects.

Faulty nutrition, new emerging causes, Zika virus infection and lifestyle are contributing factors to high burden of birth defects in the US. WHO-SEARO shared the progress made in CDC supported birth defects initiative with nine countries now having a national programme for birth defects prevention and control. The SEAR-NBBD database has built capacity in birth defects surveillance in the countries and its role to document Zika infection related microcephaly during Zika outbreak was highlighted. Role the government in birth defect surveillance is very important. It was proposed there should a big campaign for awareness of folic acid fortification and supplementation for NTD prevention like Pulse Polio campaign.

Representative from India ministry of health briefly presented the Rashtriya Bal Swasthya Karyakram (National Child Health Programme) that mandates every child will be screened for 4D’s i.e. Birth defect, developmental delay, Deficiencies and specific diseases, till 14 years of age. The identification and free treatment of birth defects was included in National Health Mission programme. He also informed that there was a dedicated birth defect surveillance programme in collaboration with WHO. Govt. of
India started Rubella campaign for preventing Rubella and CRS. Folic acid supplementation is being done that will contribute in prevention of NTDs. Representative of GAIN, India described their experience with the implementation of the food fortification programme. Compliance was found only 45 percent; the problem lies with the availability of fortified food. It was concluded that fortification and supplementation of folic acid should be done side by side. The Ministry of Health of the countries should come forward and encourage the food fortification and its usage for preventing neural tube defects.

**Conclusions and Recommendations**

**Conclusions**

- Member States have made further progress in hospital-based birth defects surveillance and are progressively improving implementation of interventions for prevention of birth defects through RMNCAH, Immunization, and nutrition programmes (supplementation and food fortification).
- Hospital-based birth defects surveillance has stabilized in about 140 hospitals across the Region, error rates have decreased and efforts for improving quality of data over time. Monitoring and supportive supervision (mentoring) has led to improvement of performance as illustrated by Bangladesh.
- Verification of forms and data in the hospitals (first level by the hospital nodal officers) has started picking up and must also be strengthened at the second level (national coordinator center / MOH).
- The functions of data analysis, interpretation, and dissemination need to be strengthened and use of data for action ensured.
- Only some countries have included birth defects in the national HMIS.
- Countries are prepared to scale up *stillbirth surveillance* and response with the revised data collection form starting from the hospitals that are included in the birth defects surveillance.
Rubella vaccination has been introduced in all countries and CRS surveillance undertaken. Six countries have already achieved control of rubella and congenital rubella syndrome.

Food fortification with folic acid is acknowledged as an effective public health strategy for addressing anemia and preventable neural tube defects and has been reported at small scale by several countries.

Country teams identified key actions for expansion of surveillance implementation of birth defects surveillance, prevention and management.

**Recommendations for Member Countries**

**Member countries to:**

- MOH to **assume ownership and leadership** of the database and **provide necessary resources** (financial, human and others) to the hospitals and coordinating center so that good quality actionable data is available. Promote data verification, and undertake monitoring, supportive supervision and review of the participating hospitals through the help of the National coordinator hospitals.

- Improve the **analysis of birth defects data**, dissemination to health ministry and relevant stakeholders and **use of data for action** to strengthen management and care services and preventive programmes.

- Introduce **stillbirth surveillance** in network hospitals and others and provide training, including ICD PM classification as well as response.

- Work with immunization programme for **control of CRS and surveillance** by convergence with birth defects surveillance in the common sentinel hospitals.

- Prepare for integration of the birth defects-newborn-stillbirths database into the **existing health information system** and platforms like DHIS 2.

- Strengthen **life course approach for preventing birth defects** and improving perinatal outcomes, with a particular focus on preconception care and food fortification with folic acid and other micronutrients.

- Continue to follow up babies born with birth defects and **expand the services for care**, surgery and rehabilitation programmes for them.
• Spread awareness among families, healthcare workers, educationists etc. to **address stigma**, promote social inclusion and access to services.

**Recommendations for WHO, CDC and Partners**

• **Sustain the SEAR-Database** until countries have been able to integrate birth defects and stillbirth surveillance in the national health information systems; and continue to **support expansion of hospital-based birth defects surveillance**, build further capacity in data analysis and use of data for action at all levels.

• Support Member States for **strengthen/establish stillbirth surveillance** and response including capacity building.

• **Support data analysis, publication of data, and evaluation** of surveillance system.

• Support Member States to implement plans for **prevention, care and management of birth defects** and create opportunities for Member States for reviewing progress and **sharing of experience**.

