Training on Influenza Data Management and Basic Analysis

Malé, Maldives, 13–15 March 2023

Meeting Report
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>COVID-19</td>
<td>Coronavirus disease 2019</td>
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<tr>
<td>GISRS</td>
<td>Global Influenza Surveillance and Response System</td>
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<tr>
<td>IHM</td>
<td>Infectious Hazards Management</td>
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<tr>
<td>ILI</td>
<td>Influenza-Like Illness</td>
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<td>NIC</td>
<td>National Influenza Centre</td>
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<td>PIP</td>
<td>Pandemic Influenza Preparedness</td>
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<tr>
<td>SARI</td>
<td>Severe Acute Respiratory Illness</td>
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<tr>
<td>SEARO</td>
<td>Regional Office for South-East Asia</td>
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<tr>
<td>WHA</td>
<td>World Health Assembly</td>
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<tr>
<td>WHE</td>
<td>WHO’s Health Emergencies</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1. **Background**

The Global Influenza Strategy for 2019–2030 serves as a comprehensive framework for the World Health Organization (WHO), countries, and partners to address influenza holistically. It outlines tailored national programmes encompassing surveillance, disease prevention, and control, aiming to bolster seasonal prevention efforts and enhance preparedness for future pandemics.

Central to the strategy is the development of improved global tools like vaccines, antivirals, and treatments, benefiting all countries while fostering public confidence and uptake. Additionally, it emphasizes strengthening country capacities integrated within national health security planning and efforts for universal health coverage.

Influenza prevention, control, and preparedness serve as essential components for capacity-building, contributing to enhancing core capacities across the health spectrum. A country-level approach and ownership are crucial for ensuring the sustainability of national influenza programmes, serving as investments in broader health system strengthening and pandemic preparedness.

Moreover, the strategy aligns with the goals outlined in WHO's Thirteenth General Programme of Work 2019–2023, focusing on achieving universal health coverage, addressing health emergencies, and promoting healthier populations. Building on the success of the Global Influenza Surveillance and Response System (GISRS) and the Pandemic Influenza Preparedness (PIP) Framework, it integrates broader objectives for influenza prevention, control, and preparedness worldwide.

Following discussions on enhancing influenza surveillance during the World Health Assembly-75 (WHA-75), the 75th session of the Regional Committee of the WHO Regional Office for South-East Asia (WHO SEARO) endorsed strengthening influenza preparedness in the WHO’s Southeast Asia region. Consequently, the Infectious Hazards Management (IHM) unit of WHO’s Health Emergencies (WHE) programme at the WHO Regional Office for Southeast Asia (SEARO) initiated a series of joint national and international reviews of influenza surveillance in the region. The aim of this initiative is to strengthen influenza surveillance to achieve surveillance objectives, enhancing the implementation of the Global Influenza Strategy and the PIP framework in WHO’s Southeast Asia Region (SEAR).

In this context, the Democratic Republic of Timor-Leste hosted the first such review mission in the region in December 2022. The mission included influenza data management training, a review of the sentinel surveillance system, and a laboratory assessment.

Following that, a joint national and international review of influenza surveillance in the Republic of Maldives was conducted in March 2023. The general objectives of the mission were to support the Maldives in:

(a) Strengthening the national Influenza-Like Illness (ILI) and Severe Acute Respiratory Illness (SARI) surveillance network to serve as a platform for the early detection of broad respiratory pathogens of pandemic potential, including influenza.

(b) Assessing the National Influenza Laboratory at Indira Gandhi Memorial Hospital to identify areas for strengthening in order to be recognized as the National Influenza Centre by WHO.

(c) Enhancing the national capacity for influenza data management.

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1 https://apps.who.int/iris/bitstream/handle/10665/311184/9789241515320-eng.pdf?sequence=18&isAllowed=y
The review mission was successfully carried out by a team of experts headed by Dr Pushpa Ranjan Wijesinghe, Programme Area Manager - IHM at the WHE, from 5 to 9 March 2023.

Subsequently, the second phase of this mission, an influenza data management training workshop, was conducted from 13 to 15 March 2023. The recommendations from the joint national and international review of influenza surveillance in the Maldives (Annex I) underscored the relevance and importance of this data management training workshop.

2. 12th March 2023: Preparatory day

The data management training team consisted of five proficient members. Mr Tika Ram Sedai (Technical Officer - Data Management) represented WHO/SEARO and coordinated the training workshop. The other team members were from various backgrounds, each bringing expertise in public health and data management. Among them were representatives from the United States Centers for Disease Control and Prevention (CDC) in Thailand and India, alongside professionals from academia.
Below are brief introductions to the team members.

