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INFECTIOUS DISEASES OUTBREAK

RAPID RESPONSE MANUAL

Coordinated by:

Disease Control Division
MINISTRY OF HEALTH MALAYSIA

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EDITORIAL BOARD

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FOREWORD

Many new infectious diseases have been identified in the world in the last few decades. Over the last 2 decades alone 30 new infectious diseases have been described. The Severe Acute Respiratory Syndrome (SARS) is the latest of such diseases. The SARS outbreak demonstrated most clearly the need for preparedness and rapid response. Any lack of preparedness and delay in response can lead to catastrophic impacts on human lives and the economy.

The Director General of World Health Organisation (WHO), Dr. Brundtland had stressed that crucial hours lost in early days of a disease outbreak can mean the difference between a handful of cases and a major epidemic. Rapid detection, identification and response are key to saving lives and controlling infectious disease; whether caused by an incident of bioterrorism or naturally occurring. Strategies to enhance preparedness against both of these threats depend on an effective and efficient health infrastructure.

As detection and response to infectious disease outbreaks require multi-sectoral, multi-agency and multidisciplinary cooperation and collaboration, this document was prepared with contributions from a multidisciplinary group of health professionals at a workshop held in September 2002. It is hoped that this document will be of practical use; and through the same spirit of cooperation and collaboration, infectious disease outbreaks will be overcome in a more coordinated and well organised manner.

TAN SRI DATU DR MOHAMAD TAHA BIN ARIF
DIRECTOR GENERAL OF HEALTH
16 June 2003

ABBREVIATION

APW	Alkaline peptone water	CSF	Cerebro-spinal fluid
CDSS	Communicable Disease Surveillance Section	DCD	Disease Control Division
FOMEMA	Foreign Workers Medical Examination Monitoring Agency	GIS	Geographical Information System
HFMD	Hand-foot-mouth disease	HKL	Kuala Lumpur Hospital
HUKM	Hopsital Universiti Kebangsaan Malaysia	HUSM	Hospital Universiti Sains Malaysia
ID	Infectious Diseases	IMR	Institute for Medical Research
MAb	Monoclonal antibody	MOH	Medical Officer of Health (District Health Officer)
NPHL	National Public Health Laboratory	PCID	Prevention And Control of Infectious Diseases Act
PHI	Public Health Inspector	PHL	Public Health Laboratory
PPE	Personnel Protective Equipment	RAT	Rapid Assessment Team
RRT	Rapid Response Team	Scl-F	Salenite-F
SHD	State Health Department	UMMC	University Malaya Medical Centre
UNIMAS	University Malaysia Sarawak	USM, PP	University Sains Malaysia, Pulau Pinang.
VRI	Veterinary Research Institute	VTM	Viral transport media
WHO	World Health Organisation		

1. INTRODUCTION

The purpose of this document is to provide guidelines for effective management of infectious disease outbreaks.

An epidemic or a disease outbreak is the occurrence of the disease at an unusual (unexpected) frequency. Under the Prevention and Control of Infectious Diseases Act (PCID) 1988, the person authorised to declare an outbreak is the Minister of Health. Early investigation and verification to an infectious disease outbreak and institution of control measures must preceed such declaration of an outbreak.

1.1 BACKGROUND

The last few years have witnessed the occurrence of several infectious diseases outbreaks which resulted in the loss of lives, property and money. These included the ssfollowing:

- 1996 -A major cholera outbreak occurred in Penang with subsequent spread to the other Peninsular States resulting in a total of 1,182 reported cases and 231 detected carriers. Even though there were no fatalities, the direct and indirect costs as a result of the outbreak had adverse implications in several sectors.

- 1997 - The Hand, foot and mouth disease (HFMD) outbreak in Sarawak, mainly during the months of June and July, generated a lot of attention because of the 31 paediatric deaths.

- 1999 - A Nipah Encephalitis outbreak which occurred in 3 defined localities in Peninsular Malaysia resulted in 283 cases including 109 deaths. This was the first report of such infection in the world.

- 2001 - An anthrax scare with a total of136 reported incidents occurred nationwide following a bioterrorist attack in United States of America.

As a result of the above outbreaks, there is an urgent need to address the following issues:

i. to provide guidelines for the management of infectious disease outbreaks at district, state and national levels.

ii. to anticipate and identify possible disease outbreaks by strengthening the surveillance system.

iii. to identify who should initiate the first response in the affected areas and who should be responsible for taking measures to manage the outbreak rapidly, effectively and efficiently.

iv. to define the role of the various relevant agencies in the management of outbreaks.

v. to determine the resources necessary to manage the outbreaks in terms of the expertise, drugs, vaccines, laboratory services, equipment and other facilities.

vi. to prepare uniform and standard operating procedures for the activation of Rapid Response Teams (RRT) in outbreak management.

vii. to develop linkages and lines of communication with other relevant agencies in managing the outbreaks.

vii. to undertake training and capacity building to enhance the nations capability in managing future outbreaks.

1.3 OBJECTIVE

1.3.1 General Objective

To provide prompt and effective response to infectious disease outbreaks and to reduce morbidity and mortality to a minimum by being constantly and adequately prepared in managing the outbreak.

1.3.2 Specific Objectives

a) To prevent, control and contain infectious disease outbreaks.

b) To reduce morbidity and mortality due to infectious disease outbreaks.

c) To strengthen public health infectious disease surveillance.

d) To provide general guidelines and develop a mechanism for effective implementation of outbreak management.

e) To enhance effective emergency and risk communication.

f) To collaborate and coordinate activities with other relevant agencies, both within and outside the country in managing the outbreak.

1.4 GENERAL PRINCIPLE OF OUTBREAK PREVENTION IN MINISTRY OF HEALTH MALAYSIA.

There are several outbreak prevention strategies. There are:

1.4.1 Outbreak management planning

Health organisations at district, state and national levels should undertake surveillance on infectious diseases. Regular surveillance will enable the organisations to forecast possible outbreaks (early warning signals) and develop plans to prevent such occurrences. Such planning helps the organisations to take action before an outbreak occurs.

1.4.2. Organising training and simulation exercises.

Appropriate training must be provided to the people in an organisation for people who would be involved in outbreak investigation. Various categories of people should know what is expected of them when a certain type of outbreak occurs. This training can take the form of simulation, seminars and exercises.

1.4.3 Learning from previous crisis situations

Learning and reflecting on lessons from previous outbreak management which the organisation had experienced would help avert future outbreaks or better manage new outbreaks when they occur.

2.0 OUTBREAK PREPAREDNESS

2.1 RAPID RESPONSE TEAMS

2.1.1 Definition of Rapid Response Team (RRT)

A RRT is a predetermined team identified based on individual expertise and experience and assembled by matching expertise and incident needs in order to provide rapid response in managing disease outbreak effectively.

RRTs should be formed at district, state and national levels.

2.1.2 General roles and functions

1. To analyse and act on surveillance information concerning infectious diseases.

2. To plan control and response strategies for managing outbreaks.

3. To identify additional resources needed for rapid response.

4. To investigate and manage the outbreak including communication with the general public and the media.

5. To collaborate and coordinate with other relevant agencies in managing the outbreak.

6. To evaluate the effectiveness of the response and intervention measures adopted during the outbreak.

7. To produce a detailed report on the outbreak investigation and control activities including recommendations.

8. To predict and plan for the management of future outbreaks.

2.1.3 District Level RRT

2.1.3.1 Membership

The district level RRT may comprise the following:

- District Medical Officer of Health (MOH) / Epidemiologist – as team leader.
- Hospital Director / Physician / Medical and Health Officer
  Senior Health Inspector
- Health Inspectors (Disease Control / Vector Borne Disease Control).
- Health Matron / Health Sister.
- Health Education Officer / Health Education Co-ordinator.
- Other co-opted members from relevant agencies as and when needed.

2.1.3.2 Roles and Functions of District RRT

i. Outbreak Preparedness

- Surveillance of infectious diseases and risk analysis.
- Establishing clear lines of responsibility for planned actions.
- Identification of teams leaders and members (e.g. Rapid Assessment Team (RAT), Investigation Teams, Control Teams etc).
- Regular meetings to review data and evaluate the effectiveness of the implemented measures.
- Predicting and planning for potential future outbreaks.
- Determining additional resources needed for rapid response.
- Ensuring availability of personnel and training.
- Maintaining an inventory of resources for rapid response.
- Conducting regular simulation exercises.
- Making recommendations for improvements of outbreak preparedness plan.

ii. Rapid Assessment

- Formation of RAT. The RAT may comprise MOH / District Epidemiologist / Public Health Inspector (PHI).
- The RAT shall verify the occurrence of the outbreak.
- The RAT shall undertake risk analysis and needs assessment if necessary.

iii. Outbreak Investigation

- Field Investigation (Epidemiological, Environment & Laboratory)

iv. Control activities

- Implement prevention and control measures.
- Risk communication

v. Report and recommendations

- Produce report of the outbreak.
- Evaluate response / intervention measures undertaken during the outbreak.
- Disseminate report to the relevant parties.
- Maintaining an archive of outbreak management reports

2.1.3.3 Criteria for Activation of District Level RRT

a) Unusual occurrence of notifiable infectious diseases in the district (refer to list of notifiable diseases Appendix 1)

b) Unusual occurrences of other infectious diseases in the district

c) Unusual occurrences / clusters of diseases / deaths in the district.

d) Upon directive from a higher authority.

2.1.3.4 Flow Chart for mobilization of District RRT

ACTIVITIES	RESPONSIBILITY
Receive / obtain outbreak information from: • Media • Community • District / State / national surveillance system (on single district outbreak)	District Medical Officer of Health
Mobilise RAT	District Medical Officer of Health
Verify the outbreak	District RAT
Outbreak?	District RRT
No **END**	
Yes Field investigation Control measures Inform state and national levels	District RRT
Report and recommendation, dissemination	District RRT

2.1.4 State level RRT

2.1.4.1 Membership

The state level RRT may comprise the following:

- State Director of Health – as team leader.
- State Deputy Director of Health (Public Health)
- State Deputy Director of Health (Medical)
- State Deputy Director of Health (Pharmacy)
- State Deputy Director of Health (Administration)
- State Epidemiology Officer
- State Chief Health Inspector
- State Health Matron
- State Medical Officer of Health (Vector)
- State Entomologist
- State Health Education Officer
- State Physician / Infectious Disease Physician
- State Paediatrician
- State Pathologist
- State Food Technologist
- Other co-opted members from relevant agencies as and when needed.

2.1.4.2 Roles and Functions of State RRT

- Surveillance of infectious diseases and risk analysis in the state.
- Establishing clear lines of responsibility for planned actions.
- Identification of teams' leaders and members (e.g. Rapid Assessment Team (RAT), Investigation Teams, Control Teams etc).
- Conducting regular meetings to review data and evaluate the effectiveness of the implemented measures in the state.
- Predicting and planning for potential future outbreaks in the state.
- Determining additional resources needed for rapid response.
- Ensuring availability of personnel and training.
- Maintaining an inventory of resources for rapid response.
- Conducting regular simulation exercises and training in the state.
- Making recommendations for improvements of outbreak preparedness plan.
- Coordinating & deployment of resources
  - Inter-district collaboration
  - Communication with Ministry of Health Head Quarters and other states.
  - Communication with National Security Council (state level).
- Maintaining an archive of outbreak management reports

2.1.4.3 Criteria for activation of State RRT

- Unusual occurrences of notifiable infectious diseases in more than one district in the state (refer to list of notifiable diseases: Appendix 1)
- Unusual occurrences of other infectious diseases in more than one district in the state.
- Unusual occurrences / clusters of diseases / deaths in more than one district in the state.
- Request for assistance from a District Health Office.
- The nature of the outbreak requires the involvement of the state (e.g. in highly contagious and fatal infectious diseases).
- Upon directive from a higher authority.

2.1.2.4 Flow chart for mobilisation of State RRT

ACTIVITIES	RESPONSIBILITY
Receive / obtain outbreak information from: • State / National Surveillance system (multi districts within state) • National level or District Health Office • International agencies. • Media	State Epidemiology Officer
Verify the outbreak	State Epidemiology Officer
No / Yes	
END Inform District to investigate	State Deputy Director of Health State Epidemiology Officer
Requires state involvement?	
No / Yes	
END Activate State RRT	State Director of Health

2.1.5 National RRT

2.1.5.1 Membership

The national level RRT may comprise the following:

- Deputy Director General of Health (Public Health) – as team leader.
- Deputy Director General of Health (Medical).
- Director of Pharmacy Services.
- Head of Pathology Services.
- Chief Physician, MOH.
- Chief Infectious Disease (ID) Physician, MOH.
- Chief Paediatrician,MOH.
- Director of Disease Control Division, MOH.
- Director of Institute for Medical Research.
- Deputy Directors for Disease Control.
- Director of National Public Health Laboratory.
- Director of Infectious Disease Research Centre.
- Director of Health Education and Communication Centre.
- Director of Public Health Institute.
- Other co-opted members from relevant agencies as and when needed.

2.1.5.2 Functions

- Surveillance of infectious diseases and risk analysis in the country.
- Establishing clear lines of responsibility for planned actions.
- Providing the expert resources for management of outbreaks when necessary.
- Conducting regular meetings to evaluate the national preparedness for the management of outbreaks and make recommendations for improvements.
- Predicting and planning for potential future outbreaks.
- Determining additional resources needed for rapid response.
- Ensuring availability of trained personnel.
- Maintaining an inventory of expert resources (local and international).
- Conducting regular training and simulation exercises.
- Ensuring adequate resource allocation and deployment of resources at national and state levels.
- Coordinating & collaboration in managing outbreaks
  - Inter-state / district levels.
  - Inter-ministerial and agencies (National Task Force).
  - Communication with relevant international agencies e.g. WHO.
  - Communication with National Security Council (national level).

