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Ministry of Health & Family Welfare
Government of India

Report of the National Workshop on Reprioritization of Diseases

Integrated Disease Surveillance Programme

December 2016

World Health Organization
COUNTRY OFFICE FOR India


FIRE
EXIT

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Integrated Disease Surveillance Programme

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Acknowledgements

The report was drafted by Dr Pavana Murthy, Dr Giridhara Babu, Mr Himanshu Sekhar Pradhan, Dr Ramesh Krishnamurthy and further peer reviewed by the experts who participated in the workshop.

Contents

Abbreviations

AES	acute encephalitis syndrome
AFI	acute febrile illness
ANM	auxillary nurse midwife
ARI	acute respiratory infection
CCHF	Crimean-Congo haemorrhagic fever
CDC India	US Centers for Disease Control and Prevention – India Country Office
CHC	community health centre
CSU	central surveillance unit
DDG	Deputy Director General
DGHS	Director General of Health Services
DHS	Director Health Services
DSU	district surveillance unit
FA	factor analysis
GHSA	Global Health Security Agenda
HIS	Health Information System
HO	Health Officer
ICMR	Indian Council of Medical Research
ICT	information and communication technology
IDSP	Integrated Disease Surveillance Project
IHR	International Health Regulations
ILI	influenza-like illness
IT	information technology
JE	Japanese encephalitis
JMM	Joint Monitoring Mission
JS	Joint Secretary
KFD	Kyasanur Forest Disease

L Form	Laboratory Surveillance Form
MCI	Medical Council of India
MoHFW	Ministry of Health & Family Welfare
NCD	noncommunicable disease
NCDC	National Centre for Disease Control
NHM	National Health Mission
NPCDCS	National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Disease and Stroke
NPO	National Programme Officer
NVBDCP	National Vector Borne Disease Control Programme
P Form	Presumptive Surveillance Form
PHFI	Public Health Foundation of India
RNTCP	Revised National Tuberculosis Control Programme
S Form	Syndromic Surveillance Form
SARS	severe acute respiratory syndrome
SHOC	Strategic Health Operations Centre
SSU	state surveillance unit
WCO India	WHO Country Office for India
WHO	World Health Organization
WR	WHO Representative

Executive summary

In keeping with one of the key recommendations of the Joint Monitoring Mission (JMM) of 2015, the Integrated Disease Surveillance Project (IDSP) administered a reprioritization exercise to review the relevance and importance of all diseases and conditions under IDSP. JMM strongly recommended the redesign of the IDSP surveillance system with reprioritization of the diseases/disease groups. This had to be guided by assessing the need for collecting more epidemiological data for action, especially for the priority diseases, and redefining the required surveillance deliverables.

The purpose of the reprioritization exercise was to ensure the best use of limited human and financial resources for disease surveillance, taking into account changing demographic and epidemiological conditions. The exercise was essential to ensure that both planning and resource allocation were rational, explicit and transparent.

The objectives of the exercise were to:

- Review the relevance of the list of priority diseases for surveillance under IDSP;
- Strengthen IDSP in its resource allocation for disease surveillance and response; and
- Focus on the diseases that affect the majority of the population and have more severity and adverse sequels.

The reprioritization exercise was organized in a systematic manner. Firstly, an initial list of 46 diseases that included zoonotic, food borne, water borne, vector borne and vaccine preventable diseases were considered based on key parameters such as disease burden, severity, epidemic potential, health gain, socioeconomic impact and international regulations. Subsequently, a suggestive list of 32 diseases was considered in consultation with the National Centre for Disease Control (NCDC).

The next step was to assemble an expert group consisting of disease-specific specialists, statisticians, laboratory specialists and public health professionals at all levels and from different surveillance and control programmes to include representation from the Centre, states, academia, World Health Organization (WHO), US Centers for Disease Control and Prevention (CDC) and other health and development partners through a workshop. This workshop was organized by WHO in collaboration with NCDC, Ministry of Health & Family Welfare (MoHFW), Government of India (GoI) and CDC on 6–7 December 2016 in New Delhi.

During the workshop, the experts were divided into eight groups and were provided with a disease-scoring sheet. Each group was provided with a list of 32 diseases and basic disease profile for each disease. A group chair and rapporteur were identified for each group and they facilitated scoring of all the 32 diseases. The scoring for each disease was marked on the scoring sheet through a consensus process within each group. The scoring sheet contained 11 scoring dimensions to prioritize each disease. The scoring dimensions included present burden of diseases, severity, mortality, epidemic potential, socioeconomic impact, preventability, treatability, relevance to IHR, international resolutions, relevance to regional control and relevance to control within the state.

At the end of the reprioritization exercise, the scores from all groups for all diseases were weighed and averaged to create a prioritized diseases list. The prioritized diseases list was

further validated by statistical experts and scores were further analysed using factor analysis, which resulted in identification of 32 diseases/conditions reprioritized in a rank order of importance (disease list is reflected in the report). Apart from the 32 diseases, there was consensus among groups to also include human rabies into the list.

Updating IDSP's Integrated Disease Surveillance, and best practices from the Bruhat Bengaluru Mahanagara Palika (BBMP) experiences in software for IDSP were discussed during the meeting.

