A report on Global Outbreak Alert and Response Network (GOARN) Roadshow
Nepal
11-12 October 2022

Ministry of Health and Population
In support of
WHO Nepal, SEARO, HQ and GOARN SCOM

Government of Nepal

Ministry of Health & Population

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Ramshahpath, Kathmandu
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FOREWORD

Nepal is exposed to several hazards and falls in the top 20th list of the multi-hazard prone countries in the world. The country suffers from a range of geophysical and hydro-meteorological hazards such as Earthquakes, floods, landslides, lightning, Glacial Lake Outburst Flood (GLOF), etc. In addition to these natural hazards, various disease epidemics occur frequently throughout the country. Along with the ongoing COVID-19 pandemic, the country suffered from cholera, measles outbreak and the largest dengue outbreak with infections detected throughout Nepal in the year 2022. These hazards and epidemics pose serious threat to the health, lives, and livelihoods. While natural disasters, disease outbreaks and other acute public health risks are often unpredictable, the adverse impact can be mitigated through a robust preparedness, readiness, and response.

The Ministry of Health and Population (MoHP) has been continuously conducting several activities in partnership with the health and non-health partners for the early detection, verification, and response to outbreaks. The Global Outbreak Alert and Response Network (GOARN) has supported Nepal in testing procedures, laboratory biosafety and biosecurity, biomedical waste handling, and provided hands on training for NPHL staff during the surge of cases of COVID-19.

GOARN is a global network of technical institutions and networks with capacity to contribute resources to international disease outbreak response. There are currently four GOARN partners in Nepal, namely, National Public Health Laboratory (NPHL), Health Emergency Operation Center (HEOC), Sukraraj Tropical and Infectious Disease Hospital (STIDH), and Central Department of Microbiology (CDMI), Tribhuvan University (TU). Ministry of Health and Population (MoHP), with the support of World Health Organization organized this roadshow as the need was identified to expand expertise to support rapid alert and response mechanism and capacitate local response during outbreaks as well as learn through the experiences and knowledge of existing partners. I hope that the network established through this roadshow will contribute to responding to outbreaks at international level and help collaborate with the MoHP to support outbreaks within the country.

Lastly, I would like to offer my deepest gratitude to all the members of the HEOC network, WHO Headquarter, WHO SEARO, GOARN Headquarter, and WHO Nepal for extending their generous and continued support. I would also like to thank Dr Allison Gocotano, Dr Subash Neupane, Mr Prahlad Dahal, Dr Gaurav Devkota, Dr Bigyan Prajapati, Dr Irana Joshi, Mr Prakash Chandra Ghimire, Mr Ramdaresh Pandit, Mr Sanjib Gautam, Mr Manish Dhungana, Mr Tribhuwan Bhatta, Ms Deepa Chand, Ms Barsha Thapa, and Mr Ganesh Singh Dhami who were instrumental through the planning phase to successful conduction of the roadshow.

Dr Samir Kumar Adhikari
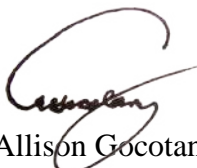Chief, Health Emergency Operation Center

FOREWORD

The COVID-19 pandemic sent shockwaves throughout the globe, overwhelming health systems due to its sheer scale and the speed at which events unfolded. There were unknown variables which contributed to confusion and anxiety, and decisions were made based on the best available information. This context is one of the areas where the work of the Global Outbreak Alert and Response Network (GOARN) is of utmost importance - as a platform for international collaboration between scientists and experts from multi-disciplinary institutions for effective early warning, alert and coordinated response to disasters and public health emergencies and continuous learning from them.

For more than two decades, GOARN has been a critical part of WHO's mission to keep the world safe and protect the vulnerable through strategic partnerships. Coordinated by an Operational Support Team based at the WHO headquarters in Geneva and governed by a Steering committee, GOARN aims to deliver rapid and effective support to prevent and control infectious diseases outbreaks and public health emergencies when requested.

There are currently four GOARN partners in Nepal, namely, Health Emergency Operation Center (HEOC), National Public Health Laboratory (NPHL), Sukraraj Tropical and Infectious Disease Hospital (STIDH), and Central Department of Microbiology (CDMI), Tribhuvan University (TU) with expertise on outbreak alert and response. The Ministry of Health and Population (MoHP) along with GOARN and its partners in Nepal identified the need to expand the expertise throughout the country to support rapid alert and response mechanism during disasters and public health emergencies.

The GOARN roadshow, a first of its kind conducted in Nepal on 11-12 October 2022, assisted in exploring further opportunities for current and potential partners in Nepal to engage with GOARN. The successful conduct of the roadshow, supported by WHO, has provided a promising platform for the expansion and strengthening of the network within Nepal.

WHO Nepal reiterates its commitment to support institutions including government agencies, universities, laboratories, and nongovernmental organizations, from specialized areas to be part of this network. Together, the GOARN partners can strengthen the country's capacity to preventing unnecessary morbidity from the spread of infectious diseases and ultimately saving lives during disasters and public health emergencies.

Dr Allison Gocotano
Team Leader – WHO Health Emergencies Programme
WHO, Country Office for Nepal

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Background

The Global Outbreak Alert and Response Network (GOARN) was established in April 2000 through an initiative from WHO & other core partners to provide support for long-term epidemic preparedness and capacity building. It has a global network of technical institutions and networks with capacity to contribute resources to international disease outbreak response. The GOARN strengthens operational coordination, and build outbreak response capacity through rapid detection, verification & response to outbreaks of emerging infectious diseases of international concern. The network at the global level has expanded to include over 300 partner institutions, including government agencies, universities, laboratories, nongovernmental organizations, international organizations, and a range of related networks in specialist areas and diseases. These missions involve experts in the field, and the mobilization of outbreak response teams and equipment, including field laboratories, information management tools and communication equipment, vehicles, and field kits.

There are currently only four GOARN partners in Nepal, namely, National Public Health Laboratory (NPHL), Health Emergency Operation Center (HEOC), Sukraraj Tropical and Infectious Disease Hospital (STIDH), and Central Department of Microbiology (CDMI), Tribhuvan University (TU) with expertise on outbreak alert and response. Ministry of Health and Population (MoHP) along with the GOARN and its partners in Nepal identified the need to expand the expertise throughout Nepal to support rapid alert and response mechanism during outbreaks. To expand the partnership with other organizations, MoHP in coordination and support of World Health Organization (WHO) is planned for a GOARN roadshow inviting relevant stakeholders and academic institutions along with GOARN experts. The aim was to capacitate local response capabilities through interaction with national and international GOARN members and teams and provide opportunities for networking, strengthening capacity, and learning lessons from alert and response to major outbreaks from all part of the world.

