

**‘Support to Indian Institutes for imparting training’ to the Faculty of Medical Colleges/
Research Institutes under Human Resource Development Scheme of Department of
Health Research**

1. Area of Training:

Epidemiology and Investigation of Outbreak and Emerging Infection

2. Name of the Institution and contact details:

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3. (a) Name of the Principal Investigator and contact details

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(b) Name of the Co- Investigators and contact details

Sr. No.	Names of Co-investigators	Contact details		
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4. Training Module

Programme-Duration of the training-Minimum 4 weeks/1 month

I. Introduction

Most of the current outbreak investigation and response training programmes focus on field epidemiology trainings that deal with endemic diseases having potential to cause outbreaks. Emerging / imported infectious diseases related outbreak response is mostly neglected in existing training programs. In addition, outbreak investigation training programmes significantly lack training in the laboratory component of outbreak investigation and response. Also, the Integrated Disease Surveillance Programme (IDSP) network does not have adequate capacities and expertise on laboratory response during outbreaks. It is expected that Virus Research and Diagnostic Laboratory Network (VRDLN) would take up this important aspect. However, the VRDLN also needs similar outbreak investigation training programme.

II. Aim of the program

This program aims at providing all aspects of outbreak investigation on one platform by employing the holistic approach. The proposed training programme is very important for response workers who are mostly ignorant on the specific requirements of laboratory roles, responsibilities and the requirements of specimens for diagnostics and specialized testing during outbreaks, especially of emerging infections.

It would be developed as the training-of-the-trainers programme for complementing, but not duplicating, the existing training programmes for IDSP. In addition, it could cater to the training of medical college faculty that is deputed as the Medical College rapid response teams (RRTs) for outbreak investigations. These trainings would be able to develop capacities for outbreak investigation and response which could enable them to undertake research for generating evidence for timely public health decisions.

III. Existing faculty members, their details, positions, available with the institution for imparting training programme.

Sr. No.	Faculty - Name and designation	Research interest of faculty
1	Dr DT Mourya, Scientist G & Director	Virologist, Biocontainment specialist & BSL-4 expert
2	Dr MS Chadha Scientist G	Medical / clinician scientist, Influenza expert
3	Dr CG Raut Scientist E	Veterinarian, Animal health expert
4	Dr BV Tandale Scientist E	Medical - clinical / field epidemiologist, Human Ethics, Epidemiology of infectious diseases of epidemic potential
5	Dr J Mullick Scientist E	Molecular virology, Avian influenza & BSL-3
6	Dr PD Yadav, Scientist D	Virologist, Emerging infections, BSL-4 incharge
7	Dr GN Sapkal Scientist D	Serology/Immunology, Diagnostic Virology incharge
8	Dr YK Gurav Scientist D	Medical, Biosafety, Epidemiology, Infectious diseases
9	Dr AR Deoshatwar Scientist C	Medical scientist, Epidemiology
10	Dr Rajlakshmi Vishwanathan Scientist C	Medical Microbiologist, Diagnostic Virology scientist
11	Dr SD Pawar Scientist D	Virologist, Influenza avian & High Containment Lab
12	Dr AB Sudeep Scientist D	Virology/Tissue Culture, Entomology
13	Dr DR Patil Scientist C	Veterinarian, Animal Research Facilities
14	Dr MD Gokhale, Scientist C	Field investigations on vectors, Entomology
15	Mr Atul M Walimbe, Technical Officer B	Statistician, Bioinformatics & Data Management, softwares
16	Mr Santosh M Jadhav, Technical Officer A	Statistician, Bioinformatics & Data Management, softwares
17	Dr R Laxminarayanan, Senior Administrative Officer	Administration, coordination & logistics management
18	Mr Dinesh Singh, Technical Assistant	Avian influenza & BSL-3 technical support
19	Mr AV Jamgaonkar, Technical Officer	Avian influenza & BSL-3 technical / field support
20	Mr Vijayasimha K, Technical Officer	IT support, Data management/statistics, softwares

IV. Available infrastructure facilities

List of equipment available in laboratory / institute and infrastructure facilities

(a) Existing laboratory facilities to be described (List the major equipment & other Facilities available with the institution that would be used for the training programmes)

Epidemiology, Entomology including GPS/GIS, Veterinary/Animal facilities, BSL-3 and BSL-4 including Biosafety cabinets and PPE, Diagnostic virology, Human and animal ethics committees, Statistics & Data management (software VirusLIMS)