• Provide evidence-based strategies and tools for implementing **large scale food fortification and supplementation** with folic acid and other micronutrients (prevention of neural tube defects) and implementation of preventive interventions across life course, including **preconception care**.
ANNEXES

Annex-1: Message from Regional Director, WHO South-East Asia Region
Annex-2: Country Progress
Annex-3: Country Action Plans
Annex-4: Programme
Annex-5: List of Participants
Annex-1: Message from Dr Poonam Khetrapal Singh
Regional Director, WHO South-East Asia Region

Distinguished participants, ladies and gentlemen,

I welcome you to this regional meeting on reducing newborn mortality with a focus on birth defects.

It reflects and is consistent with our continued work in this area.

In 2012 WHO-South-East Asia, in collaboration with the Centers of Disease Control and Prevention, launched the birth defects initiative in response to the passing of a World Health Assembly Resolution on the subject.

As I’m sure you are aware, during the MDG-era there was a significant decline in under-five mortality in most of the Region’s Member States.

But with this rapid decline birth defects have assumed greater significance as a cause of neonatal and child mortality, especially given the primary cause of the decline is a reduction in the incidence of infectious diseases.

Mortality from birth defects has meanwhile remained constant. In countries that have reduced child mortality to less than 15 per 1000 live births, including Maldives, Sri Lanka and Thailand, for example, proportionate mortality due to birth defects has increased to as high as 30%.

Indeed, to this day, an estimated 175 000 children across our Region die from birth defects before their fifth birthday every year, with around half of these deaths entirely preventable. In addition, some birth defects are lethal for the fetus, leading to miscarriages and stillbirths, the exact burden of which remains unknown.

The prevention and control of birth defects is thus a prerequisite to further reductions in newborn and child mortality, and towards achieving the SDG 3 targets of reducing child mortality to as low as 25 per 1000 live births and reducing newborn mortality to at least 12 per 1000 live births and achieving the target of stillbirths reduction to 12 per 1000 births.

Distinguished participants,
To address the burden of birth defects, WHO-South-East Asia has developed the Regional Strategic Framework for the prevention and control of birth defects, which has provided guidance to prepare national plans accordingly.

I understand that nine Member States have now developed and are implementing national plans for the prevention and control of birth defects. These plans must be integrated into existing RMNCAH and related programmes such as nutrition and immunization.

At the same time as rolling out the Strategic Framework, WHO has been supporting Member States strengthen data and information on birth defects and establish birth defects surveillance mechanisms. In consultation with ministries of health, hospital-based surveillance systems have been established in countries to detect and report birth defects that occur in live-born and stillborn babies.

To support these systems, WHO South-East Asia, in collaboration with CDC, has developed an online integrated birth defects, stillbirths and newborn health database named the South-East Asia Regional Newborn - Birth Defects Database (SEAR-NBBD). By now we have a network of around 150 hospitals that collect and manage data related to birth defects in a standardized manner and consistently report to the SEAR-NBBD database.

Importantly, the integrated neonatal-perinatal database is contributing to the development of a wider understanding of overall neonatal morbidity and mortality. For example, in view of the recent threat of Zika virus infection associated with microcephaly, neurological and other birth defects in newborns, SEAR-NBBD network hospitals provided a readymade platform to monitor the occurrence of microcephaly among newborns.

A dedicated module for microcephaly, for instance, has already been introduced in the SEAR-NBBD database, while guidelines on intra-uterine zika infection have also been issued. Thailand has meanwhile introduced a head circumference module and guidelines in existing systems, whereas India plans to scale up integrated surveillance in 75 hospitals across the country.

Given the significance of the problem, I am pleased the emphasis of this year’s meeting is on stillbirth reporting, and that there will be a session dedicated to introducing the new reporting form and which will help orientate delegates with it.

I also note that in line with the Regional Strategic Framework, WHO South-East Asia has supported Member States implement strategies to prevent birth defects, including supplementation and fortification with folic acid and vitamins for the prevention of neural tube defects, rubella vaccination
for the prevention of congenital rubella syndrome, and the elimination of congenital syphilis among other key strategies.

As part of this, WHO-SEARO and CDC have supported a demonstration project on wheat flour fortification in Haryana, India to study its feasibility and effectiveness in the prevention of neural tube defects and have recently completed the baseline assessment. The findings of the assessment and the government’s strategy to implement wheat flour fortification will be shared in this meeting.

