

# Topic 8. How to respond to an Epidemic/ manage an out break?

## ***A hand out from the project on “Integrated management of public health programmes at district level”***

*This project was developed by incorporating ideas, suggestions and contribution from an interactive participatory process of dialogue and consultation involving public health and multidisciplinary resource network drawn primarily from mainstream institutions and the civil society network in India.*

*A draft manual evolved covering concepts and values Roles, Skills and Challenges and an Integrated Paradigm for the Public Health Management at District level. It also elaborates on, making a district diagnosis; organizing a health management information system; evolving a district plan; organizing an epidemiological surveillance system; responding to an epidemic and managing an outbreak; managing health programmes; managing human resources; organizing materials management; monitoring and evaluation; leading and building a health team; promoting, communicating and advocating for health; promoting and sustaining community partnerships; and building and sustaining partnerships with the educational sector; civil society, private sector and promoting an inter-sectoral collaboration.*



**Developed by  
Centre for Public Health and Equity, and its  
associates, for the Society for Community Health  
Awareness Research and Action, Bangalore.**

***[A later edited version of this document has been included in a manual submitted to the WHO Regional Office in South East Asia, towards the fulfillment of grant for the same - 2010]***

## Facilitating Team

### COORDINATOR AND KEY FACILITATOR

#### Dr. Ravi Narayan

Community Health Advisor  
Centre for Public Health and  
Equity (CPHE) – Society for  
Community Health  
Awareness, Research and  
Action (SOCHARA)-  
Bangalore

### RESEARCH FELLOWS

#### Dr. Deepak Kumaraswamy

CPHE/SOCHARA- Bangalore

#### Dr. T.N. Satyanarayana

Indian Institute of Public  
Health- (IIPH) Hyderabad-  
Public Health Foundation of  
India (PHFI)

#### Dr. N.S. Prashanth

Karuna Trust/ Institute of  
Public Health- Bangalore

#### Dr. Giridhara R Babu

- IIPH, Hyderabad/PHFI

---

## Acknowledgements

---

Prof. L.M. Nath (VHAI) and  
Dr. Thelma Narayan  
(SOCHARA) for going  
through all the chapters and  
suggesting very useful  
changes and additions.

## Preface

This document is intended to serve as an evolving conceptual **framework for district level public health managers** in the health systems of the South East Asian countries. These managers, their knowledge, skills, attitudes, and openness to new challenges and new paradigms will remain one of the key determinants of the success of countries in reaching the **“Health For All”(HFA) vision** and the **Millennium Development Goals(MDG’s)**.

This document is a practical do it yourself workbook that draws upon some of the wealth of experience and resources in the past and present and tries to help district level managers address the complexities of today’s challenging global, national and local health situation and the emergence of new challenges and reemergence of older ones.

Readers are advised not to treat this document as a comprehensive manual but as **an evolving compilation of concepts in public health management**. This conceptual framework contains suggestions to tackle some of the problems, that the district level public health managers meet in their daily life as they lead, assess, respond, evaluate and learn from numerous health systems challenges. Where possible and feasible it directs the managers to other resources and materials that will provide them additional perspective and details (**see CD accompanying the manual**)

The authors/ facilitators have extensively worked in the community and have had decades of experience in supporting capacity building for public health/ community health in the main stream and civil society linked alternatives sector. They have also tried to draw upon the experience and the field-oriented perspectives of a network of public health capacity builders and trainers from the mainstream public health institutions and civil society training centers (**see list of contributors**).

This is **a work in progress**. The conceptual framework will, we expect, evolve into a guidebook that gets used and adapted by district level public health managers, trainers and supervisors of district level public health programmes. The document is expected to continue to evolve with the feedback from users making it more relevant, responsive, context specific and focused.

We see this document as the beginning of a new journey - **a journey of strengthening district level public health management**.

Dr Ravi Narayan  
SOCHARA-SOPHEA

## 8. Responding to an epidemic /managing an outbreak?<sup>1</sup>

---

*“Remember that an outbreak is usually a sudden and unexpected event. There is a need to act quickly. So a **SYSTEMATIC APPROACH** needs to be adopted”*

When the district authority –usually the district health officer and some times the District Surveillance Officer (DSO), when available suspects an outbreak, he/she should initiate the following steps immediately.

