

MANUAL FOR FOODBORNE DISEASE SURVEILLANCE IN GHANA

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Foreword

Foodborne diseases comprise a broad spectrum of diseases and accounts for a significant number of morbidity and mortality worldwide. It is a growing public health problem in both developing and developed countries. Determination of the exact mortality associated with foodborne diseases is very difficult. However, it was estimated to be the cause of over 2 million deaths worldwide, during the year 2005.

The ways foodborne diseases arise and spread are changing due to changes in food production and distribution methods. Also the scope of outbreaks is much larger than before and occurring over longer periods of time in widely separated areas, making them difficult to detect. The threat of a bioterrorist attack on our food supply is an issue that needs to be assessed and considered at every stage of preparedness planning. A compromised food supply would have physical, psychological, political, and economic consequences. The physical consequences may include food insecurity.

Ensuring food safety is a critical and fundamental component of public health and food security. Efficient food safety and quality programmes reduce food losses by about 30 percent, which is important for food security. Strengthening food safety in the country will help minimize the burden of foodborne diseases, reduce poverty and contribute to the achievement of the Sustainable Development Goals 1, 2, 3 and 12.

Foodborne disease surveillance is essential for estimating the burden of disease, monitoring trends, detecting outbreaks and providing data for advocacy and resource allocation. It also helps monitor and evaluate food safety measures implemented along the various sector of the food chain. Therefore, it is important to incorporate foodborne disease surveillance into food control and health systems. It is mandatory, under International Health Regulations (2005), to report events of international importance that involve contaminated food and outbreaks of foodborne diseases. The Ghana Health Service has implemented an Integrated Disease Surveillance and response System in Ghana to strengthen disease surveillance in the country. This Manual is intended to complement such efforts and also to facilitate the generation of data to be used in strategic public health interventions.

Hudu Mogtari
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Abbreviations

| | |
|---------|--|
| AFENE | African Field and Epidemiology |
| DSO | Disease Surveillance Officer |
| FDA | Food and Drugs Authority |
| FBD | Foodborne Disease |
| GFN | Global Foodborne Infections Network |
| GHP | Good Hygiene Practice |
| GSS | Global Salmonella Surveillance |
| HACCP | Hazard Analysis and Critical Control Points |
| IDSR | Integrated Disease Surveillance and Response |
| IHR | International Health Regulations |
| NGO | Non-Governmental Organization |
| NPHRL | National Public Health Reference Laboratory |
| ORS | Oral Rehydration Solution |
| PFGE | Pulse Field Gel Electrophoresis |
| PHEMC | Public Health Emergency Countermeasures |
| WHO | World Health Organization |
| INFOSAN | International Food Safety Network |

1.0 INTRODUCTION

1.1. Background

Food may be a vehicle for microbial, chemical and physical hazards which result in foodborne illness. There is also concern about transmission of multiple antimicrobial resistant bacteria via the food chain. The Food and Drugs Authority recognizes the public health effect of foodborne diseases in the country as well as the surveillance systems put in place by relevant institutions. However, major gaps exist in surveillance activities to ensure a reliable data collection and dissemination of information on foodborne pathogenic diseases. The FDA received approval from the Director General of the Ghana Health Service to establish a pilot foodborne disease surveillance project in Adentan Municipality in the Greater Accra Region. In view of this, series of stakeholders' workshops were held to establish modalities for implementing the pilot foodborne disease surveillance system in the country.

The pilot system was syndromic-based and involved seven health facilities (both private and public) in the Adentan municipality. The focus was on five foodborne diseases; Cholera, Typhoid fever, Dysentery, Hepatitis A and E. After a series of stakeholders' consultations and trainings the Foodborne Disease Surveillance System, commenced in February 2015. The programme was piloted for one (1) year after which an evaluation was conducted for a National scale-up. One of the aims of the pilot system was to do traceback of the etiologic agents to the various sectors along the food chain. Thus, providing a scientific evidence for the implementation of public health interventions along these sectors of the food chain. The pilot surveillance system also provided a framework for implementing the National Surveillance System for Foodborne Diseases.

This Manual is intended to guide the implementation of the National Foodborne Disease Surveillance System. This manual should not be used in isolation but alongside the Technical guidelines for Integrated Disease Surveillance and Response in Ghana.

1.2. Profile of Adentan Municipal Assembly (AdMA)

Adentan Municipal Assembly (AdMA) was one of the newly created administrative municipalities in the Greater Accra Region. The Assembly was carved from the Tema Municipal Assembly and lies 10 Kilometers to the Northeast of Accra. It shares boundaries with Tema Metropolitan Assembly (TMA) in the east, Ga East Municipal Assembly in the West, Oyibi Township in the North and Madina Township in the south. The municipality had a population of 91,111 (2015) within four sub-municipalities. It also has 16 public health facilities (4 RMNCH, 1 Clinic and 10 CHPs) and 22 private health facilities (3 Hospitals, 16 Clinics and 3 Maternity Units).

1.3. For whom the Manual is intended

The Manual is intended for managers, decision makers and officers involved in the implementation of the National Foodborne Disease Surveillance system. In particular:

- (a) Surveillance officers;
- (b) IHR focal person;
- (c) International Food Safety Network (INFOSAN) focal person;
- (d) Institutional Public Health Unit
- (e) District Health Management Team;
- (f) Medical and Nursing Officers;
- (g) Environmental Health Officers;
- (h) Food inspectors;
- (i) Health facility managers;
- (j) Public Health Officers and Administrators;
- (k) Laboratory personnel; and
- (l) Community Health Workers.

2.0 STRENGTHENING OF FOODBORNE DISEASE SURVEILLANCE

Surveillance is defined as the systematic and ongoing collection, analysis, interpretation, and dissemination of data for public health action.

2.1. Objectives of surveillance

To pilot a foodborne disease surveillance in Adentan Municipality in the Greater Accra Region.

The specific objectives of the foodborne diseases surveillance system are to:

- assess the burden of foodborne disease in order to determine the magnitude of the problem;
- monitor risk factors to inform policy makers for public health interventions for targeted foods or food practices;
- detect and respond to outbreaks to determine urgent action; and
- generate timely and complete surveillance data to be used for risk analysis and ensure safety of food supplies.

2.2. Core capacity for foodborne disease surveillance

The improvement of national control efforts to contain, eliminate or eradicate epidemic-prone diseases is fundamental for the improvement of national health security. Similarly, control programmes are aimed at reducing public health risks associated with events of chemical, microbiological, toxic and environmental origin.

Laboratory services are the cornerstone to foodborne disease surveillance for national epidemic alert and response, including detection, investigation and response. Laboratory analysis of human, food and animal samples is critical and requires collaboration from all stakeholders. This must be based on reliable sample collection and transportation, domestic diagnostic capacity and use of required external capacity.