Distinguished participants, ladies and gentlemen,

The care and management of babies born with birth defects is equally important and needs multi-dimensional interventions and active partnership among various stakeholders. To this end, I am particularly enthused that on 10 August there is a joint session with the delegates of the International Federation of Spina Bifida and Hydrocephalus, who are holding their international conference in Asia for the first time. I welcome them to New Delhi and look forward to working with the Federation and its members.

Importantly, this meeting provides an opportunity for Member States to review progress regarding their national birth defects plans and take stock of their performance regarding birth defects surveillance and prevention activities. I am sure you will all be able to leverage the opportunity to further strengthen activities at the regional and national levels.

With that in mind, I take the opportunity to acknowledge and welcome officials from ministries of health from Member States, experts from the fields of neonatology, pediatrics and obstetrics, and other development partners.

After all, the prevention and surveillance of birth defects can be expanded and sustained over the long term only with the leadership and support of ministries of health. WHO stands committed to support the efforts of Member States in this regard.

I wish you a successful meeting and a comfortable stay in New Delhi.
## Annex-2: Country Progress

Birth defects prevention included in other RMNCAH programs

<table>
<thead>
<tr>
<th>Intervention / Strategy</th>
<th>Pre-conception care</th>
<th>Prenatal care and screening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
<td>2017</td>
</tr>
<tr>
<td>Bangladesh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bhutan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td>Not known/not answered</td>
<td>Not included/ not present</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timor-Leste</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention / Strategy</th>
<th>Birth defects prevention included in other RMNCAH programs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Newborn screening</td>
</tr>
<tr>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Bangladesh</td>
<td></td>
</tr>
<tr>
<td>Bhutan</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Not known/not answered</td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
</tr>
<tr>
<td>Timor-Leste</td>
<td></td>
</tr>
</tbody>
</table>
Rubella Immunization and National Programs

<table>
<thead>
<tr>
<th>Intervention / Strategy</th>
<th>Immunization - Rubella vaccination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Bangladesh</td>
<td></td>
</tr>
<tr>
<td>Bhutan</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
</tr>
<tr>
<td>Timor Leste</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Not known/not answered</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not included/ not present</td>
</tr>
<tr>
<td></td>
<td>National implementation efforts done or ongoing</td>
</tr>
</tbody>
</table>

Graph Courtesy- Dr Sudhir Khanal MO Measles and Rubella WHO SEARO
## Nutrition and Non-communicable diseases

<table>
<thead>
<tr>
<th>Intervention / Strategy</th>
<th>Food fortification with Folic Acid</th>
<th>Micronutrient supplementation programmes</th>
<th>BD prevention messages in NCD programmes</th>
<th>Care/management for BDs in NCD programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bhutan</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nepal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sri Lanka</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timor Leste</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Not known/not answered**
- **Not included/not present**
- **Partial implementation/project based/not yet implemented at the national level**
- **National implementation efforts ongoing**
## Annex-3: Country Action Plans

<table>
<thead>
<tr>
<th>Country action plan</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of hospitals</strong></td>
<td>Birth Defect Surveillance</td>
<td>16</td>
<td>3</td>
<td>start in 14</td>
<td>55</td>
<td>28</td>
<td>10</td>
<td>10</td>
<td>16</td>
<td>43</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Stillbirth Surveillance</td>
<td>1 (NBBD)</td>
<td>2 (NBBD)</td>
<td>0</td>
<td>20 (NBBD Pilot)</td>
<td>0</td>
<td>2 (NBBD)</td>
<td>18 (MoH)</td>
<td>6 (NBBD)</td>
<td>101 (MoH)</td>
<td>10 (university)</td>
</tr>
<tr>
<td></td>
<td>Newborn Surveillance</td>
<td>5 (NBBD)</td>
<td>3 (NBBD)</td>
<td>1705 (MoH)</td>
<td>55 (NBBD)</td>
<td>0</td>
<td>2 (NBBD)</td>
<td>0</td>
<td>5 (NBBD)</td>
<td>none</td>
<td>MoH</td>
</tr>
<tr>
<td><strong>Expected % increase in Birth defects surveillance-2019 (number of hospitals)</strong></td>
<td>13% (18)</td>
<td>67% (5)</td>
<td>200% (200)</td>
<td>60% (88)</td>
<td>25% (35)</td>
<td>80% (16)</td>
<td>20% (12)</td>
<td>13% (18)</td>
<td>49% (85)</td>
<td>subject to MoH approval</td>
<td>200% (3)</td>
</tr>
</tbody>
</table>