  Preparing National Policy and legislation on infectious diseases
- Providing risk communication.
- Maintaining an archive of outbreak management reports.

2.1.5.3 Criteria for activation at National Level

- Unusual occurrence of notifiable infectious diseases in more than one state (refer to list of notifiable diseases: Appendix 1)
- Unusual occurrences of other infectious diseases in more than one state.
- Unusual occurrences / clusters of diseases / deaths in more than one state.
- Request for assistance from State / District Health Office.
- The nature of the outbreak requires the involvement at national level (e.g. in highly contagious and fatal infectious diseases, transboundary spread, bioterrorist attack).
- Upon directive from a higher authority.
- An international alert.
- Systems breakdown and natural disasters that may affect health e.g. disruption of water supplies, civil disturbances etc.

2.1.5.4 Flow Chart for mobilisation National RRT

ACTIVITIES	RESPONSIBILITY
Request from state / district Request by higher authority International alert ↓ Mobilisation of Expertise to verify and investigate ↓ Assess the situation ↓ Further action? No → **END** Yes ↓ Activate National RRT ↓ Further action	Director of Disease Control Expert Team National RRT Team Leader

2.2 LABORATORY PREPAREDNESS

Laboratory support is an essential component in outbreak management and involves the rapid detection, identification and epidemiological typing of the aetiological agent in order to determine the source and mode of transmission. In the case of bacterial agents, susceptibility testing is required to guide clinicians in the treatment and prophylaxis.

2.2.1 Inventory of laboratory resources

An inventory of laboratory resources will be maintained and up-dated by the Director of IDRC. The inventory of resources is a list of laboratories, experts and tests available and should be up-dated on an annual basis and made available to the relevant parties.
The current inventory of microbiological services is shown in Appendix 2. A Directory of Laboratory Tests provided by laboratories in Malaysia is shown in Appendix 3.

2.2.2 Regional reference laboratories

A system of regional reference laboratories will be established. The regional reference laboratories will offer an expanded repertoire of diagnostic tests including virus isolation and tests based on molecular technique. Table 1 shows the existing and future laboratories that has been identified and planned to be the regional reference laboratories. The contact numbers of existing reference laboratories are as in Appendix 4.

Table 1: Existing and future regional reference laboratories

REGION	LAB
North Region (Perlis, P.Pinang, Kedah, North Perak)	• Public Health Laboratory (PHL) Ipoh* • *Veterinary Research Institute (VRI) Ipoh** • Pulau Pinang Hospital
Central Region (Selangor, W. Persekutuan, N. Sembilan, Malacca, Pahang & South Perak)	• *Kuala Lumpur Hospital* * • *Natinal PHL (NPHL)**, Sg. Buloh
South Region (Johore, Malacca, N. Sembilan)	• PHL Johor Bahru* • Sultanah Aminah Hospital, Johor Bahru
East Region (Kelantan, Terengganu, Pahang)	• Kota Bharu Hospital • Kuala Terengganu Hospital • *Universiti Sains Malaysia* Hospital (HUSM), Kubang Kerian* • PHL Kota Bharu (Future)

REGION	LAB
Sabah	• Queen Elizabeth Hospital, Kota Kinabalu • PHL (Future) • Universiti Malaysia Sabah • Tawau Hospital • Sandakan Hospital
Sarawak	• *Universiti Malaysia Sarawak** (UNIMAS) Kota Samarahan • Sarawak General Hospital, Kuching • PHL (Future)

** viral isolation facilities*
Laboratories in italics are functioning as regional reference laboratory.

2.2.3 National reference laboratories

National reference laboratories will provide specialised tests that require expensive equipment and the appropriate containment facilities. In principle the specialised tests should not be duplicated between these laboratories. The national reference laboratories will also be responsible for liaising with other international reference laboratories when the need arises. The following laboratories have been identified to function as national reference laboratories.

The NPHL will co-ordinate the activity of national reference laboratories;
which are:

- Institute for Medical Research, Kuala Lumpur
- Hospital Universiti Kebangsaan Malaysia, (HUKM) Kuala Lumpur
- University Malaya Medical Centre, (UMMC) Kuala Lumpur
- University Malaysia Sarawak, Kota Samarahan
- National Public Health Laboratory, Sg. Buloh, Selangor
- Veterinary Research Institute, Ipoh, Perak

2.2.4 International Specialised laboratory resources.

When the need arises the national Reference Laboratories will liaise with overseas' specialised laboratory resources as identified in table 2 below.

Table 2: International laboratory resources

INTERNATIONAL LABORATORY RESOURCES	LIAISONING AGENCY
CDC Atlanta	IMR & UMMC & NPHL
WHO: Victoria Infectious Disease Centre-Enterovirus WHO Collaborating Centre for Ref. & Research on Influenza	IMR & UMMC
CDC Fort Collins US	IMR & UMMC & NPHL
Australian animal health laboratory (CSIRO), Geelong, Australia	VRI & UMMC
Nagasaki Institute For Tropical Medicine – Arbovirus	IMR & UMMC
Central Public Health Laboratory, Colindale UK	IMR

2.2.4 Stockpile of critical laboratories material.

Certain laboratory materials should be stockpiled and kept by the regional stockpile centres which will ensure that the materials are within the expiry date and stored appropriately. These materials must be distributed in a timely manner to the requesting laboratories during an outbreak.

2.2.4.1 Materials to be stockpiled

No	Item	Amount and types	Center to stock	Comments
1	Specimen containers/ Transport Media/ Media/ reagents • Sterile containers • Swabs • VTM • APW • Scl-F • Cary Blair Media • Secondary and tertiary Containers for packaging & transport • Boxes for exporting specimen • Amies Transport Media • Reagents: diagnostic kits, Cell-Lines, MAb (IMR & NHPL)	Sufficient to process 500 specimens	Stockpiles centre	Networking is important Order in stages To exchange before expiry
2	Containers for hazardous Materials (WHO Standard)	Metal Cylinder/ capsule 30/centre Boxes (IMR) 30/centre	Stockpiles centre Export Purposes: IMR	Disease Control Division (DCD), MOH to purchase centrally and distribute to reference laboratory Licensed person (5 from IMR and 3 from PHL) for export of hazardous materials. Training for packaging and export of infectious materials every 2 years. IMR to function as export centre during an outbreak

2.2.4.2 Stockpile centres

The following have been identified as the regional stockpile centres for laboratory materials.

STATE	LABORATORY
EAST COAST Kelantan Terengganu Pahang	 Kota Bharu Hospital Kuala Terengganu Hopsital Tengku Ampuan Afzan Hospital, Kuantan Mentakab Hospital
CENTRAL WPKL Selangor Malacca N. Sembilan	 National Public Health Laboratory (NPHL) Institute for Medical Research (IMR)
SOUTH Johore	 Public Health Laboratory Johor Bahru
NORTH Penang Perak Perlis Kedah	 P. Pinang Hospital Public Health Laboratory
SABAH	Hospital Queen Elizabeth, Kota Kinabalu SandakanHospital Tawau Hospital
SARAWAK	Miri Hospital Sibu Hospital Kuching General Hospital

2.3 CLINICAL RESOURCES

Early clinical diagnosis, timely isolation and appropriate treatment of cases are essential components in the management of an outbreak.

2.3.1 Inventory of clinical resources

i. Existing general Clinical Services are available at

- Health Centers
- District Hospitals
- State Hospitals
- Tertiary / University Hospitals
- Army hospitals
- General practitioners and private hospitals.

ii. Identified hospitals with specialised ID services

Hospitals with specialised ID services should have

- Adult / Paediatric ID physician
- Specialists in respiratory medicine, gastroenterology and neurology.
- Pathologist (Microbiology)
-

The following hospitals have been identified to provide the specialised ID services:

- Kuala Lumpur Hospital*.
- Penang Hospital*.
- Sungai Buloh Hospital (when news hospital ready*)
- Tengku Ampuan Afzan Hospital, Kuantan.
- Sultanah Aminah Hospital, Johor Bahru.
- Sarawak General Hospital, Kuching
- Queen Elizabeth Hospital, Kota Kinabalu, Sabah.
- University Malaya Medical Centre, Kuala Lumpur*

* Hospital with existing specialised 10 services and/or specialists

2.3.2 Isolation and high containment facilities

2.3.2.1 Isolation facilities in Hospitals

All hospitals with specialised ID services should have isolation facilities. The minimal requirements for an isolation facility are the following:

- a single room with an anteroom.
- hand-washing facilities in the anteroom.
- attached bathroom.

- ☛ inlet / outlet pass.
- ☛ negative pressure (droplet transmission cases).
- ☛ air lock.

Eventually all state hospitals will also have isolation facilities as shown in table below. For all new hospitals, it is proposed that ID wards with designated isolation rooms and negative pressure rooms be made available.

	Minimum number of isolation rooms	Minimum number of isolation rooms with negative pressure
Hospital with specialised ID Physician	8 rooms	4 rooms
State hospital	4 rooms	2 rooms

Patients suspected to be infected with Risk Group 4 pathogens (e.g. Ebola, Marburg, Lassa etc) should be sent to a high containment facility. Sungai Buloh Hospital has been identified as a high containment hospital.

Transportation of patients with highly contagious diseases should be done in a special transporter or special ambulances. The interior of these ambulances should be easily dismantled and the surfaces easily decontaminated.

2.3.3 Decontamination facilities

2.3.3.1 Onsite decontamination facilities

These facilities are meant for the victims and emergency response personnel (medical / non-medical e.g. army, HAZMAT etc). The sites of facilities should be selected based on risk analysis and risk assessment.

The onsite decontamination facilities are vehicle mounted mobile self-contained cabin. Such vehicles are to be located in hospitals with ID specialists as identified. They are proposed for:

- Kuala Lumpur Hospital*.
- P. Pinang Hospital*.
- Sungai Buloh Hospital (when new hospital ready*)
- Tengku Ampuan Afzan Hospital, Kuantan.
- Sultanah Aminah Hospital, Johor Bahru.
- Sarawak General Hospital, Kuching
- Queen Elizabeth Hospital, Kota Kinabalu, Sabah.
- University Malaya Medical Centre, Kuala Lumpur*

* Hospital with existing specialised 10 services and/or specialists

2.3.3.2 Hospital decontamination facilities

i. Location

The identified hospitals with ID Specialised services should have decontamination facilities.

ii. Requirements of the hospital decontamination facility

The facility shall comprise designated room(s) or space which should

- Have separate doors (entrance / exit)
- Be away from crowded areas
- Have separate ventilation system (negative pressure)
- Have a system where the waste water should be self-contained and to be disposed properly
- Have separate shower for patient and personnel

2.4 STOCKPILES OF CRITICAL MATERIALS

2.4.1 Vaccines, antibiotics and other essential items

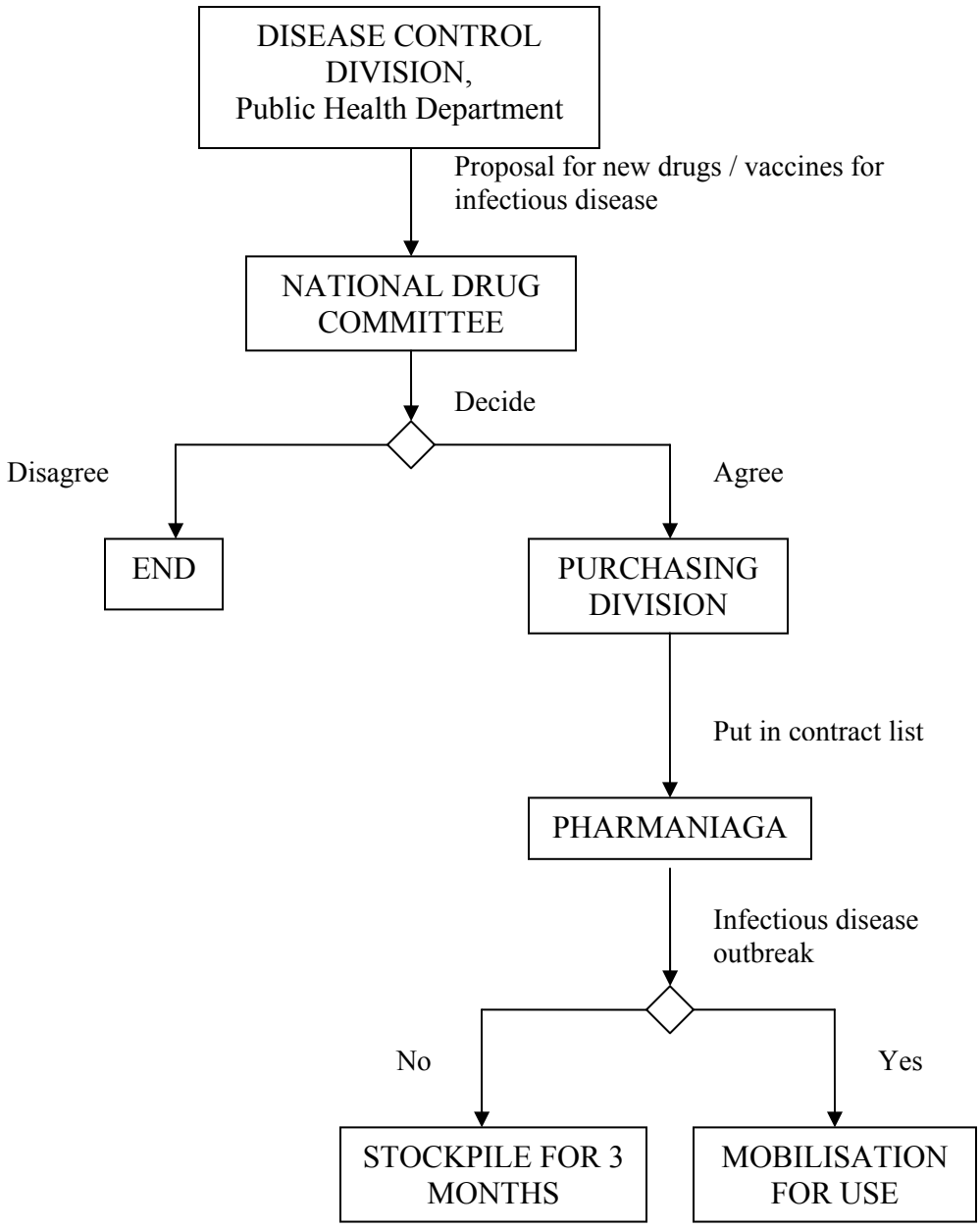
There should be a four month buffer stock for vaccines and antibiotics. The vaccines and antibiotics and other essential items are as shown in table 3.