Key recommendations

Following are the key recommendations of the workshop:

- As a first step, following this prioritization exercise, IDSP needs to update the following components for all 32 prioritized diseases: (i) case definitions; (ii) type of surveillance to be implemented for each of the prioritized diseases; (iii) minimum data sets and data collection standards for each prioritized disease. It also needs to make all relevant changes to the reporting forms to reflect the amendments.
- An expert consultation needs to be organized for updating data capturing tools (S, P and L Forms) and minimum data sets for the diseases including finalization of the formats for surveillance.
- IDSP to advise all state surveillance units (SSUs) to conduct similar reprioritization exercises to include diseases of importance at the state level.
- IDSP's information and communication technology (ICT) platform and information management needs to be upgraded to conform to the current standards. A comprehensive ICT and Information Management Master Plan Document needs to be developed and maintained.
- A comprehensive Operational Document must be developed to implement the aforementioned Master Plan with clearly articulated timelines, roles and responsibilities.
- Updated Data-sharing agreements need to be put in place between various parties, including states, local governments and the private sector
- As part of a national integrated disease surveillance effort, IDSP needs to identify all relevant disease surveillance aggregate data from specialized disease surveillance programmes for potential inclusion under a common integrated disease surveillance "dash board" that will be administered by IDSP.

1 Background

Disease surveillance is a critical component of the health system. A functional surveillance system not only provides the information for action on priority communicable diseases, but also plays a crucial role in public health decision-making. Surveillance systems are usually developed over time, with new diseases being added and a few being removed. A national surveillance system should cover the diseases of public health importance that affect the majority of the population with severe and adverse consequences.

Prioritization of diseases is an integral, periodic process to strengthen a national surveillance system for communicable diseases and can be used as an aid in making decisions about resource allocation. In many surveillance systems, data are collected which never result in public health action, and new threats are considered insufficiently or not at all. As public health risks change over time, prioritization of diseases for surveillance should be reviewed periodically.

The Integrated Disease Surveillance Programme (IDSP) in India was launched in 2004 to detect and respond to disease outbreaks. It became a National Programme during the Twelfth Five-Year Plan and functions under the umbrella of the National Health Mission. The first disease prioritization for IDSP was done in 2004 and subsequently in 2009. Currently, 18 disease conditions are being monitored under IDSP. In 2015, the Joint Monitoring Mission (JMM) for IDSP strongly recommended redesign of the IDSP surveillance system with reprioritization of the diseases/disease groups. In the recent past, India has recognized the geographic expansion of diseases such as scrub typhus, Crimean-Congo haemorrhagic fever (CCHF) and Japanese encephalitis (JE). Hence, there is a need to relook at disease prioritization and investments for enhancing the surveillance mechanisms.

Considering all these aspects for strengthening the IDSP, World Health Organization Country Office for India (WCO India) jointly with National Centre for Disease Control (NCDC) of the Ministry of Health and Family Welfare (MoHFW), US Centers for Disease Control and Prevention India Country Office (CDC India) initiated the process for reprioritization of diseases under IDSP. As a preparatory process for the disease reprioritization exercise, a series of activities as detailed below were undertaken ahead of this exercise. The prioritizing of diseases for surveillance involved complex value judgments, such as the relative importance of early detection of a highly infectious disease compared with monitoring endemic, common, but less severe diseases. Hence, the methodology was aimed at a process that would be transparent and acceptable to most stakeholders and implementers of the surveillance system. It attempted to combine quantifiable epidemiological, clinical and financial data with interpretive assessments based on consensus views of informed participants.

Ideally, prioritization should be based on scientific evidence. However, such evidence is frequently unavailable and there is a particular deficiency in data on the effectiveness and outcomes of surveillance systems. As the situations involved insufficient, inadequate, contradictory or even non-existent scientific information, consensus methods such as the Delphi method were considered a valid approach, which provided a structure and process to harness the insight of appropriate experts to enable decisions to be made avoiding personal and political influence and allowing individuals to change their opinion in light of the group response.

1.1 Prioritization process

This prioritization process consisted of the following steps:

- Formulation of a list of diseases and criteria to include/exclude diseases for surveillance
- Formulation of a scoring sheet for prioritizing the diseases against the criteria
- Discussion of the proposed criteria and disease list by participants in the prioritization exercise
- Expression of averaged score of the subject matter experts (based on individual opinions of participants) through scoring the diseases against the criteria
- Collation and summary (using statistical parameters) of the scoring, and assessment of agreement
- Feedback of the individual and group rankings to the participants and discussion of the results
- Weighting and revision of the prioritized list of diseases
- Sharing the finalized list of prioritized diseases.

1.2 Formation of the working group

A working group was formed with representation from MoHFW, NCDC, IDSP, Public Health Foundation of India (PHFI) and medical colleges. WHO guided the disease reprioritization process. A consultative process with IDSP ensured finalization of case definition of diseases. There were two technical consultations held for finalization of cases definitions of various diseases (likely to be considered for inclusion under IDSP) including emerging and remerging diseases under various categories such as zoonotic, vaccine preventable, vector borne, food and water borne, as well as diseases covered under International Health Regulation (IHR).