### Expansion of surveillance

- Hospitals for Stillbirths surveillance (2018-1019)
- Hospitals for Newborn health and Head circumference reporting
- Same as birth defects surveillance hospitals - plan is to expand and train to all hospitals doing BD surveillance

### Surveillance Training

<table>
<thead>
<tr>
<th>Surveillance Training</th>
<th>NBBD Refresher training</th>
<th>Training in verification</th>
<th>Training in data analysis</th>
<th>Training in Stillbirth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Resource need

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Funding and MoH approval</td>
<td>Consultant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country action plan</td>
<td>Bangladesh</td>
<td>Bhutan</td>
<td>DPR Korea</td>
<td>India</td>
<td>Indonesia</td>
<td>Maldives</td>
<td>Myanmar</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>First level verification status</td>
<td>Not done</td>
<td>Done at country level</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>Done at country level</td>
<td>Not done</td>
</tr>
<tr>
<td>Training needed at the hospital level</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Monitoring and mentoring of hospitals</td>
<td>National Coordinator</td>
<td>National Coordinator</td>
<td>Not done</td>
<td>National Coordinator</td>
<td>National Coordinator</td>
<td>National Coordinator</td>
<td>WCO</td>
</tr>
<tr>
<td>Second level verification</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
</tr>
<tr>
<td>Training for second level verification</td>
<td>Currently not done and it contingent upon resource availability and support from WHO SEARO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample checks and paper based checks</td>
<td>Nodal Center</td>
<td>Nodal Center</td>
<td>MoH</td>
<td>Nodal Center</td>
<td>MoH</td>
<td>Nodal Center</td>
<td>WCO</td>
</tr>
<tr>
<td>Include data abstraction forms in the case files (NB and BD forms in Newborn case sheet; and Stillbirth form with Mother case sheet)</td>
<td>50% hospitals done</td>
<td>Explore opportunities with WHO SEARO support (2019)</td>
<td>Done by MoH</td>
<td>Delhi network with support from WHO SEARO</td>
<td>Not Yet</td>
<td>Plan with WHO SEARO support</td>
<td>Done in NBBD reporting Hospitals</td>
</tr>
<tr>
<td>Plan for analysis of data and sharing</td>
<td>Partially with support from WHO SEARO</td>
<td>Partially with support from WHO SEARO</td>
<td>Partially with support from WHO SEARO</td>
<td>Partially with support from WHO SEARO</td>
<td>Partially with support from WHO SEARO</td>
<td>Partially with support from WHO SEARO</td>
<td>Plan to do it in 2019</td>
</tr>
<tr>
<td>Country action plan</td>
<td>Bangladesh</td>
<td>Bhutan</td>
<td>DPR Korea</td>
<td>India</td>
<td>Indonesia</td>
<td>Maldives</td>
<td>Myanmar</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------</td>
<td>-----------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>Incorporation of Hospital based Birth defect and still births surveillance into national data systems by MOH</td>
<td>Include NBBD variables in DHIS2 Platform</td>
<td>Some variables are included HMIS need to improve and integrate</td>
<td>NBBD yet to be rolled out-consensus and initial work initiated</td>
<td>Establishmen t of NBBD and still birth sentinel surveillance system in India</td>
<td>NBBD data is link to INA-Registry (National Data Research Board) but has not linked with hospital data reporting system. and Still Birth Data was collected by provincial but doesn’t have the cause of death data.</td>
<td>Exploring opportuniti es within the new national HMIS system which is under developme nt</td>
<td>Currently not incorporate d</td>
</tr>
</tbody>
</table>
### Support Needed to Help Integrate NBBD into National Data Systems

**Country Action Plan**

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To select common variables for categorizing birth defects easily at the national HMIS level.</td>
<td>Follow up needed to help update the HMIS for better information on BD as well as SB moving forward - support from WHO CO/SEARO/MOH, RGOB.</td>
<td>Follow-up and support from MoH and WHO CO/SEARO</td>
<td>Technical resources needed: – ICMR project already submitted to GoI (3 years) – HR support for sentinel centres (WHO) from – ICMR, MoHFW, GoI subject to approval</td>
<td>Technical support from WHO SEARO and MoH</td>
<td>Subject to further discussions with MoH and WHO SEARO</td>
<td>Technical resource s needed from: WHO-CO, SEARO, CDC, USAID, NHSSP, GIZ Nepal, UNICEF, UNFPA</td>
<td>Technical resources needed and customization and development &amp; financial support from WHO</td>
<td>na</td>
<td>na</td>
<td></td>
</tr>
</tbody>
</table>