Team members of the influenza data management training
(From left to right: Mr Tika Ram Sedai, Professor Nuwan Darshana Wickramasinghe, Dr Aslesh Prabhakaran, Ms Waraporn Sakornjun, Ms Patranuch Sapchookul)

- Mr Tika Ram Sedai - Technical Officer (Data Management), WHE, WHO SEARO
- Ms Patranuch Sapchookul - Medical Research Technologist, Influenza Programme, US.CDC, Thailand
- Ms Waraporn Sakornjun - Data Manager Influenza Programme, US.CDC, Thailand
- Dr Aslesh Prabhakaran - Public Health Specialist, US.CDC, India
- Professor Nuwan Darshana Wickramasinghe - Public Health Specialist, Professor in Community Medicine, Rajarata University of Sri Lanka

The training team convened with Dr Faiha Ibrahim (National Programme Officer) and Dr Padmal De Silva (Medical Officer), both representing the WHO Country Office in Maldives, on March 12, 2023. This meeting, held a day before the commencement of the data management training workshop, aimed to provide a comprehensive briefing to the WHO country office representatives. The briefing outlined the workshop's objectives, expected outcomes, and the benefits it would bring to the country.

Mr Sedai, in his introductory remarks, highlighted the significance of the workshop in light of the recent joint national and international review of influenza surveillance in Maldives. He elucidated how the training aligned with the review's recommendations and outlined the key content areas to be covered.

Dr Ibrahim and Dr De Silva provided valuable insights into the training needs of the target group based on their respective job descriptions. They identified medical records officers, laboratory technologists, surveillance officers, and data management officers as the primary categories of participants. It was noted that all anticipated participants were proficient in English, making it feasible to conduct the entire training workshop in English.
Building on the positive feedback from the recent training workshop in Timor-Leste, the team decided to incorporate more engaging sessions, including small group activities, to enhance active participant involvement. With an anticipated participant count of approximately 30–35, the decision was made to form small groups representing different categories of public health staff involved in data handling. Additionally, the team opted for an iterative approach, updating subsequent sessions based on participant feedback received each day, mirroring the successful methodology employed in the previous workshop.

As mentioned above, the objective of the data management training was to ensure adherence to data reporting requirements for the global data sharing platform (FluMart) and to implement recommendations from the 14th and 15th bi-regional NIC meetings in 2021 and 2022. The main theoretical content areas addressed in the training workshop included:

- Introduction to Basic Data Management
- Basic Epidemiology and Data Analysis
- Data Reporting
- Baseline Calculations
- Feedback

Hence, the workshop encompassed crucial aspects of surveillance data, including its various applications, data collection methods, data entry processes, and techniques for presenting data graphically and in tabular form. Additionally, the agenda covered sessions on conducting data quality checks, calculating basic indicators, and preparing feedback bulletins.

Through a structured approach, the workshop aimed to enhance participants’ capacities in the following areas:

- Data management and reporting systems
- Building a data management system
- Database construction
- Preparing data for analysis
- Data analysis and presentation

The teaching and learning materials for each session were developed using the comprehensive content from the 'SEAR Influenza Data Management & Analysis Basic Training Reference Module' and the 'SEAR Influenza Data Management & Analysis Advanced Training Reference Module.' These modules served as foundational resources, ensuring that the training curriculum was both robust and aligned with international standards.

Following the initial briefing session, the facilitators convened for a preparatory meeting, which was instrumental in fine-tuning logistical arrangements and brainstorming effective teaching strategies tailored to the specific needs and capacities of the diverse group of participants. Ms Zulaikha Abdul Gafoor, representing the WHO country office, supported in coordinating logistical aspects for the training workshop, ensuring a smooth and seamless experience for all involved.
3. 13th March 2023: Day 1

Opening session

The influenza data management training workshop commenced on March 13, 2023, at the Meerumaa Hotel in Malé. A diverse cohort of 35 participants attended the training, representing the following main categories of health professionals involved in influenza data management (Annex II):

- Medical records officers
- Laboratory technologists
- Surveillance officers
- Data management officers

The opening session was honored by the presence of Mr Ibrahim Nishan Ahmed, Associate Public Health Specialist, whose insights set a promising tone for the workshop. Mr Ahmed extended a warm welcome to all members of the training team and participants. In his opening remarks, he reflected on the commendable achievements of the country’s health system amidst the challenges posed by the COVID-19 pandemic. He further emphasized the timeliness of conducting an influenza data management training workshop and the importance of building the capacity of relevant health staff in this area.