Preparatory Activities

There were number of virtual preparatory meetings among Ministry of Health and Population (MoHP); WHO Nepal, South-East Asia Regional Office (SEARO) and Headquarters (HQ); and GOARN (collectively and/or bilateral) that addressed issues like finalization of roadshow dates, agenda, key speakers/presenters, participants, logistics, and other requirements. For smooth conduction of the GOARN roadshow, a two-member technical team from WHO Headquarter, one-member technical team from WHO SEARO and one member from GOARN arrived in Nepal a day earlier to provide necessary technical support and ensure that the roadshow is well-planned. This team included Dr Gail Carson, Chairperson of GOARN Steering Committee, Ms Marie-Amelie Degail and Dr Victor Del Rio Vilas from HQ and Dr Partha Pratim Mandal from WHO-SEARO.

Welcome and objective sharing

The program initiated with welcome of all the participants and sharing of objective of the roadshow. The goal of the roadshow was to identify avenues for GOARN to contribute to local response capabilities through the following objectives:

- To have understanding on the Global Outbreak Alert and Response Network (GOARN) and its activities
- To strengthen the current GOARN partnership and identify the probable GOARN partners, and
- To support the strengthening of local expertise for outbreak alert and response.

Opening Remarks

Dr. Allison Gocotano, Acting WHO Representative to Nepal provided background on GOARN network and the need for alert and response mechanism in Nepal. He also assured of support to Ministry of Health and Population from WHO Nepal, SEARO and HQ in GOARN related activities.

Dr Dipendra Raman Singh, Director General, Department of Health Services (DoHS) reiterated the need to train the local human resources to capacitate the local alert and response mechanism.

Dr Sangeeta Kaushal Mishra, Additional Secretary, MoHP, shared her experience of meeting with GOARN deployment in Nepal during COVID-19 and admired their expertise. She suggested on strengthening the local response capabilities of Nepal as well as its networking/deployment globally.

Dr. Roshan Pokhrel, Secretary, Ministry of Health and Population, praised the GOARN network for being able to rapidly response/deploy during emergencies globally. He also stressed the need to expand the expertise throughout Nepal to support rapid alert and response mechanism during future outbreaks.

General Overview of GOARN

Dr Gail Carson initiated the technical session providing a brief overview of GOARN and presented on the GOARN strategies (2022-2026). She shared that GOARN priorities were community-centered, committed to the global public health emergency workforce through collaborative network of institutions, and focused on creating solutions for a better response. She praised Nepal for supporting the GOARN roadshow, a first of its kind, and highlighted that the roadshow in Nepal would assist in exploring opportunities for engagement with GOARN. Dr Gail presented a short video on GOARN and explained the collaborative efforts of partners for containment of outbreak, research during emergencies, planning and evaluating the response decisions, optimizing resources of the host country, and global understanding of disease trends.

Dr Partha Pratim Mandal followed with presentation concentrating on the partners engagement. He provided a brief history of GOARN focused on strengthening alert and response to public health emergencies through rapid deployment of experts when requested by host country via WHO. He provided a summary of the ongoing support through deployed GOARN members for COVID-19 global response, COVID-19 vaccination response, Response for Cholera, Dengue Fever, Greater Horn of Africa drought and food insecurity, Monkeypox in multiple locations, Ukraine emergency 2022. He then explained the steps on becoming a GOARN partner, how the request for assistance is shared, process of deployment once the experts are identified, and deployment of eligible candidates as per the need of the host country and shared the standard package and checklist for deployment.

On query whether an institute can become a GOARN partner without collaborating with the Ministry of Health and Population, Dr Partha emphasized that any institute can become a GOARN member based on the expertise they provide, however, the acceptance from the Ministry of host country is required for deployment.

On query whether the government/ Department of Health Services (DoHS) need to be a GOARN partner to seek support from GOARN, Dr Partha responded that Ministry of Health and Population can always ask for support from GOARN when needed. He further added that MoHP can also provide support to other countries by rapid deployment of the expertise during any public health emergencies.

The session was closed by Dr Dipendra Raman Singh, Director General, DoHS, MoHP thanking the presenters on their comprehensive presentations and addressing the queries. He further emphasized on the overall objective of GOARN roadshow, i.e., aligning the expertise of the country and strengthening alert, response, and preparedness all over the world.

Presentations from GOARN members of Nepal

Dr Samir Kumar Adhikari, Chief, Health Emergency Operation Center (HEOC), in his presentation informed HEOC being the latest member of GOARN in Nepal. He then presented the roles of HEOC in alert, preparedness and response to disaster and public health emergencies. He further highlighted the contribution and experience shared between HEOC and GOARN. He then mentioned regular communication and coordination between partners, capacitation of human resources, and deployment of experts to and from the country as way forward in GOARN membership.

Ms Lilee Shrestha, NPHL presented a quick background of the central diagnostic and public health laboratory of Government of Nepal, MoHP. She then highlighted about collaboration with GOARN that started since the COVID-19 pandemic and the activities supported by GOARN, i.e., the WHO GOARN support of laboratory technical expert to NPHL and their major outputs during the period where they visited four provinces of the country and provided with technical expertise during the visit. She then briefed about conclusions and action plan made through the field visits and provided recommendations for continued technical support to NPHL. Finally, she stressed on continuing membership, collaborating in future endeavors, and aiding expertise as an active GOARN member.

Dr Bimal Chalise, STIDH presented a quick background of the evolution of the hospital and its facilities. He then informed on the reason for being a GOARN member, its contribution and experience, and highlighted about the ideas and expertise. He showcased the facility's strength for having the best trained manpower in different specializations and other paramedics. Lastly, he advocated on expanding field deployments, regular coordination meetings, and expert exchange between institutions.

Prof. Dr Prakash Ghimire, CDMi TU presented on the background of TU, the first national institution of higher education in Nepal. He then proceeded with the objectives of CDMi and its different disciplines. He also highlighted on national and international representation and collaboration with different programs like membership with AMR-HH-TWG-MoHP/DoHS/NPHL, Asia Pacific Malaria Elimination Network, WHO-NTD-Diagnostic technical working Group for Visceral Leishmaniasis, and a GOARN member since 2017. He also presented about collaborative studies in partnership with different government counterparts and hospitals. Highlighting that CDMi became member with GOARN from 2017, he reiterated about having availability of qualified faculties and tools which can contribute to GOARN for outbreak investigation and response. He also mentioned their contribution and experiences shared between them and way forward for continuing coordination along with expansion of GOARN network nationally and internationally.