### Stillbirth Surveillance

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB review/surveillance current status</td>
<td>1 (NBBD)</td>
<td>2 (NBBD)</td>
<td>0</td>
<td>20 (NBBD Pilot)</td>
<td>0</td>
<td>2 (NBBD)</td>
<td>18 (MoH)</td>
<td>6 (NBBD)</td>
<td>101 (MoH)</td>
<td>10 (university)</td>
<td>0</td>
</tr>
</tbody>
</table>

### Stillbirth Surveillance Linked to MDSR

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>Pilot</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

### Level of SB Review being done

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Frequency of review

<table>
<thead>
<tr>
<th>Country</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td>na</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **SB**: Stillbirth
- **MDSR**: Maternal and Child Disease Surveillance System
- **NBBD**: Neonatal and Birth Defects
- **HR**: Human Resources
- **ICMR**: Indian Council of Medical Research
- **GOI**: Government of India
- **RGOB**: Royal Government of Bhutan
- **MoH**: Ministry of Health
- **CDC**: Centers for Disease Control and Prevention
- **USAID**: United States Agency for International Development
- **NHSSP**: National Health Systems & Rehabilitation Council
- **GIZ**: German Development Cooperation
- **UNICEF**: United Nations Children’s Fund
- **UNFPA**: United Nations Population Fund
- **WHO**: World Health Organization
- **SEARO**: South-Eastern Asia Regional Office
<table>
<thead>
<tr>
<th>Country action plan</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>DPR Korea</th>
<th>India</th>
<th>Indonesia</th>
<th>Maldives</th>
<th>Myanmar</th>
<th>Nepal</th>
<th>Sri Lanka</th>
<th>Thailand</th>
<th>Timor-Leste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response mechanism</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
<td>PDSR is plan to be inserted into MDSR</td>
<td>na</td>
<td>Feedback to responsible team and hospital</td>
<td>na</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability of country own SB review format</td>
<td>na</td>
<td>No</td>
<td>Yes</td>
<td>na</td>
<td>Yes</td>
<td>Yes (NBBD)</td>
<td>Yes (NBBD)</td>
<td>Yes</td>
<td></td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>COD ascertainement: ICD 10/ICD PM/any other specify</td>
<td>na</td>
<td>ICD-10 and ICD-PM</td>
<td>Not yet</td>
<td>ICD-10</td>
<td>na</td>
<td>ICD 10</td>
<td>CODAC</td>
<td>ICD-PM</td>
<td>ICD-PM</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Plan to initiate/strengthen Stillbirth surveillance SEAR NBBD</td>
<td>2</td>
<td>5</td>
<td>200</td>
<td>77</td>
<td>3</td>
<td>2</td>
<td>18</td>
<td>10</td>
<td>28</td>
<td>subject to MoH approval</td>
<td>1</td>
</tr>
<tr>
<td>Timeline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training needs (SB surveillance)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Technical and database use and implementation support from WHO SEARO</td>
<td></td>
</tr>
</tbody>
</table>
Annex-4: Programme

- Inaugural Session
- Setting the stage
  - Global overview of birth defects situation and prevention
  - Regional progress in Birth Defects Initiative
- Progress in Birth Defects plans in the Region
  - Regional progress
  - Country highlights
- Demonstration project on wheat flour fortification in Haryana
- NBBD Surveillance related issues
  - Emerging issues in birth defects prevention: Zika and Dolutegravir
  - CRS surveillance and Rubella immunization in SEAR
  - Importance of previable birth screening
- SEAR-NBBD: Birth defects surveillance
- Stillbirth surveillance
- Country Plans of Action for Birth Defects Surveillance, prevention and management
- Face to face with birth defects
- Prevention of Neural Tube Defects
- Management of birth defects
- Conclusion and Recommendations
- Closing remarks
Annex-5: List of Participants

**Bangladesh**

1. Dr Ashis Kumar Saha  
   Director  
   HIS & e-Health, MIS  
   Directorate General of Health Services  
   Mohakhali  
   Dhaka

2. Prof Dr Mohammad Shahidullah  
   Department of Neonatology  
   Bangabandhu Sheikh Mujib Medical University  
   Shahbagh  
   Dhaka 1000