The identification of the source of an outbreak and its containment is a key IHR (2005) requirement. Hence, it is important to develop risk management capacities in

order to ensure food control throughout the food chain. If epidemiological analysis identifies food as the source of the outbreak, based on risk assessment, the adopted risk management option for preventing further spread should be put in place.

Overall human capacity development should follow the principle of sustainability at all levels, in particular sufficiently trained and conscious physicians and nurses who will ensure collection of samples from patients and their subsequent shipments to laboratories with competent technicians for analysis. Categories of staff must cut across all disciplines including clinicians, microbiologists, epidemiologists, clinical toxicologists and environmental officers. Strengthening the knowledge and skills of all public health actors, especially laboratory and data capturing personnel, are key to the implementation of the foodborne diseases surveillance agenda.

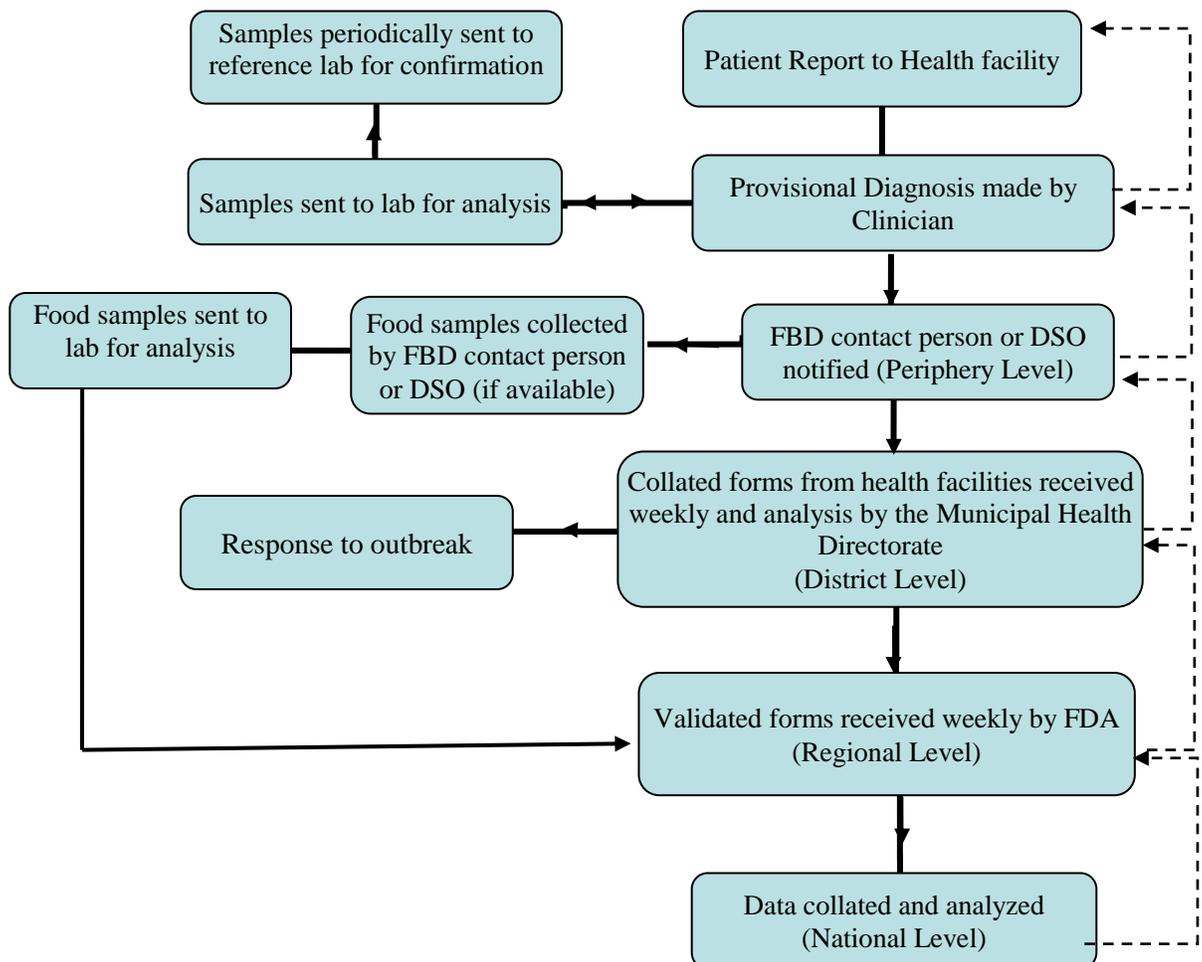
3.0 THE FOODBORNE DISEASE SURVEILLANCE SYSTEM

3.1. Syndromic Surveillance and Response

Syndromic surveillance system monitors data through emergency calls, hospitals, over-the-counter drug sale records and other data sources to detect unusual patterns. When an activity spike is noticed in any of the disease monitoring systems, epidemiologists and public health professionals are alerted that there may be an unusual health event or public health emergency.

The data aspects relate to case counts, trends-based information and seasonal variation, defined at-risk and high-risk populations, to recognize sources of outbreaks at the local level, as well as unusually large outbreaks at the national level.

Figure 1: Schematic diagram of the Syndromic Surveillance System



3.2. Which diseases are target for surveillance?

Foodborne diseases comprise a broad spectrum of diseases and accounts for a significant number of morbidity and mortality worldwide. They result from the consumption of food contaminated with pathogens such as bacteria, viruses, parasites or with poisonous chemicals or bio-toxins. Based on the frequently reported cases of foodborne disease in health facilities in Ghana, the FDA has considered the following cases for the syndromic foodborne disease surveillance.

1. Viral Hepatitis (Hepatitis A and E)
2. Cholera (*Vibrio cholerae*)
3. Dysentery (*Shigella sp.*)
4. Typhoid fever (*Salmonella sp.*)
5. Other foodborne diseases

See Summary Guidelines for details of Specific Priority Diseases and Conditions (section 7)

3.3. Implementation of the Syndromic Foodborne Surveillance System

The ability to successfully implement and sustain the syndromic foodborne surveillance requires excellent and dedicated data capturing personnel and IT equipment. In addition, microbiological, chemical or biochemical laboratory facilities to test clinical, food and other environmental samples will facilitate the timely detection of principal aetiological agents. For example, microbiology laboratories could identify prevalent serotypes or subtypes together with their antibiotic sensitivity patterns. Laboratory capability for detection of chemical and biological residues including pesticides, heavy metals, mycotoxins, anabolic agents, veterinary drugs, additives and other contaminants is also required.

Such laboratories must participate actively in capacity building activities aimed at standardization of techniques and procedures and development of new diagnostic techniques. Apart from their routine responsibilities, laboratories must be involved in outbreak investigation by testing clinical, food and environmental samples.