During this session, Dr Pushpa Ranjan Wijesinghe, Programme Area Manager - IHM at the WHE, participated remotely in addition to the on-site training team. Dr Wijesinghe, who spearheaded the team of experts involved in the joint national and international review of influenza surveillance in Maldives, provided a concise overview of the objectives and agenda for the training workshop.
Recognizing the country’s accomplishments in influenza surveillance despite resource constraints, Dr Wijesinghe commended Maldives for its achievements in this critical area. However, he also emphasized the ongoing need to strengthen data management capacities, particularly in light of the recommendations outlined in the joint review. Reaffirming the significance of the data management training workshop, Dr Wijesinghe highlighted its alignment with the review’s recommendations (Annex I). By emphasizing the workshop’s relevance to current challenges and priorities identified through the review process, Dr Wijesinghe underscored its pivotal role in further enhancing the country’s influenza surveillance capabilities.

Dr Wijesinghe outlined the objectives of the data management training workshop as follows:

- Enhance country capacity (national and subnational) in influenza data management.
- Support the Ministry of Health in achieving national ILI/SARI sentinel surveillance objectives and targets.
- Standardize influenza data collection, collation, and analysis according to national and global influenza surveillance standards.
- Establish a platform for the timely reporting of influenza data to FluNet and FluID.
- Fulfill the recommendations of the 15th bi-regional NIC meeting as agreed upon by the Member States.

Following the opening session, a pre-test was administered to assess participants’ understanding of the key content areas of the workshop. The results revealed an average knowledge score of 69.4%. To foster engagement and build rapport, an interactive activity was facilitated before the training sessions commenced.

To begin the training sessions, Mr Sedai delivered a succinct overview of the current status of influenza surveillance systems, both globally and regionally. He provided a historical perspective on the evolution of global influenza data-sharing initiatives and outlined the key components of systems such as FluID and FluNet. During his presentation, Mr Sedai highlighted the countries, territories, and areas actively participating in influenza surveillance and contributing data to FluNet and/or FluID. He also explored specific details regarding influenza data reporting within the SE Asia Region, shedding light on regional trends.
Following that, Ms Aminath Aroosha, Public Health Coordinator at the Centre for Community Health and Disease Control, provided an introduction to the public health surveillance system in Maldives on behalf of the Public Health Preparedness, Surveillance, and Epidemiology Department of the Health Protection Authority. She outlined the history and objectives of the surveillance system, relevant local and international legislation, and key documents integral to the system, such as forms, reports, and returns. Ms Aroosha also covered aspects of data collection, entry, storage, analysis, and dissemination, and discussed current issues in the surveillance system along with possible reasons for these challenges.

Following the initial introduction, Mr Sedai and Dr Prabhakaran conducted a session on the critical role of surveillance data in informing response decision-making. They elucidated how surveillance transforms raw data into actionable information and generates valuable knowledge to guide evidence-based actions. Emphasizing the significance of laboratory-assisted influenza sentinel surveillance (ILI/SARI), they highlighted its pivotal role in analyzing data, interpreting information, and applying acquired knowledge to inform response strategies effectively. Additionally, they illustrated how insights gained from surveillance data and the knowledge derived contribute to achieving national, regional and global surveillance objectives.

In the subsequent session, Ms Sapchookul led a detailed discussion on constructing a robust data management system. She outlined the step-by-step process involved in effective data management, covering essential aspects such as data collection, entry, cleaning, analysis, and reporting. Ms Sapchookul further described the critical linkage between epidemiological and laboratory data, emphasizing the synergy between these two components for comprehensive disease surveillance efforts. Additionally, she highlighted various aspects related to database management systems, including considerations for building a system, essential functions, user needs, and structure design. Furthermore, she provided an introduction to data collection forms, equipping participants with foundational knowledge needed to develop effective tools for gathering essential data.
With the foundational knowledge gained in the previous sessions, participants engaged in group exercises designed to scrutinize data collection forms for consistency and completeness. Facilitated by all members of the training team, these exercises encouraged active participation and collaboration. The familiarity of the data collection forms, which are used in influenza data management within the country, led to the successful completion of tasks by all groups. This approach not only reinforced the practical relevance of the exercises but also highlighted their applicability to the participants’ day-to-day responsibilities in influenza data management.