Considering different parameters such as disease burden, epidemic potential, health gain, socioeconomic impact, etc. a list of 46 diseases was prepared. Further, through a consultative process with NCDC, a suggestive list of 32 diseases was generated for consideration under the disease prioritization exercise. However, the experts were provided the flexibility to include or exclude diseases during the disease reprioritization exercise. Disease information sheets were prepared and used during the prioritization exercise to assist the experts.

Formation of experts: Experts from the various fields were assembled consisting of disease specific experts, statisticians, IT, laboratory and public health professionals. Over 80 subject matter experts representing states, the Centre, academia, WHO, CDC and other health and development partners participated in the workshop. The list of participants is at Annex 2.

2 Proceedings of the workshop – Day 1

The two-day National Workshop on Reprioritization of Diseases was held on on 6–7 December 2016 to reprioritize the diseases/disease groups under IDSP and standardize case data elements, data collection methods and information technology (IT) tools.

2.1 Inauguration

In his welcome address, Dr S. Venkatesh, Director, NCDC highlighted the achievements and initiatives taken by NCDC and IDSP over the years. He said that the disease reprioritization workshop would help in making decisions for resource allocation under IDSP as well as in effective execution of the programme and standardization of data elements, data collection methods and IT tools.

In his address, Dr A.K. Gadpayle, Additional Director General of Health Services (Addl DGHS), MoHFW emphasized the need for reprioritization of diseases under surveillance in IDSP in view of the recent threats posed due to emerging and re-emerging of diseases.

Speaking on the occasion, Mr Lav Aggarwal, Joint Secretary (JS), MoHFW stressed that IDSP should be the mother of all monitoring mechanisms for various health programmes and that there is a need for renewed focus on IDSP. He stressed that appropriate strategies needed to be developed for capturing disease data from urban areas as well as from the private sector. He emphasized the use of latest IT tools to make meaningful interventions from the surveillance data collected in the field.

Dr Henk Bekedam, WHO Representative (WR) to India emphasized the need to equip India's surveillance system well in view of emerging threats like severe acute respiratory syndrome (SARS), Ebola, Zika, etc. Further, he emphasized the need for strengthening the laboratory component of IDSP and use of IT for real-time web-based reporting, collaboration of the health department with the agriculture sector for zoonotic diseases and strengthening of public health cadres for enhancing the surveillance system in India.

Dr B.D. Athani, Special DGHS, MoHFW outlined establishing linkages with other communicable disease programmes for accessing the data from them and the need to establish linkages with the private sector for receiving disease related data.

Reflecting MoHFW's commitment to strengthening the IDSP, Professor (Dr) Jagdish Prasad, DGHS, MoHFW emphasized the need to urgently fill the critical vacant positions of epidemiologists, microbiologists and entomologists under IDSP and train them for strengthening the surveillance programme. He further emphasized on strengthening IDSP laboratories, its infrastructure, surveillance as well as augmenting the implementing of IDSP.

2.2 Session 1: Trends in surveillance systems and current status of IDSP

Session Chair : Dr B.D. Athani, Special DGHS, MoHFW

Co-chairs : Dr Gadpayle, Addl. DGHS, MoHFW

Dr K.K. Aggarwal, President-elect, Indian Medical Association

Four presentations were made in this session.

- Key functions, structure and data management aspects of IDSP were covered by Dr Pradeep Khasnobis, National Programme Officer (NPO), IDSP, NCDC. Achievements as well as constraints of IDSP were highlighted. Areas that need focused interventions were: monitoring of IDSP by State Health Secretary/Mission Director, National Health Mission (NHM)/Director Health Services (DHS); enhancing coordination between DHS and Director Medical Education; recording of diagnosis by doctors in the OPD register in major hospitals; participation of the private sector in data reporting; functioning of identified district public

health laboratories under IDSP; strengthening urban surveillance; sending samples to the laboratory in all outbreaks; and convergence with other national health programmes and ICMR.

- Dr Sameer Sodha, CDC Resident Advisor, Epidemic Intelligence Service Programme, India highlighted two laboratory-based surveillance projects with the Global Health Security Agenda (GHSA) – acute febrile illness (AFI) surveillance led by Manipal Centre for Virus Research and acute encephalitis syndrome (AES) surveillance led by National Institute of Mental Health and Neurosciences. A number of recommendations were made, such as use of laboratory-based surveillance to monitor trends, detect outbreaks and guide laboratory strengthening; evaluate rapid diagnostic tests for leading pathogens for potential sub-district/district level use, unifying data management of surveillance systems for the National Vector Borne Disease Control Programme (NVBDCP), IDSP, and Child Health Division; ensuring same case definitions (e.g. meningitis versus AES) and encouraging increased laboratory testing at district level.
- Dr Vason Pinyowiwat, Technical Officer, WHO Regional Office for South-East Asia highlighted surveillance models of Sri Lanka and Thailand, describing the organization of the surveillance system, disease notification system, data collection and reporting mechanisms of Sri Lanka as well as organization of surveillance system, list of diseases under surveillance and morbidity notification of Thailand.
- Dr Nishant Kumar, Assistant Director, IDSP, NCDC brought out that initially 13 core diseases and conditions were under surveillance in IDSP. The disease list was revised in 2009, giving more focus on outbreak-prone diseases with 18 disease conditions. Evolution of data reporting formats as well as data management aspects of IDSP were highlighted in his presentation. Preparatory activities of prioritization exercises such as two consultations were held for finalization of case definitions of diseases under various categories such as zoonotic, vaccine preventable, vector borne, food and water borne.
- Dr Sanket Vasant Kulkarni, Assistant Director, IDSP, NCDC discussed state specific diseases being reported under IDSP. Additional diseases under consideration for IDSP such as scrub typhus, anthrax, Kyasanur Forest Disease (KFD), CCHF and mumps were discussed.
- Dr K. K. Aggarwal, President-elect, Indian Medical Association, suggested to make use of Medical Council of India's (MCI) regulations, which mandate reporting of diseases by registered medical practitioners. He stressed that Revised National Tuberculosis Control Programme (RNTCP)'s methods for enhancing reporting from the private sector should be adapted for notification/reporting of other diseases.