3.4. Methodology for sample collection and transportation

Specimens must be collected in prescribed containers, labelled appropriately and delivered to the laboratory, as quickly as possible, under approved conditions.

A completed form must accompany each specimen upon submission. The required information includes:

- (i) date, time and place of collection;
- (ii) description of sample;
- (iii) Source of sample. If human, provide name, age and sex;
- (iv) type of specimen;
- (v) analysis required;
- (vi) name and signature of collector.
- (vii) Unique ID (same as Epid no. on reporting form)
- (viii) Location address
- (ix) Telephone contact

3.4.1. Faecal samples

Faecal samples should be collected in the early stages of onset of symptoms (including nausea, vomiting, abdominal cramps and diarrhoea) when pathogens are present in highest numbers and preferably before treatment with antibiotics is started. Ideally, specimen should be collected in the morning, such that they can be delivered to the laboratory before noon and processed during the day. A fresh faecal sample is preferred to a rectal swab but this may be acceptable if faecal sample cannot be obtained immediately. Specimens must be sealed once collected and delivered to the laboratory immediately. In case of delay of more than two hours, the specimen must be transferred into a container with transport medium (Cary-Blair or Amies) using two or three swabs. Pathogens may survive in such media for up to one week but refrigeration is recommended.

3.4.2. Food samples

Leftover foods and other food samples should be collected aseptically and placed in sterile jars or sterile plastic bags. Perishable foods that are not frozen at the time of collection should be chilled rapidly at 4°C and maintained at that temperature until examined. The laboratory must be consulted on proper sample collection and must be notified when submitting samples for testing. Do not freeze the samples.

Meat, poultry and dairy products should be refrigerated. Collect five random samples of at least 500g each and place in a clean plastic bag. For already packaged products, five random packages are acceptable. Place on ice and submit to the laboratory within 24 hours.

Similarly, for fruits, collect five random samples of at least 500g and place in sterile plastic bags. Transport them on ice to the laboratory within 24 hours.

Canned products or shelf-stable products may be transported to the laboratory after collecting five random samples of at least 500g into clean plastic bags.

3.4.3. Water samples

Water samples should be collected in sterile containers. For bottled water, collect five random samples and send to the laboratory on ice. 100 ml of other water samples should be collected in a sterile container (available upon request in laboratories). Containers must not be filled to the brim, to avoid spillage and contamination. Screw on, cover tightly, place in bags with zips and seal. Place in cooler with ice and submit to the laboratory.

3.5. Data collection process

Data collection shall be done using the '**Foodborne Illness Reporting Form (FDA/FSMD/FM-FBD/2012/01)**'. This must be done for all the target diseases of the syndromic foodborne disease surveillance system. The national, regional, district and periphery levels are the four (4) levels of collation and will have the following responsibilities:

3.4.1. Periphery level

The Periphery level is responsible for collecting data from patients. The Foodborne disease (FBD) contact person or the Disease Surveillance Officer(DSO), upon receiving notification from physician, nurse etc., shall complete the '**Foodborne Illness Reporting Form (FDA/FSMD/FM-FBD/2012/01)**'. Where available, food specimen shall be collected and forwarded to the appropriate laboratory for analysis. The contact person or DSO shall then collate all the forms, and forward them weekly to the district level.

Clinicians at all levels of healthcare must be sensitized on the need to collect samples from all suspected cases and test them in the laboratory before antibiotic therapy is started.

3.4.2. District level

The district level is responsible for collating and processing data from all periphery levels within the district. District personnel should perform all necessary actions within their

technical capabilities (e.g. perform basic epidemiological analysis, with the aim of detecting and responding to outbreaks) and forward all the data to the regional level for consolidation, analysis and further action.

The district level should ensure that all contact personnel at the periphery have basic training in data collection and the syndromic foodborne disease surveillance system.

3.4.3. Regional level (FDA and DSD Regional offices)

The regional level is intermediate between the district and national level. At this level, data is collected, compiled, analyzed and assessed and proposals written for appropriate public health intervention and administrative measures to be taken at the district level. This level shall conduct epidemiological studies and other advanced analysis to identify the etiology of an outbreak. The regional team should have basic training in foodborne disease outbreak investigation and foodborne disease surveillance, so as to be able to implement prevention and control actions timely as well as propose the basis for programming and evaluation of the FBD surveillance system.

3.4.4. National or central level (FDA Head office)

This level defines policies and advises the other levels on epidemiological surveillance. Information received at this level is compiled, processed and analysed in order to identify the status of foodborne diseases in the country. The outcomes of such assessment will inform policy. The unit overseeing foodborne disease surveillance will be responsible for reporting FBD to relevant stakeholders and international agencies through the IHR focal person. If a case report enters the system at regional or central level, the district level shall be informed as well.

3.5 Data processing

Data will be validated, compiled and integrated at this stage. This will be done at the regional and national levels using Epi Info software.

3.6. Analysis and interpretation of data

Data on foodborne diseases is analyzed to see trends and detect possible outbreaks. The

trends will be compared with national, regional and international data.

3.7. Dissemination of information

Information obtained will be published and disseminated to the general public, the private sector and all other relevant stakeholders. This will be the responsibility of the national team.

3.8. Reporting

Effective reporting involves timely, continuous and regular flow of information on the occurrence of cases of foodborne diseases in particular, to the syndromic foodborne diseases surveillance system for action. This shall be done on daily or weekly basis depending on the system level.

Cases of foodborne diseases outbreaks should be reported immediately to the district levels for timely and appropriate action as follows:

- (a) upon receipt of information on suspected outbreak of foodborne disease, the district level shall activate the investigation team and informs the regional/national team (see '*Guidelines For Handling Foodborne Disease Outbreaks, FDA/FSMD/GL-FBD/2012/01*). **Source of information includes hospitals, pharmacies, laboratories, patients, news media and community leaders;**
- (b) a preliminary report shall be submitted to the District Director of Health Services and the CEO-FDA within 24 hours following receipt of the report.
- (c) the investigation team referred to in (a) will be activated to:
 - (i) assemble investigation tools;
 - (ii) collect data;
 - (iii) collect and examine specimens;
 - (iv) examine exposed persons;
 - (v) review laboratory and other findings;
 - (vi) implement control measures;
 - (vii) prepare a report comprising, for instance, an introduction, case definition, field and laboratory methods, results or findings, discussions, control and preventive measures, conclusions and recommendations.

Facilitation of resource allocation and provision of guidance will be the responsibility of the regional level.