### **Step 1 - Verification of the outbreak**

The preliminary step of the outbreak investigation would be to verify the outbreak. Much time may be wasted due to a false alarm. Even if the outbreak is suspected from the routine surveillance data, it must be verified (lest it may be a data entry error). The fastest way to verify is to contact the MO nearest to the location of the outbreak and request him/her for confirmation. This may be done telephonically or through a special messenger. The MO should check

- if there is an abnormal increase in the number of cases or
- if there is a clustering of cases or
- if the cases are Epidemiologically linked or
- if some trigger events have occurred (see above) or
- if many deaths have occurred

If there is evidence of an outbreak, and the clinical diagnosis , the source and the route of transmission is known, then the specific control measures need to be immediately instituted. If however, any one of the above is unknown, then the outbreak must be investigated to identify the specific cause. **The Rapid Response Team (RRT)** should be alerted and requested to investigate the outbreak. At the same time, general control measures should be instituted.

The fastest way to verify an outbreak is to contact the medical officer (MO) nearest to the location of the outbreak and request him/her for confirmation.

### **Step 2 – Sending the RRT**

RRT members, with local health staff should initiate Medical, Epidemiological and Laboratory investigations simultaneously

A RRT should be immediately formed with those readily available. As stated above, it should have the minimum 4 categories of professionals. Resources (vehicles, drugs, reagents and forms) should be made available to the RRT and they should proceed to the location. At the location the RRT

members along with the local health staff should initiate a Medical / Epidemiological / Laboratory investigation simultaneously.

**a) Medical investigation –**

The physician / pediatrician will clinically examine the available cases (in the hospital or the community) and make a clinical diagnosis. The history will include questions that will identify the possible source, routes of transmission and contacts. He will also review the case management (as per the recommended protocol) and recommend suitable amendments to the therapy if required.

**b) Laboratory investigation –**

The microbiologist will perform the appropriate lab investigations. He will advise on what samples are required, mode of collection and method of transportation and also to which lab it has to be sent. He will be responsible for the lab confirmation of the outbreak. If the outbreak warrants entomological investigation should also be done.

**When there are many cases it is *not* necessary to collect specimens from all cases; just enough to confirm the diagnosis.**

**c) Epidemiological investigation –**

The epidemiologist will carry out a detailed epidemiological investigation that will look into the epidemiological and environmental aspects of the outbreak. The basic aim of the epidemiological investigation is to identify the source of the problem and the routes of transmission. For this he may ask for further tests like water analysis, entomological survey, etc.

**d) Formulation of hypothesis-**

The RRT will then review all the various investigative findings and reports/results received and formulate a provisional hypothesis to explain the cause of the outbreak. This will answer the following questions:

- What was the causal agent
- What was the source of infection
- What was the transmission pattern
- Who are the people at risk

If this hypothesis fits with the facts, then specific response measures can be instituted. If however, the hypothesis does not fit with the facts, then further analytical investigation in terms of case control studies will need to be carried out. In the meantime, general control measures may be instituted.

**e) Specific response measures-**

Based on the above hypothesis, the RRT will recommend suitable control measures to be immediately implemented by the local PHC staff to curtail the

epidemic. If the team feels that the PHC staff needs any support, then they will request the District to provide the necessary help. Similarly if the district team needs support, then they need to call the State team.

**f) Special studies if necessary-**

Following the institution of control measures, if the epidemic is under control and tapers off, the hypothesis of causation could be considered as correct. If the epidemic continues unabated then the Hypothesis would have to be reviewed. In such cases analytical studies like a case control study might have to be conducted to confirm the hypothesis. The decision to investigate further or to institute control measures are dependent on whether the source and the transmission are known or not.

**g) Interim report-**

The RRT should file an interim report, giving details of the investigation and the diagnosis and also the control measures initiated.

**h) Follow-up Visits –**

Once the outbreak is coming under control, the RRT can leave but should make follow up visits to ensure that the control measures are being implemented adequately. Also these follow up visits help to identify any new information that may have been missed in the first visit.