COVID-19 laboratory optimization

Ms Lilee Shrestha initiated her presentation with the overview of the activities conducted in laboratory optimization from the start of the pandemic till September 2022. She then provided in-depth information on the surge of human resources in NPHL and other government laboratories, expansion of government and private laboratories throughout the country, conduction of capacity building activities along with on-site monitoring, quality assurance activities, coordination and collaboration activities, and in-country capacity building for genetic sequencing.

Operational Research Findings and Experience sharing

Dr Nishant Thakur WHO in his presentation on the Operational research findings and experience sharing provided a brief introduction of the Structural Operational Research and Training IniTiative (SORT-IT) and described the steps involved in the program and the qualities it possesses. He then briefed on the findings from his research on the performance of Case Investigation and Contact Tracing (CICT) in Madhesh Province of Nepal against national benchmarks, using routine programmatic data reported by district CICT teams and stressed on the need of performance assessment of activities implemented. He also provided some asks from the participants/SORT IT fellows from the SORT IT program to further strengthen the research activities.

Dr Shrawan Mandal detailed on the processes involved in the SORT-IT, from selection to the development of a research product and shared how this program supported countries and institutions to conduct research through experience sharing and catalyzing the evidence. He then shared the processes and outcome of his research on factors affecting treatment outcome among COVID-19 patients treated in COVID-19 designated hospitals. He shared that the parallel COVID-19 management and the learning and research that the program had was the best form of training.

On enquiry whether the data included patients who refused admission or left before complete recovery, Dr Shrawan informed that the study include only those patients who stayed in hospital (in second wave more patient stayed up to recovery). On enquiry, whether the deaths include deaths due to co-morbid conditions or not, Dr Shrawan informed that there was no accurate differentiation but the data of COVID-19 positive cases with comorbid conditions were available. On enquiry whether the case investigation figure (17000+) includes both government and private data, Dr Nishant Thakur informed that the data include mainly government testing.

Experience sharing from Bangladesh

On behalf of Dr Jroge Martinez and Dr Anthony Eshofonie, Dr Simon Kaddu Ssentamu, Public Health Response Officer, Cox's Bazar, Bangladesh, shared the experience from Bangladesh. He gave a brief overview about Rohingya refugee crisis in Cox's bazar, which also resulted in various outbreaks of communicable diseases like diphtheria, cholera, malaria etc. During the surge, the GOARN support was required for additional expertise to scale up the response to crisis and outbreaks. He then presented the steps taken to organize GOARN deployment, technical areas of support and duration of deployments. He provided the instances of GOARN deployment in WHO Country Office, Bangladesh. He described the capacity assessment and capacity building actions taken with regards to GOARN in the country. He further briefed on contributions from the GOARN deployments and emphasized about technical and administrative challenges faced. He also recommended to have clearly defined terms of reference, timely approval from management and visa facilitation to be emphasized. He provided the impact of GOARN deployments, and its strengths and challenges. Lastly, he also provided the references to GOARN websites.

On enquiry about changes in terms of reference after deployment or in the field as per need of the outbreak situation, Dr Simon responded that the TOR are as clear as possible, mentioning the additional expectations from the deployee, however, constant communication with the deployee and noting down their work can be of help.

Integrated Outbreak Analytics (IOA) partnership and support to countries

Ms Marie-Amelie Degail provided a brief overview of the Integrated Outbreak Analytics (IOA), operationalization of IOA and examples of recent IOA conducted at different parts of the world. Integrated outbreak analytics is a multidisciplinary approach where epidemiological analyses, health services and data, behavioural filed studies, social science analyses, contextual data and operational programmes data are analysed holistically to explain and better understand the outbreak dynamics. It includes collaboration with partners and support ministries of health and governments. She provided some recent examples of IOA; Ebola virus disease in Guinea 2021 the challenges faced; insufficient human resource, delay in data collection, limited team size and recommendations to create online training for people with experience in IOA, ensure availability of software for team.

MoHP current approach to Alert and Response System (ARS)

Dr Abhiyan Gautam, Epidemiology and Disease Control Division (EDCD) introduced the participants to the legal provisions: The Public Health Service Act 2075 (BS), Public Health Service Regulation 2077 (BS) and the Infectious Disease Act 2020 (BS). These acts provided the government authority to designate any official and confer power for containment of infectious disease, development of emergency health plan and enforce/implement these plans at federal, provincial, and local level. Through the presentation, he highlighted the major system of capturing diseases through Vaccine Preventable Diseases (VPD) surveillance, port of entries, Early Warning and Reporting System (EWARS) sentinel sites and health facilities via community, local leaders, and Female Community Health Volunteers (FCHVs). He emphasized on mobilization of community volunteers and hospital informants for surveillance and way forward for event-based surveillance through defining threshold of diseases in the community and establishing formal Rapid Response Team (RRT) for outbreak response.

Combined Q&A for IOA and ARS

On query on whether the government collaborated with animal health during the Ebola outbreak and how to ensure involvement and integration with animal health, Ms Marie informed that the team was involved during the acute phase of the Ebola Outbreak but not during the integrated outbreak analytics. She stressed that One Health specialists should be part of the team and thus members should be identified for a multidisciplinary team depending on the type of outbreak.

On query whether feedback being provided to the FCHVs who play significant role in alerting activities from the community level, Dr Abhiyan informed that the FCHVs are provided 9 days training after recruitment ad oriented on possible outbreaks and where to inform when these outbreaks occur within the community. The number of FCHVs in each location is based as per the geographical terrain and total population. He added that the review meetings of FCHVs are done every 6 months to interact, discuss on new diseases, and provide relevant information.

On query about the utilization of RRT in between outbreaks or public health emergencies and the related logistic approach, Dr Abhiyan informed that annual review meetings are done to gather information, timely interaction from central level are done with the focal persons, and feedback are gathered from them.

On query about the list of reportable diseases or directives for reportable disease that the laboratory or health care workers needs to report if they suspect these diseases, Dr Abhiyan informed that 10 zoonotic diseases were identified among the one health and were in process of collecting more information from field level in coordination with livestock and animal health authorities. He further added that a Technical Working Group (TWG) have been identified for prioritization of other diseases scientifically. He stressed that as EDCD need to report according to the system of IHR, after the finalization of notifiable disease, they will be included in the EWARS. He also informed that a Steering committee has been formed, led by the Director General, to reinforce the process of early reporting.

Facilitated Discussion

The discussion to identify collaboration opportunities was facilitated by Dr Victor. He presented certain questions to understand and map the capacity of the institution participating in the roadshow.

Dr Victor enquired on the availability of social scientist among the participants, participatory research method or modelling used by any participants. Dr Allison responded that Nepal is in its early stage of modelling with recent capacity building of EDCD and MoHP through the Technical Officer from WHO Nepal. However, the modelling and projection has been used into good effect for COVID-19 wave projection and planning the Rapid Action Plan for COVID-19. He further stressed that modelling considerations differs for different diseases and Nepal has only used it in case of COVID-19 and beginning to strengthen the in-country modelling. Further, an uncertainty in the use of qualitative data for human health was responded from the participants.