4.0 INVESTIGATION OF OUTBREAKS

Foodborne disease outbreak investigations shall be done in accordance with the ‘*Guidelines for Handling Foodborne Disease Outbreaks, FDA/FSMD/GL-FBD/2012/01*’. However, the following 10 measures should be considered when investigating a suspected or confirmed case of FBD outbreak:

(i) **Prepare for field work.**

Investigators should be familiar with the disease and develop a plan of action which includes lists of supplies, assignment of tasks among team members and administrative and travel arrangements.

(ii) **Establish the existence of an outbreak.**

An outbreak is defined as the occurrence of more cases of disease than normally expected within a specific place or group of people over a given period of time. To establish that an outbreak is real (that is, more cases than expected), an investigator can examine health department surveillance records, hospital records, and other disease-related registers. If this information is unavailable, other options include interviews with doctors or people within the community.

(iii) **Verify the diagnosis.**

An investigator will need to review clinical findings and laboratory tests in order to verify the diagnosis, as well as determine the specific nature of the disease (Appendix 3: Foodborne Illnesses: A condensed classification by symptoms, incubation periods, and types of agents). For example, in the case of infectious disease outbreaks, additional laboratory tests may be necessary to determine the specific microbe strain causing the outbreak.

(iv) **Define and identify cases.**

The investigator is responsible for case definition, which usually includes information about the disease, characteristics of the patients, information about the location and a specific time range. Thus, investigators can eliminate an excess of false-positives. To

identify cases, it is important to entertain open communication with personnel of healthcare facilities and other relevant structures or people who will be on the radar for observing potential cases.

(v) **Perform descriptive epidemiology.**

An investigator will understand more about the outbreak by compiling a comprehensive description of its trends over time, place, and persons (age, race, sex, etc.) affected by the disease (Appendix 2: line listing).

(vi) **Develop hypotheses.**

The hypothesis is an educated guess about the source of the disease, mode of transmission, and/or exposures causing the disease, based on available information.

(vii) **Evaluate hypotheses.**

The credibility of the hypotheses can be evaluated by analysing facts or processing figures to obtain actual statistics, based on available information.

(viii) **Fine tune hypotheses and carry out additional studies**

Additional studies may include laboratory tests or environmental studies, among other methods of evaluation.

(ix) **Implement control and prevention measures.**

Control and prevention methods usually target the source of the disease, but may also involve interrupting transmission or limiting exposure. It is essential to institute minimum control measures, pending the results of the outbreak investigation and laboratory data to confirm the etiology of the outbreak

(x) **Communicate findings.**

Findings of the investigation should be communicated to the district levels who are responsible for implementing control measures. In addition, a written report provides a legal record of the findings and contributes to public health awareness.

5.0 CONDUCT OF COMMUNITY INFORMATION, EDUCATION AND COMMUNICATION ACTIVITIES

Effective risk communication is an essential element in the management of public health events. When the public is at risk of a real or potential health threat, treatment options may be limited. Direct interventions may take time to organize and resources insufficient. Therefore, communicating advice and guidance may be the most important public health tool for managing risk.

The public should be constantly informed in order to allay their fear and encourage cooperation with the outbreak response team. Community education messages should be developed and information provided on how to recognize the illness, prevent transmission and when to seek treatment. Communication activities should begin in the community as soon as an epidemic or public health problem is identified.

6.0 MONITORING AND EVALUATION OF SURVEILLANCE AND RESPONSE

Monitoring and evaluation of surveillance and response systems is essential for assessing the success of intervention in view of further action and systems improvement. Information on timely reporting from one level to another, quality of data and the quality of routine prevention and control activities will be used for the routine monitoring and annual evaluation of surveillance and response systems.

7.0 SUMMARY GUIDELINES FOR SPECIFIC PRIORITY DISEASES AND CONDITIONS

This section describes how to:

- Take action to respond to alert and epidemic thresholds for specific diseases
- Identify surveillance goals and objectives for each priority disease
- Identify data to analyse and interpret for each priority disease

7.1. Thematic Areas

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| Background |
| <p>In this section, you will find general information about</p> <ul style="list-style-type: none"><input type="checkbox"/> The disease or event, the causative agent, geographic range affected, and other epidemiologic information.<input type="checkbox"/> Transmission routes such as person-to-person, unprotected contact with infectious body fluids or contaminated materials, vector-borne, and so on.<input type="checkbox"/> Why the disease is a priority disease for surveillance. For example, the disease is responsible for a high number of deaths, disability and illness, especially in African countries.<input type="checkbox"/> General and specific risk factors in African countries.<input type="checkbox"/> Any additional background information that might serve the district surveillance team. |
| Surveillance goal |
| <p>This section states how the surveillance information is used for action.</p> |
| Standard case definition |
| <p>Suspected case: A definition is provided for suspecting a case or outbreak of this disease or event. Probable case: A definition is provided for a suspected case with epidemiological link to a confirm case or an outbreak. Confirmed case: A definition is provided for classifying a case as confirmed through laboratory diagnostic testing.</p> |
| Respond to alert threshold |
| <p><i>For priority diseases of public health importance</i>, an outbreak or event is suspected when there is any unusual cluster, pattern, or increase in the number of cases when compared with previous time periods. This should prompt a response such as investigating what might have caused the unusual events. If laboratory confirmation is indicated, specimens should be collected for laboratory confirmation.</p> |
| Respond to action threshold |
| <p><i>For priority diseases of public health importance</i>, a confirmed outbreak should prompt an appropriate response such as improving coverage for specified immunizations, strengthening case management, providing information, education and communication about preventing and controlling the disease, and so on.</p> |
| Analyze and interpret data |
| <p>This section contains generic information about the minimum data elements to collect, analyze and interpret. The key points to consider for interpreting the data and specific elements for analysis are also stated (time, place, and person).</p> |
| Laboratory confirmation |
| <p>In this section guidelines on laboratory confirmation are provided including: relevant diagnostic test, how to collect, store and transport the specimens needed for lab confirmation, and information on the results of laboratory work.</p> |