3. Prof Dr Feroza Begum  
   Head, Fero-maternal Unit  
   Department of Obstetrics and Gynaecology  
   Bangabandhu Sheikh Mujib Medical University  
   Shahbagh  
   Dhaka 1000

4. Dr Emdadul Hoque  
   DPM (Admin)  
   NNHP and IMCI  
   Directorate General of Health Services  
   Mohakhali  
   Dhaka

**Bhutan**

5. Dr Kezang  
   Gynaecologist II  
   Phuntsholing Hospital

6. Dr Tulsi Ram Sharma  
   Pediatrician I, ERRH  
   Mongar

7. Dr Roma Karki  
   Program Officer, NCDD  
   Department of Public Health  
   Ministry of Health

8. Dr Pema Lethro  
   Program Officer, NCDD

**DPR Korea**

9. Dr Choe Yon  
   Researcher  
   Genetics Engineering Institute  
   Pyongyang University of Medicine  
   Kim Il Sung University  
   Pyongyang

10. Dr Jo Sin Ok  
    Researcher  
    Molecular Genetics Institute  
    Pyongyang University of Medicine  
    Kim Il Sung University  
    Pyongyang

11. Dr Won Hak Min  
    Senior Official  
    Department of Treatment and Prevention  
    Ministry of Public Health  
    Pyongyang

**India**

12. Dr P K Prabhakar  
    Deputy Commissioner (Child Health)  
    Ministry of Health and Family Welfare  
    Government of India  
    452-A, Nirman Bhavan  
    New Delhi – 110 011

13. Dr Arun Singh  
    National Advisor (RBSK)  
    National Institute of Health and Family Welfare  
    Baba Gang Nath Marg  
    Munirka  
    New Delhi – 110 067

14. Dr Pratima Mittal  
    Consultant & Professor  
    (Obstetrician & Gynaecologist)  
    Safdarjung Hospital  
    Ansari Nagar  
    New Delhi 110 029
15. Prof Dr Suchandar Mukherjee  
Head of Neonatology Department  
Institute of Post Graduate Medical  
Education & Research (IPGME&R)  
244, A J C Bose Road, Bhowanipore  
Kolkata – 700 020  
West Bengal

16. Prof Dr Erry Gumilar Dachlan, SpoG(K)  
Head of Indonesian Feto-Maternal Medical Association (HKFM)  
Dr Soetomo Provincial Hospital, Surabaya, East Java  
Jalan Mayjen Prof Dr Moestopo No. 6-8 Airlangga, Gubeng, Surabaya  
Jawa Timur 60286

17. Dr Rima Damayanti, M.Kes  
Chief, Neonatal Division  
Directorate of Family Health  
Ministry of Health  
Jalan H.R. Rasuna Said, Blok X5 Kav. 4 – 9  
Jakarta Selatan 12950

18. Dr R Adhi Teguh Perma Iskandar, SpA(K)  
Secretary to Neonatology Department  
Indonesian Pediatrician Association (IDAI)  
Jalan Salemba I No.5  
Jakarta Pusat 10430

19. Dr Didi Danukusumo, SpoG(K)  
President Director  
Harapan Kita Children and Women’s Hospital  
Jalan Letjen S. Parman Kav 87, RT 1/RW 8  
Kota Bambu Utara, Palmerah  
Kota Jakarta Barat 11420

Indonesia

21. Dr Ahmed Faisal  
Consultant in Pediatrics grade 2  
Indira Gandhi Memorial Hospital  
Male  
Republic of Maldives

22. Mr Abdullah Muaaz  
Senior Public Health Programme  
Health Protection Agency  
Ministry of Health  
Male  
Republic of Maldives

23. Dr Thasneem Faroog  
Consultant in Obstetrics & Gynecology  
Indira Gandhi Memorial Hospital  
Male  
Republic of Maldives

Myanmar

24. Dr Mya Mya Win  
Senior Consultant (OG)  
Central Women Hospital  
Mandalay  
Myanmar

25. Dr Nant San San Aye  
Professor (Neonate)  
Central Women Hospital  
Yangon  
Myanmar

26. Dr Nyo Nyo  
Senior Consultant (OG)  
Central Women Hospital  
Mandalay  
Myanmar

27. Dr Zaw Win Moe  
Senior Consultant (Neonate)  
(500) Bedded Children Hospital  
Yankin  
Myanmar

Maldives

20. Dr Mariyam Jenyfa  
Senior Medical Officer  
Health Protection Agency  
Ministry of Health  
Male  
Republic of Maldives