He then enquired on the Public Private partnership in Nepal and its use during COVID-19. Participant from NPHL responded that a network (National Influenza Surveillance Network) has been established and a consortium developed for genomic surveillance involving the private sector. The coordination and collaboration have thus been maintained among public and private organizations. Training was provided and support were provided in sequencing SARS-CoV-2. Some of these institutions/academics are also receiving help from public health laboratory and have contributed for capacity building. The laboratory capacity in Nepal increased during COVID-19 with many COVID-19 molecular laboratories contributing to the COVID-19 surveillance. It was further added that 60% of the functional COVID-19 laboratories were public and 40% private, with 60% of tests performed by private laboratories thereby significantly reducing the pressure on government laboratories. There was also process for approval before laboratories started testing, a quality control was maintained by the government and there was reimbursement from the government in initial time.

Dr Victor then asked about the community risk assessment. Dr Samir responded that the community risk assessment goes down with Ministry of Home Affairs (MoHA), and from the public health perspective, MoHP and HEOC communicate with the local level. And if there is any outbreak or disease or any health emergency, MoHP or HEOC coordinate with local level to have community health assessment. The local health coordinators are then reached, who in turn engage the community volunteers and media for the assessment.

Dr Victor then queried about prioritizing among the 8 different surveillance sources, investment plan and use of livestock information for surveillance purpose. EDCD responded that through there was not access to direct information, but whenever there are any issues in community about animal health, EDCD was informed in the perspective of one health approach. The information sharing on cases of bird flu and joint response was provided as example. Dr Prakash Ghimire also informed on the presence of a surveillance network among animal health sector coordinated by FAO, and the director general of the nominated office being the focal point. He then informed about the process of notification and combined action, i.e., the animal health sector notifies the cases and as per the pandemic preparedness network of the government of Nepal, whose co-chairs are from MoHP and Ministry of Agriculture, a meeting with chairs or secretaries is convened and work with their system for risk assessment and response.

Breakout Session

The breakout session involved distribution of all the participants into 4 groups, one led by Dr Gail, next by Dr Victor, next by Dr Partha, and the last by Dr Allison. The session was designed to respond to the questions raised by the participants regarding GOARN, its partnership processes, criteria, and others. The session also aimed to collect the unanswered questions or questions that required further clarification. Moreover, expectations from the participants and their recommendations were also sought for GOARN moving ahead in Nepal.

Summary of Breakout Session

Queries raised during break out session:

GOARN partnership
- What is the formal process for being a GOARN partner? Are there any minimum requirements to meet? Any eligibility criteria? Any weighting processes?
- Is there list of areas for being a GOARN partner?
- Is there any tool to map the technical capacity of an organization interested to be GOARN partner?
- What are the benefits of being a GOARN member?
- Can the PHEOC/DEOC/LEOC, Private hospitals and other INGOs working in the province be a member of GOARN?
- How can a private medical college provide expertise/support GOARN?
- Can an individual expert not bound to any organization be a partner?
- The health partners have been supporting the Ministry of Health & Population of Nepal during disaster and public health emergencies. Why do the partners have to enroll with GOARN?
- The partners of health cluster coordination perceive it as a national networking of GOARN? How does it differ from being a member of GOARN?

National and Sub national levels
- Is there a provision of national focal point for GOARN?
- Do the government counterparts have to go through the approval of the provincial/federal level for inclusion in the GOARN community?
- Does the GOARN support directly to the subnational level?
- Is there strategy for national GOARN members to collaborate during local outbreaks? Any suggestions on strategy for this local collaboration?

Roles and responsibilities
- What are the roles of GOARN partner? Is there a ToR for partners?
- How different is the role of GOARN and the EWARS/IHR system of the country?
- Will GOARN have an integrated approach during outbreaks? With One Health or multisectoral?
- Possibility for the integration of EMDTs and GOARN?
- Is there a possibility of synchronising the activities of IFRC and GOARN?
- Is there any clinical level support from GOARN (patient level interaction)?

Systems and Processes
- How does GOARN identify the need for expert support to any partner?
- What is the mechanism for a partner to alert for need of expert?
- What is the mechanism to request other partners to provide support?
- What processes must the requesting and supporting partners go through? Is there SoP, ToR?
- What about the visa related processes? Is the foreign affairs ministry involved?

Deployment related
- What are requested from partner/expert before deployment? Is there some screening?
- Must the deployment from partner organization be an individual or organizational decision?
- Can expertise, trained people from universities, go for outbreak response?
- What are the resource implications for organization while deploying experts?
- What resources can GOARN provide during international deployment of experts? What happens in case of in-country deployment?
- What is the duration of deployment?
- How can the deployment process of the experts from government institutions be streamlined? Any global examples?

Others
- What are the global experiences of Public Private Partnership by GOARN?
- What are the materials/ideas/information to take from this roadshow to the authority of our organization?
- How can training and capacity development on IOA be supported?
- Can students and their thesis information and analysis be supported by GOARN if the colleges are partners?

Recommendations:
- Ensure involvement of a diverse network/ participants for the roadshow; Scientists, one health partners, provincial government authorities and local NGOs.
- A platform for advocacy and sensitization to the government officials and the public health experts.
- Sensitization at the sub-national level will benefit the provincial government.
- GOARN visibility should be up to the operational level of partner organization, i.e., not limited to personal or administrative level for increased engagement
- GOARN can also have a meaningful collaboration and stronger work area with the one health
- Activities on awareness and community engagement also can be focused
- Regular meetings and coordination among national GOARN partners led by HEOC or EDCD
- Infographics for non-health actors that includes the diplomatic of international request and mobilization
- Same response isn't going to work for every outbreak/community. We can learn from other SEARO countries and can plan ahead

Review of Breakout Session

Dr Gail and Dr Victor provided the review of the breakout sessions. They appraised all the participants for their active participation in the breakout sessions. They also thanked the participants for sharing their expectations and suggesting MoHP and GOARN for moving ahead. They then responded to the queries that were raised during the breakout sessions.