(b) Back-up existing internet facilities to provide online course
LAN connections with high internet speed

(c) Hostel

24 rooms in guest house with canteen facilities, additional hostel facility for international & domestic PhD & Masters students

(d) Others

Administrative facility managed by administrative software (AIMS), Management support, Education and training support

Well maintained conference room and seminar room with required facilities

V. Training schedule with elaborate details day wise or week wise along with the topic.

Week 1 (Public health systems and Generic outbreak investigation steps and activities)

Day / Date	Session	Broad Area / Contents	Topic / Plan	Time / Duration	Format / Type	Faculty / Expert
1	1	Inauguration & training plan	Objectives & Training plan	60 min	Introductions & Pre-test	Coordinator
	2	Public health systems in disease surveillance & response	Public health system & services	120 min	Lecture & Discussion	External/ Internal
	3		Surveillance & Outbreak response	120 min	Lecture & Discussion	External/ Internal
	4		Outbreak prone virus diseases	60 min	Lecture & Discussion	External/ Internal
2	1	Outbreak investigation and response – generic plan and processes	Confirm the outbreak	60 min	Lecture & Demo	Internal
	2		Confirm diagnosis, Case definitions	120 min	Lecture & Demo	Internal
	3		Case finding & Line listing of cases	120 min	Lecture & Discussion	Internal
	4		Ethics & Informed Consent / Assent	60 min	Lecture & Discussion	External / Internal
3	1		Bio-safety & Infection control practices	60 min	Lecture & Demo	Internal
	2		Clinical investigation and specimens	120 min	Lecture & Demo	External / Internal
	3		Epidemiological / field data and surveys	120 min	Lecture & Demo	Internal
	4		Environmental data and specimens	60 min	Lecture & Demo	Internal
4	1		Descriptive epidemiology	60 min	Lecture & Discussion	Internal
	2		Time analysis- Epidemic curve	120 min	Lecture & Demo	Internal
	3		Place analysis – Spot map	120 min	Lecture & Demo	Internal
	4		Person analysis – host factors	60 min	Lecture & Demo	Internal
5	1		Cause / Etiological agent / risk factors	60 min	Lecture & Discussion	Internal / External
	2		Source of infection transmission mode	120 min	Lecture & Discussion	Internal / External
	3		Reporting and Communications	120 min	Lecture & Discussion	Internal / External
	4		Control measures, Feedback / Lessons	60 min	Lecture & Discussion	Internal / External
6	1	Outbreak preparedness, planning, team role, resources	Preparedness/Plans	60 min	Group work	Internal
	2		IDSP Control room	120 min	Facility Visit	External
	3		Checklists/Logistics	120 min	Group work	Internal
	4		Forms / Formats	60 min	Group work	Internal

Timings: 9.30 AM - 5.00 PM, Breakfast: 10.30 -11.00 AM, Lunch: 1.00-2.00 PM , Tea: 3.30-4.00 PM

Training Schedule
Week 2 (Outbreak investigation – example/specific plan and field plans / procedures)

Day / Date	Session	Broad Area / Contents	Topic / Plan	Time / Duration	Format / Type	Faculty / Expert
1	1	Clinical investigation	Clinical course & investigations plan	60 min	Lecture / Demonstration	External / Internal
	2		Clinical Sequelae - Discharge/Follow up	120 min	Lecture/ Demonstration	External / Internal
	3	Epidemiological investigation	Study Surveillance & Control measures	120 min	Lecture/ Group discussion	Internal / External
	4		Study Progression / Course of outbreak	60 min	Lecture/ Group discussion	Internal / External
2	1	Epidemiological study/-ies general approaches	Hypothesis formulation / generation	60 min	Lecture / Demonstration	Internal
	2		Hypothesis testing	120 min	Lecture/ Demo	Internal
	3		Study designs	120 min	Lecture/ Demo	Internal
	4		Special studies	60 min	Lecture/ Demo	Internal
3	1	Epidemiological / other special studies / approaches	Plan of a special study	60 min	Lecture/ Demo	Internal
	2		List study requirements	120 min	Lecture/ Demo	Internal
	3		Design study tools/ templates/ forms	120 min	Group work	Internal
	4		Draft analysis plan	60 min	Group work	Internal
4	1	Field outbreak investigation – Example plan	Example outbreak Investigation Plan	60 min	Demonstration / Group work	Internal
	2		Preparedness / planning checklists	120 min	Demonstration / Group work	Internal
	3		Investigation plans tools & methods	120 min	Demonstration / Group work	Internal
	4		Data needs & sources, forms/ formats	60 min	Demonstration / Group work	Internal
5	1	Epidemiology & Control – Example plan	Descriptive epidemiology	60 min	Lecture / Demonstration	Internal
	2		Analytical epidemiology	120 min	Lecture / Demonstration	Internal
	3		Reporting & Communications	120 min	Lecture / Demonstration	Internal
	4		Control measures & feedback / lessons	60 min	Lecture / Demonstration	Internal
6	1	Field outbreak investigation – Field experiences	Field investigation plan	60 min	Discussion/ Group work	Internal
	2		List major activities	120 min	Demonstration / Practice	External / Internal
	3		List observations	120 min	Demonstration / Practice	External / Internal
	4		Summary of report	60 min	Demonstration / Practice	Internal