		SOURCE / TRANSMISSION	
		<u>Known</u>	<u>Unknown</u>
ETIOLOGY	<u>Known</u>	Control +++ Investigate +	Control + Investigate +++
	<u>Unknown</u>	Control +++ Investigate +++	Control + Investigate +++

**Step 3: Monitoring the situation**

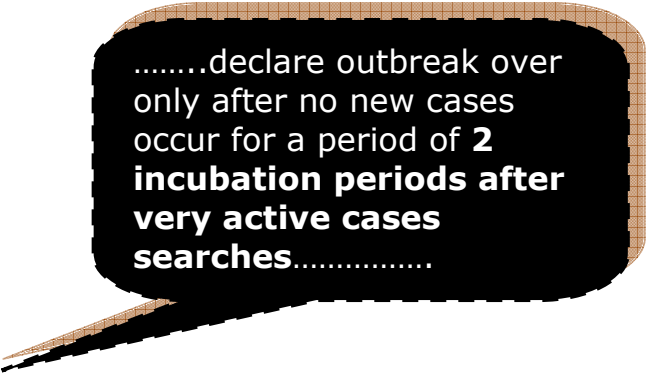
The DSO / MHO should monitor the situation on a regular basis. Ideally they should review the status on a daily basis and give feedback to the RRT as well as feed forward to the State. The main points to monitor are:

- The trends in the cases and deaths
- The containment measures that are being implemented
- Drugs / vaccine stock
- Logistic issues – communications, vehicles,
- Community involvement
- Media response

This should continue till the outbreak is officially declared to be over.

**Step 4: Declaring the outbreak to be over**

The DSO / DHO should declare the outbreak to be over only when there have been no new cases for a period of 2 incubation periods since the onset of the last case. This implies that a very active case search should continue during this period to ensure that cases are not missed.



.....declare outbreak over only after no new cases occur for a period of **2 incubation periods after very active cases searches**.....

**Step 5: Review of the final report**

The DSO / DHO should receive the final report from the PHC MO within 10 days of the outbreak being declared to be over. The Technical committee should review the report basically to understand why the outbreak occurred. Based on this review the Committee should make recommendations – immediate and medium term, so that similar outbreaks do not occur. Most important, they should try and identify deficiencies in the system that needs to be rectified.

**Response to an outbreak**

Even as the outbreak is detected, and is being investigated, control measures need to be instituted. These may be divided into General measures, Specific measures and Community involvement.

**a) General measures:**

- **Logistic support** to the field teams: This would start immediately when the outbreak is reported without waiting for verification, etc. The emphasis should be on saving lives.
- **Human resources:** Additional MO's, lab technicians and nursing staff (depending on the number of cases/deaths reported) may be sent from the block/ district hospital to strengthen in-patient treatment facilities in the nearest health facility, like the PHC. They will assist the MO health facility in providing emergency health care to the patients. Assistance from local practitioners/ specialists should also be sought for better on the spot management of cases. If situation demands 'camp hospitals' should be established in school buildings or similar structures.
- **Drugs:** In the event of an outbreak, there should be an uninterrupted flow of medicines to the area. Emergency medicine stocks should be mobilized and if necessary medicines should be relocated from unaffected regions for the use of the affected region.
- **Equipment and supplies:** this is also important and the district health manager should ensure that this takes place.
- **Vehicles and mobility:** this is of utmost importance as the teams need to move as fast as possible to the affected areas.