2.3 Sessions 2 and 3: Disease prioritization

Session Chair : Dr S. Venkatesh, Director, NCDC

Co-chair : Dr Ramesh Krishnamurthy, Senior Advisor, Department of Information, Evidence and Research, Health Systems and Innovation Cluster, WHO

- Dr Giridhara R. Babu, Additional Professor, Indian Institute of Public Health, Bengaluru described the methodology for scoring the diseases. The scoring sheet contained 11 scoring dimensions to prioritize each disease. These scoring dimensions included the present burden of disease, severity, mortality, epidemic

potential, socioeconomic impact, preventability, treatability, relevance to IHR, international resolutions, relevance to regional control and relevant importance to the state. A total of 32 diseases were considered for scoring.

- During the discussion, Dr Venkatesh stressed that numbers alone could not decide the epidemic potential of the disease and that even a single case of some diseases could equate to an epidemic.
- Discussions were held in eight groups. Disease scoring sheets and disease information sheets were provided to each groups. These groups scored all the 32 diseases through a consensus process within each group. The scores from all groups for all diseases were weighed and averaged, resulting in a prioritized diseases list, which was presented during Day 2 of the workshop.

3 Proceedings of the workshop – Day 2

3.1 Session 4: Findings of group work and panel reflections

Session Chair : Dr P.L. Joshi, ex. Director, NVBDCP

Co-chairs : Dr D.C.S. Reddy, ex-Professor and Head of the Department, Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University

Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India

3.1.1 Summary of feedback

Summary of feedback of the group work is as follows:

- There should be a national core list of diseases with state specific amendments
- Acute respiratory infection (ARI) and influenza-like illness (ILI) need to be segregated
- "Fever of unknown origin" to be replaced with "fever" more than 7 days duration
- Acute diarrhoeal diseases to be written as "excluding cholera"
- Rickettsial disease, acute febrile illness (AFI) filariasis, leishmaniasis, poisoning, burns, road accidents, snake bite, dog bite and West Nile Fever should be included in the IDSP disease list
- Small pox to be removed from the IDSP disease list
- Death can be recorded in Presumptive Surveillance Form (P Form)
- Viral hepatitis B & C maybe included in Laboratory Surveillance Form (L Form)
- Reduce duplication of data collection
- Reduce number of diseases in P Form
- Forms require streamlining
- As disease priority differs from state to state, regional priority should be given importance
- Response components should be integrated with surveillance
- Capacity building is needed on data analysis.

Dr Mohammad Shaukat, Deputy Director General (DDG), Noncommunicable Diseases (NCDs), MoHFW, highlighted the issues for and challenges to NCD surveillance and monitoring. Four common NCDs – cardiovascular diseases, diabetes, cancers and chronic respiratory diseases accounted for about 55% of premature mortality in the age group of 30–69 years. The National Programme for Prevention and Control of Cancers, Diabetes, Cardiovascular Disease and Stroke (NPCDCS) focused on the early screening, diagnosis and treatment by NCD cells through community health centres (CHCs) at the district level. The NPCDCS aimed at the integration of NCD interventions within the NHM framework for optimization of scarce resources, provision of seamless services to patients as also for ensuring long term sustainability of interventions.

The NCD programme has developed a recording and reporting mechanism to monitor the key interventions outlined in strategies of the programme. The information is compiled from NCD clinics located at CHC and district levels. In a limited resource setting, IDSP provides a unique opportunity for surveillance and monitoring of key NCD indicators required to guide

the programme. There is a need to debate upon the inclusion of key indicators in the IDSP dashboard with a decision on the frequency of data collection on such indicators.

Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India discussed findings of the group work. He demonstrated the data analysis procedure and sample data analysis sheet. The scores from all groups for all diseases were averaged, which resulted in a preliminary prioritized diseases list of 32 disease conditions in a rank order of importance.

There was further validation by statistical experts using factor analysis (FA), which reduced the voluminous data by shrinking it to a smaller data set that was more manageable and more understandable. Finally, range and rank were calculated for each disease loading by the standard range formula and by using the rank function of excel.