7.2. Viral hepatitis A and viral hepatitis E

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| Background | |
| <ul style="list-style-type: none"> • Enterically transmitted HAV and HEV are a worldwide problem. • Common source epidemics have been related to contaminated water and to contamination via infected food handlers. • In general, both HAV and HEV are self-limiting viral infections; case fatality is normally low (0.1 – 0.3%). Women in the third trimester of pregnancy are especially susceptible to fulminant HEV disease. • Both HAV and HEV are transmitted via the faecal-oral route. • Prevention and control measures for hepatitis A and hepatitis E include adequate supplies of safe-drinking water and improvement of sanitary and hygienic practices to eliminate faecal contamination of food and water. | |
| Surveillance goal | |
| <ul style="list-style-type: none"> <input type="checkbox"/> Detect hepatitis outbreaks. <input type="checkbox"/> Identify areas/populations at high risk to target prevention and control measures. <input type="checkbox"/> Estimate burden of disease. <input type="checkbox"/> If countrywide surveillance is not possible, surveillance in sentinel areas or hospitals may provide useful information on potential sources of infection. | |
| Standard case definition | |
| <p>Suspected case: Any person with acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness. (Note: infected children are often asymptomatic.)</p> <p>Confirmed case: A suspected case that is laboratory confirmed</p> | |
| Respond to alert threshold | |
| If hepatitis cases are suspected: | |
| <ul style="list-style-type: none"> <input type="checkbox"/> Report case-based information to the appropriate levels. <input type="checkbox"/> As necessary, treat and manage the patient(s) with supportive care. <input type="checkbox"/> Collect specimens and send to laboratory to identify the aetiology of the illness | |
| Respond to action threshold | |
| If hepatitis cases are confirmed | |
| <ul style="list-style-type: none"> <input type="checkbox"/> Determine mode of transmission <input type="checkbox"/> Identify population exposed to risk of infection <input type="checkbox"/> Eliminate common source(s) of infection <input type="checkbox"/> Implement appropriate prevention and control interventions | |
| Analyze and interpret data | |
| <p>Time: Analysis of suspected and confirmed cases by week. Graph cases and deaths weekly. Construct an epidemic curve during outbreaks.</p> <p>Place: Plot location of case households.</p> <p>Person: Analyze by age and gender. Assess risk factors to plan and monitor prevention and control measures.</p> | |
| Laboratory confirmation | |
| Diagnostic test | <p>Hepatitis A: IgM anti-HAV positive</p> <p>Hepatitis E: IgM anti-HEV positive and/or IgG anti-HEV positive</p> |
| Specimen | Serum |

| | |
|---|---|
| When to collect the specimen | Specimens should be collected from suspected patient. IgM anti-HAV becomes detectable 5-10 days after exposure. HBsAg can be detected in serum from several weeks before onset of symptoms to days, weeks or months after onset; it persists in chronic infections. IgM anti-HBc positive usually disappears within 6 months. |
| How to prepare, store and transport the specimen | Use universal precautions to minimize exposure to sharps and any body fluid. Collect 5-10 ml of venous blood. <input type="checkbox"/> Let clot retract for 30 to 60 minutes at room temperature or centrifuge to separate serum from red blood cells. <input type="checkbox"/> Aseptically pour off serum into sterile, screw capped tubes. <input type="checkbox"/> Store serum at 4°C. <input type="checkbox"/> For storage >5 days, samples are held at -20°C Transport serum samples using appropriate packaging to prevent breakage or leakage. |
| Results | Results are usually available within one to 3 days from arrival in the laboratory. |

73. Cholera

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|--|
| Background |
| <ul style="list-style-type: none"> <input type="checkbox"/> Acute illness with profuse watery diarrhoea caused by <i>Vibrio cholerae</i> serogroups O1 or O139. The disease is transmitted mainly through the faecal-oral route; that is through eating or drinking contaminated food or water. <input type="checkbox"/> Cholera causes over 100 000 deaths per year. It may produce rapidly progressive epidemics or worldwide pandemics. In endemic areas, sporadic cases (less than 5% of all non-outbreak-related diarrhoea cases) and small outbreaks may occur. <input type="checkbox"/> Incubation period is from a few hours to 5 days, usually in the range of from 2 to 3 days. <input type="checkbox"/> There has been a resurgence of cholera in Africa since the mid-1980s, where over 80% of the world's cases occurred in 1999. The majority of cases occurred from January through April. <input type="checkbox"/> Cholera may cause severe dehydration in only a few hours. In untreated patients with severe dehydration, the case fatality rate (CFR) may exceed 50%. If patients present at the health facility and correct treatment is received, the CFR is usually less than 1%. At least 90% of the cases are mild, and they remain undiagnosed. <input type="checkbox"/> Risk factors: eating or drinking contaminated foods such as uncooked seafood or shellfish from estuarine waters, lack of continuous access to safe water and food supplies, attending large gatherings of people including ceremonies such as weddings or funerals, contact with persons who died of cholera. <input type="checkbox"/> Other enteric diarrhoea may cause watery diarrhoea, especially in children less than 5 years of age. |
| Surveillance goal |
| <ul style="list-style-type: none"> <input type="checkbox"/> Detect and respond promptly and appropriately to cases and outbreaks of watery diarrhoea. To confirm an outbreak, collect and transport stool specimens transported in Cary-Blair medium. <input type="checkbox"/> Do immediate case-based reporting of cases and deaths when an outbreak is suspected. |

| | |
|---|--|
| Standard case definition | |
| Suspected case: | |
| <input type="checkbox"/> In a patient age 5 years or more, severe dehydration or death from acute watery diarrhoea. <input type="checkbox"/> If there is a cholera epidemic, a suspected case is any person age 5 years or more with acute watery diarrhoea, with or without vomiting. | |
| Confirmed case: | |
| <input type="checkbox"/> A suspected case in which <i>Vibrio cholerae</i> O1 or O139 has been isolated in the stool. | |
| Respond to alert threshold | |
| If a single case is suspected: | |
| <input type="checkbox"/> Report case-based information immediately. <input type="checkbox"/> Manage and treat the case according to national guidelines. <input type="checkbox"/> Enhance strict hand-washing and isolation procedures. <input type="checkbox"/> Conduct case-based investigation to identify similar cases not previously reported. <input type="checkbox"/> Obtain stool specimen from 5 patients within 5 days of onset of acute watery diarrhoea, and before antibiotic treatment is started. | |
| Respond to action threshold | |
| If a suspected case is confirmed: | |
| <input type="checkbox"/> Establish treatment centre in locality where cases occur. Treat cases onsite rather than asking patients to go to standing treatment centres elsewhere. <input type="checkbox"/> Strengthen case management including treatment. <input type="checkbox"/> Mobilize community early to enable rapid case detection and treatment. Survey the availability of clean drinking water. <input type="checkbox"/> Work with community leaders to limit the number of funerals or other large gatherings for ceremonies or other reasons, especially during an epidemic. <input type="checkbox"/> Reduce sporadic and outbreak-related cases through continuous access to safe water. Promote safe preparation of food (especially seafood, fruits, and vegetables). Promote safe disposal of human waste. | |
| Analyze and interpret data | |
| Time: | Graph weekly cases and deaths and construct an epidemic curve during outbreaks. Report case-based information immediately and summary information monthly for routine surveillance. |
| Place: | Plot the location of case households. |
| Person: | Count weekly total cases and deaths for sporadic cases and during outbreaks. Analyze distribution of cases by age and according to sources of drinking water. Assess risk factors to improve control of sporadic cases and outbreaks. |
| Laboratory confirmation | |
| Diagnostic test | Isolate <i>V. cholerae</i> from stool culture and determine O1 serotype using polyvalent antisera for <i>V. cholerae</i> O1. If desired, confirm identification with Inaba and Ogawa antisera. If specimen is not serotypable, consider, <i>V. cholerae</i> O139 |
| Specimen | Liquid stool or rectal swab |