Risk Based Approach in Calibrating Public Health and Social Measures (PHSM) in the Context of COVID-19

Dr P.K. Amarnath Babu, Epidemiologist, World Health Emergencies Programme, SEARO started with the lessons learnt from COVID-19 and how the restriction of movement contributed to reduction in transmission. He then explained why risk-based approach is needed followed by its foundation as IHR (2005) Article 2 purpose and scope. He provided with different classification of public health and social measures. He then proceeded with the background and outline on risk-based calibration of PHSM. He further described on assigning a situational level based on risk assessment which involves two key elements: Transmissional level and Response Capacity. He explained how the PHSM level is assessed according to risk assessment and application based on the risk level. He then presented an example of Indonesia's dashboard showing indicator values and situational level to guide PHSM implementation. He further mentioned about WHO suggested indicators and criteria to assess transmission level and response capacity. He then briefed the SEARO epidemiological patterns and thresholds of monitoring burden on health care systems in Nepal. He also described about WHO proposed guideline in adjusting PHSM and introduced about the Pandemic Influenza Severity Assessment (PISA) tool. He later mentioned about WHO interim guidance in risk-based approach to international travel and provided insight on where to obtain certain information in acute, transition and future phase. He further described about WHO public health surveillance for COVID-19, key objectives, and core principles in implementing PHSM.

On enquiry about differences between the scenario of Indonesia compared to Nepal, and learning from the first wave which led to comparatively lesser mortality in the later wave, Dr Amarnath responded that during the omicron wave, cases were higher in Nepal with regards to natural infection with increased vaccination resulting lesser number of hospitalization and severity of cases and majority of cases being reported from Kathmandu, whereas, surge in cases in Jakarta were reported from all the provinces which may have elevated the reporting system leading to increased number of cases in Indonesia.

On further enquiry about the availability of database on efficacy of interventions, Dr Amarnath mentioned that due to different countries leading on different activities, any such database is not readily available at present. When asked about acute phase having less genomic surveillance compared to transition and future phase, Dr Amarnath replied that the genomic surveillance capacity was not available in SEARO region during the initial stage, and later the capacity increased having numerous information from the genomic surveillance. Hence, in the acute phase the system had to be setup to be functioning at an adequate level marking lesser contribution in that phase.

Experience Sharing on Mobilization of Experts from GOARN (Technical and Administrative experience)

The session was presented by Dr P P Mandal (SEARO), where he shared his technical and administrative experience about available support and importance of remote support. He shared information on institutes affiliated with GOARN in South-East Asia Region, his experience on mobilizing experts from GOARN; its challenges, lessons learnt, and opportunities and overall activities conducted in the region. He also advised on the need of expanding local expert base. He also talked about expanding regular feedback meeting between CO, RO and deployees. He also made a presentation on how to produce a plan of response in early stage of emergency, utilizing remote support when suitable and growing interest from regional partners to join the partnership.

Capacity mapping of institutions

The session was facilitated by Dr Gail Carson and Dr Victor del Rio Vilas which mapped the participants' institutional capacity using the website (www.menti.com). The participants actively shared their views on their institute's capacity to contribute and support GOARN, ways to improve deployment during public health emergencies, and the organizational and technical needs to conduct integrated analyses of non-health and health data.

Experience sharing from Papua New Guinea (PNG)

Dr Anup Singh Gurung, WHO Country Office, PNG, presented on how PNG worked with the partners and GOARN in various health emergencies through his presentation "Partnerships and beyond: the Blues Band". He detailed on epidemiological curve during three phases of COVID-19. He further presented on the variants of concern and mutation of COVID-19 lineages from cases sequenced by province. He also informed that the violence during the political campaigns and the earthquake in PNG made it difficult to implement various response activities. He then informed on the decentralized outbreak management through the provincial EOCs. He stressed on having one health field epidemiology training in PNG, ground training and deployment. He also highlighted that 27 people have been deployed by GOARN in 2020 to 2021 in various fields and various partners were involved in response. Lastly, he showcased some challenges in deployment in PNG including anticipation of deployment, offshore visas, and contracts etc.

On enquiry about the one health support specification, Dr Anup replied that the University of Australia along with other partners are working towards designing one health, frontline epidemiology looking at community network for one health. On being asked about how they sorted out issues during deployment of human resources, especially who needed to be registered in the medical council, Dr Anup replied that even though the registrations were mandatory, the health department and medical council being in the same premises shortened the registration period. On being asked further if the surge capacity provided direct care, Dr Anup answered that during delta surge when the country's healthcare system was overwhelmed, Australian medical teams were directly deployed to the urban areas for the service.

Observational bias presentation

This session was initiated by Dr Victor del rio Vilas, where he expressed his view on how system is designed to down-pay uncertainty, limit research and sub optimization toward immediate objectives. His further presentation included hoarseness of apocalypse, complex decision

problem, quantification of surveillance stream and optimization of goal. His presentation also focused on the risks of ignoring uncertainty, a critical analysis of multicriteria module for the prioritization of health threat and an analysis of accuracy of COVID-19 country transmission classification. Mark S Gilthorpe, Professor of Statical Epidemiology, Obesity Institute, Leeds Beckett University, Leeds and Turing Fellow, Alan Turing Institute, London virtually presented on data science about gaining insight and extracting meaning. His presentation focused tasks like description, prediction, and causal inference. He also added that how modeling methods have already evolved to be data driven. He also briefed about how predictive model differs from causal model in outcome, aim, maximization, automation and co-efficient. Further, Peter WG Tennant, Assistant Professor of Health Data Science, University of Leeds, UK and Alan Turing Institute, UK made his virtual presentation on key challenge for casual research and the beasts of observational research. He further briefed about different bias, which include confounding bias, collider/selection bias, composite variable bias, observational bias, information bias and regression to mean bias and its importance in research.

Ms Marie made a post presentation comment about the importance of the presentation. Dr Prakash Ghimire gave his valuable opinion on usefulness of the presentation on ongoing research.

Panel Discussion

Panellists:
GOARN: Dr Gail Carson
GOARN Affiliated institution in Nepal: Prof. Dr Prakash Ghimire, Central Department of Microbiology
Non-GOARN institution in Nepal: Prof. Dr. Bharat Bahadur Khatri, Pokhara Academy of Health Sciences
WHO Nepal: Dr Allison Gocotano

Panel discussion was led by Dr Samir Kumar Adhikari, HEOC

GOARN Affiliated institution in Nepal - Central Department of Microbiology, Tribhuwan University
What are the areas in which your organization was directly involved with GOARN? Are there any GOARN activities that you are currently planning for participation? What are the advantages of being a GOARN member that you have experienced since your involvement in the network? Any challenges your organization might have faced during GOARN activities?

Central Department of Microbiology, Tribhuwan University is a partner of GOARN since 2017. We have been supporting the Ministry of Health and Population for trainings on vector borne diseases, establishment of provincial laboratory in Karnali Province during COVID-19 Pandemic. These supports are not in the name of GOARN, however, activities were similar for a GOARN partner, i.e to support the MoHP as per the request of MoHP. I will be participating as a facilitator for a regional training course being organized by GOARN for Western Pacific and South-East Asia region. Since being a member, we keep on receiving information on GOARN activities regarding request for assistance. Due to the COVID-19 pandemic the institute was not able to deploy expertise but now the institute is ready to support GOARN.