Week 3 (#Syndromic case studies / Disease outbreak investigation – Group / Team activity)

Day / Date	Session	Broad Area / Contents	Topic / Plan	Time / Duration	Format / Type	Faculty / Expert	
1	1	Outbreak investigation - Syndromic case study 1 – Respiratory syndromes & diseases	Explain scenario 1 & Performance target	60 min	Lecture / Discussion	Internal	
	2		Preparations/ Plans	120 min	Group/Team work	Internal	
	3		Methods & Tools	120 min	Group/Team work	Internal	
	4		Data needs & plans	60 min	Group/Team work	Internal	
2	1		Clinical / field steps	60 min	Group/Team work	Internal	
	2		Clinical specimens	120 min	Group/Team work	Internal	
	3		Specific aspects	120 min	Group/Team work	Internal	
	4		*Steps 1 & 2	60 min	Group/Team work	Internal	
3	1		Steps 3, 4 & 5	60 min	Group/Team work	Internal	
	2		Steps 6 & 7	120 min	Group/Team work	Internal	
	3		Steps 8, 9 & 10	120 min	Group/Team work	Internal	
	4		Presentation & group discussions	60 min	Group/Team work	Evaluation	
4	1		Outbreak investigation - Syndromic case study 2 – Gastro-intestinal syndromes & diseases	Explain scenario 2 & Performance targets	60 min	Lecture / Discussion	Internal
	2			Preparations/ Plans	120 min	Group/Team work	Internal
	3			Methods & Tools	120 min	Group/Team work	Internal
	4			Data needs & plans	60 min	Group/Team work	Internal
5	1	Clinical / field steps		60 min	Group/Team work	Internal	
	2	Clinical specimens		120 min	Group/Team work	Internal	
	3	Specific aspects		120 min	Group/Team work	Internal	
	4	*Steps 1 & 2		60 min	Group/Team work	Internal	
6	1	Steps 3, 4 & 5		60 min	Group/Team work	Internal	
	2	Steps 6 & 7		120 min	Group/Team work	Internal	
	3	Steps 8, 9 & 10		120 min	Group/Team work	Internal	
	4	Presentation & group discussions		60 min	Group/Team work	Evaluation	

Week 4 (#Syndromic case study / Disease outbreak investigation – Group / Team activity)

Day / Date	Session	Broad Area / Contents	Topic / Plan	Time / Duration	Format / Type	Faculty / Expert
1	1	Outbreak investigation - Syndromic case study 3 – Febrile non-systemic syndromes & diseases	Explain scenario 3 & Performance targets	60 min	Lecture / Discussion	Internal
	2		Preparations/ Plans	120 min	Group/Team work	Internal
	3		Methods & Tools	120 min	Group/Team work	Internal
	4		Data needs & plans	60 min	Group/Team work	Internal
2	1		Clinical / field steps	60 min	Group/Team work	Internal
	2		Clinical specimens	120 min	Group/Team work	Internal
	3		Specific aspects	120 min	Group/Team work	Internal
	4		*Steps 1 & 2	60 min	Group/Team work	Internal
3	1		Steps 3, 4 & 5	60 min	Group/Team work	Internal
	2		Steps 6 & 7	120 min	Group/Team work	Internal
	3		Steps 8, 9 & 10	120 min	Group/Team work	Internal
	4		Presentation & Group discussions	60 min	Group/Team work	Evaluation
4	1	Outbreak investigation - Syndromic case study 4 – Zoonotic / emerging severe syndromes & diseases	Explain scenario 4 & Performance targets	60 min	Lecture / Discussion	Internal
	2		Preparations/ Plans	120 min	Group/Team work	Internal
	3		Methods & Tools	120 min	Group/Team work	Internal
	4		Data needs & plans	60 min	Group/Team work	Internal
5	1		Clinical / field steps	60 min	Group/Team work	Internal
	2		Clinical specimens	120 min	Group/Team work	Internal
	3		Specific aspects	120 min	Group/Team work	Internal
	4		*Steps 1 & 2	60 min	Group/Team work	Internal
6	1		Steps 3, 4 & 5	60 min	Group/Team work	Internal
	2		Steps 6 & 7	120 min	Group/Team work	Internal
	3		Steps 8, 9 & 10	120 min	Group/Team work	Internal
	4		Presentation & Group discussions	60 min	Group/Team work	Evaluation