Table 3: Stockpiles of critical materials.

ITEM		HOW MUCH	STORED AT
Vaccines:	Rabies Mumps-Measles-Rubella Diphteria-Pertussis-Tetanus Diphteria- Tetanus Smallpox Meninggococcal *Haemophilus influenzae* b Yellow fever Chicken Pox Anthrax, Influenza	To be worked out with Pharmacy Division.	To be worked out with Pharmacy Division.
Immunoglobulin	Rabies		
Antitoxin	Botulinum antitoxin		

ITEM		HOW MUCH	STORED AT
Antibiotics	doxycycline, rifampicin, ciprofloxacin		
Decontamination solutions - surfaces - equipment - personnel	sodium hypochloride Hibiscrub chlorine 1:10 solution for disinfecting excreta, cadavers and spills of infectious fluids chlorine to make a 1:100 solution for disinfecting gloved hands, bare hands & skin, floors, clothing, equipment,bedding Household bleach 5% active chlorine Calcium hypochloride powder or granules 70%		Regional pharmacies

2.4.2 Flow Chart for distribution of critical material (Vaccine & drugs)



The following Personal Protective Equipment (PPE) items (table 4) should also be kept as emergency stockpiles.

Table 4: List of Personal protective equipment

ITEM	AMOUNT	STORE AT
TYVEK DUPONT Disposable Suit	To be worked out with The Medical Division	6 regional centres which are • Head Quarters MOH • Johor State Health Department (SHD) • Penang SHD • Pahang SHD • Sarawak SHD • Sabah SHD
Safety boot Nitrle Chemical Resistant		
Fumigation Heat Chamber		
Class A Biohazard Suit		
Spare cylinder		
Fumigation mask		
HEPA/Charcoal/HEPA Cartridge		
Apron Chemical Spray		
Portable fire extinguisher		
Gum Boot without toe cap		
Respirator with full mask complete with battery charger		
FR2 Tychem Hood with full face piece		6 regional centres which are • Head Quarters MOH • Johor State Health Department (SHD) • Penang SHD • Pahang SHD • Sarawak SHD • Sabah SHD
Level A test kit for safety suit		
Knapsack disinfectant sprayer		
Biohazard Bag Autoclavable		
Cabinet		
Decontamination packs		
Full Body Containment suits		
Face mask respirator with filter		

2.4.4 Epidemic Kits.

Epidemic Kits are tools that are necessary for the Rapid Response Team to take along whenever they go to investigate an outbreak. The suggested epidemic kits should comprise of the following:

- Digital Camera
- Hand held Global Positioning System (GPS) device
- Notebook computer (with downloaded resource materials, guidelines, questionnaire etc).
- Portable printer
- Mobile phone with internet access
- Relevant laboratory materials including transport media
- Personnel Protective Equipment
- Other relevant materials.

3.0 SURVEILLANCE AND ALERT

3.1 DEFINITION

Surveillance is the ongoing systematic collection, analysis, and interpretation of communicable disease data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know, so as to take the appropriate action. The final link in the surveillance chain is the application of these data to prevention and control.

3.2 OBJECTIVES

Surveillance systems are distinguished from health information systems by their direct application to epidemiological investigation, and disease prevention and control actions. To support these actions, each surveillance system will need to achieve the following objectives:

- identifying cases of infectious disease that require immediate public health control measures
- monitoring infectious disease incidence and distribution, and alert health workers to changes in disease activity in their area,
- identifying infectious disease outbreaks and support their effective management,
- assessing infectious disease impact and help set priorities for prevention and control activities,
- identifying risk factors for infectious disease to support development of effective prevention measures,

- evaluating prevention and control activities,
- identifying and predicting emerging and re-emerging infectious diseases,
- monitoring changes in infectious disease agents through laboratory testing,
- generating and evaluating hypotheses about infectious disease occurrence,
- fulfilling statutory and international reporting requirements, e.g. surveillance of yellow fever, cholera and plague.

3.3 INFECTIOUS DISEASE (ID) SURVEILLANCE SYSTEMS IN MALAYSIA

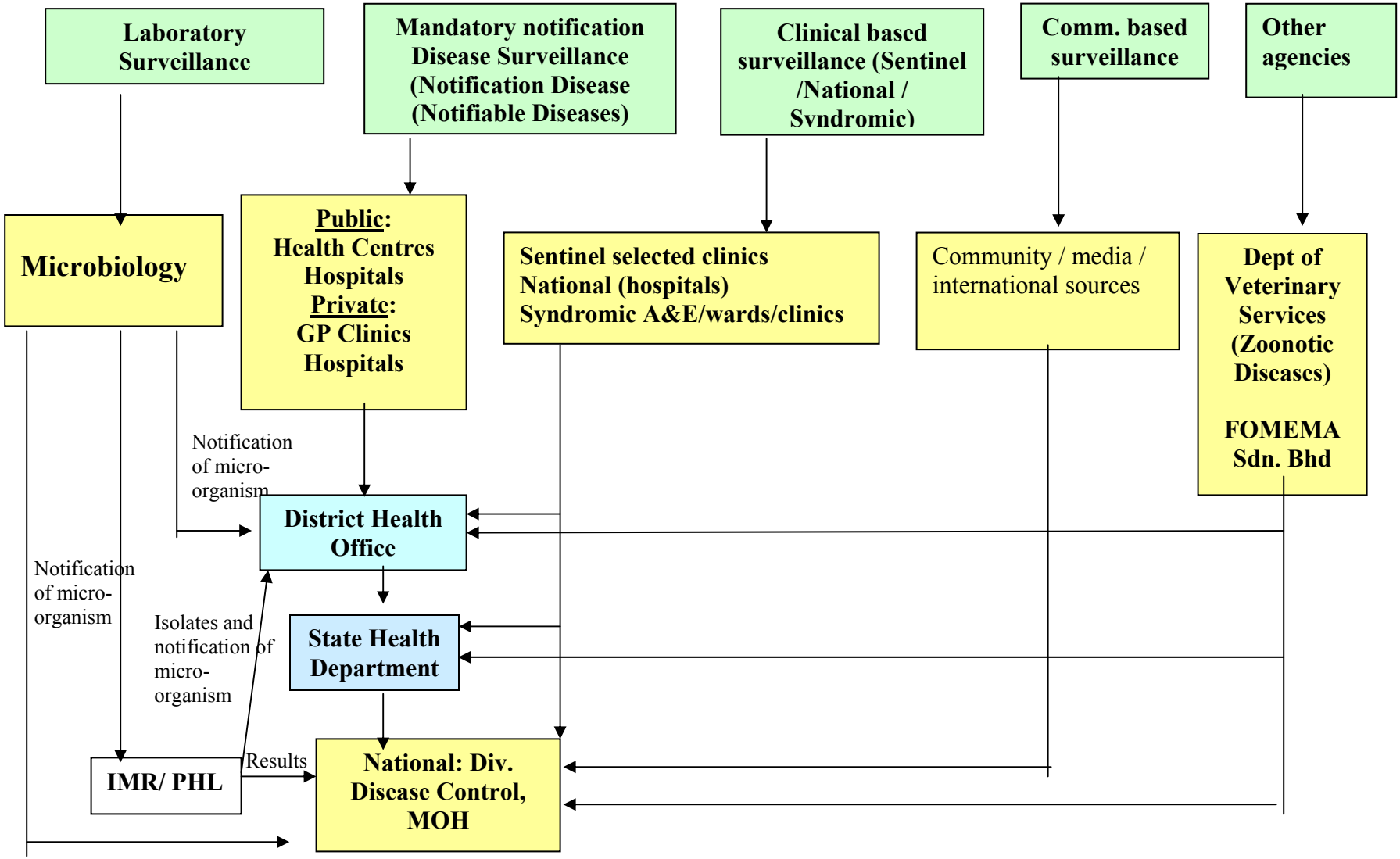
There are several surveillance systems for infectious diseases in Malaysia and the flow of surveillance data and information is as shown. (Figure 1).

3.3.1 Mandatory notifiable diseases surveillance

The mandatory notificable disease surveillance system requires the mandatory notification of presently 26 infectious diseases under the schedule 1 and 2 of the Prevention and Control of Infectious Disease Act 1988 (PCID) as shown in Appendix I. This list is reviewed from time to time.

The present system involves manual reporting of ID using a prescribed notification form as provided for under the Act. However, an electronic Communicable Disease Control Information System (CDCIS) was implemented nationally since 2001. (Refer to CDCIS Manual)

Figure 1: Surveillance mechanisms in Malaysia



3.3.2 Laboratory based surveillance

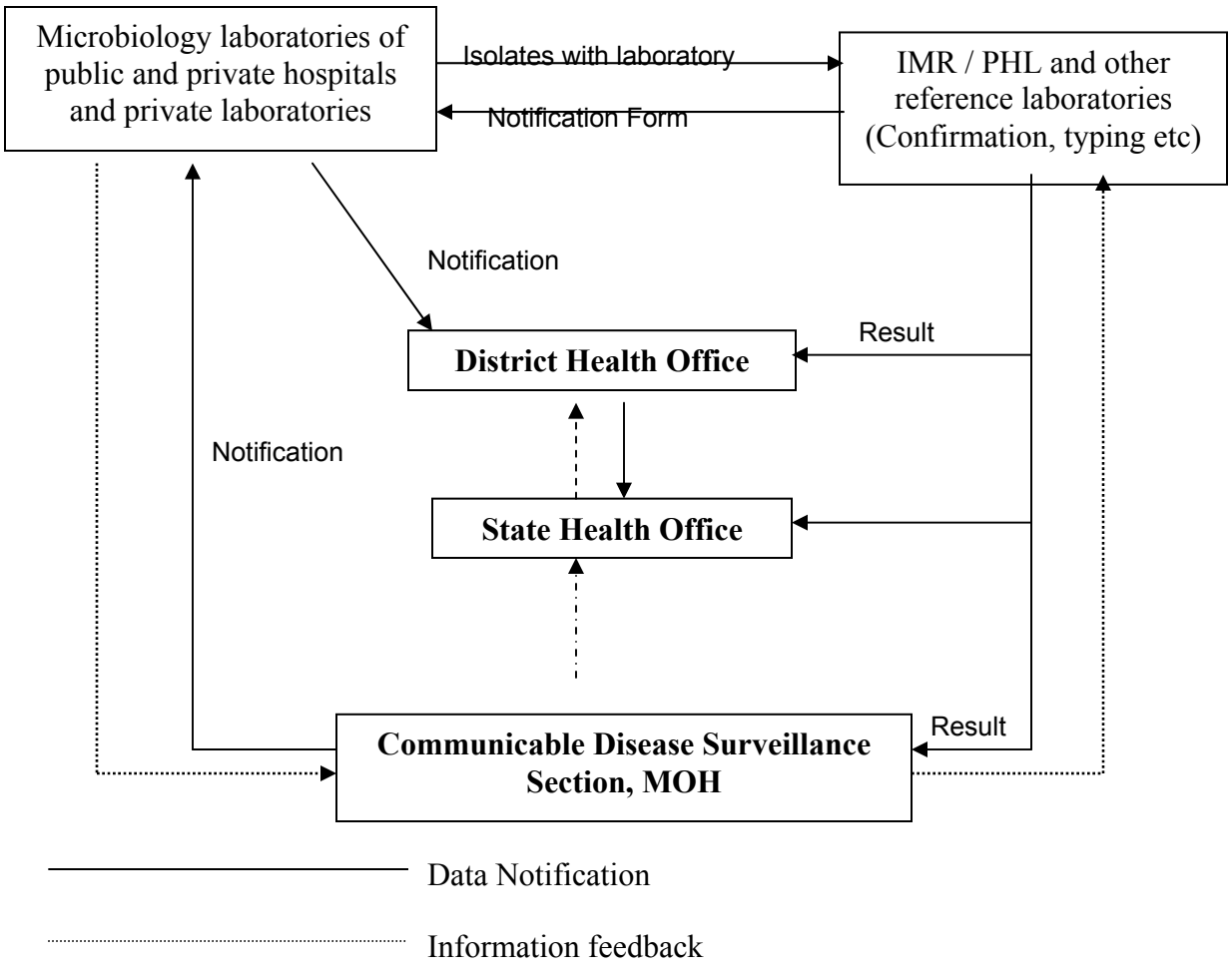
Laboratory based surveillance system which monitor the ID agents was introduced in August 2002. This system also complements the mandatory notifiable disease surveillance system.

This system entails the reporting of micro-organisms isolated in all public/private laboratories in Malaysia to the relevant health authorities. Presently, 6 types of bacteria viz. V.cholerae, H. influenzae B, Salmonella spp., S. typhi/paratyhpi, N. meningitides, and Leptospira are being prioritized to be monitored by the participating microbiology laboratories from the Ministry of Health (MOH).

This system is being piloted in all MOH government microbiology laboratories and will be extended to the other laboratories in the public and private sectors in the country after evaluation of the pilot project. The number of microorganisms which is to be monitored will be reviewed from time to time. Figure 2 shows the laboratory based surveillance flow chart.

For details, refer to the Field Guidelines for Laboratory based surveillance.