Tables 1 and 2 give the final disease/syndrome lists by ranking.

Table1: Final list of disease/syndrome after factor analysis

Rank	Final list of diseases after factor analysis	Syndrome/ disease	Pathogens
1	Influenza-like illness	Syndrome	Influenza A/H1N1pdm09, influenza A/H3N2, influenza B, respiratory syncytial virus A & B, metapneumovirus, parainfluenzavirus1–4, rhinovirus, adenovirus
2	Severe acute respiratory infection	Syndrome	Influenza A/H1N1pdm09, influenza A/H3N2, Influenza B, respiratory syncytial virus A & B, metapneumovirus, parainfluenzavirus1-4, rhinovirus, adenovirus, corona virus, bocavirus
3	Dengue	Disease	Dengue viruses (1,2,3 and 4)
4	Dysentery	Syndrome	Entamoeba histolytica and shigella (including sub types)
5	Zika virus disease	Disease	Zika virus
6	Acute hemorrhagic fever	Syndrome	Dengue viruses, nairovirus (CCHF virus), Ebola virus, West Nile virus, arbovirus (yellow fever virus)
7	Acute viral hepatitis	Syndrome	Hepatitis virus A, B, C, D and E Yellow fever virus

8	Acute diarrhoeal disease (except cholera)	Syndrome	Viruses: Rotavirus, adenoviruses, coronaviruses, enteroviruses Bacteria: Enterotoxigenic *E. coli*, shigella, Campylobacter Jejuni, Salmonella Others: *Entamoeba histolytica,* giardiasis, trichuriasis, cryptosporidium
9	Chikungunya	Disease	Chikungunya virus
10	Chicken Pox (Varicella Zoster)	Disease	Varicella zoster
11	Fever more than 7 days duration	Syndrome	Dengue, Chikungunya, Malaria, Leptospirosis, Scrub typhus, Zika and others
12	Malaria	Disease	*Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale* and *Plasmodium malariae*
13	Scrub typhus	Disease	*Orientia tsutsugamushi*
14	Cholera	Disease	*Vibrio cholerae O1*
15	Smallpox	Disease	Variola virus
16	Enteric fever	Disease	*Salmonella typhi*, *Salmonella paratyphi A*, *Salmonella paratyphi B, Salmonella paratyphi C*
17	Acute flaccid paralysis	Syndrome: DD; Poliomyelitis, Gullian Barre Syndrome, Transverse myelitis	Poliovirus (type 1, type 2 and type 3) Enterovirus, Coxsackie virus and echovirus serotypes Herpesviridae; Japanese encephalitis virus
18	Measles	Disease	Rubeola virus
19	Acute encephalitis syndrome	Syndrome	Serum: JE, Scrub typhus, West Nile Fever, Cerebrospinal Fluid: Enteroviruses, herpes, tuberculosis, *Staphylococcus pneumoniae*, *H influenza* and Nisseria

20	Meningitis	Syndrome	*Neisseria meningitidis*
21	Yellow fever	Disease	Arbovirus
22	Rubella	Disease	Rubella virus
23	Kyasanur Forest Disease (KFD)	Disease	KFD virus
24	Mumps	Disease	*Myxovirus parotiditis*
25	Anthrax	Disease	*Bacillus anthracis*
26	Crimean-Congo hemorrhagic fever (CCHF)	Disease	Nairovirus
27	Leptospirosis	Disease	Spirochetes of the genus Leptospira
28	Plague	Disease	*Yersinia pestis*
29	Brucellosis	Disease	*Brucella abortus, Brucella melitensis* and *Brucella suis*
30	Pertussis	Disease	*Bordetella pertussis* and *Bordetella parapertussis*
31	Diphtheria	Disease	*Corynebacterium diphtheriae*
32	Tetanus	Disease	*Clostridium tetani*

*Apart from the 32 diseases, there was consensus among the experts to also include human rabies into the list.

Table 2: Priority syndromes/diseases for Integrated Disease Surveillance Programme – 2017

<table>
<tr><th>Epidemic prone syndrome/diseases</th><th>Syndrome/diseases targeted for eradication or elimination</th><th>Other major syndrome/diseases, events or conditions of public health importance</th></tr>
<tr><td rowspan="3">Acute haemorrhagic fever
Chikungunya
Cholera
Dengue
Dysentery
Measles*
Meningitis
Plague
ILI
SARI
Enteric fever
Chicken pox
Rubella
Mumps
Pertussis
Diphtheria

*Targeted for elimination</td><td>Acute flaccid paralysis</td><td>Acute viral hepatitis
Acute diarrhoeal disease (except cholera)
Fever more than 7 days duration
Malaria
Scrub typhus
Anthrax
Kyasanur Forest Disease (KFD)
Crimean-Congo hemorrhagic fever (CCHF)
Leptospirosis
Brucellosis</td></tr>
<tr><td colspan="2">Diseases or events of international concern</td></tr>
<tr><td colspan="2">Yellow fever
Human influenza due to a new subtype[1]
SARS[1], Smallpox[1]
Poliomyelitis[1]
Zika virus disease
Any public health event of international or national concern (infectious, zoonotic, food borne, chemical, radio nuclear, or due to an unknown condition</td></tr>
</table>

[1]Disease specified by IHR (2005) for immediate notification

3.1.2 Limitations of the disease prioritization

This exercise focused only on ranking exercises conducted for diseases under the purview of IDSP. However, quality assurance measures were put in place to mitigate any potential bias. The groups used their own assessment tools to provide their view as a consensus in terms of the relative importance of each domain in the scoring sheet for all diseases. Further, use of a single checklist enabled comparisons to be made across all the groups based on the principles of validity and reliability, regardless of the precise scoring criteria.