| | |
|---|---|
| <p>When to collect the specimen</p> | <p>For each new area affected by the outbreak, a laboratory confirmation should be done. Collect stool sample from the first suspected cholera case. If more than one suspected case, collect until specimens have been collected from 5 to 10 cases. Collect stool from patients fitting the case definition and:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Onset within last 5 days, and <input type="checkbox"/> Before antibiotics treatment has started <p><i>Do not delay treatment of dehydrated patients.</i> Specimens may be collected after rehydration (ORS or IV therapy) has begun.</p> <p>If possible, specimens should be collected from 5 – 10 suspected cases every 1 – 2 weeks to monitor cessation of the outbreak, changes in serotypes, and antibiotic sensitivity patterns of <i>V. cholerae</i>.</p> |
| <p>How to prepare, store, and transport the specimen</p> | <ul style="list-style-type: none"> <input type="checkbox"/> Place specimen (stool or rectal swab) in a clean, leak proof container and transport to lab within 2 hours. <input type="checkbox"/> If more than 2- hour delay is expected, place stool-soaked swab into Cary-Blair transport medium. <p>If Cary-Blair transport medium is not available and specimen will not reach the lab within 2 hours:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Store at 4°C to 8°C <input type="checkbox"/> Do not allow specimen to dry. Add small amount of 0.85% NaCl if necessary <input type="checkbox"/> To transport, transport in well- marked, leak proof container <input type="checkbox"/> Transport container in cold box at 4°C to 8°C |
| <p>Results</p> | <ul style="list-style-type: none"> <input type="checkbox"/> Cholera tests may not be routinely performed in all laboratories. <input type="checkbox"/> Culture results usually take 2 to 4 days after specimen arrives at the laboratory. <input type="checkbox"/> Cary-Blair transport medium is stable and usually good for at least one year after preparation. It does not require refrigeration if kept sterile and in properly sealed container. If colour changes (medium turns yellow) or shrinks (depressed meniscus), do not use the medium. <input type="checkbox"/> The O139 serotype has not been reported in Africa and only in a few places in southwest Asia. <p>Serological determination of Ogawa or Inaba is not clinically required. It is also not required if polyvalent antisera results are clearly positive.</p> |

7.4. Diarrhoea with blood (Shigella)

| |
|--|
| Background |
| <ul style="list-style-type: none"><input type="checkbox"/> <i>Shigella dysenteriae</i> type 1 (SD1) is the most common cause of enteric infections and is transmitted from person-to-person through faecal-oral spread.<input type="checkbox"/> Large scale outbreaks may be caused by <i>Shigella dysenteriae</i> type 1 (SD1) with up to 30% of populations infected. The case fatality rate may approach 20% among young children and elderly persons with severe dehydration.<input type="checkbox"/> The incubation period is from 1 to 4 days.<input type="checkbox"/> Clinical illness is characterized by acute fever and bloody diarrhoea, and can also present with systemic symptoms and signs as well as dehydration especially in young children.<input type="checkbox"/> Risk factor: overcrowded areas with unsafe water and poor sanitation (for example, refugee and famine populations).<input type="checkbox"/> SD1 is frequently resistant to multiple antibiotics including trimethoprim-sulfamethoxazole.<input type="checkbox"/> Enterohaemorrhagic and enteroinvasive <i>E. coli</i> and other bacteria or parasites such as <i>Entamoeba histolytica</i> may also cause bloody diarrhoea. |
| Surveillance goal |
| <ul style="list-style-type: none"><input type="checkbox"/> Detect and respond to dysentery outbreaks promptly.<input type="checkbox"/> Improve percentage of laboratory-confirmed cases and evaluate proportion verified as type 1 (SD1).<input type="checkbox"/> Determine antibiotic sensitivity pattern of the agents isolated (especially SD1) both for routine surveillance and during outbreaks. |
| Standard case definition |
| <p>Suspected case: A person with diarrhoea with visible blood in stool.</p> <p>Confirmed case: Suspected case with stool culture positive for <i>Shigella dysenteriae</i> type 1.</p> |
| Respond to alert threshold |
| <p>If you observe that the number of cases or deaths is increasing over a period of time:</p> <ul style="list-style-type: none"><input type="checkbox"/> Report the increase to the next level of the health system.<input type="checkbox"/> Treat the suspected cases with oral rehydration and antibiotics based on recent susceptibility results, if available.<input type="checkbox"/> Obtain stool or rectal swab specimen for confirming the SD1 outbreak.<input type="checkbox"/> Investigate the case to determine risk factors contributing to transmission. |
| Respond to action threshold |
| <p>If a suspected outbreak is confirmed:</p> <ul style="list-style-type: none"><input type="checkbox"/> Search for additional cases in locality of confirmed cases.<input type="checkbox"/> Strengthen case management and treatment.<input type="checkbox"/> Mobilize community to enable rapid case detection and treatment.<input type="checkbox"/> Identify high risk populations using person, place, and time data.<input type="checkbox"/> Reduce sporadic and outbreak-related cases by promoting hand-washing with soap or ash and water after defecating and before handling food. Strengthening access to safe water supply and storage, and use of latrines and safe disposal of human waste. |
| Analyze and interpret data |

| | |
|---|---|
| <p>Time: Graph monthly trends in cases and deaths. Construct an epidemic curve for outbreak cases.</p> <p>Place: Plot location of case households.</p> <p>Person: Count cases and deaths each month. During an outbreak, count outbreak-related cases by week. Routinely analyze age distribution. Assess risk factors to improve control and prevention of sporadic diseases and outbreaks.</p> | |
| <p>Laboratory confirmation</p> | |
| <p>Diagnostic test</p> | <p>Isolate <i>Shigella dysenteriae</i> type 1 (SD1) in culture to confirm shigella outbreak. If SD1 is confirmed, perform antibiotic sensitivity tests with appropriate drugs.</p> |
| <p>Specimen</p> | <p>Stool or rectal swab.</p> |
| <p>When to collect the specimen</p> | <p>For each new area affected by the outbreak, a laboratory confirmation should be done. Collect sample when an outbreak is suspected. Collect stool from 5-10 patients who have bloody diarrhoea and:</p> <ul style="list-style-type: none"> · Onset within last 4 days, and · Before antibiotic treatment has started. |
| <p>How to prepare, store, and transport the specimen</p> | <p>Place stool swab or rectal swab in Cary-Blair transport medium. Transport to laboratory refrigerated.</p> <p>If Cary-Blair not available, send sample to lab within 2 hours in a clean, dry container with a tightly-fitting cap. Specimens not preserved in Cary-Blair will have significant reduction of <i>shigellae</i> after 24 hours.</p> <p>If storage is required, hold specimens at 4°C to 8°C, and do not freeze.</p> |
| <p>Results</p> | <p>Culture results are usually available 2 to 4 days after receipt by the laboratory. SD1 isolates should be characterized by antibiotic susceptibility.</p> <p>After confirmation of initial 5-10 cases in an outbreak, sample only a small number of cases until the outbreak ends, to monitor cessation of the outbreak, and antibiotic sensitivity patterns, which will guide the definitive treatment.</p> <p>Refer to disease specific guidelines in Section 8.0 for additional information about the epidemic potential of <i>Shigella dysenteriae</i> 1</p> |