Ms Sakornjun led a training session on constructing databases for effective analysis. Her presentation covered key aspects of database design, including functions, structures, data types (text and numbers), and data relationships. She also addressed essential considerations for data entry, such as data standards, form controls, control validation, and data security. Additionally, Ms Sakornjun discussed double entry, validity checks, consistency across fields, and the use of data dictionaries.

Following the theoretical overview, participants took part in a hands-on activity that applied these concepts to practical scenarios. Facilitated by all members of the training team, this session provided participants with valuable experience in implementing database design principles within the context of influenza data management.

The subsequent session focused on the vital process of preparing data for analysis, with a particular emphasis on data cleaning and error logs. Dr Prabhakaran led this session, delivering a concise overview of the importance of ensuring data quality and the rationale behind conducting data cleaning procedures. During the demonstration, Dr Prabhakaran showcased various Excel functions essential for data cleaning, including sorting, identifying duplicates, and using find-and-replace features. Additionally, he provided insights into basic statistical measures. Moreover, he discussed about maintaining error logs, highlighting the significance of documenting and addressing any discrepancies or anomalies encountered during the data cleaning process. Throughout the session, participants actively engaged in practical exercises, applying the demonstrated techniques under the guidance of the training team members. This hands-on approach allowed participants to gain first hand experience in identifying and rectifying errors in their datasets, reinforcing their understanding of data cleaning principles and enhancing their analytical skills.

On the final session of Day 1, Professor Wickramasinghe conducted a session on the introduction to basic epidemiological analysis tailored for surveillance data. He discussed the core objectives of data analysis and its diverse applications in informing policy decisions, guiding programmatic actions, and supporting research. Professor Wickramasinghe emphasized the role of strategic information, illustrating how data underpins strategic decisions across various public health domains, leading to evidence-based policies and interventions.

The session introduced essential terminology related to descriptive epidemiology, supported by practical examples relevant to influenza surveillance. Professor Wickramasinghe also covered data outputs, explaining the significance of different reporting intervals—weekly, quarterly, and annually—and how each serves distinct purposes in the context of public health reporting.

At the close of Day 1, the training team members convened to reflect on the day’s proceedings and strategize for Day 2. It was encouraging to see that nearly all participants were actively and enthusiastically engaged in the exercises. The team reviewed the pre-test knowledge assessment results, which indicated a generally satisfactory understanding of the basic content areas among participants.
Building on this foundation, it was decided to deepen the training scope by incorporating additional content from the 'SEAR Influenza Data Management & Analysis Advanced Training Reference Module'. This adjustment aimed to broaden the participants' knowledge base in preparation for more complex data management and analysis tasks. Additionally, recognizing the importance of practical application in reinforcing learning outcomes, the team agreed to streamline the delivery of theoretical content and allocate more time for hands-on exercises.

4. 14th March 2023: Day 2

The second day of the training workshop commenced with a recap of the topics covered on Day 1. To facilitate this, one of the participants delivered a succinct summary of the key aspects discussed during the previous day's sessions. This participant-led reflective exercise ensured that everyone had grasped the essential content areas covered on Day 1.

The opening session of Day 2, led by Professor Wickramasinghe, focused on risk factors. This additional session was included based on the needs of the participants, as guided by the 'SEAR Influenza Data Management & Analysis Advanced Training Reference Module.' Building on the basic concepts of descriptive epidemiology covered on Day 1, this session delved into the concept of risk factors. It included definitions, basic calculations, and interpretation of measures of association such as odds ratios and relative risks. Professor Wickramasinghe illustrated these concepts with practical examples relevant to influenza surveillance.

Next, Dr Prabhakaran conducted a session on automated data analysis, focusing on its various applications and practical implementation. This session covered the uses of automated data analysis, including the process and preparation steps, and discussed relevant software, considerations, and basic requirements for developing automated data analysis systems. Practical exercises involved using pivot tables and generating automated graphs/reports, offering participants hands-on experience with these techniques. With guidance from the training team, participants engaged enthusiastically with the exercises, successfully following demonstrations and independently executing tasks.

Ms Sapchookul led an engaging session on descriptive epidemiology and routine analyses, focusing on summarizing data by various categories, such as groups, types, and locations. This session built on the theoretical concepts introduced on Day 1, covering fundamental aspects like calculating proportions, generating graphs, and summarizing data across different groupings to enhance understanding of descriptive epidemiology basics.