28. Dr Nabin Shrestha  
Consultant Gynaecologist  
Gandaki Institute of Health Science  
Pokhara

Nepal
29. Dr Yubanidhi Basaula  
   Senior Consultant Paediatrician  
   Bharatpur Hospital  

30. Dr Kalpana Upadhyay Subedi  
   Chief Consultant Paediatrician  
   Paropakar Maternity and Womens Hospital  
   Nepal  

31. Mr Sharad Kumar Sharma  
   Demographer  
   Family Health Division  
   Department of Health Services  
   Ministry of Health and Population  
   Kathmandu  

Sri Lanka  

32. Dr I L K Jayaratne  
   Consultant Community Physician  
   Family Health Bureau  
   Ministry of Health, Nutrition & Indigenous Medicine  
   Colombo  
   Sri Lanka  

33. Dr N V J Thenuwar  
   Consultant Community Physician  
   Family Health Bureau  
   Ministry of Health, Nutrition & Indigenous Medicine  
   Colombo  
   Sri Lanka  

34. Dr S K Kasturiaratchi  
   Consultant Community Physician  
   Family Health Bureau  
   Ministry of Health, Nutrition & Indigenous Medicine  
   Colombo  
   Sri Lanka  

35. Dr N W A J Premadasa  
   Visiting Obstetrician & Gynecologist  
   Teaching Hospital  
   Anuradhapura  
   Sri Lanka  

36. Dr A D T M S S Tennekone  

37. Mrs Sarinna Sangarun  
   Director  
   Health Promotion Centre Region 3  
   Nakornhsawan  
   Ministry of Public Health  
   Thailand  

38. Dr Supattra Somchit  
   Medical Officer, Senior Professional Level Pediatrician  
   Pediatric Department, Khon Kaen Hospital  
   Provincial Public Health Office, Khon Kaen  
   Ministry of Public Health  
   Thailand  

39. Assoc Prof Dr Sunya Patrachai  
   Lecturer, Department of Obstetrics and Gynecology  
   Faculty of Medicine, Ramathibodi Hospital  
   Mahidol University  
   Ministry of Education  
   Thailand  

40. Miss Vijita Rachatanantikul  
   Expert on Empowerment of Persons with Disabilities  
   Department of Empowerment of Persons with Disabilities  
   Ministry of Social Development and Human Security  
   Thailand  

Timor-Leste  

41. Dr Nilton S E da Costa S Cruz  
   Program Assistant for Director General of Services Delivery  
   Ministry of Health  
   Dili
42. Ms Julieta da Costa  
Child Health Officer  
Ministry of Health  
Dili

43. Dr Lurdes Maria do Rego Leao  
Pediatrician  
Dili National Hospital  
Bidau-Toko Baru  
Dili

44. Dr Lidia Nelia Luisa de Oliveira  
General Practitioner/Medical Doctor  
Dili National Hospital  
Bidau-Toko Baru  
Dili

Special Invitees

45. Dr Vijay Kumar  
Executive Director (Hony.)  
SWACH Foundation, Near S D Mandir  
Sector-16  
Panchkula, Haryana  
India

46. Professor Reena Das  
Department of Haematology  
Postgraduate Institute of Medical Education and Research  
Sector-12  
Chandigarh-160012  
India

47. Dr Ashok K Deorari  
Professor & Head  
Department of Pediatrics  
WHO Collaborating Centre for Training and Research in Newborn Care  
All India Institute of Medical Sciences  
New Delhi 110029  
India

48. Dr Madhulika Kabra  
Professor  
Genetic Unit  
Department of Pediatrics  
WHO Collaborating Centre for Training in Clinical and Laboratory Genetics in Developing Countries  
All India Institute of Medical Sciences  
New Delhi 110029  
India

49. Dr Sanjay Chauhan  
Scientist G  
Department of Operational Research  
National Institute of Reproductive Health Research (NIRRH)  
Mumbai 400012  
India

50. Dr Vanita Suri  
Professor  
Department of Obstetrics & Gynaecology  
Postgraduate Institute of Medical Education and Research  
WHO Collaborating Centre for Reproductive Health  
Sector-12  
Chandigarh 160012

51. Dr Neelam Aggarwal  
Additional Professor  
Department of Obstetrics and Gynaecology Postgraduate Institute of Medical Education and Research (PGIMER)  
Chandigarh  
India