75. Typhoid Fever

| |
|--|
| Background |
| <ul style="list-style-type: none"><input type="checkbox"/> Typhoid fever is a bacterial disease, caused by <i>Salmonella typhi</i>. Symptoms usually develop 1–3 weeks after exposure, and may be mild or severe. They include high fever, malaise, headache, constipation or diarrhoea, rose-coloured spots on the chest, and enlarged spleen and liver. Healthy carrier state may follow acute illness.<input type="checkbox"/> In virtually all endemic areas, the incidence of typhoid fever is highest in children from 5–19 years old. The disease is almost exclusively transmitted by food and water contaminated by the faeces and urine of patients and carriers.<input type="checkbox"/> Polluted water is the most common source of typhoid transmission. In addition, shellfish taken from sewage-contaminated beds, vegetables fertilized with night-soil and eaten raw, contaminated milk and milk products have been shown to be a source of infection.<input type="checkbox"/> People can transmit the disease as long as the bacteria remain in their body; most people are infectious prior to and during the first week of convalescence, but 10% of untreated patients will discharge bacteria for up to 3 months.<input type="checkbox"/> Typhoid fever can be treated with antibiotics. However, resistance to common antimicrobials is widespread. Healthy carriers should be excluded from handling food. |
| Surveillance goal |
| <ul style="list-style-type: none"><input type="checkbox"/> Detect Typhoid Fever sporadic cases and outbreaks promptly, and seek laboratory verification<input type="checkbox"/> Identify areas/population at high risk in order to improve prevention of the disease by taking hygienic measures |
| Standard case definitions |
| <p>Suspected case: Any person with gradual onset of steadily increasing and then persistently high fever, chills, malaise, headache, sore throat, cough, and, sometimes, abdominal pain and constipation or diarrhoea.</p> <p>Confirmed case: Suspected case confirmed by isolation of <i>Salmonella typhi</i> from blood, bone marrow, bowel fluid or stool.</p> |
| Respond to alert threshold |
| <p>If Typhoid fever cases are suspected:</p> <ul style="list-style-type: none"><input type="checkbox"/> Arrange for laboratory testing of stool specimens or rectal swabs of suspected cases, especially in situations where food- or waterborne transmission is suspected.<input type="checkbox"/> Report and investigate all suspected outbreaks of typhoid. Search for case/carrier that is the source of infection and for the vehicle (water or food) through which infection is being transmitted.<input type="checkbox"/> Treat typhoid fever patients with antibiotics. Severe cases should be provided supportive measures such as oral or intravenous hydration, the use of antipyretics, and appropriate nutrition. |
| Respond to action threshold |
| <p>If Typhoid Fever cases are confirmed</p> <ul style="list-style-type: none"><input type="checkbox"/> Identify areas/populations at high risk to identify source(s) and mode(s) of transmission in order to prevent and control the disease.<input type="checkbox"/> Conduct health education programmes on hygiene with simple messages on safe water, safe food handling practices, hygiene and hand washing.<input type="checkbox"/> Support provision of clean water and proper sanitation to affected population(s). Chlorinate suspected water supplies. All drinking water should be chlorinated or boiled before use.<input type="checkbox"/> More than 90% of patients can be managed at home with oral antibiotics, reliable care and close medical follow-up for complications or failure to respond to therapy. Patients with persistent vomiting, severe diarrhoea and abdominal distension may require hospitalization and parenteral antibiotic therapy. |
| Analyze and interpret data |

| | |
|---|--|
| <p>Time: Graph cases and deaths weekly. Construct an epidemic curve during outbreaks.</p> <p>Place: Plot location of case households with precise mapping.</p> <p>Person: Report immediate case-based information for cases and deaths. Report summary totals monthly. During outbreak, count cases and deaths weekly. Analyze by age. Assess risk factors to improve prevention of outbreaks.</p> | |
| Laboratory confirmation | |
| Diagnostic test | <p>Culture:</p> <p>Isolation of <i>salmonella spp.</i> from stool or blood of a patient</p> <p>The WIDAL Test should not be used for diagnostic purpose</p> |
| Specimen | Blood, Stool |
| When to collect | Collected samples preferably before antibiotics are administrated |
| How to prepare, store, and Transport | <p>5-10 ml of blood distributed in a blood culture bottle. Stool in stool container</p> <p>Store specimens at 4-8 C or ambient temperature away from heat and direct sunlight.</p> |
| Results | <p>Blood culture 4 days to 2 weeks</p> <p>Stool 3-4 days.</p> |