For any institute to be a partner of GOARN, the institute's objective should match with GOARN objective, there shouldn't be any conflict of interest. The institute should be able to spare 2 months for any deployment. The institute can provide training to other participants and support GOARN activities.

Non-GOARN institution in Nepal – Pokhara Academy of Health Sciences
What are the things that you identified favouring your organization to be a GOARN partner? Do you see any areas that may hinder being a partner? In what ways do you think GOARN can support to your organization and vice-versa?

Firstly, thank you for inviting us for the GOARN roadshow. This is the first roadshow with GOARN, since the national game is happening soon in Pokhara the hospital is busy with training and other planned activities. However, being the first ever roadshow I decided to come and get directly involved and know the importance of GOARN. I shall be taking the learnings/experience sharing from GOARN members to the executive committee of Pokhara Academy of Health Sciences and try to convince the institute to be part of GOARN.

WHO Nepal
How do you define the role of WHO CO for GOARN activities in Nepal? Do WHO CO have any specific focal person and specific regular activities for GOARN and how can WHO CO support to take it to the country?

The role of the Country Office is primarily on the facilitation; the requirement is communicated by the member state in terms of technical requirement and needs. The country office will be the link to regional, headquarter as well as global partnership of GOARN to facilitate transmitting the requirement and also facilitate in understanding and collecting the possible solutions. GOARN is one of the partnerships and its network that we have for public health emergencies, but it's not limited to GOARN. There is standby partnership, for instance, with different NGOs, institutions of public health at regional level and headquarters. Thus, the access to partnership and technical resource person exists and that is facilitated through the country office.

For all official communication for country office Nepal, all communication should be addressed to WHO Country Representative Nepal. Any request, just for information to know more or request for further details to make decision about GOARN membership or common area of interest can be forwarded to team lead WHE or NPO for Project and Partnerships Management (PPM). Regular programming, in terms of GOARN, needs to be done in consultation with the Ministries for shared vision, what the government wants GOARN to move forward in the future, identify priority areas that can be collaborated in, and these will be forwarded to the regional office and headquarter and the GOARN network.

GOARN
Nepal is in the phase of orientating GOARN you know from the roadshow many queries and experiences gathered. So, how it can be materialized in coming days.

It's been an inspiration visit with many learnings from the participants. Nepal has almost two-decade history of mobilizing rapid response team, the presence of female community health volunteers (FCHVs) at ground level, clinicians experienced in dealing with diseases like cholera, dengue, snake bite. These experts can be deployed in countries where the clinicians are not exposed to these diseases. We will be delighted to have you as GOARN partners and continue forward to work with the existing partners.

Closing Remarks

Representative from Gandaki Medical College thanked MoHP, WHO and GOARN for organizing this wonderful two-day event. The roadshow provided knowledge on the activities carried out by GOARN, the process of being a member of GOARN, the information on national GOARN partners and experiences of GOARN support provided in different countries.

Dr Gail Carson, Chairperson of GOARN Steering Committee expressed her gratitude to all the participants for their active participation and experience sharing throughout the event. Conducting the first ever roadshow in Nepal has been satisfying and the GOARN SCOM has learnt more through the experiences shared by health care workers during the pandemic. She has conveyed her wish to collaborate with GOARN partners of Nepal and continue working together.

Dr Partha Pratim Mandal from WHO-SEARO conveyed his pleasure of being in Nepal and thanked the Ministry of Health & Population. He gave his vote of thanks to all the participants, the regional director SEARO, Dr Samir and his team for the excellent coordination, Dr Allison and his team for all the efforts and Dr Gail for accepting their request. He assured of having similar or more expanded event or activities and developing regional partner's forum for current partners and new partners for cross cutting and cross teaching opportunities through the support from regional office.

Acting WHO Representative to Nepal Dr Allison Gocotano summed up the two-day event. He expressed gratitude on witnessing the reflections from the past, strategies of GOARN moving towards the future, the experiences of GOARN partners in Nepal, the reflections of non-GOARN partners in Nepal, the reflections from different countries within South East Asia region and outside in terms of their experiences, and finally moving towards the unique opportunity to hear about recent developments in research. Additionally, he mentioned having decisive recommendations on how to bring this partnership in future.

Dr Sangeeta Kaushal Mishra, Additional Secretary, MoHP concluded the closing session thanking WHO, Dr Gail and all distinguished participants. The last two-day Global Outbreak Alert and Response Network Roadshow must have been an interactive and fruitful. She expressed her gratitude to the panelists and participants for the breakout sessions and all the recommendations insights brought through the interactive sessions. Areas for further coordination and collaboration at national and sub-national level has been identified through this roadshow alongside requested the participating organizations to be involved in sharing expertise to support the country during outbreak and disasters. Lastly, she conveyed her sincere appreciation to experts and officials from SEARO, HQ, GOARN SCOM and WHO Nepal for their support to Ministry in organizing this roadshow and thanked her colleagues at MoHP for successful conduction of the roadshow.

Action Points

- Identify a National Focal Point for GOARN activities in Nepal
- Strengthen national and international networking of GOARN partners
  - Conduct regular meetings and coordination among national GOARN partners
  - Support addition of GOARN partners in Nepal and ensure inclusion of diverse stakeholders (ministry, health institutions, academia, one health actors, etc.)
  - Identify avenues for international meetings and experience sharing
- Expand the areas for involvement (alert and response, preparedness, research, awareness, risk communication, community engagement, etc.) and train human resources in those areas
- Facilitate the deployment of GOARN partners to and from the country for support and/or experience sharing
- Develop guidance (criteria and procedure) for sending and receiving personnel and team from GOARN partners during public health emergencies

Global Outbreak Alert and Response Network (GOARN) Roadshow

Date: 11-12 October 2022 | Venue: Hotel Himalaya, Lalitpur, (Non-Residential)

AGENDA

DAY 1 – 25 Asoj 2079 (11 October 2022), Tuesday

Time	Activities	Responsibility
0800 - 0900 hrs	Breakfast and Registration	
0900 -1000 hrs	**Opening Session** Welcome and objectives including MoHP Priorities –HCD **Opening Remarks** − WHO Representative for Nepal, Dr. Rajesh Sambhajirao Pandav − Director General, DoHS, Dr. Dipendra Raman Singh − Additional Secretary, Dr. Sangeeta Kaushal Mishra − Additional Secretary, Dr. Guna Raj Lohani − Chair, Dr. Roshan Pokharel, Secretary, MoHP	
1000-1055 hrs	General Overview on GOARN	GOARN 1. Dr Gail Carson, Chairperson of GOARN Steering Committee 2. Dr Partha Pratim Mandal (WHO-SEARO) Dr Gail to moderate the session
1055-1110 hrs	Tea / Coffee Break	