3.2 Session 5: Data collection tools for IDSP

Session Chair : Dr Sujeet Kumar Singh, DDG, Mental Health & International Health, MoHFW

Co-chair : Dr Pradeep Khasnobis, NPO, IDSP, NCDC

Two presentations were made in this session.

- Dr Saurabh Goel, Assistant Director, IDSP, NCDC highlighted that under presumptive surveillance, currently 96% of districts and 84% of reporting units were reporting on the IDSP portal. Challenges included—less representation from the private sector; presumptive diagnosis not mentioned in the register by medical officers; filling up of P Forms by pharmacists or even ward boys; difficulties in extracting data for P Form from illegible OPD registers; no mechanisms to check duplication of cases; limited capability to analyse data on state-specific diseases and in correct recording of laboratory tests in the line list. He stressed that the new P & L Forms could be designed based on reprioritization of diseases keeping in view programme deliverables. The P Form based OPD registers should be revived at all health facilities. More advanced specific data analysis tools should be integrated into the portal. Provisioning of regular training of medical officers, sensitization of district surveillance units (DSUs) and state surveillance units (SSUs) to analyse P Form data and introduction of GIS into IDSP Portal were other steps that were needed.

- A presentation on “L Form Data on the IDSP portal” was made by Dr Lata Kapoor, Joint Director, IDSP, NCDC. A line listing of positive cases in L Form, challenges in filling up of L Form as well as solutions were stressed in her presentation. She also highlighted additional diseases such as shigellosis, salmonellosis (non typhoidal), scrub typhus and anthrax that were being proposed for L Form.

Key suggestions

- Reprioritization of diseases in L Form
- Line lists to be generated directly from computerized systems/Health Information System (HIS)
- On-site data entry to prevent delays in reporting
- Cross notification of positive results tested in labs to get accurate geographical disease trends
- Trends to be generated from line list data, not absolute numbers
- Analysis of line list at all levels for outbreak detection – laboratory, district and state level

- For data captured through vertical programmes, avoid duplicate data collection under IDSP establish IT enabled mechanisms to extract data needed for disease surveillance under IDSP, e.g. vaccine preventable diseases (VPDs) and Vector Borne Diseases.
- Unique Identity (UID) for each patient to avoid the same case being captured more than once in the data.

3.3 Session 6: Information and communication technology for IDSP

Session Chair : Dr Sujeet Kumar Singh, DDG, Mental Health & International Health, MoHFW

Co-chair : Dr Pradeep Khasnobis, NPO, IDSP, NCDC

Three presentations were delivered in this session.

Dr Suhas Dhandore, Assistant Director, IDSP, NCDC highlighted technical details like overview of the IDSP Portal, data entry functionality, HR details, training status, master data key functionality, IDSP dashboard and present status of IDSP portal.

Following was the proposed plan for upgradation of IDSP portal:

- Adoption of frameworks and standards to strengthen the HIS under IDSP
- Compliance to integrate e-governance standards in master data
- Revamping of IDSP portal to develop a GIS enabled software application, mobile technology for real time data collection and integration of SMS gateway and automated e-mail alerts
- Introducing basic and advanced web analytical features in the portal
- Redesigning of portal output, development of dashboard for real time visualization of data
- Decentralization of data entry up to health facility level
- Development of offline data entry module
- Interoperability of application for automated sharing of data among other MIS applications of disease control programmes.

A presentation on “An architectural approach to updating IDSP’s Integrated Disease Surveillance Information System” was delivered by Dr Ramesh S. Krishnamurthy, Senior Advisor, Health Systems and Innovation Cluster, WHO, Geneva. Two key factors for architectural approach – minimum data sets and appropriate use of standards-based ICT interventions were stressed.

Following components were highlighted for updating IDSP’s Information System:

- Resources (leadership, policies, financial and human resources, infrastructure)
- Indicators (morbidity, mortality, environmental risks, health resources availability and readiness, vaccine coverage)
- Data sources (common operational datasets, health facilities data, reports from subnational health management teams and coordination meetings, health workforce, human and animal surveillance, laboratories, data on stockpiles of medicines and commodities, financial data, etc.)

- Data management (collection, storage, quality assurance, processing, compilation, analysis and visualization of data and geospatial information presentation)
- A collaborative platform for information sharing
- Information products (situation reports, 3Ws (who does what, where and when), case summary statistics, media/communication reports, financial reports, health workforce distribution reports, etc.)