Ms Sapchookul utilized a range of Excel demonstrations, providing practical examples and step-by-step guidance for performing these analyses. The hands-on approach enabled participants to deepen their grasp of the concepts discussed. Following the theoretical overview, participants took part in an extended hands-on session using Excel, where they applied the techniques demonstrated, reinforcing their learning through practical application.
Group presentations by participants

The final session of the second day, led by Professor Wickramasinghe, concentrated on the critical task of developing Standard Operating Procedures (SOPs) for data management. He defined SOPs, discussed their purposes and benefits, and emphasized their importance in maintaining consistency, efficiency, and quality in data management processes. Professor Wickramasinghe outlined various formats for developing SOPs, equipping participants with the knowledge to tailor these procedures to their organizations' specific needs.

The session also introduced process mapping, a valuable tool for visualizing and documenting workflow processes. Following the presentation, participants engaged in a group exercise to develop an SOP for influenza sentinel surveillance (ILI/SARI) data management, quality assurance, and data control. Each group collaborated to draft their SOP using the knowledge and skills acquired throughout the workshop. They then presented their SOPs for peer review and feedback, fostering critical thinking and collaboration as participants provided constructive critiques to refine and improve each other's SOPs.

The second day concluded with a reflective session led by the training team members. They reviewed the day's activities and strategized for the final day of the workshop. The team observed that participants had effectively grasped fundamental concepts and demonstrated competence in completing exercises with minimal assistance. Participants were noted for their ability to connect theoretical concepts with real-world practice, as evidenced by insightful questions and practical examples shared during discussions.

Based on these observations, the training team decided to tailor the content of Day 3 to further enhance participants' ability to apply theoretical knowledge to practical scenarios. Exercises were adapted to encourage participants to explore how the concepts learned could be effectively utilized in their everyday work environments.
5. **15th March 2023: Day 3**

Similar to Day 2, one of the participants recapped the key points covered during the previous day’s sessions. The debriefing highlighted the diverse topics explored, including risk factors, automated data analysis, descriptive epidemiology, and the development of SOPs for data management.

Building upon the foundation laid in the previous sessions, Professor Wickramasinghe conducted a session on the concepts of feedback and information sharing. He emphasized the importance of these principles within the realm of influenza data management. Professor Wickramasinghe outlined the role of feedback as a mechanism for continuous improvement, noting its value in providing insights, identifying areas for enhancement, and promoting accountability within the surveillance system. He illustrated the practical application of feedback and information sharing in disease surveillance with examples from global and regional contexts.

Following that session, Dr Prabhakaran introduced the basics of baselines, emphasizing their role as reference points for monitoring and evaluating changes in data over time. He explained the concept of baselines, their importance, and the types of data used to establish them. The session also covered the fundamental steps involved in calculating baselines, including the average epidemic curve, seasonal thresholds, and alert thresholds. Although this topic was advanced, it was included to offer participants a brief overview, given their satisfactory understanding of other data management topics covered throughout the workshop. After the informative session on baselines, participants engaged in a hands-on demonstration designed to solidify their understanding. Led by Dr Prabhakaran and supported by other facilitators, this interactive session provided participants with a practical opportunity to apply the theoretical knowledge gained.

With the conclusion of this session, a post-test was administered to assess the effectiveness of the training and measure the knowledge gained by participants. The post-test used the same questionnaire as the pre-test. The results indicated a notable increase in participants' knowledge, with a mean score of 77.9%. This substantial improvement affirmed the effectiveness of hands-on learning experiences, interactive sessions, and expert-led presentations in facilitating successful knowledge transfer among participants.

Following the completion of the training sessions for all workshop participants, an additional session was convened specifically for the members of the Epi/NIC data team. Led by Mr Sedai, this session addressed a critical issue concerning influenza data submission to the Global FluMart (FluNet and FluID).

Mr Sedai began by introducing the FluMart platform, emphasizing its essential role in facilitating the exchange, harmonization, consolidation, and storage of influenza data on a global scale. He explained how FluMart acts as a centralized platform that streamlines data management processes and enhances interoperability among diverse data sources.

A key feature highlighted by Mr Sedai was FluMart’s flexibility in accommodating various data formats. He detailed how the platform allows users to upload data files in custom formats, which are then automatically transformed into standardized data. This feature simplifies the data submission process and ensures consistency and uniformity in data representation across different sources.