52. Dr Rakesh Gupta  
Additional Principal Secretary to the Chief Minister, Haryana  
Chandigarh  
India

53. Dr Siraporn Sawasdivorn  
Clinical Professor  
Queen Sirikit National Institute of Child Health  
Bangkok  
Thailand

54. Dr Coleen A. Boyle (Director)  
National Center on Birth Defects and Developmental Disabilities  
U.S. Centers for Disease Control and Prevention, Atlanta
55. Dr Yan Ping Qi  
Health Scientist, Prevention Research Team  
Division of Congenital and Developmental Disorders  
National Center on Birth Defects and Developmental Disabilities  
U.S. Centers for Disease Control and Prevention, Atlanta

56. Dr Priya Karna  
CDC Consultant  
New Delhi

57. Dr Parveen Bhalla  
Coordinator  
Haryana Demonstration Project  
Government of Haryana  
Panchkula, India

58. Mr Lieven Bauwens  
IF Secretary General  
International Federation for Spina Bifida and Hydrocephalus  
Belgium

59. Dr Santosh Karmarkar  
General Arunkumar Vaidya Nagar  
Bandra West  
Mumbai  
India

60. Dr Godfrey Oakley  
Director  
Centre for Spina Bifida Prevention  
Emory University  
Atlanta, GA  
USA

61. Ms Anjali Bhardwaj  
Acting Regional Deputy Director  
Nutrition International  
B-28, 2nd Floor  
Qutab Institutional Area  
New Delhi 110 016

62. Ms Deepti Gulati  
Head of Programme

Global Alliance for Improved Nutrition (GAIN), New Delhi

63. Dr Arijit Chakrabarty  
Senior Programme Manager  
Global Alliance for Improved Nutrition (GAIN), New Delhi

UNICEF

64. Dr Dharmmica Rowel  
Health and Nutrition Officer  
UNICEF Country Office  
Sri Lanka

Observers

65. Dr Harish Kumar Chellani  
Professor and HoD Paediatrics  
Safdarjung Hospital  
New Delhi

66. Dr Neerja Gupta  
Additional Professor and Head  
Department of Genetics  
All India Institute of Medical Sciences (AIIMS)  
Ansari Nagar  
New Delhi

67. Dr Ashish Jain  
Asstt Professor, Neonatology  
Maulana Azad Medical College  
2, Bahadur Shah Zafar Road  
New Delhi

68. Dr Shobana Gupta  
Child Specialist (CMO) and Nodal Officer for NBBD  
Department of Paediatrics  
Safdarjung Hospital  
Ansari Nagar  
New Delhi

69. Dr Renu Srivastava  
JHPIEGO  
29, Okhla Phase III  
New Delhi
WHO Secretariat

70. Dr Neena Raina
   Director a.i.
   Department of Family Health, Gender and Life-Course
   WHO-SEARO

71. Dr Sunil Bahl
   Team Leader-IVD
   WHO-SEARO

72. Dr Rajesh Mehta
   Regional Adviser-CAH
   WHO-SEARO

73. Dr Chandani Anoma Jayathilaka
   Regional Adviser-MRH
   WHO-SEARO

74. Dr Mikiko Kanda
   Technical Officer
   (Nursing and Midwifery)
   WHO-SEARO

75. Dr Angela De Silva
   Regional Adviser-NHD
   WHO-SEARO

76. Dr Patanjali Dev Nayar
   Regional Adviser-DPR
   WHO-SEARO

77. Dr Sudhir Khanal
   Medical Officer-Measles
   WHO-SEARO

78. Mr Mark Landry
   Regional Adviser-HST
   WHO-SEARO

79. Dr Mahbuba Khan
   NPO
   WHO-Bangladesh
   Dhaka

80. Mr Kencho Wangdi
   NPO
   WHO-Bhutan
   Thimphu

81. Dr Rachita Gupta
   NPO
   WHO-India
   New Delhi

82. Dr Mohammad Shahjahan
   Public Health Administrator
   WHO-Myanmar
   Yangon

83. Dr Meera Thapa Upadhyay
   NPO
   WHO-Nepal
   Kathmandu

84. Mr Jermias Da Cruz
   NPO
   WHO-Timor-Leste
   Dili

85. Mr E Rangarajan
   National Operational Officer-FGL
   WHO-SEARO
   New Delhi

86. Mr Arun Shrivastava
   Executive Assistant-CAH
   WHO-SEARO

87. Mr Dhiraj Kumar
   Executive Assistant (Data Management)
   WHO-SEARO, New Delhi