Phase-based upgrading of IDSP's information system was suggested at all levels. Following are the recommendations for updating the IDSP's Integrated Disease Surveillance Information System:

Information systems and ICT:

- Develop or update
  - Comprehensive information management master plan document
  - Comprehensive operations plan document to include data and information needs related to all activities and functions of IDSP at central and state levels
  - Update IDSP portal
  - Upgrade Central Surveillance Unit (CSU)'s information platform
  - Upgrade ICT of CSU's strategic health operations centre (SHOC)
- Fully upgrade information systems and ICT infrastructure for SHOC at Central, state, and large municipality levels
- Data for disease surveillance: Update the following components for all diseases that are prioritized:
  - Case definition
  - Surveillance type
  - Surveillance data sets
  - Surveillance data collection standards
  - Adjust all reporting forms (P, L) to reflect the aforementioned components
- Data display and visualization
  - Design dashboard frame and its essential components
  - Identify surveillance data from other programmes/activities within the MoHFW for potential display in a common integrated disease surveillance dashboard
  - Develop agreements to obtain data from other programmes/activities and demonstrate a prototype dashboard
- Data sharing agreements

Data-sharing agreements need to be put in place between various parties, including states, local governments and the private sector and all data sharing agreements must be updated.

Bruhat Bengaluru Mahanagara Palika (BBMP) experiences in software for IDSP were shared by Dr M.N. Lokesh, Chief Health Officer (Public Health), BBMP focusing on software application of BBMP – Public Health Information and Epidemiological Cell (PHIEC).

Following are the key features of the software:

- Online data collection
- Data collection from government and private hospitals

- Line listing of patients with GIS location
- SMS/e-mail alerts to MoHFW for confirmed cases
- Update from rapid response teams in the field
- Weekly reporting and emergency reporting
- Data on noncommunicable diseases and Syndromic Surveillance Form (S Forms)
- Outbreak/media alerts, VPD alerts
- Reports for MoHFW and epidemiologists
- Reports, charts on map
- "Thank you" e-mail, reminder SMS
- Hospitals in BBMP area that are GIS mapped
- Over 350 private hospitals given access to the application
- MoHFW and Health Officers have access to dashboards
- Auxiliary nurse midwives (ANMs) and health inspectors trained to update in the field for control and preventive actions.

Mr Lav Agarwal, JS, MoHFW appreciated the architectural approach for updating IDSP's information system as well as BBMP's software experience on IDSP.

3.4 Session 7: Recommendations and conclusions

Session Chair : Dr B.D. Athani, Special DGHS, MoHFW

Co-chair : Dr S. Venkatesh, Director, NCDC.

3.4.1 Key recommendations

- The reprioritization workshop identified 32 conditions as per weighted scores in a rank order of importance. However, apart from the 32 diseases, there was consensus among the experts to also include human rabies into the list.
- IDSP needs to update the following components for all diseases that are prioritized through the consultative process: case definitions; type of surveillance to be implemented for each prioritized disease; and minimum data sets and data collection standards for each prioritized disease. It also needs to make all relevant changes to the reporting forms to reflect the amendments.
- IDSP may advice all state SSUs to conduct similar reprioritization exercises to include diseases of importance at the state level.
- IDSP's ICT platform and information management need to be upgraded to conform to the current standards. A comprehensive ICT and Information Management Master Plan document needs to be developed and maintained. The ICT Master Plan component needs to clearly define the computer network architecture at CSU level (including the data layer and application layer) while the information management document must contain all aspects of data management, including data privacy and confidentiality at both CSU and SSU levels.
- Two-level information architecture needs to be considered for disease surveillance management. Level-1 architecture should exclusively address the data and information exchange needs at the CSU level and give a clear articulation of the revised IDSP portal as well as the needs of Strategic Health Operations Centre. Level 2 architecture should address the data and information exchange at the SSU levels. Near real-time data collection approaches as well as advanced data analytics and visualization techniques must be considered as part of the architecture. A

comprehensive Operational Document has to be developed to implement the aforementioned Master Plan with clearly articulated timelines, roles and responsibilities.

- Manage the IDSP data and information systems without interruption. Data sharing agreements need to be put in place between various parties, including state and local government levels and the private sector and all data sharing agreements must be updated.
- IDSP needs to identify all relevant disease surveillance aggregate data from specialized disease surveillance programmes for potential inclusion under a common integrated disease surveillance dashboard that will be administered by IDSP.

In his concluding remarks, Dr S. Venkatesh, Director, NCDC expressed his appreciation to the participants for their efforts in prioritizing the diseases.

In his closing remarks, Dr B. D. Athani, Special DGHS, MoHFW expressed his appreciation for the successful organization of this workshop. Dr Pradeep Khasnobis, NPO, IDSP, NCDC thanked all the participants for their active involvement in the workshop and dignitaries for their guidance in successful organization of the workshop.