Furthermore, Mr Sedai clarified that FluMart is not intended to replace existing applications like FluNet and FluID. Instead, it complements these platforms by integrating data from multiple sources into a unified repository. This integration enables stakeholders to access comprehensive datasets and facilitates integrated analysis and reporting, thereby improving the efficiency and effectiveness of global influenza surveillance efforts.
6. **Closing session**

The closing session of the workshop was honored by the presence of distinguished guests, Dr Nazneen Anwar, WHO Representative to the Maldives, and Dr Ahmed Ashraf, Director-General of Health Services.

In his address, Dr Ashraf expressed heartfelt appreciation to the training team members for their invaluable contribution to the impactful training workshop on influenza data management and basic analysis. He also commended the dedication and commitment demonstrated by the workshop participants, acknowledging their active participation and engagement throughout the sessions. Dr Ashraf emphasized the importance of applying the updated knowledge and enhanced skills acquired during the training to improve influenza surveillance and response efforts in the Maldives. Dr Anwar expressed her heartfelt appreciation to the international team for their invaluable contribution to the successful completion of the influenza data management and basic analysis training workshop. She mentioned the pivotal role of collaboration between the WHO and the Maldives' health sector in navigating the challenges and advancing public health initiatives during the COVID-19 pandemic. She emphasized the importance of such collaborative efforts in building capacity and strengthening health systems, especially in the face of evolving public health threats.

As a token of recognition for their active participation and dedication, all workshop participants were awarded a certificate of attendance.

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7. **16th March 2023: Debriefing sessions**

After the successful completion of the intensive three-day training workshop, the training team met with Dr Nazneen Anwar, Dr Faiha Ibrahim, and Dr Padmal De Silva at the WHO Country Office in the Maldives on 16 March 2023 for a debriefing session. The primary objective of this session was to summarize the workshop outcomes and discuss future activities to sustain and strengthen influenza data management in the country.
Mr Sedai, who coordinated the workshop, provided a comprehensive summary of the activities conducted throughout the duration of the training workshop. The entire training team unanimously expressed their satisfaction with the workshop’s outcomes, collectively agreeing that it was very successful. One of the most notable observations highlighted by the training team was the high level of engagement demonstrated by almost all participants throughout the training sessions. This active participation reflected the participants’ keen interest in the topics discussed. It was evident to the training team that the participants had not only grasped but also internalized the core concepts covered in the workshop. Their ability to appropriately apply theoretical knowledge in practical scenarios was particularly noteworthy. These reflections were further substantiated by the group presentations delivered by participants, which showcased their understanding and proficiency in applying the acquired knowledge. Additionally, an objective assessment conducted through pre- and post-test evaluations further confirmed the observations made by the training team.

Further, Mr Sedai discussed the pivotal role of the WHO Country Office in supporting and facilitating the Ministry of Health in influenza data management initiatives. He emphasized the critical need for ongoing capacity-building efforts in this area and advocated for the organization of subsequent workshops dedicated to enhancing the skills and knowledge of health staff. Building on the foundational training provided during the workshop, the training team emphasized the importance of identifying and addressing any remaining training gaps and specific needs within the health workforce.

The need for a targeted approach, wherein training initiatives are tailored to address the specific requirements and challenges faced by health personnel in the field of influenza data management, was stressed. Furthermore, Mr Sedai expressed a readiness to provide technical expertise and support to the WHO Country Office from the influenza team at WHO/SEARO. This collaborative approach would ensure that the subsequent capacity-building workshops are designed and delivered in alignment with international guidelines and tailored to meet the unique needs of the Maldives’ health sector.

During the debriefing session, an additional point of emphasis was placed on the consistent and timely data reporting to FluID and FluNet. This reiterated the significance of maintaining a robust and reliable surveillance system for influenza, which relies heavily on accurate and up-to-date data. Furthermore, it was reiterated that the WHO stands ready to provide expert technical advice and support as needed, ensuring that any uncertainties or challenges related to data reporting are addressed promptly and effectively. This commitment underscores the importance of collaboration and ongoing support to sustain and enhance influenza data management practices in the Maldives.