1110-1150 hrs	Presentation from GOARN members of Nepal
	   1. HEOC
	   2. NPHL
	   3. STIDH
	   4. Central Department of Microbiology, TU
		1. HEOC, Dr Samir Kumar Adhikari
		2. NPHL, Lilee Shrestha
		3. STIDH, Dr Bimal Chalise
		4. TU, Prof. Dr Prakash Ghimire

1150-1300 hrs	Operational Research Findings and Experience sharing from the Participants of Nepal 1. COVID-19 laboratory optimization (NPHL) 2. SORT-IT participants 3. General discussion	Dr Lilee Shrestha Dr Shrawan Mandal (STIDH) Dr Bijay Khanal (BPKIHS) Dr Nishant Thakur (WHO)
1300-1345 hrs	Lunch Break	
1345-1415 hrs	Experience sharing from Bangladesh, Virtual Presentation WCO Bangladesh and discussion	Dr Jorge Martinez, Dr Anthony Eshofonie
1415- 1545 hrs	1. Presentation: Introduction to the Integrated Outbreak Analytics partnership and support to countries 2. MoHP current approach to Alert and Response System 3. Facilitated discussion to identify collaboration opportunities	1. Ms Marie-Amelie Degail 2. EDCD 3. Supported by Dr Victor Del Rio Vilas
1545-1600 hrs	Tea/Coffee break and set up for break-out sessions.	
1600-1730 hrs	**Breakout sessions** Discussion on concerns and queries of existing and possible GOARN Partners	Break out Group 1: Dr Gail, Dr Subash, Dr Sudesha Break out Group 2: Dr Mandal, Dr Bigyan, Dr Irana Break out Group 3: Dr Victor, Dr Amit, Ms Sadhana Break out Group 4: Dr Marie, Dr Saugat, Dr Binay Break out Group 5: Dr Allison, Dr Gaurav, Ms Barsha

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AGENDA

DAY 2 – 26 Asoj 2079 (12 October 2022), Wednesday

Time	Activities	Responsibility
0800-0900 hrs	Breakfast and Registration	
0900-0910 hrs	Recap 1st day	GOARN
0910-1000 hrs	Review of breakout sessions	GOARN
1000-1045 hrs	Experts View: Calibration of Public Health and Social Measures Discussion	Dr Masaya Kato / Dr Amarnath (HIM Team, WHE/ SEARO)
1045-1100 hrs	Tea and Coffee Break	
1100-1115 hrs	Experience Sharing on Mobilization of Experts from GOARN Technical and Administrative experience	Dr Partha Pratim Mandal (SEARO)
1115-1145 hrs	GOARN Presentation on Inclusion of Institutions for GOARN Network Group work: Capacity mapping of own institutions (GOARN and Non GOARN)	Dr Gail Carson and Dr Victor
1145 – 1200 hrs	Experience sharing from Papua New Guinea (PNG)	Dr Anup Singh Gurung, WHO Country Office PNG
1200 – 1315 hrs	GOARN orientation • Capacity building training • Observational bias presentation	Dr Victor del Rio Vilas, Dr Mark Gilthorpe, Leeds University Dr Peter Tennant, Leeds University
1315 – 1415 hrs	Lunch Break	
1415-1530 hrs	Panel Discussion on Way Forward on GOARN in Nepal - Ministry of Health and Population - GOARN (Dr Gail) - GOARN Affiliated Institution in Nepal - Non-GOARN Institution in Nepal - WHO Nepal	Dr. Samir Kr. Adhikari
1530-1600 hrs	Summary and Way Forward	Dr Gail and Dr Mandal
1600-1700 hrs	Closing Ceremony ✓ WHO Representative for Nepal, Dr. Rajesh Sambhajirao Pandav ✓ Director General, DoHS, Dr. Dipendra Raman Singh ✓ Additional Secretary, Dr. Sangeeta Kaushal Mishra ✓ Additional Secretary, Dr. Guna Raj Lohani ✓ Dr. Roshan Pokharel, Secretary, MoHP ✓ Chair, Dev Kumari Guragain, Secretary, MoHP	

Annex-2: List of Participants

S. No.	Name	Designation	Organization
1	Dr. Roshan Pokharel	Secretary	MOHP
2	Dr. Guna Raj Lohani	Additional Secretary	MOHP
3	Dr. Sangeeta Kaushal Mishra	Additional Secretary	MOHP
4	Dr. Dipendra Raman Singh	Director General	MOHP
5	Dr. Radhika Thapaliya	CHEA	MOHP
6	Dr. Chuman Lal Das	Director	EDCD
7	Dr. Samir Kumar Adhikari	Chief HEOC	MOHP
8	Bhim Psd. Sapkota	SR.PHA	MOHP
9	Dr. Pawan Kr. Sah	Sr. Me. Su	MOHP
10	Dr. Bharat B. Khatri	Director	Pokhara Academy of Health Science
11	Dr. Rajiv Shah	H. Director	KAHS
12	Madhav Kr. Shrestha	HE Administrator	MOHP
13	Ravi K. Mishra	SPHO	MOHP
14	Lilee Shrestha	Chief Med. Technologist	NPHL
15	Dr. Roshika Shrestha	Vet. Officer	EDCD
16	Dr. Abhiyan Gautam	Dep. Health Admin	EDCD
17	Sujan Rana	Senior Veterinary Officer	DLS, MOALD
18	Dr. Luna Gongal	Vet. Officer	CVL
19	Dr. Sharmila Chapagain	Central Vet Lab	CVL
20	Dr. Deegendra Khadka	Senior Scientist	NAST
21	Neesha Rana	Faculty Head, Science, NAH	NAST
22	Prof. Dr. Prakash Ghimire	Professor	TU
23	Dr. Reshma Tuladhar	Associate Professor	Central Dept Of Microbiology, T.U
24	Dr. Komal Raj Rijal	Central Department of Microbiology	TU
25	Mohan Chandra Adhikari	Phd. Scholar	CD Math TU
26	Dr. Dinesh Kafle	Exec Director	T.U, Teaching Hospital
27	Dr. Vijay Kumar Sharma	HOD, Biochemistry	TUTH
28	Dr. Pratibha Bista	HOD, Pathology	Bir Hospital
29	Dr. Laxman Banstola	S.C Pathologist	PAHS, Pokhara
30	Dr. Kushal Bhattarai	Associate Professor (BioChemistry)	KAHS
31	Dr. Nava Raj Joshi	Me. Su	Bajhang District Hospital
32	Dr. Nagendra KC	E.D	NAIHS
33	Dr. Shrawan Ku. Mandal	M.O	STIDH
34	Dr. Jenish Neupane	M.O	STIDH Teku
35	Dr. Bimal Sharma Chalise	Chief Committee Physician	STIDH Teku