- **24-hour Communication channels:** to be established between the District and the team leader at the outbreak location.
- **IEC** to sensitize the community about the problem, give them the correct messages and enroll their help in containing the outbreak.
- **Media:** This is an important task and needs the appointment of a special officer whose main responsibility is to update the press on a daily basis. This will reduce the stress for the district managers and will go a long way in communicating the right message to the community.

b) **Specific measures;** depending on the causative agent. The broad steps would include

- Identification and nullification of the source of the outbreak e.g. chlorinating wells.
- Minimizing transmission and so further exposure e.g. vector control
- Protection of the host e.g. immunization or chemoprophylaxis.
- Effective case management

c) **Community involvement-** while in the past management of epidemics and outbreaks was primarily seen as a “top down” expert driven public health activity, it is now well established through public health practice that the involvement of the community should be a significant part of the whole epidemic/outbreak management strategy. This would mean involvement of community proactively by the district health team, at every stage of the operation, especially:

- Identifying the cases
- Encouraging active reporting of the cases
- Supporting investigation
- Supporting preemptive measures
- Supporting epidemic measures
- Involvement of community leadership, members and other representatives in decision making
- Communicating data and analysis
- Sharing the community experience with other communities after the events.

## Reports

It is important for the concerned officials to make appropriate and timely reports to higher authorities. This has two main uses

1. It keeps the authorities at the higher level informed so that they can make the appropriate decisions
2. It helps to review the outbreak and response, identify system failures and take corrective measures so that similar events are not repeated.

Thus reports are an important learning tool and should not be seen as a mindless chore. But for this to happen, the authorities at the appropriate level should read the reports and take the necessary action.

a) **Daily situation updates:**

During the period of the outbreak the nodal MO should continue to give daily situation updates of the outbreak to the next level. This should continue even when the RRT has started its investigation and should include the list of new cases, lab results received, any new findings, any containment measures taken etc. This daily report should continue till the end of the outbreak (i.e. no suspect case during a period which is double the incubation period). However it is important that these updates are kept as simple as possible – thereby sparing the MO unnecessary work.

b) **Interim report by RRT:**

The RRT will submit an interim report within one week of starting their investigation, response and control activities. The report should cover verification of the outbreak, total number of affected cases/ deaths, time, person, place analysis, management of the patients, likely suspected source, immediate control measures implemented, etc. The report will include reports by the physician and microbiologist, and entomologist (where applicable). The lab results received during that period, environmental factors, etc. It will also have a provisional hypothesis of the causation of the outbreak and comments/recommendations, if any, including whether any further outside help is necessary.

c) **Final report:**

Within 10 days after the outbreak has ceased, a final outbreak investigation report must be submitted by the local health authorities. This report must be comprehensive and give a complete picture of the multi-factorial causes of the outbreak, the precipitating factors, the evolution of the epidemic, description of the persons affected, time trends, areas affected and direction of spread of the epidemic. It should have complete details of lab results including regional lab (cross verification and strain identification), confirmation of the provisional diagnosis and other relevant information.

It is important that feedback from the report is shared with the lower levels and also other districts. Publication in a journal will ensure wider circulation of the lessons learnt.

d) **Summary of outbreak investigation/control at district level**

Surveillance has no meaning if there is no action taken. And RRTs play an important role in completing the surveillance cycle – using information for action. A rapid response to an outbreak not only ensures effectiveness of a surveillance system and prevents morbidity and mortality from a disease or a health related event. Response has two objectives, one is to contain the outbreak, while the other is identify problems with the health systems so that repetitions of the outbreaks do not occur.

There are certain principles of outbreak response that is common to most outbreaks and if applied will be effective in most situation

**References:**

1. Integrated disease surveillance project. Integrated Disease Surveillance Project (IDSP) State and District Surveillance Officer *Two Week Course Content – 2008* available from, [http://idsp.nic.in/idsp/nicd/IDSP\\_2WeekCourse\\_DSO\\_Sept08/Resources.htm](http://idsp.nic.in/idsp/nicd/IDSP_2WeekCourse_DSO_Sept08/Resources.htm), accessed 1 March 2010.

Further Reading
<ol style="list-style-type: none"><li>1. WHO, Module J Field Exercise – Supervisory Visit, in <i>Management of Tuberculosis, Training for District TB Co-ordinators – Set of 14 Modules</i>, WHO/HTM/TB/2005.347a-n Geneva, World Health Organization, 2005. Pp 1-18.</li><li>2. WHO-SEARO, Module 5, Setting Coverage targets and choosing key outcome indicators , <i>National AIDS Programme Management: a set of training modules</i>, World Health Organization, 2007</li></ol>