After the productive debriefing session, Dr Anwar, Dr Ibrahim, and Dr Silva expressed their sincere appreciation for the invaluable technical guidance and support provided by the training team members throughout the workshop. In a gesture of gratitude and recognition, all training team members were presented with tokens of appreciation for their successful implementation of the workshop. This acknowledgment not only highlighted the significance of the training but also reinforced the collaborative efforts between the WHO and the Maldives’ health sector in enhancing influenza data management capabilities.
Recommendations of the joint national and international review of influenza surveillance, Maldives

- Formulate surveillance objective(s) in the current context and update National ILI and SARI sentinel surveillance guideline
- Operationalization through contextualized protocol and Standard Operating Procedures (SOPs)
- Integration of monitoring of SARS-CoV-2 by strengthening the national ILI and SARI sentinel surveillance system (specially for transition/post pandemic period)
- Consider a specific plan for ownership (as a part of the overall national surveillance system) and sustainability of ILI/SARI surveillance including financial sustainability; this plan could be supported by partner agencies
- Consider utilization of the existing data management system (e.g. HIS, Aasandha)
- Ensure collection of (a) minimum epidemiological data: ILI/ARI and SARI (as per WHO recommendations) and (b) denominator data by the sentinel sites (total OPD visits and total in-patient admissions) for calculation of rates for meaningful interpretation
- Set feasible target for recruiting samples segregated by ILI/ARI and SARI (and sites) guided by the WHO recommendations (global/regional)
- Establish (a) surveillance monitoring mechanisms at reasonable intervals and (b) annual evaluations to improve the quality of sentinel surveillance with clear indicators and targets
- Consider a designated surveillance team for implementation, monitoring and evaluation to ensure surveillance is being performed in a standardized manner at the sentinel sites
- Establish a feedback system with summary national and site wise data being reported to all sites with their performance status based on performance indicators as a mechanism of stimulating better performance
- Consider regular dissemination of the surveillance aggregated report (including site wise segregation) through a publicly available platform
- Consider strengthening use of Information, Education and Communication (IEC) materials both for the community and service providers
- Consider organizing orientation programme for ILI and SARI surveillance for sentinel sites
- Establish a regular and systematic training/capacity enhancement opportunities for all those involved with the surveillance system
- Ensure regular reporting of ILI and SARI epidemiological data to WHO global data sharing platform (FluID)
- Consider SARS-CoV-2 monitoring through the ILI SARI surveillance system to the WHO global data sharing platform (FluMart)
Annex II:

List of participants

Ramsha Abdul Sattar
Aminath Guraisha
Fathimath Fauza Ibrahim
Aminath Aroosha
Aishath Hareera
Fathimath Ana
Ahmeem Farish
Ahmed Shinan
Adam Rifau
Abdulla Muaaz Adam
Fathimath Shabana
Aishath Farzana
Fathimath Thasleema
Aishath Jeena
Fathimath Nilsana
Mariyam leela
Ahmed Aafee Azaad
Abdul Hameed

Mariyam Waheeda
Mohamed Hamzath
Fathimath Rasheeda
Aishath Shuhuda
Soafy Mohamed
Aminath Shazleena Abdul Rahman
Fathimath Ibrahim Manik
Aminath Azeema
Hussain Zuhoor
Aminath Raufa
Aminath Shifna
Mariyam Ifa
Al Dominic Nadal
Hussain Zuhoor
Fathimath Izza Mafaz Shareef
Gulisthan Easa
Mariyam Murushidha
# Annex III:

## Agenda

### Day 1 – Introduction to Basic Data Management

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter(s)</th>
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<td>08.30–09.00</td>
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| 09.00–09.20 | Opening remarks  
Welcome | Ministry of Health (MOH), Maldives                                      |
| 09.20–09.40 | Objectives and workshop plan                                            | Pushpa Wijesinghe                                |
| 09.40–10.00 | Pretest (Participants expectation)                                       |                                                  |
| 10.15–10.45 | Influenza surveillance system:  
Global & Regional Update (15 min)  
National data management & reporting system (15 min) | Tika Ram Sedai MOH |
| 10.45–11.00 | Use of surveillance data for response decision making                   | Pushpa Wijesinghe                                |
| 11.00–11.20 | Using data for evaluating ILI/SARI surveillance systems                 | Aslesh Prabhakaran                               |
| 11.20–11.50 | Building a data management system  
• How data will be used; user needs  
• Designing best storage structure  
• Data collection forms as guides | Patranuch Sapchookul                           |
| 11.50–12.30 | Exercises (review of data collection form, consistency and completeness)  
Discussion (10 min)                                           | All facilitators                                  |
| 13.30–14.30 | Database construction: Designing a system for easy analysis  
• Types of data (text, number)  
• Structure of a table: columns, rows & why that matters for analysis  
• Linked tables, setting up relationships, etc.  
• Double entry; Validity checks; Data consistency across fields  
• Data dictionary | Waraporn Sakornjun                                      |
| 14.30–16.00 | Exercises                                                               | All facilitators                                  |
| 16.10–16.45 | Demo Preparing data for analysis  
• Data cleaning  
• Error logs | Aslesh Prabhakaran                                          |
| 16.45–17.15 | Introduction to basic epidemiological analysis for surveillance data  
• Objectives for analysis, use of data, basics of descriptive analysis  
• Intro to using data to convey information  
• Overview of routine analysis and reporting indicators  
• Risk factors | Nuwan Wickramasinghe                                 |
| 17.15–17.30 | Discussion and wrap up of the day                                        |                                                  |
Day 2: Basics of Epidemiology, Data Analysis and Reporting