36	Prameshwar Yadav	Lab Tech	Provincial Hospital JNP
37	Dr. Sunil K. Singh	CEO/ Pathologist	Nepalgunj Medical College
38	Prof. M.N Marhatta	H. Director	NMC
39	Dr. Khilasa Pokharel	Assistant Professor	KMCTH
40	Surendra K. Madhup	Microbiologist	Dhulikhel Hospital
41	Srimani Pandey	Director Procurement	Janaki Medical College
42	Parash Adhikari	Op. Manager	CMC
43	Dr. D.R. Bhatta		Manipal College
44	Ram Daresh Pandit	PHI	MOHP
45	Prakash Chandra Ghimire	SAHW Officer	MOHP
46	Rita Thapa	HEOC/ Staff Nurse	MOHP
47	Ashish Katel	HEOC/HA	MOHP
48	Aashis Lamichhane		MOHP
49	Bharat		NPHL
50	Amit H Shrestha		NPHL
51	Dr. Allison Gocotano	AG WR	WHO CO
52	Dr. Gail Carson	GOARN	GOARN
53	Marie Amelia Degail	WHO	WHO HQ
54	Dr. P.P. Mandal	SEARO	WHO SEARO
55	Victor Del Rio	WHO	WHO HQ
56	Prof. Arun Kumar Govindakarnavar	TO (PHL)	WHO CO
57	Melissa Bingham	WHO/WHE	WHO CO
58	Dr. Binod Gupta	MPO	WHO CO
59	Dr. Subash Neupane	NPO-PPM	WHO CO
60	Dr. Palpasa Kansakar	WHO- NPO	WHO CO
61	Sudhan Gnawali	Comm Officer	WHO CO
62	Dr. Gaurav Devkota	WHO-FMO	WHO CO
63	Dr. Anant Nepal	HEIO	WHO CO
64	Dr. Amit Singh	WHE-HEIO	WHO CO
65	Dr. Bigyan Prajapati	WHO, e-health & Post COVID-19 Support Officer	WHO CO
66	Dr. Irana Joshi	HPO	WHO CO
67	Dr. Saugat Shrestha	Sort IT Officer	WHO CO
68	Dr. Sudesha Khadka	FMO	WHO CO
69	Dr. Sagar Poudel	FMO	WHO CO
70	Dr. Sabita Poudel	FMO	WHO CO
71	Dr. Rajeeb Lalchan	FMO	WHO CO
72	Dr. Mona Pradhan	FMO	WHO CO
73	Dr. Roman Ranjit	FMO	WHO CO
74	Dr. Sunil Kr. Thapa	FMO	WHO CO
75	Sadhana Paudel	IPC Officer	WHO CO
76	Bimal S. Bist	HEIO	WHO CO
77	Binay Shrestha	HEIO	WHO CO

78	Dr. Setu Verma	HPO/WHO	WHO CO
79	Dr. Pawan Upadhyaya	NVO	WHO CO
80	Dr. Nishant Thakur	WHO ARO	WHO CO
81	Dr. S R Shakya	SMO	WHO CO
82	Sanjib Gautam	IMO	WHO CO
83	Tribhuwan Bhatta	IMA	WHO CO
84	Barsha Thapa	CSA	WHO CO
85	Chhiring Y Sherpa	WHO-OSL	WHO CO
86	Pasang Tamang	WHO-OSL	WHO CO
87	Kabindra Nepal	WHO-OSL	WHO CO
88	Biraj Bhattarai	WHO-OSL	WHO CO
89	Adweeti Nepal	Health Program Manager	CARE NEPAL
90	Ajay Acharya	SRH Analyst	UNFPA
91	Bhola Ghimire	PC	NRCS
92	Dr. Sulav Deo	Technical Specialist	FHI360
93	Rajesh Khanal	Project Director	FHI360
94	Suresh Shrestha		WHO CO
95	Maharjan		WHO CO
96	Jeevan		WHO CO
97	Laxman		WHO CO
98	Krishna B. Khadka	WHO	WHO CO
99	Kiran Khadka		WHO CO
100	Khagendra Rimal		U-Turn
101	Uddab Bahadur Oli		U-Turn
102	Mahesh Maharjan		U-Turn
103	Milan Nakarmi		U-Turn
104	Leela Raj Bastola		U-Turn
105	Jiten Maharjan		U-Turn
106	Ritesh Paudel		U-Turn
107	Kumar Maharjan		U-Turn
108	Gokarna Adhikari		U-Turn
109	Sabbu Shrestha		U-Turn
110	Nirjala Rimal		U-Turn
111	Dibya Karma		U-Turn
112	Deepak Tamang		U-Turn
113	Ujowl Manadhar		U-Turn
114	Robin Sitoula		U-Turn
115	Santa Ba. Tamang		
116	Lalaji		

Annex-3: Presentations

- **Day 1 presentations**

- **Day 2 presentations**

Annex-4: Pictures

Figure 1: Group Picture on the Opening Ceremony of Global Outbreak Alert and Response Network (GOARN) Roadshow

Figure 2: Inauguration of the Roadshow by Dr. Roshan Pokhrel, Secretary, Ministry of Health and Population

Figure 3: : Dr. Roshan Pokhrel, Secretary, Ministry of Health and Population proving his opening remarks

Figure 4: Dr Sangeeta Kaushal Mishra, Additional Secretary, MoHP giving her remarks on the opening ceremony of the GOARN Roadshow

Figure 5: Dr Allison Gocotano, Ac. WHO Country Representative gave his remarks on the opening ceremony

Figure 6: Dr Partha Pratim Mandal from WHO-SEARO presenting on General Overview of GOARN

Figure 7: Dr Gail Carson, Chairperson of GOARN Steering Committee presented on the General Overview of GOARN

Figure 8: Dr Samir Kumar Adhikari, Chief, Health Emergency Operation Center (HEOC) presented as the National GOARN partner on activities carried out through HEOC

Figure 9: Diverse group of participants representing Academia, Hospitals, Health Partners and One Health Partners

Figure 10: Glimpses of interactive Breakout sessions

Figure 11: Dr. Bharat Khatri, Director Pokhara Academy of Health Sciences sharing his thoughts during the panel discussion led by Dr Samir Kumar Adhikari

Figure 12: Dignitaries from MoHP, WHO SEARO and National GOARN Partners sharing some thoughts

Figure 13: Group picture of members from MoHP, WHO Country Office Nepal, WHO SEARO and GOARN Steering Committee

Figure 14: Group picture of HEOC team