Annexures

Annexure 1: Agenda

Day 1 – 06 December 2016 **Inaugural session: 10:00–11:00**	
	Welcome address by Dr S. Venkatesh, Director, NCDC, MoHFW
	Introduction of participants
	Address by Mr Lav Agarwal, Joint Secretary, MoHFW
	Address by Mr Sanjeeva Kumar, Additional Secretary, MoHFW
	Address by Dr Henk Bekedam, WHO Representative, India
	Address by Dr B.D. Athani, Special DGHS, MoHFW
	Special Address by Professor (Dr) Jagdish Prasad, Director General of Health Services, MoHFW
	Vote of Thanks by Dr Pradeep Khasnobis, NPO, IDSP, NCDC
Session 1: 11:00–12:00 – Trends in surveillance systems and current status of IDSP ***Chair: Dr B.D. Athani, Special DGHS, MoHFW*** ***Co-chairs: Dr A. K. Gadpayle, Addl. DGHS, MoHFW and Dr K. K. Aggarwal, President-elect, Indian Medical Association***	
	Integrated disease surveillance programme (10 mins): Dr Pradeep Khasnobis, NPO, IDSP, NCDC
	Surveillance review from GHSA in India (10 mins): Dr Sameer Sodha, CDC Resident Advisor, Epidemic Intelligence Service Programme, India
	Surveillance models of Sri Lanka and Thailand (10 mins): Dr Vason Pinyowiwat, Technical Officer, WHO Regional Office for South-East Asia
	Why disease prioritization of IDSP – the past and current status (10 mins): Dr Nishant Kumar, Assistant Director, IDSP, NCDC
	Diseases under consideration for IDSP (10 mins): Dr Sanket V. Kulkarni, Assistant Director, IDSP, NCDC
	Discussion and wrap-up (10 mins)

Session 2: 12:00–01:00 – Disease prioritization ***Chair: Dr S. Venkatesh, Director, NCDC, MoHFW*** ***Co-chair: Dr Ramesh Krishnamurthy, Senior Advisor, Department of Information, Evidence and Research, Health Systems and Innovation Cluster, WHO***	
	Disease prioritization methodology (30 mins): Dr Giridhara R. Babu, Additional Professor, Indian Institute of Public Health, Bengaluru
	Instructions for group work and sample scoring exercise (15 mins): Dr Giridhara R. Babu, Additional Professor, Indian Institute of Public Health, Bengaluru
	Discussion and wrap up (10 mins)
Lunch break – 01:00–02:00	
Session 3: 02:00–05:30 – Disease prioritization ***Chair: Dr S. Venkatesh, Director, NCDC, MoHFW*** ***Co-chair: Dr Ramesh Krishnamurthy, Senior Advisor, Department of Information, Evidence and Research, Health Systems and Innovation Cluster, WHO***	
	Formation of groups and ground rules for scoring (10 mins) Group work on disease prioritization (180 mins)
	Tea Break: 03:30–03:40 Discussion and wrap up (10 mins)
Day 2 – 07 December 2016 **Session 4: 09:00–12:00 – Presentation of findings and panel reflections** ***Chair: Dr P.L. Joshi, Ex Director, NVBDCP, MoHFW*** ***Co-chairs: Dr D.C.S. Reddy, Ex Professor and Head, Department of Preventive and Social Medicine, Institute of Medical Sciences, Banaras Hindu University and Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India***	
	Presentation of group work (15 mins per group): Rapporteurs of working groups
	Panel reflection (30 mins)
Tea Break: 11:00–11:15	
	Finalization of list of prioritized diseases (30 mins): Dr Pradeep Khasnobis, NPO IDSP, NCDC and Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India Wrap up (15 mins): Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India

Session 5: 12:00–01:00 – Data collection tools for IDSP ***Chair: Dr Sujeet Kumar Singh, DDG, Mental Health & International Health, MoHFW*** ***Co-chair: Dr Pradeep Khasnobis, NPO, IDSP, NCDC***	
	P&L Forms (30 mins): Dr Lata Kapoor, Joint Director, IDSP, NCDC and Dr Saurabh Goel, Assistant Director, IDSP, NCDC
	Short, medium and long term plans (30 mins): Plenary discussion
Lunch break: 01:00–02:00	
Session 6: 02:00–03:30 – Information and communication technology for IDSP ***Chair: Dr Sujeet Kumar Singh, DDG, Mental Health & International Health, MoHFW*** ***Co-chair: Dr Pradeep Khasnobis, NPO, IDSP, NCDC***	
	IDSP Information communication and portal: Dr Suhas Dhandore, Assistant Director, IDSP, NCDC (30 mins)
	Information systems for IDSP – minimum data sets (30 mins): Dr Ramesh Krishnamurthy, Senior Advisor, Department of Information, Evidence and Research, Health Systems and Innovation Cluster, WHO
	Bruhat Bengaluru Mahanagara Palika (BBMP) experiences in software for IDSP (30 mins): Dr M.N. Lokesh, Chief Health Officer (Public Health), BBMP, Bengaluru
Tea break: 03:30–03:45	
Session 7: 03:45–05:00 – Recommendations and conclusions ***Chair: Dr B.D. Athani, Special DGHS, MoHFW*** ***Co-chair: Dr S. Venkatesh, Director, NCDC, MoHFW***	
	Recommendations Dr Pavana Murthy, National Professional Officer, Surveillance and Response, WHO Country Office for India ***Concluding remarks*** Dr S. Venkatesh, Director, NCDC, MoHFW Dr B.D. Athani, Special DGHS, MoHFW ***Vote of thanks*** Dr Pradeep Khasnobis, NPO, IDSP, NCDC

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