Figure 2: Laboratory based surveillance flowchart

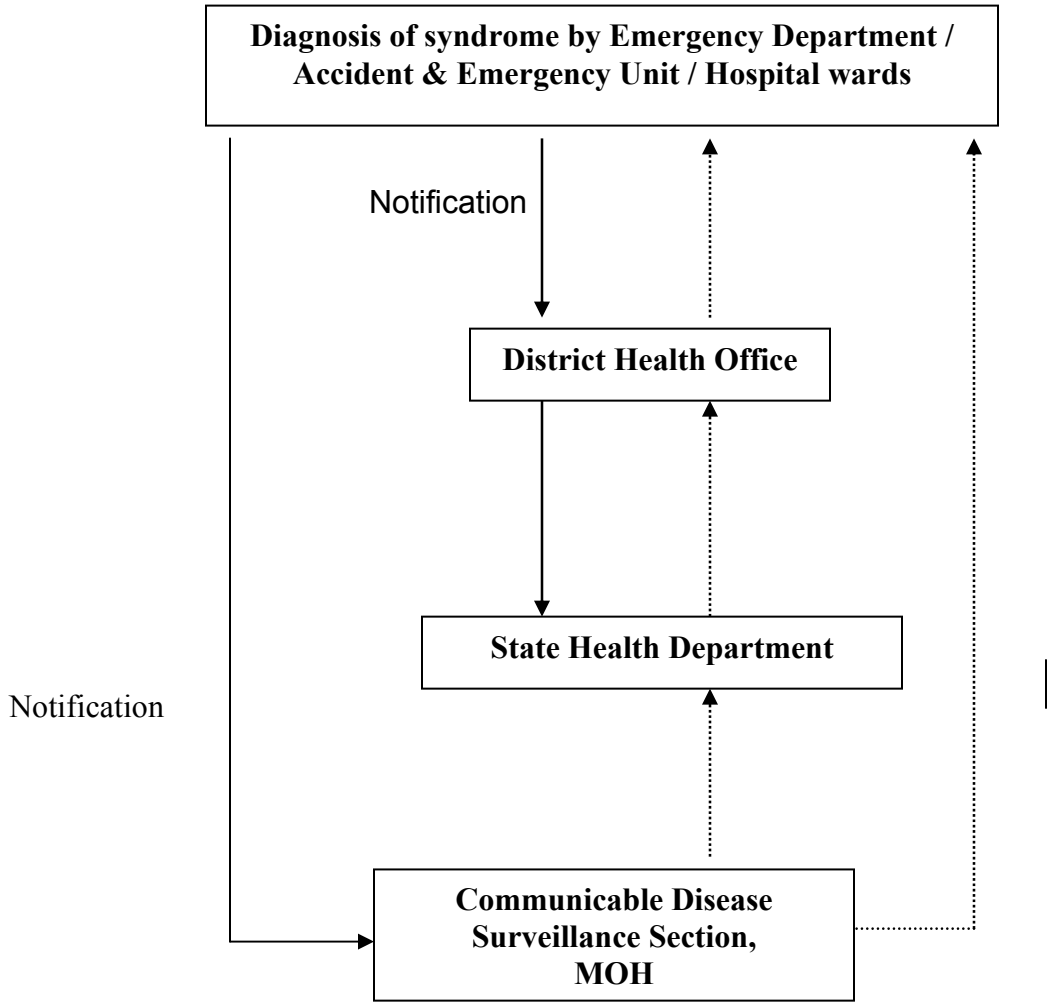


3.3.3 Clinical based surveillance

Clinical based surveillance is limited to specific infections either on a national basis (acute flaccid paralysis and acute gastroenteritis) or on a sentinel site basis e.g. hand, foot and mouth disease. A more comprehensive syndromic based surveillance (acute jaundice syndrome, acute neurological syndrome, acute respiratory syndrome, acute dermatological syndrome and acute haemorrhagic fever syndrome) has been introduced in 2003.

Figure 3 shows the syndromic surveillance flow chart. For the detailed refer to the Syndromic Notification and Laboratory Investigation Manual.

Figure 3: Syndromic Surveillance Flowchart



3.3.4 Disease surveillance by other agencies

Other agencies such as the Department of Veterinary Services and FOMENA Sdn. Bhd. also contribute to the surveillance of certain infectious diseases.

Surveillance of certain ID in foreign workers in Malaysia is being done by FOMENA and reported to the Disease Control Division.

The Department of Veterinary Services currently undertakes zoonotic disease surveillance. Any unusual occurrence of zoonotic diseases in animals (as listed in table 5 below) should be reported to the Communicable Disease Surveillance Section (CDSS), MOH as agreed by the Inter-ministry Committee for the Control of Zoonotic Diseases

Table 5: List of zoonotic diseases with public health importance

NO	DISEASE
1	Rabies
2	Nipah Virus infection
3	Avian influenza
4	Japanese Encephalitis
5	Vancomycin resistant Enterococcus
6	Bovine Tuberculosis
7	Bovine Spongiform Encephalopathy
8	Brucellosis
9	Anthrax infection
10	Toxoplasmosis
11	Leptospirosis

3.3.5 Community based surveillance

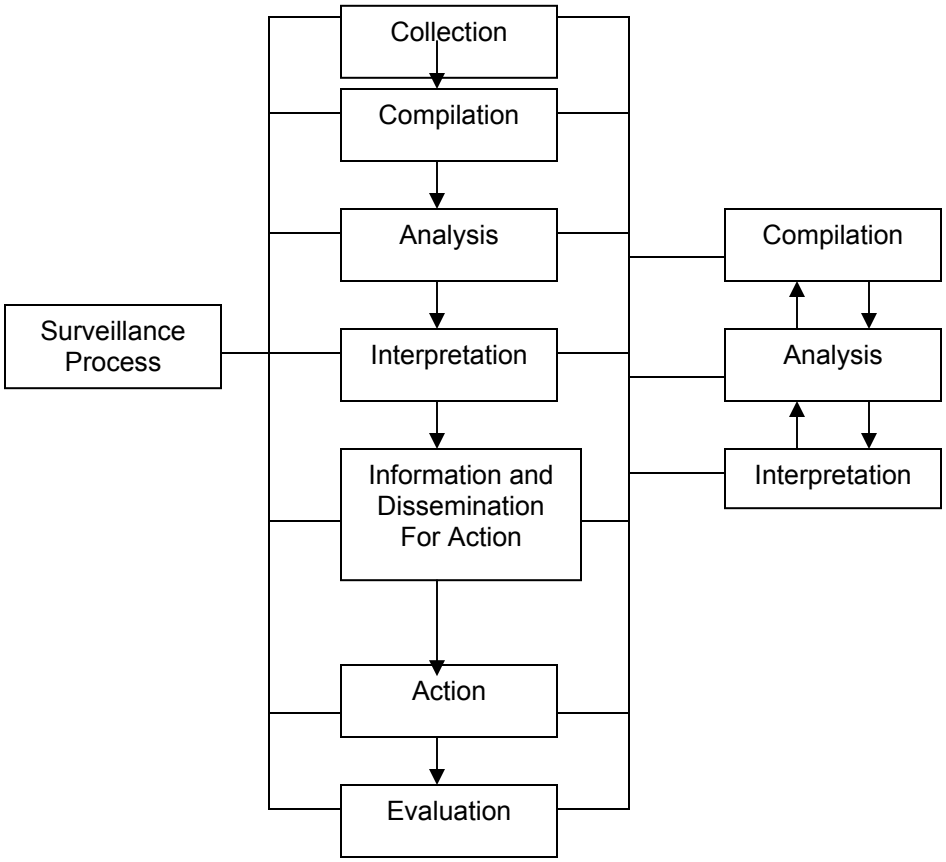
In addition to the above systems, community based surveillance including monitoring of rumours / reports on ID from the community and media (print/electronic) both nationally and internationally, is essential and should become an activity which should be formalised.

CDSS, (MOH), all State Health Offices and District Health Offices, including entry points should play a proactive role in monitoring rumours, local press and media reports and take prompt action to verify these reports in their areas of jurisdiction.

CDSS, MOH, has assigned an officer to perform this task, in particular the monitoring of international ID trends using the Internet and reports from international organization like the WHO.

3.3.6 Surveillance activities at various levels

Surveillance activities as shown in the table below must be undertaken routinely at all levels of the Ministry of Health. The extent and degree of the surveillance activities will depend in the type of infectious diseases as specified by the respective ID prevention and control programmes.



3.3.6.1 Surveillance at the District Level

The District Health Office is responsible for the surveillance of infectious diseases in the district and must establish a system to routinely collect data from

- Health Clinics
- General Practitioners' Clinics
- Hospitals (both government and private)
- Microbiology laboratories

This data must be submitted on a weekly basis to the State Health Office in a timely manner.

The Medical Officer of Health (MOH) will be responsible for collating, analyzing, interpreting the trends of data or for patterns that would suggest that an outbreak is occurring in the district. The information then should be distributed for action by relevant personnel in the district.

3.3.6.2 Surveillance at the State Level

The State Health Office is responsible for collecting surveillance data from the District Health Offices and must collate, analyse and interpret the data for trends and patterns that would suggest that an outbreak is occurring in more than one district in the state. The State Health Office must submit the State data on a weekly basis and in a timely manner to the CDSS.

The State Epidemiology Officer will be responsible for all surveillance activity in the state.

3.3.6.3 Surveillance at the National Level (Communicable Disease, Surveillance Section, Disease Control Division)

CDSS, Disease Control Division is responsible for the collection of data from all State Health Offices, directly from laboratories under the Laboratory Based Surveillance system and directly from reporting physician under the Syndromic Surveillance System. CDSS will collate, integrate, analyse and interpret the data from the various sources to detect trends and patterns of disease outbreak on a national level. The section will employ appropriate tools and techniques for this purpose e.g. Geographical Information System (GIS). The section will also be responsible for monitoring press and other media reports both nationally and internationally and take the appropriate action when necessary.

3.3.7 Dissemination and flow of data

There must be efficient and timely flow of data from the District level to the State and to the Surveillance Section, Disease Control Division and vice-versa. Under normal circumstances weekly reports must be made by all District Health Offices to the State Health Office and by all State Health Offices to the Surveillance Section, Disease Control Division. Where the situation warrants it, immediate reporting by phone may be necessary.

The dissemination of information to all who need to know is equally important. Such information should be sent to the relevant personnel on a regular basis through bulletins and newsletters, at a minimum, on a quarterly basis. Urgent information should be transmitted immediately by phone, fax or e-mail.

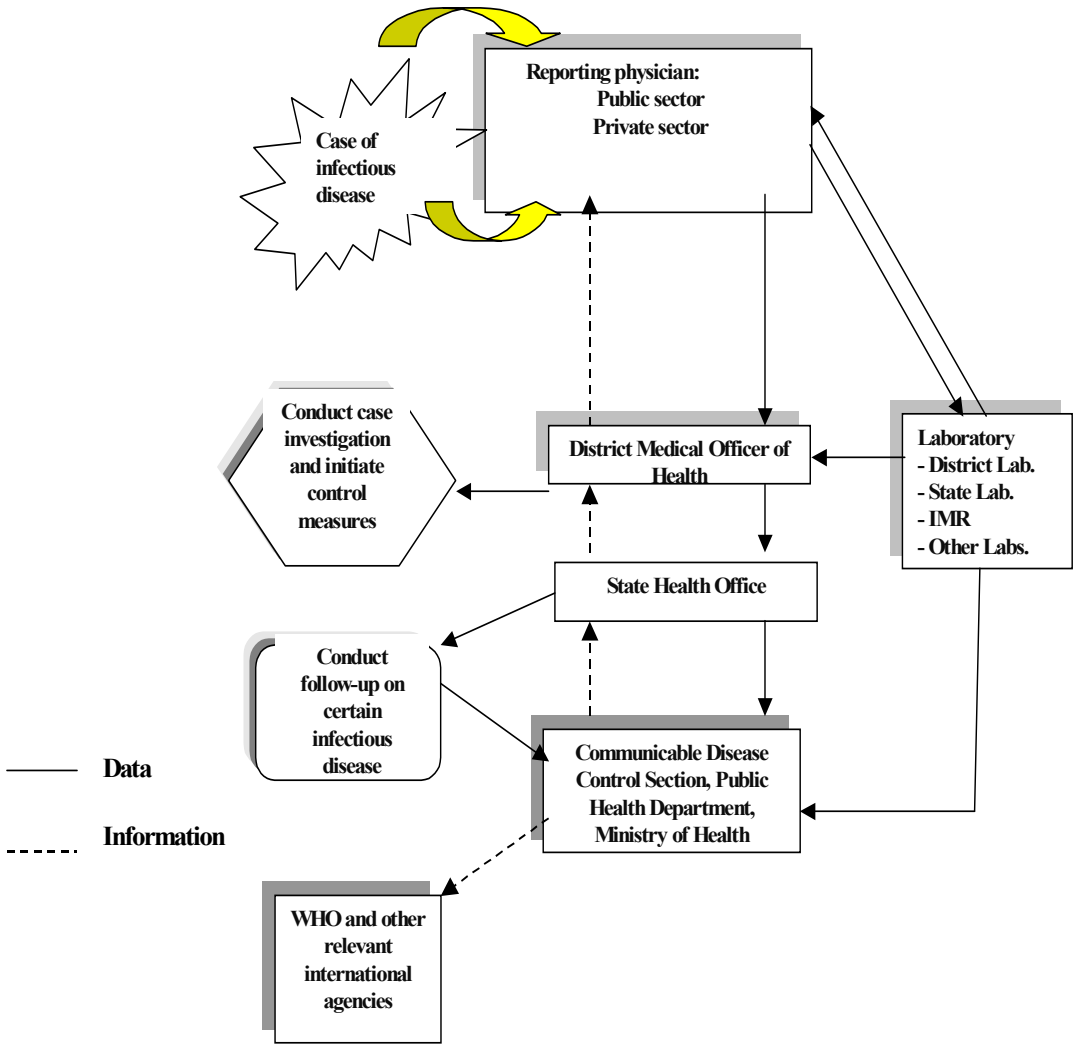
The District Health Office is responsible for the feedback of district surveillance information to relevant personnel in the district.