*Steps to be followed in outbreak investigations

1. Team & resources for preparedness and planning
2. Confirm the existence of outbreak
3. Confirm or verify the diagnosis
4. Formulate case definition/s
5. Case finding, verification and investigations, contact investigation/surveillance/follow up
6. Line-listing of cases
7. Descriptive epidemiology & development of hypothesis
8. Evaluate hypotheses / Additional studies
9. Control and Prevention measures
10. Reporting, Communications, Feedback and Lessons learnt

#SYNDROMIC / DISEASE SPECIFIC CASE STUDY SCHEDULE

Syndrome / transmission category	Group 1 (3-4 members@)	Group 2 (3-4 members)	Group 3 (3-4 members)	Group 4 (3-4 member)
Respiratory – airborne / aerosol transmission	Acute respiratory illness (ARI) / influenza-like illness (ILI)	Acute febrile rash	Influenza	Measles
Gastro-intestinal / enteric - fecal-oral transmission	Acute diarrheal disease (ADD)	Acute jaundice	Rotavirus diarrhea	Acute viral Hepatitis A/E
Febrile systemic (Myalgia/Arthralgia) - Vectorborne transmission	Acute undifferentiated fever (AUF)	Multi-systemic / Multi-organ dysfunction/ failure syndrome (MODS/MOFS) ?Hantavirus (HFRS/HPS)	Dengue / Chikungunya	Chronic fever PUO/FUO
Emerging / severe syndromes - Zoonotic / unknown / multiple modes of transmission	Ebola / Other	H7N9/ H5N1 Coronavirus MERS / SARS	Hepatitis B / C	Viral Hemorrhagic fever (VHF) - CCHF / KFD & acute encephalitis syndrome (AES) – JE/WN/CHP/Nipah

@Team/group would include 3-4 members with different backgrounds as below:
Epidemiologist/ public health specialist/environmental specialist, clinician / physician/ medical graduate and Microbiologist/ Laboratory specialist

VI. Relevance in public health

The training programme is designed with the core objective that the fellow trainees are appropriately oriented to the clinical, epidemiological and environmental investigation skills during field outbreak investigation/ response of emerging infections.

The training programme has relevance in public health because mostly skill based fellowship that includes lectures by the leading experts in the field along with demonstrations of processes and tools including the forms/ formats and questionnaires along with personal protective equipments (PPEs) during clinical and environmental investigation procedures, hands on practices/ exercises, group activities/ tasks and field visits including data collection/analysis and specimen collection and management needs. They would be needed to work closely in groups/ teams for acquiring skills and delivering their roles.

The training programme is very relevant in routine public health response as it is integrated for launching timely and adequate outbreak response and related special investigation requirements, especially during emerging infections/ public health emergencies. This clinical and field investigation and response is specifically targeted with technical skill building on the specific clinical and epidemiological/ environmental requirements for field investigation and response during emerging infections, outbreaks and emergencies.

5. Eligibility Conditions

The mid-career or senior level regular medical faculties of the Government medical colleges, central/ state/ district public health departments and public health research institutes, who are mandated or required to work as the members of the rapid response team (RRT) or as the nodal officers for emerging infections are encouraged to apply. These may include preferably the epidemiologists, clinicians, public health specialists and laboratory scientists.

Number of trainees: Maximum 16 trainee participants would be selected per batch.