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>08.30–09.00</td>
<td>Debriefing - Day 1/Set up Day 2</td>
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<tr>
<td>09.30–10.15</td>
<td>Introduction to basic epidemiological analysis for surveillance data</td>
<td>Nuwan Wickramasinghe</td>
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<tr>
<td>10.30–12.30</td>
<td>Automated data analysis</td>
<td>Aslesh Prabhakaran</td>
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<td>Exercise of Pivot Tables, Automated graphs/report, etc.</td>
<td>(All facilitators)</td>
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<tr>
<td>13.30–15.00</td>
<td>Calculating proportions, producing graphs, summarizing data by groups, descriptive epidemiology. Demo in Excel</td>
<td>Patranuch Sapchookul</td>
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<tr>
<td>15.15–16.30</td>
<td>Exercise in Excel</td>
<td>All facilitators</td>
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<tr>
<td>16.30–17.00</td>
<td>Data management SOP, Feedback &amp; bulletin</td>
<td>Nuwan Wickramasinghe</td>
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<tr>
<td>17.00–17.15</td>
<td>Discussions and wrap up of the day</td>
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Day 3: Baselines, Feedback and Reporting

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<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>08.30–09.00</td>
<td>Debriefing - Day 2/Set up Day 3</td>
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</tr>
<tr>
<td>09.00–09.30</td>
<td>Data management SOP, Feedback &amp; bulletin</td>
<td>Nuwan Wickramasinghe</td>
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<tr>
<td>09.30–10.00</td>
<td>Introduction to baselines; significance &amp; interpretation</td>
<td>Aslesh Prabhakaran</td>
</tr>
<tr>
<td>10.15–10.45</td>
<td>Demo: Simple baseline calculation</td>
<td>Aslesh Prabhakaran, Nuwan Wickramasinghe</td>
</tr>
<tr>
<td>10.45–12.15</td>
<td>Exercises (in Excel)</td>
<td>All facilitators</td>
</tr>
<tr>
<td>12.15–12.30</td>
<td>Post-test and evaluation</td>
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<tr>
<td>12.30–13.00</td>
<td>Discussions and closing</td>
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</tr>
<tr>
<td>14.00–14.30</td>
<td>Influenza data submission to Global FluMart (FluNet &amp; FluID)</td>
<td>Tika Ram Sedai</td>
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<tr>
<td>14.30–17.00</td>
<td>Work with national Epi/NIC data team:</td>
<td>All facilitators</td>
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<td>- Baseline calculation and analysis outputs of key indicators</td>
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<td>- ILI/SARI (FluID) and Lab (FluNet); FluMart template and submission procedures</td>
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<td>- Discussions</td>
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<td>De-briefing to HPA/MOH</td>
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In alignment with the Global Influenza Strategy (2019–2030) and the recommendations of the 14th Bi-Regional meeting of surveillance and National Influenza Centres in WHO South-East Asia and Western Pacific regions, Maldives conducted an influenza data management workshop with WHO and the US CDC Thailand and India offices from the 13 to 15 of March 2023.

To enhance the effectiveness of building stronger country capacities in data management and data reporting for evidence-based decision-making, the workshop was held immediately after the Joint National and International review of Influenza-like Illness (ILI) and Severe Acute Respiratory Infections (SARI) sentinel surveillance in Maldives.

The objective of the data management component of the mission was to enhance the national capacity for influenza data management. This report presents in detail the objectives, methodology, and content of the training, the debriefing to key stakeholders including the Ministry of Health, and lists the recommendations of the joint surveillance review for operationalizing data quality improvement and data management capacity.

The document will help the national programme to continue with capacity-building in data management and also assist WHO, partners, and donors in planning technical and financial support to countries to sustain progress and bolster areas that need further strengthening.