The State Health Office is responsible for the feedback of state surveillance information to relevant personnel in the state.

CDSS, Disease Control Division is responsible for the feedback of national surveillance information to all relevant personnel in the country.

At present the bulk of data and information is still transmitted in paper form and this has caused undue delay in the analysis and interpretation of the data, hence a delay in response. All effort must be made to upgrade the dissemination of data and information using the latest in information technology in order that the flow is seamless and in real time. The flow of data and information is summarized in figure 4.

Figure 4: Flow of surveillance data and information dissemination



3.4 ALERT MECHANISM AND INITIAL EVALUATION OF POTENTIAL OUTBREAKS

3.4.1 Mechanism of collection, integration and analysis of all surveillance information at district, state and national levels.

- Data from the various surveillance systems need to be integrated using information technology and appropriate statistical software (e.g. Epi-Info) for meaningful analysis.
- Analysis of surveillance shall be undertaken at District, State and National levels (see 2.1.2).
- At the District Level the MOH will be responsible for all surveillance activities in the district.
- At the State Level the State Epidemiologist will be responsible for all surveillance activities in the state.
- Appropriate training shall be given to all health personnel undertaking surveillance activities.

3.4.2 Alerting other relevant parties when an outbreak is suspected

3.4.2.1 District Level

When an outbreak or impending outbreak is suspected based on surveillance activities, the district shall immediately alert:

- The State Health Office by telephone to be followed by a written report within 24 hours to confirm the outbreak or otherwise
- The District Hospital and Microbiology Laboratory by phone to be on standby
- Other relevant governmental agencies in the district to be on standby depending on the nature of the outbreak
- The MOHs of neighbouring districts depending on the nature of the outbreak

3.4.2.2 State Level

When an outbreak or impending outbreak is suspected in more than one district in the state the State Health Director shall immediately alert:

- The Communicable Disease Surveillance Section, Disease Control Division by telephone to be followed by a written report within 24 hours to confirm the outbreak or otherwise.
- The State Hospital and Microbiology Laboratory by phone to be on standby
- Other relevant governmental agencies in the state to be on standby depending on the nature of the outbreak.
- The MOHs of the unaffected districts depending on the nature of the outbreak.

- The State Directors of neighbouring states depending on the nature of the outbreak.

3.4.2.3 National Level

When an outbreak or an impending outbreak is reported from more than one state, the Director of Disease Control Division will immediately alert:

- Deputy Director General of Health (Public Health)
- The relevant Control and Prevention Programme Heads.
- The Chief ID Consultant Physician.
- IMR, NPHL and other relevant laboratory resources.
- Any other relevant agencies when the need arise.

3.5 OUTBREAK DETECTION

3.5.1 Alert indicators

Indicators of impending outbreaks will include:

1. Action thresholds.
   These thresholds will be established at district, state and national levels together with the relevant programmes taking into account:

   - Epidemiological trend in the district, state or country.
   - Baseline incidence levels of infections.
   - The magnitude of the present problem compared with the baseline.
   - The nature of the infection (for rare or very virulent infections, even one case can constitute an outbreak).

2. The occurrence of a cluster of disease or deaths related in person, place or time.

3. Alerts generated by other surveillance system e.g. vector density, GIS, epidemiological typing etc.

4. Surveillance-related information from
   - Vaccine coverage data
   - Food Laboratory results
   - Other agencies e.g. Department of Veterinary Services

5. Proxy indicators as in table 6:

Table 6: Proxy indicators of existing surveillance system

Proxy	Disease/problem
Acute Gastroenteritis	Food and water borne diseases
Acute Flaccid Paralysis	Poliomyelitis
HFMD	Enteroviruses
Acute Respiratory Infection	Pneumonia, Influenza virus
The defined syndromes under the syndromic notification system	Emerging or unknown infections
Unexplained / ill defined death of infectious origin	Emerging or unknown infections

Refer to S.O.P. for surveillance of infectious diseases.

3.5.2 Outbreak Verification

The purpose of outbreak verification is to confirm the occurrence of an outbreak and represents the first important measure in outbreak response. A multidisciplinary approach is required and will include one or a combination of the following:

- Review of the epidemiological data and trend.
- Clinical examination of cases.
- Review of medical records.
- Review of laboratory results.

The task of the outbreak verification shall be performed by the Rapid Assessment Team which is composed of relevant members of RRT.

3.5.2 Evaluation of severity of outbreak

Upon verification of an outbreak the Rapid Assessment Team should also undertake a brief evaluation of the severity of the outbreak. To assess the severity of an outbreak the Rapid Assessment Team will take into account the following:

- Increasing mortality and morbidity.
- High case-fatality rate.
- High rate of severe presentation of disease.
- High rate of anti-microbial resistance.
- Involvement of vulnerable and other high risk group.

3.5.3 Literature search, retrospective review, consultation with experts

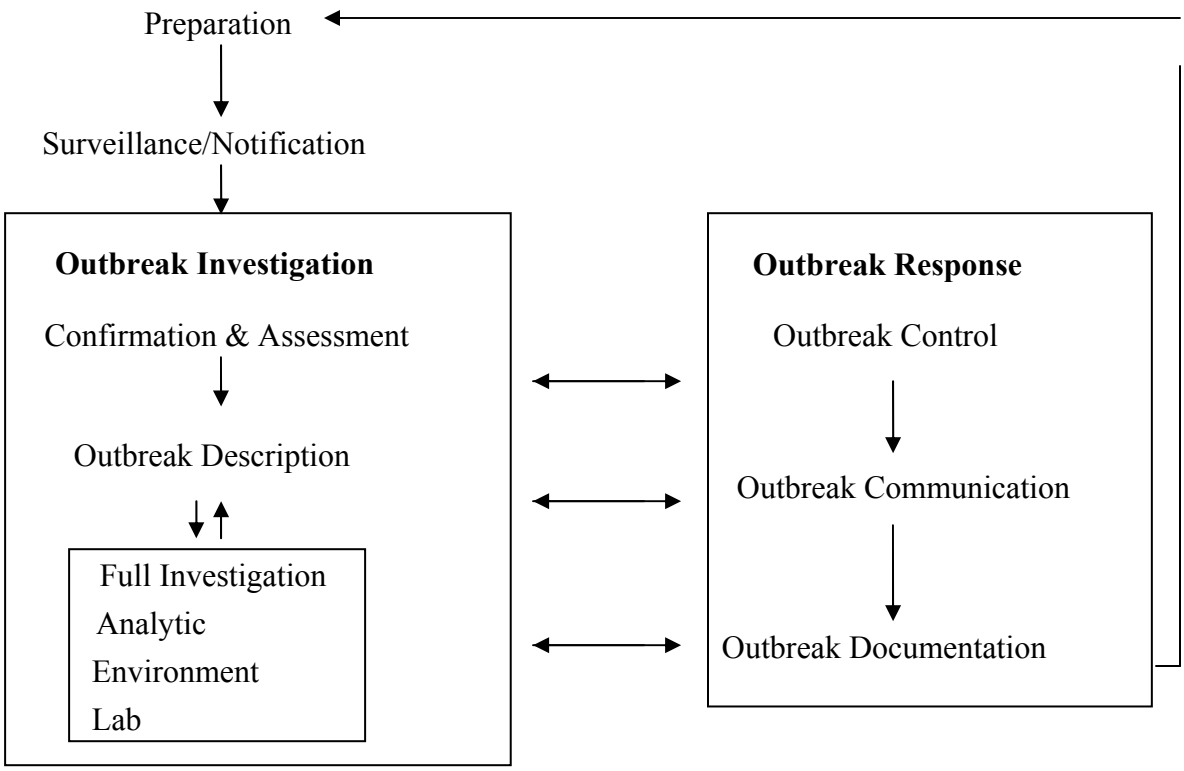
Where the need arisen the Rapid Response Team should also undertake an initial literature search, conduct a retrospective review or consult with experts in the field as to the possible nature of the outbreak. This will greatly facilitate subsequent investigation and control activities.

4.0 MANAGEMENT OF OUTBREAK

4.1 OUTBREAK MANAGEMENT FRAMEWORK

Outbreak preparedness is the first essential step in the whole management framework. An efficient surveillance system allows for the early detection of outbreaks which should then trigger off a whole series of activities including alert, verification, investigation, control and documentation. Systematic evaluation of every outbreak response will further enhance outbreak preparedness thus completing the cycle (Figure 5).

Figure 5: Outbreak management framework

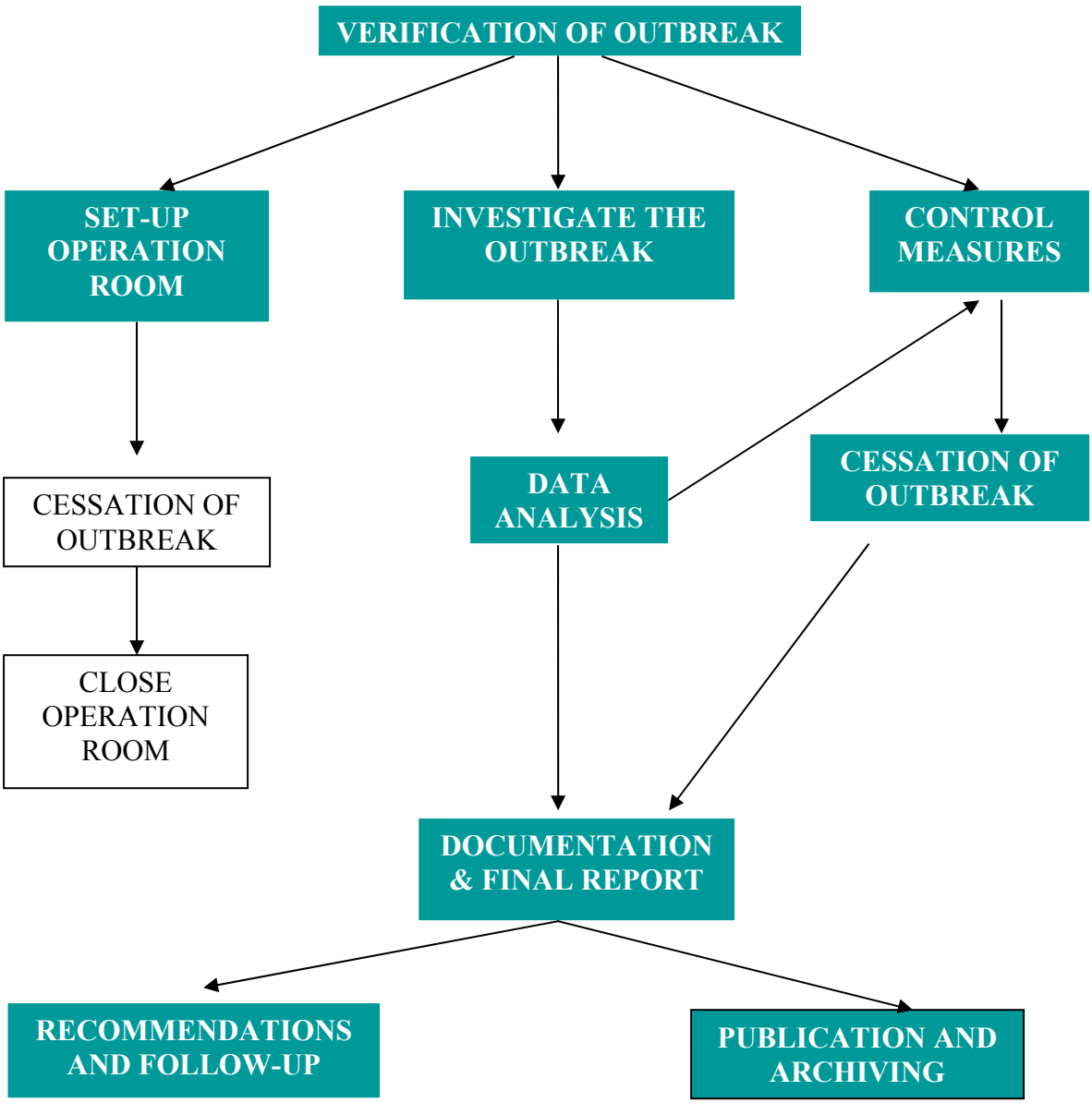


souce: ESR-NZ Disease Outbreak Manual

4.2 INITIATION OF OUTBREAK INVESTIGATION AND CONTROL ACTIVITIES

Once an outbreak has been verified by the Rapid Assessment Team, depending on the nature of the outbreak, the MOH of the district or State Director of Health or the Deputy Director General of Health (Public Health) will initiate activities designed to investigate, control and contain the outbreak (Figure 6).

Figure 6: Outbreak Management Flow Chart



4.2.1 Outbreak definition

For each outbreak there should be a case definition.

- For known diseases: Refer to Disease Control Division, MOH Case Definition for Infection disease in Malaysia.
- For unknown diseases, consider epidemiological linkages (time, place, person, clinical presentation)

The case definition should contain the following:

- ✓ The name of the disease (or as "…like" until more precise data is available)
- ✓ The most frequently occurring signs and symptoms
- ✓ Epidemiological circumstances
- ✓ Confirmatory laboratory tests, if any
- ✓ Criteria of the level of certainty: ''confirmed", "probable" and "suspect".

4.2.2 Standard Operating Procedure for initiation of outbreak investigation and control activities in the District

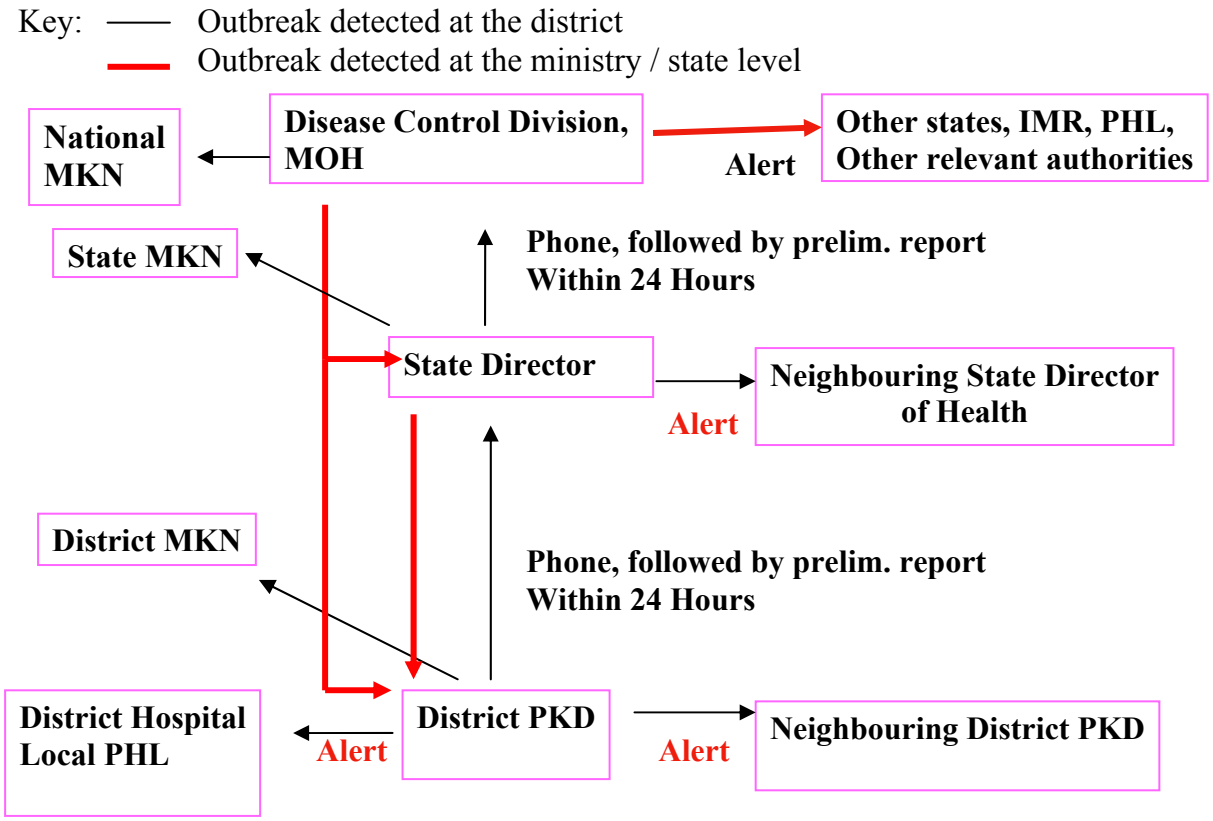
	Activity	Person Responsible	Timeline
1	Detection of possible outbreak through surveillance mechanisms	District MOH	On-going
2	Assemble Rapid Assessment Team	District MOH	Immediate
3	Alert State Health Office by phone	District MOH	Immediate
4	Alert other relevant parties if necessary	District MOH	Immediate
5	Outbreak verification	Rapid Assessment Team	* Within 24 - 48 hours of alert
6	Report outcome of verification exercise to MOH District	Rapid Assessment Team	As soon as verification is made
7	If outbreak verified, mobilise the members of Rapid Response Team	District MOH	Immediately upon verification of outbreak
8	Inform State Health Office of verification by phone	District MOH	Immediately upon verification of outbreak
9	Inform other relevant parties where necessary by phone	District MOH	Immediately upon verification of outbreak
10	Meeting of Rapid Response Team to initiate investigation and control of outbreak activities	Rapid Response Team	Within 24 hours of verification

	Activity	Person Responsible	Timeline
11	Inform State Health Office via a written preliminary report and the District MKN by fax or e-mail.	District MOH	Within 24 hours of verification

- *depending on the nature of the outbreak, a longer period of time for verification may be necessary.*

The flow of processes is as summarised in figure 7.

Figure 7: Line of Communication
(Outbreak information and support request)



MKN: '*Majlis Keselamatan Negara*' (National Security Council)

4.2.3 Outbreak Operation Room.

Refer appendix 5. For details on how to set up and close an Operation Room, refer to standard Operating Procedure (S.O.P) for Operations Room in infectious disease outbreak.

4.2.4 Field data collection and analysis

The Rapid Response Team will collect the relevant data in the field. Important data needed are name, age, sex, race, date of onset, exposure, address, symptoms of disease and laboratory results. Case line listing and the epidemic curve should be updated on a daily basis. For diseases with very short incubation period the data should be up-dated more frequently.

All data should be entered into a computer using the EPI-Info software. This application will also be used to analyse and document the outbreak.

4.2.5 Control activities

4.2.5.1 Public Health control activities

General public health control activities should be implemented immediately. Specific public health control measures will be applied when the nature of the outbreak becomes clearer or is established.

Where relevant MOH guidelines for the control of specific infectious diseases are available and should be adhered to (Appendix 6).

4.2.5.2 Infection control activities in hospitals and clinics during ID outbreak

General Control activities should be implemented immediately. Specific control measures will be applied when the nature of the outbreak becomes clearer or is established.

For details, refer to the Standard Operating Procedures (S.O.P) for infection control during outbreak

4.2.6 Meetings of the Rapid Response Team, Progress Reports and Request for Additional Resources

The Rapid Response Team should meet daily to discuss the progress of investigation and management of the outbreak.

For district outbreaks, the MOH of the District should submit written daily progress reports to the State Health Office. For state outbreaks the State Director of Health should submit written daily progress reports to the Director of Disease Control Division.

Where additional resources are required to manage an outbreak, the District MOH shall make such requests to the State Director of Health and in the case of a state level outbreak; the State Director should make the request to the Director of Disease Control Division.

The State Director of Health or the Director of Disease Control Division as the case may be will coordinate all activities arising from such requests including obtaining experts and material resources from the Ministry of Health or other agencies.

4.2.7 Cessation of outbreak

- For known diseases, the cessation of an outbreak is defined as "when no new epidemiologically linked cases are detected over a period of double-the-incubation period of the infectious disease".
- For unknown diseases, the cessation of an outbreak will be determined by the RRT based on their judgment.
- For a District level outbreak the decision will be made by the District RRT with the agreement of the State Health Director
- For a State level outbreak the decision will be made by the State RRT and to inform the Disease Control Division
- For a National level Outbreak the decision will be made by the Director General of Health.

4.2.8 Final report of the outbreak

4.2.8.1 Person responsible for writing the outbreak report

A final report must be produced for every outbreak. The person responsible for writing the report is as follows:

- District Medical Officer of Health at the district level
- State Epidemiologist at state level
- Director of Disease Control Division, MOH at national level.

4.2.8.2 Format for report

The report should be based on the standardised format (Appendix 7) consisting of:

- Title
- Summary
- Introduction
- Objectives
- Methodology
- Results
- Discussion
- Conclusion and recommendation
- References

4.2.8.3 Dissemination of report

i. District Level outbreak
The report should be sent to:

- State Director of Health of the involved state.
- Director of Disease Control Division, Ministry of Health.
- Executive summary with recommendations to the relevant district authorities (e.g. Education Department, Local Authority etc)

ii. State Level Outbreak
The report should be sent to:

- Director of Disease Control Division, Ministry of Health.
- Executive summary with recommendations to the relevant state authorities (e.g.: Education Department, Local Authority etc)

iii. National Level outbreak
The report should be sent to:

- Director General of Health.
- Deputy Directors General of Health.
- Executive summary with recommendations to the relevant national authorities (e.g.: Education Department, Local Authority etc)

4.2.8.4 Tabling of the report

The report should also be tabled for discussion at

- District/State/National RRTs (depending on the nature of the outbreak)

- State Epidemiologists Meeting (all relevant parties should be invited)
- National outbreak management conference (to be organised by Disease Control Division; and where all relevant parties should be invited including clinicians and laboratory personnel).

4.2.9 Publication

The outbreak report may be published in local or international journals / bulletins, etc with the permission of the Director General of Health.

4.2.10 Recommendations for policy changes

Recommendations for policy changes from district and state health offices should be directed to the Director of Disease Control Division for his consideration and action.

4.2.11 Archiving of the reports

Hard copies of the reports are to be kept at the district, state and national levels depending on the site of the outbreak. Access to these reports should be restricted to Ministry of Health personnel only. *Bona-fide* researchers who want to see and photocopy the report should be allowed to do so only with the written permission of the Director General of Health.

The Disease Control Division will set-up a national outbreak report repository with a cataloging system for use as reference material.

4.3 THE ROLE OF HEALTH CENTRES AND HOSPITALS IN AN OUTBREAK

4.3.1 Alert systems

Hospital and health centres may be alerted to the possibility of an outbreak from the following:

- An alert from district/state/national RRT.
- When the hospital/health centre encounters
    - an unusual cluster of ID cases.
    - an unusual cluster of patients presenting with similar signs and symptoms (refer to Syndromic Notification and Laboratory Investigation Manual).

- unexplained deaths suspected to be infectious in origin.

- When the laboratory reports an unusual number of isolates of specific microorganisms or even single report of highly virulent and contagious pathogens.
- Unusual number of referrals from general practitioners of patients with similar signs and symptoms.

4.3.2 Preparation in health centres and hospitals

Depending on the nature of the outbreak, the hospitals should make adequate preparation for the following:

- protocol for admission of cases and contacts.
- diagnosis of cases
  - clinical
  - laboratory
- isolation facilities for cases and contacts.
- decontamination and barrier precautions to prevent transmission to staff and other patients.
- treatment.
- referral and transfer of cases.
- discharge and follow-up.

3.3.3 Triage for Infectious Disease Outbreaks with high mortality or due to deliberate release of biological agents

This protocol is meant for infectious diseases with high fatality rate like SARS, Ebola, Lassa, pulmonary Anthrax, Marburg, Plague, Yellow Fever, Hanta Pulmonary Syndrome and other newly emerging diseases or outbreak due to deliberate release of biological agents.

The patient is categorised

- by level of exposure/contamination
- by clinical condition either
  i) critical / highly exposed/contaminated
  ii) semicritical / low risk exposure
  iii) non critical / no exposure

The need for decontamination, to isolate and to manage cases should be assessed accordingly.

5.0 RISK COMMUNICATION

Risk communication is very important in outbreak management. It is not only to inform the public about the outbreak with regard to the control and prevention, but to alleviate anxiety and panic among the public. The information given to the public must be truthful and transparent. A spokesperson should be appointed to communicate with the public especially the media. The following will act as spokesperson

- at the national level, the Director General of Health or his representative shall be the spokesperson.
- the state level or his representative, the State Director of Health shall be the spokesperson.
- the district level, the District Medical Officer of Health shall be the spokesperson.
- any other person authorised by the Director General of Health.

6.0 OCCUPATIONAL HEALTH AND SAFETY FOR HEALTH CARE WORKERS

Personal protective equipment should be used according to the suspected aetiological agent. Vaccination and chemoprophylaxis should be given as appropriate to known etiologic agents. There should be a mechanism to ensure compliance to the Occupational Safety and Health Act 1994.

For known infectious pathogen (Risk Group 1 and 2), the standard precautions should be adopted. However for unknown aetiological agents, maximum possible protective measures should be observed. Decontamination procedures for exposed health care workers are as outlined in the Annex 9.

Exposed health care workers should also be given counseling and advice on stress management. They must also be provided with post exposure prophylaxis and treatment with follow up if appropriate.

7.0 CRITERIA FOR RECOMMENDING THE INVOKING OF '*ARAHAN*' 20 NATIONAL SECURITY COUNCIL.

7.1 Criteria for recommending the invoking of '*arahan*' 20 in the event of infectious diseases outbreak

7.1.1 Objective of '*Arahan*' 20

'*Arahan*' 20 outlines the policy on disaster management and disaster relief in Malaysia according to the level of the crisis. It puts in place a mechanism for determining the roles and responsibilities of the various agencies involved in the handling the disaster that

occurs. Certain outbreaks of infectious diseases can be considered to be a disaster that warrants the invoking of the 'A*rahan*' 20.

7.1.2 Definition of disaster under '*Arahan*' 20

A disaster is defined as an incident that occurs without warning, complex in nature and results in loss of lives, property and damage to the environment. It also disrupts services and local community activities. Management of this incident requires extensive resources (man, money and material) and effective multi agency co-ordination and participation.

7.1.3 The criteria for recommending the invoking of '*Arahan*' 20

The criteria for recommending the invoking of '*Arahan*' 20 in the event of infectious diseases outbreaks are:

i. Magnitude of the outbreak in terms of
   a. number of cases.
   b. number of deaths.
   c. large geographical areas involved.

ii. The nature of the confirmed or suspected pathogen
   a. an imported known highly virulent pathogen e.g. Marburg, Lassa, Yellow Fever, Ebola etc.
   b. a newly emerging pathogen that is associated with high mortality rate.
   c. a highly contagious air-borne pathogen.

iii. the outbreak is the result of confirmed or suspected deliberate release of biological agents.

iv. any outbreak or perceived outbreak that result in mass panic and hysteria.

v. any other outbreaks which in the judgment of Ministry of Health requires invoking of '*Arahan*' 20.

7.2 Procedure for recommending the invoking of '*Arahan*' 20

When the National Rapid Response Team, based on the above criteria in 7.1.3, is of the opinion that the outbreak is of such a nature that would require the involvement of the National Security Council, the National RRT will inform the Director General of Health of its opinion.

If the Director General of Health is satisfied that a case has been made, he shall recommend to the National Security Council that '*Arahan*' 20 be invoked.

8.0 TRAINING

Fund should be allocated for training, either locally or internationally. Training should include infectious disease management, disaster control and emergency response. Table top simulation and hands-on exercises should be held regularly.

8.1 Epidemic Intelligence Programme (EIP).

An EIP has been started by the MOH. This field training programme is designed to provide relevant health personnel with the knowledge and skill essential for the management of infectious diseases outbreak. This programme is suitable for public health practioners, clinicians, microbiologists, public health inspectors, nurses and other relevant health care practitioners.

In the event of an outbreak occurring, the EIP fellows under training should play an active role in the management of the outbreak.

8.2 Training for Epi-Info software.

All Medical Officers of Health and Health Inspectors should be trained on the use of the Epi-info package. Epi-info software is chosen because it is public domain and can be assessed freely.

8.3 Training in risk communication

Risk communication is an important aspect of an outbreak management. All relevant health personnel should receive training in risk communication conducted by the Public Health Institute.

8.4 Training in the use of Infectious Disease Outbreak: Rapid Response Manual and Syndromic Notification and Laboratory Investigation Manual

All relevant medical and health personnel likely to be involved in outbreak management should be given appropriate training in the use of the manuals. This includes briefings and simulation exercises. “Train the trainers” session will be conducted by the Disease Control Division and Institute for Medical Research. Echo training will be conducted at state and district level.

8.5 Training in the use of PPE and decontamination procedure

Front-line personnel who may need to use PPE and perform the decontamination procedure either on themselves or on cases and contacts e.g. field investigators; front-line doctors should be trained in the use of the equipment and decontamination procedures.

8.6 Training on isolation, barrier nursing, disinfection and sterilisation procedures.

Medical personnel who manage patients with infectious diseases should be given appropriate training on isolation procedures, barrier nursing including use of PPE, disinfection and sterilisation procedures and the safe disposal of infectious waste.

8.7 Training of Laboratory Personnel in handling risk group 3 & 4 pathogens.

As outbreaks may involve risk group 3 & 4 pathogens like the causative agents of Lassa, Nipah, Ebola, Anthrax, plague etc. laboratory personnel who handle infectious materials should also receive training including safe laboratory work procedures and proper disposal of laboratory waste in normal laboratories as well as BSL 3 laboratories. As these agents are rarely encountered in routine practice selected personnel should receive special training in the identification of these pathogens.

Training of selected laboratory personnel from all national reference laboratories is required for the packing and sending materials overseas. Similar training is required for personnel from regional laboratories in sending similar materials to national reference laboratories. These personnel should also be familiar with the Prevention and Control of Infectious Diseases Regulation 2001 – pertaining to the import and export of cadavers, human tissues and pathogenic organisms and other materials.

8.8 Training in psychological management and counselling

Selected medical and health personnel should receive training in psychological management and counselling in order to adequately manage any cases, their family members and contacts who suffer psychological stress during outbreaks.

8.9 Training in risk management

All Medical Officers of Health (MOHs) are required to undergo training in risk management. This training will enable them to undertake risk and hazard analysis in their respective districts, implement measures to mitigate and communicate such risks to those who need to know including the public in order to take appropriate action.
The MOHs are also required to undergo training in risk communication during outbreaks.

8.10 Training in legal aspects

All health managers as well as those involved in field investigation should receive training in legal aspects of outbreak management including Prevention and Control of Infectious Disease Act 1988 and Destruction of Disease Bearing Insect Act (DDBIA) amended 2001 and other relevant legislation. In cases of bioterrorism health personnel are also required to be familiar with the Criminal Procedure Code.

8.11 Training in postmortem procedures

Training in postmortem procedures for deaths resulting from confirmed or suspected infectious diseases case is required for pathologists and other mortuary workers. Such training should include the use of PPE, the autopsy techniques, specimen collection, storage and transport, and the safe disposal of the remains. For details see the Guidelines / Protocol on Post-mortem.

8.12 Trainers

Suitable trainers should be identified at district, state and national levels. Training the trainers will be conducted at the national level and echo training by the state and district level trainers. All trainers should attend refresher courses to update and keep abreast with the latest technology in the management of infectious diseases.
For certain specialised training foreign expertise may be required.

8.13 Training methods

A variety of training methods will be employed. These will include didactic sessions, interactive workshops, use of demonstration and other multi-media kits, simulation exercises and mock drills. Trainees will be assessed on their knowledge and skill.

All aspect of the training programme will be evaluated from time to time for their effectiveness by the Disease Control Division and changes made as appropriate. Specific outcome indicators for effective outbreak management will be identified, measured and monitored; and the appropriate remedial measures should be taken.

9.0 FUNDING

Funding for the management of the outbreak should be derived from the operating budget. In the event that the operating budget allocated is insufficient, additional funds can be applied for from the Director of Disease Control Division, Ministry of Health.

In an emergency situation e.g. large outbreak, the total allocated operating budget for the state can be used to manage the situation and reimbursement for these expenditures can be obtained from the Ministry of Health in due course. However, prior notification for such usage must be made to Director of Disease Control Division.

10.0 REFERENCE

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WHO-CDC. 2001. Technical Guideline for integrated disease surveillance and response in Africa Region. July 2001

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APPENDIX 1

List of notifiable communicable diseases

DISEASES	Notification by phone within 24 hours	Written notification within 1 week	Lab confirmation	Notification by Diagnostic Status	
				Clinical diagnosis	Labaratory diagnosis
AIDS		•	REQUIRED		X
HIV INFECTION		•	REQUIRED		X
CHANCROID		•	REQUIRED		X
CHOLERA	•		REQUIRED	X	X
DENGUE FEVER, DHF, DSS	•		REQUIRED	X	X
DIPHTERIA	•		REQUIRED	X	X
DYSENTRY		•	REQUIRED	X	X
EBOLA-MARBURG DISEASE	•		REQUIRED	X	X
FOOD POISONING	•		NOT REQUIRED	X	
GONOCOCCAL INFECTIONS		•	REQUIRED		X
LEPROSY		•	REQUIRED		X
VIRAL HEPATITIS		•	REQUIRED	X	X

DISEASES	Notification by phone within 24 hours	Written notification within 1 week	Lab confirmation	Notification by Diagnostic Status	
				Clinical diagnosis	Clinical diagnosis
HEPATITIS A		•	REQUIRED		X
HEPATITIS B		•	REQUIRED		X
ACUTE VIRAL HEPATITIS C, D& E		•	REQUIRED		X
JAPANESE ENCEPHALITIS		•	REQUIRED		X
MALARIA		•	REQUIRED		X
MEASLES		•	NOT REQUIRED	X	X
PERTUSSIS		•	REQUIRED	X	X
PLAGUE	•		REQUIRED	X	X
POLIOMYELITIS (AC)	•		REQUIRED	X	X
RABIES	•		REQUIRED	X	X
RELAPSING FEVER		•	REQUIRED	X	X
SALMONELLOSIS		•	REQUIRED		X
SYPHILIS		•	REQUIRED		X

DISEASES	Notification by phone within 24 hours	Written notification within 1 week	Lab confirmation	Notification by Diagnostic Status	
				Clinical diagnosis	Clinical diagnosis
TETANUS		•	NOT REQUIRED	X	
TUBERCULOSIS		•	REQUIRED		X
TYPHOID/ PARATYPHOID		•	REQUIRED		X
TYPHUS		•	REQUIRED	X	X
YELLOW FEVER	•		REQUIRED	X	X

Microbiological services available at the Reference Laboratories.											
	MICROBIOLOGICAL SERVICES										
SITE	**BACTERIOLOGY**		**VIROLOGY**		**PARA SITO LOGY**	**MYCOLOGY**		**POISONS AND TOXINS**	**BSL 3 FACILITY**	**MOLECULAR DIAGNOSTIC**	**EM**
	Basic	Specialised /reference	Serology (commercially available diagnostic kits)	specialised including isolation	General	Basic	Specialised / reference				Electron microscopy
HKL	X	X	X	X*	X*	X				X*	
State Hospital	X		X			X					
District Hosp	X		X			X					
University											
PPUM	X	X	X	X	X	X	X		X	X	X
HUKM	X	X	X	X	X	X	X			X	X*
HUSM	X	X	X	X	X	X				X	
Unimas	X		X	X						X	
VRI	X	X	X	X	X	X		X (Toxin)	X	X	X
IMR	X	X	X	X	X	X	X		X	X	X
NPHL	X	X	X	X	X	X		X (Food lab) (Toxin)	X*	X	X*
PHL Ipoh	X	X	X		X	X		X		X	
PHL Johor Bahru	X	X	X		X	X		X		X	
USM PP								X			X
Jab Kimia								X		X	
UPM										X	X

Note: (*) –under development

APPENDIX 3

Directory Of Laboratory Services

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Acute haemorrhagic syndrome	Microscopic examination	Blood smear: Thick and thin	State hospitals and district hospital with microbiologists.
	Virus isolation	Blood,Cerebrospinal fluid	IMR (Virology Division), NPHL, university hospital laboratories
	Bacterial and viral antigen detection	Serum, tissue, CSF	State hospitals and district hospital with microbiologists.
	Viral genome detection	Serum, tissue, CSF	IMR (Virology Division), NPHL, university hospital laboratories
	Antibody levels	Serum, CSF	State hospitals
Acute jaundice syndrome	Antigen detection, antibody levels,	Serum, tissue	State hospitals
	Microscopic examination	Blood smear: Thick and thin smear	State hospitals and district hospital with microbiologists.
	Bacterial isolation	Blood, tissue	State hospitals
	Viral isolation	Blood, tissue	IMR (Virology Division), NPHL, university hospital laboratories
	Virus serotyping, genome detection	Serum, tissue	
Acute neurological syndrome	Bacterial isolation, identification and susceptibility testing	Throat swab/washing/gargle, tissue and other body fluids	State hospitals and district hospital with microbiologists and Public Health Laboratories

* IMR and NPHL are the coordinating agencies for virology. These laboratories will collaborate with other laboratories within and outside the countries if needed.

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Acute neurological syndrome	Virus isolation	Faeces, throat swab/washing/gargle, tissue and other body fluids	IMR(Virology Division), NPHL, university hospital laboratories
	Serology	Serum	State hospitals and district hospital with microbiologists, IMR (Virology division).
Acute respiratory syndrome	Bacterial isolation, identification and susceptibility testing	Blood culture, throat swab/ gargle, sputum, nasopharyngeal swab / aspirate, bronchoalveolar lavage / tracheal aspirate, pleural fluid	State hospitals and district hospital with microbiologists.
Acute respiratory syndrome	Virus isolation, antigen testing	Throat swab/ gargle, nasopharyngeal swab / aspirate, bronchoalveolar lavage / tracheal aspirate, pleural fluid	IMR (Virology Division), NPHL, university hospital laboratories
Adenovirus	Isolation	Throat swab, stool	Virology division(IMR)
Amoebic dysentery	Microscopy	Stool	State hospitals and district hospital with microbiologists
	Antigen detection		State hospital, Parasitology division (IMR)
Anthrax	Microscopic examination of clinical specimen	Blood, sputum, skin or ulcer tissue	State hospitals and district hospital with microbiologists

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Anthrax	Isolation and identification	Blood, sputum, skin or ulcer tissue	BSL 3 laboratories (VRI, IMR)
Bacterial culture identification	Identification of pure isolates determined to be of clinical significance	Pure, actively growing culture on suitable agar slant	IMR (Bacteriology division),PHLs, university hospital laboratories
Bacterial typing, Pulsed Field Gel Electrophoresis	To determine if isolates from different sources are the same	Pure isolates on agar slants	IMR (Bacteriology division), PHLs, university hospital laboratories
Bordetella pertussis and other bordetellae	Isolation	Sputum, nasopharyngeal aspirate	State hospitals and district hospital with microbiologists
Bordetella pertussis and other bordetellae	Identification susceptibility testing of bordetella isolates	Pure culture	State hospitals
	Antigen detection (IF)	Nasopharyngeal swab	State hospitals
	Bordetella pertussis serology	Serum	State hospitals, Public Health Laboratories, university hospital laboratories
	Characterisation of bordetella isolates	Pure culture	IMR (bacteriology division), Public Health Laboratories, university hospital laboratories
Brucellosis	Culture and susceptibility testing	Blood, bone marrow, abscess, liver or spleen biopsy	State hospitals and district hospital with microbiologists. Primary specimens for isolation and identification are acceptable with prior consultation

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Chlamydia pneumoniae	Antigen detection	Brochoalveolar lavage	State hospitals
	Serology	Serum	State hospitals
Corynebacterium diptheriae	Isolation and identification	Swab from inflamed areas of the membranes in throat and nasopharynx, skin lesion and materials removed from wounds by swab or aspiration	State hospitals and district hospital with microbiologists
	In-vitro toxin testing	Pure culture	IMR (bacteriology division), PHLs
Clostridium perfringes	Culture and susceptibility testing	Stool	State hospitals
Enteric pathogens (Salmonella, Shigella, Yersinia, E. coli 0157:H7, Campylobacter, Vibrio, Aeromonas, Pleisomonas	Culture, identification and susceptibility testing	Stool, rectal swab	State hospitals and district hospital with microbiologists
Enterovirus infections(Coxsackieviruses, echoviruses, poliovirus)	Antigen detection (IF)	Stool, throat swab, CSF, vesicle fluid and tissue	State hospitals
	Isolation and strain typing		IMR(Virology Division)

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Enterovirus infections(Coxsackieviruses, echoviruses, poliovirus)	Genome detection	Stool, throat swab, CSF, vesicle fluid and tissue	IMR(Virology Division), NPHL, university hospital laboratories*
Exanthematous viral infections	EIA for mumps, measles and rubella	Serum	State hospitals and Public Health Laboratories, IMR (Virology Division)
	IFA	Vesicular fluid, lesion swab	State hospitals and Public Health Laboratories
Haemophilus ducreyi	Isolation, identification and susceptibility testing	Genital ulcer swab, aspirated pus	State hospitals and district hospital with microbiologists, Public Health Laboratories
HIV	Screening and confirmation	Serum	State hospitals and district hospital with microbiologists, Public Health Laboratories
Influenzae virus/ parainfluenza virus Influenzae virus/ parainfluenza virus	Antigen test	Throat swab, nasopharyngeal swab, bronchial wash or other respiratory specimen	State hospitals, Public Health Laboratories. Note: Need to confirm positives with conventional virus isolation and subtyping by Virology Division, IMR. Specimens tested negative are not reported until conventional culture results are r
	Isolation and typing of influenza virus by shell vials	Throat swab, nasopharyngeal swab, bronchial wash or other respiratory specimen	State hospitals. Note: Specimens tested negative are not reported until conventional culture results are reported.
	Isolation and typing by conventional culture	Throat swab, nasopharyngeal swab, bronchial wash or other respiratory specimen	Virology Division, IMR

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Legionellosis	Isolation and identification of *Legionella pneumophila* serogroup 1	Lung tissue, pleural fluid, transtracheal aspirate and lower respiratory secretions	State hospitals, Public Health Laboratories
	Speciation and serogrouping of other legionella	Pure culture	Bacteriology Division, IMR
	Isolation, identification and susceptibility testing	Blood and CSF (1st 10 days of illness), urine (2nd week - 30 days)	State hospitals, Public Health Laboratories
Leptospirosis	Antigen detection	Urine	State hospitals, Public Health Laboratories
	EIA - screening	Serum	State hospitals, Public Health Laboratories
	MAT- confirmatory		Bacteriology Division, IMR
Meningococcal disease	Bacterial culture, identification, susceptibility testing and antigen testing	CSF, blood	State hospitals and district hospital with microbiologists.
Neisseria gonorhoea	Culture and susceptibility testing	Endocervical swab, urethral swab, eye swab in Amies transport media. Preferably swab from suspected site of infection is streaked on to selective media e.g. Thayer Martin	State hospitals and district hospital with microbiologists and Public Health Laboratories

DISEASE/PATHOGEN	SERVICE	SPECIMEN REQUIRED	TESTING LABORATORY
Neisseria gonorhoea	Strain typing	Pure culture	IMR (Bacteriology Division)
Tuberculosis	Isolation only	Sputum, blood, CSF, gastric lavage, skin lesion material, tissue, stool, urine	State hospitals and district hospital with microbiologists
	Isolation, genus identification and susceptibility testing	Sputum, blood, CSF, gastric lavage, skin lesion material, tissue, stool, urine	State hospitals with automated Tb culture system and Public Health Laboratories
	Species identification and susceptibility testing (gold standard method of testing)	Pure, actively growing culture on LJ agar slant	Institute Of Respiratory Medicine, HKL and National Public Health Laboratory
	Molecular strain typing (RFLP)	Pure culture	National PHL
Rickettsial diseases	Indirect Immunoperoxidase	Serum	State hospitals
Streptococcal infections	Isolation, identification and susceptibility testing	Blood, pus, throat swab	State hospitals and district hospital with microbiologists and Public Health Laboratories
	Strain typing	Pure culture	IMR (Bacteriology Division)
Syphilis	Serology	Serum, CSF	State hospitals and district hospital with microbiologists.
Viral gastroenteritis	Serology (latex agglutination, EIA)	Stool	State hospitals
	Electron microscopic examination	Stool	IMR(Virology Division)

APPENDIX 4

CONTACT NUMBER OF REFERENCE LABORATORIES

LABORATORY	PHONE / FAX NUMBER
Institute of Medical Research Jalan Pahang, KL.	03 - 26988876 (phone) 03 - 26939335 (fax)
National Public Health Lab Sungai Buloh, Selangor.	03 - 61565109 (phone) 03 - 61571036 (phone) 03 - 61402249 (fax)
Ipoh Public Health Lab Jalan Jelapang, 30020 Ipoh	05 - 5287829 (phone) 05 - 5287836 (fax)
Johor Bharu Public Health Lab Jalan Persiaran 1 Tampoi 81200 Johor Bharu, Johor.	07 - 2387162 (phone) 07 - 2387215 (fax)
University Malaya Medical Centre Lembah Pantai 59100 Kuala Lumpur	03 - 79677022 (phone) 03 - 79594767 (fax)
Universiti Kebangsaan Malaysia Jalan Yaacob Latif Bandar Tun Razak 56000 Cheras, Kuala Lumpur	03 - 91733333 (phone) 03 - 9702531 (phone) 03 - 9702548 (phone) 03 - 91737149 (fax)
Universiti Malaysia Sarawak 94300 Kota Samarahan Sarawak	082 - 671000 (phone) 082 - 67111903 (fax) 082 - 672275 (fax)
Universiti Sains Malaysia Jalan Raja Perempuan Zainab II 16150 Kubang Kerian, Kelantan.	09 - 7651711 (phone) 09 - 7651700 (phone) 09 - 7652198 (fax)
Veterinary Research Institute No. 59, Jalan Sultan Azlan Shah, 31400 Ipoh, Perak Darul Ridzuan.	05 – 5457166 / 87 (phone) 05 - 5452863 (phone) 05 - 5463368 (fax)
Penang Poison Centre University Science Malaysia 11800 Pulau Pinang	04 - 6570099 (phone) 04 - 6568417 (fax)
Jabatan Kimia Malaysia Jalan Sultan 46661 Petaling Jaya, Selangor.	03 - 79573611 (phone) 03 - 79853000 (phone) 03 - 79556764 (fax)

APPENDIX 5

STANDARD OPERATING PROCEDURE FOR SETTING UP OF AN OPERATIONS ROOM

When to set up an Operations Room

1. Infectious disease outbreak occurring in more than one states (national level), more than one district (state level) and if only one district (district level).
2. Infectious disease outbreak causing lost of life.
3. Incidence of bioterrorism.
4. Global alert on any infectious disease that may occur locally.
5. When ordered by a higher authority.

Term of Reference (TOR)

1. To compile and monitor all information on activities concerning the infectious disease outbreak done at the relevant level.
2. To coordinate all activities involving inter-agency co-operation and collaboration. e.g. education, veterinary services, defense , information etc.
3. Updating of information concerning the outbreak
    - Number of cases reported (case listing)
    - Control activities
    - Health education activities
    - Current situation of the outbreak.
4. To manage the hotline – to provide information
5. To prepare the daily report.
6. To prepare press release if require.
7. To prepare information for dissemination to relevant parties.

Function of every unit at National Operations Room for the control of an Infectious Disease Outbreak.

A. Task Force Secretariat.

- Secretariat to National Outbreak Control Task Force.
- Secretariat to Inter-agency Committee
- Arrange Task Force Meeting
- Co-ordinate activity reports from all departments involved.

B. Technical Information Unit.

- Managing source of technical information about the outbreak.
- Download all information related to the disease from the internet.
- Compile the technical information.
- Distribute the technical information to those concerned.

C. Epidemiological Analysis Unit

- Analyse the epidemiological data from case investigation / notifications received.
- Input of data to data base.
- Perform epidemiological analysis.
- Prepare and distribute of reports to the secretariat.

D. Supplies and Procurement Unit

- Manage supply of vaccines / insecticides / drugs / personal protective equipment (PPE) and other supplies wherever applicable.

E. Health Education Unit

- Prepare of health education materials.
- Distribute of the health education material to related agencies and the public.
- Coordinate health education activities with mass media.

F. Logistic Unit

- Prepare Operations Room equipment
- Prepare transportation
- Prepare refreshments
- Maintain the cleanliness of Operation Room.
- Act as the secretariat for Operations Room daily meeting.

G. Human Resource Unit

- Prepare the duty roster (according to shift).
- List down the telephone numbers of all officers on duty.
- Ensure the presence of officers on duty according to the roster (or their replacement). However it is the officer responsibility to find the replacement and inform the Human Resource Officer.
- Coordinate with other departments for officers to be on called.

H. Documentation Unit

- Receive daily reports from various departments.
- Prepare the daily report.
- Distribute the daily report to the relevant parties.
- Document the chronology of events taken place in the outbreak.
- Review newspaper cuttings.
- Be responsible in maintaining the letters in–out files.

I. IT Support Unit

- Update the Homepage Information (if any).
- Response to queries received through e-mail.
- Manage guidelines in a software form.

J. Guidelines Preparation Unit

- Prepare guidelines related to the infectious disease outbreak i.e.
  - ✓ case management,
  - ✓ case follow-up,
  - ✓ quarantine,
  - ✓ screening,
  - ✓ transportation of cases
  - ✓ surveillance of health staff

K. Hotline Unit

- Answer the hotline telephone calls.

Equipment needed in an Operations Room.

1. Telephones for
   - direct lines,
   - hotlines,
   - mobile telephones / intercom / ATUR phone
2. Facsimile machines.
3. Computers (with installed related software) and printers.
4. INTERNET with homepage and e-mail group
5. White boards.
6. Soft board.
7. Stationery.
8. Television with ASTRO.
9. Maps and / or GIS.
10. Directory of state health departments, district health offices, government / NGO / private hospitals and laboratories / staff / personnel with address and contact numbers.
11. Protocols and guidelines (related to outbreak).
12. Rapid response kits.
13. Health information materials.
14. Files with systematic filing system.

When to close an Operation Room.

1. No new cases / transmission within 2 incubation periods or longer if necessary. However monitoring should be continued by a designated unit / personnel.
2. Ordered by a higher authority.

State health department and district health office should modify the functions according to available staff.

APPENDIX 6

PROTOCOLS AND GUIDELINES AVAILABLE AT MINISTRY OF HEALTH

1. General Guidelines On Food-Water-Borne Disease In Malaysia.
2. Plan Of Action For Control Of Cholera.
3. National Guidelines For Food Poisoning Control.
4. National Guidelines For Typhoid Management.
5. National Guidelines for Management of Dysentry.
6. National Guidelines for Management of Hepatitis A.
7. Guidelines For The Prevention And Control Of Dengue Fever And Dengue Haemorrhagic Fever.
8. Manual Of Dengue Control.
9. Management Of Severe And Complicated Malaria.
10. Guidelines On Enterovirus Epidemic Control.
11. Guidelines On The Management And Follow-Up Of Nipah Infection.
12. Epidemiologic Studies And Guidelines Of JE / Nipah Outbreak.
13. Preparedness And Response To Wild Poliovirus Importation.
14. National Polio Eradication Programme.
15. National Plan Of Action For Laboratory Containment Of Wild Poliovirus.
16. Practice Guidelines For The Control And Management Of Tuberculosis, 2002.
17. Guidelines For The Prevention And Control Of Plague, 1996.
18. Field Guidelines for Laboratory based Surveillance.
19. Case definition for infectious disease in Malaysia
20. Syndromic Notification and Laboratory Investigation Manual.

APPENDIX 7

FORMAT FOR WRITING A FINAL REPORT ON AN OUTBREAK/EPIDEMIC

1. **TITLE OF REPORT** (short)
   Informative **(to include what, where and when)**;
   Name of author(s) and department(s)

2. **SYNOPSIS (summary)** (short)
   Epidemic (what, where and when);
   Main findings;
   Actions taken (control measures) and **recommendations**

3. **INTRODUCTION** (brief)
   Background of the setting in which the outbreak/epidemic exists (geography, climate, socio-demography, health facilities);
   Surveillance system, EWS, and epidemic preparedness (RRT);
   Usual incidence/prevalence;
   Previous case(s)/ experience of epidemics of similar disease in the same locality/nearby areas;
   Other related/significant disease(s) in the locality/nearby areas;
   (Chronology of events)
   Describes the circumstances leading to the initiation of the investigation (to include **index case(s)** and significant event(s) leading to the epidemic)

4. **OBJECTIVE OF THE INVESTIGATION**

5. **METHODOLOGY (materials and methods)**
   Definitions & criteria used;
   Questionnaire used for epidemiological investigations;
   Type of study (study design eg. case-control, etc);
   I. Investigative methods taken to verify diagnosis and confirm the existence of epidemic;
   Lab specimen: type of specimen, collection and transport;
   Lab techniques;
   Data handling and analysis

6. **RESULTS**
   Clinical data: signs and symptoms, course of disease, complications, deaths, differential diagnoses;
   Epidemiological data: characteristics of outbreak by T.P.P., asymptomatic cases, contacts, death rate;
   Description of index & secondary cases;

Epidemic curve: time of exposure, incubation period;
Mode of transmission: source of infection, risk factors;
Lab data: causative agent (bacterial/viral/fungal/chemical), serological confirmation. **(may include tables, maps, diagrams/graphs if indicated/necessary….but please be selective)**

7. DISCUSSION

(Overall picture of the outbreak/epidemic)

Interpretation of results:
testing of hypothesis - hypothesis with regards to source of infection, mode of transmission, and causative agent
Statistical (significant) tests to test hypotheses
Epidemic curve – describes in details

8. REMEDIAL ACTIONS

(A description of the action taken/control measures)
To control the epidemic immediately;
Methods employed; **(what, how, when, where, and by whom)**
Follow-up (results);
Evaluate effectiveness/constraints;
To prevent recurrence of epidemic;

9. CONCLUSION AND RECOMMENDATION

Status of epidemic encountered;
Control measures
Problems faced (if any);
Recommendations (if any), and
Lessons learnt

10. ACKNOWLEDGEMENT

Where relevant

11. ANNEXES

(If not included under the RESULTS)
Maps;
Master case list;
Tables/Diagrams, etc
Organisation chart (where relevant)
Committee(s) (where necessary)

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