7.6. Other Foodborne Illnesses

| |
|---|
| Background |
| <ul style="list-style-type: none"><input type="checkbox"/> Food borne illnesses are caused by a variety of bacterial, viral, parasitic and bacterial or fungal pathogens or their toxins that enter the body through consumption of food or water. In addition to diseases listed elsewhere in this guideline such as cholera, and shigellosis, surveillance for food borne illnesses may involve other causes such as salmonellosis, hepatitis A or chemical contamination.<input type="checkbox"/> A food borne illness occurs when two or more people have shared common food or drink followed by an onset of symptoms within a short time period.<input type="checkbox"/> Most people with a food borne illness do not seek medical care, so cases and outbreaks of food borne illness usually are neither recognized nor reported.<input type="checkbox"/> The first symptoms often occur in gastrointestinal tract. Nausea, vomiting, abdominal cramps and <u>diarrhoea</u> are frequent symptoms of food borne diseases.<input type="checkbox"/> Outbreaks may be localized affecting as few as 2 individuals who ate a common meal or product, but large and geographically widespread outbreaks may also occur. Large outbreaks occur when food is contaminated prior to distribution and is widely consumed by many people in many areas.<input type="checkbox"/> Surveillance for food borne illnesses is needed to monitor food safety and target health promotion actions aimed at food handlers for safer food practices and improved personal hygiene. |
| Surveillance Goal |
| <ul style="list-style-type: none"><input type="checkbox"/> To promptly identify any unusual cluster of disease potentially transmitted through food, which may need a public health investigation or response.<input type="checkbox"/> Monitor the magnitude of food borne illnesses<input type="checkbox"/> Identify high risk foods or food practices.<input type="checkbox"/> Monitor risk factors to inform public health interventions and health promotion for targeted foods or food practices. |
| Standard case definition |
| <p>Suspected case: Other foodborne illness is suspected when a person present with GI symptoms after consuming food or drink contaminated with specific agents other than <i>V. cholera</i>, <i>viral hepatitis</i>, <i>salmonella sp.</i>, <i>shigella sp.</i></p> <p>Confirmed case: A confirmed other foodborne illness is a laboratory confirmed case of a specific agent, other than <i>V. cholera</i>, <i>viral hepatitis</i>, <i>salmonella sp.</i>, <i>shigella</i>, with a link to a contaminated food or drink source.</p> |
| Respond to alert threshold |
| <p>If observed that ≥ 2 people are ill and have eaten food from a common source:</p> <ul style="list-style-type: none"><input type="checkbox"/> Immediately report the illness to the next level of the health system<input type="checkbox"/> From patients and from the suspected food items and drinks, collect specimens for laboratory confirmation<input type="checkbox"/> Treat suspected cases |
| Respond to action threshold |
| <p>If an outbreak of a foodborne illness is confirmed:</p> <ul style="list-style-type: none"><input type="checkbox"/> Search for additional cases in locality of confirmed cases<input type="checkbox"/> Strengthen case management and treatment<input type="checkbox"/> Mobilize community for rapid case detection and treatment<input type="checkbox"/> Identify high risk groups<input type="checkbox"/> Remove from the restaurant menu or the supermarkets shelves, food items from which evidence of unsafe food may be obtained.<input type="checkbox"/> Eventually call for in-depth investigation of the food chains that may be associated with the outbreak<input type="checkbox"/> Reduce sporadic and outbreak-related cases by promoting hand washing with soap and water after defaecating/urinating and before food handling/meals; strengthen access to safe water supply and storage, use of latrines and safe human waste disposal |

Analyse and interpret data

- Time: Graph monthly trends in cases and deaths; Construct an epidemic curve for outbreak cases.
- Place: Plot location of households for cases and deaths
- Person: Count cases and deaths each month. During an outbreak, count outbreak-related cases by week.
 - Routinely review clinical data and laboratory results from food and human analyses to identify clusters of cases in time, place or person. Investigate any suspected food borne outbreaks detected in the data.
- Investigate all suspected outbreaks of foodborne illnesses.

APPENDIX 1: Foodborne Illness Reporting Form



Food and Drugs Authority Foodborne Illness Reporting Form (FDA/FSMD/FM-FBD/2012/01)



Epid No: _____

Please Complete and send or fax to:
Food and Drugs Authority
P.O. Box CT 2783
Accra- Ghana
Fax:+233 302 229 794
Email: fda@fdaghana.gov.gh

Questions? Call

Food Safety Management Department
+233 302 233200
+233 302 235100

Date: ___/___/___
dd mm yy

A

Patient/Client

Surname: _____ First Name: _____ Middle Name: _____ Tel No: () _____

District: _____ Community _____ House No: _____

Occupation: _____ Age(yrs): _____ Age(months) : _____ Sex: Male Female

Suspected Food: _____ Date Consumed: ___/___/___ Time Consumed: _____ Am Pm
dd mm yy

Source of Food: School Canteen Office Canteen Restaurant Chopbar Street vended Food Home

Event: (specify) Party Funeral Conference Other: _____

B

Illness Information

Symptoms:(tick all applicable)

- | | | | |
|---|---|---------------------------------------|-----------------------------------|
| <input type="checkbox"/> Abdominal Cramps | <input type="checkbox"/> Dehydration | <input type="checkbox"/> Fever | <input type="checkbox"/> Nausea |
| <input type="checkbox"/> Bloody stool | <input type="checkbox"/> Diarrhoea | <input type="checkbox"/> Headache | <input type="checkbox"/> Numbness |
| <input type="checkbox"/> Chills | <input type="checkbox"/> Dizziness | <input type="checkbox"/> Jaundice | <input type="checkbox"/> Vomiting |
| <input type="checkbox"/> Convulsion | <input type="checkbox"/> Excessive sweating | <input type="checkbox"/> Muscle aches | <input type="checkbox"/> Weakness |

Other Symptoms: _____

Onset of Symptoms: Date: ___/___/___ Time: _____ Am Pm Duration: Less than 12hrs 12-24hrs More than 24hrs
dd mm yy

Symptoms Ongoing: Yes No Did you seek medical attention? Yes No If yes, name of Health Facility: _____

Location Address: _____ Date of visit to Health Facility: ___/___/___
dd mm yy

Hospitalised: Yes No If yes, name of Physician: _____ Contact No: _____

Laboratory test conducted: Yes No Type of sample: _____ Agent Identified: _____

C

Food History

Obtain history back 72hrs prior to symptoms.

| Date& Time | B- Breakfast L- Lunch S- Supper | Total # persons (both ill and well) | Food(s) consumed | Source(s) of Food | Consumed at place purchased or received |
|---------------------|--|--|------------------|-------------------|--|
| 0-24hrs (Day 1) | <input type="checkbox"/> B <input type="checkbox"/> L <input type="checkbox"/> S | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 25-48hrs (Day 2) | <input type="checkbox"/> B <input type="checkbox"/> L <input type="checkbox"/> S | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 49-72hrs (Day 3) | <input type="checkbox"/> B <input type="checkbox"/> L <input type="checkbox"/> S | | | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No |

Exposure History Within the Past 2 Months

| | | |
|--|--|--|
| International Travel? Yes <input type="checkbox"/> No <input type="checkbox"/> | If yes, please specify countries: | Date of Departure: _____ Date of Arrival: _____ |
| Domestic Travel? Yes <input type="checkbox"/> No <input type="checkbox"/> | If yes, please specify locations: | Date of Departure: _____ Date of Arrival: _____ |
| Contact with ill person? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, when: ____/____/____ dd mm yy | Please specify illness if known: | |

Other persons in your household / community affected

No. of persons who ate implicated food: _____ **No. affected:** _____

| No. | Name of Affected Person | Tel. No | Date & Time | Age(yrs)/(months) |
|-----|-------------------------|---------|-------------|-------------------|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |

D

Food Sample Testing

Food(s) available for testing? Yes No Unknown **Laboratory test conducted?** Yes No Unknown

If Yes, specify food(s) & source(s):

Provide the following information if product/food is prepackaged or Commercially-processed

Product name: _____ Batch/lot # _____

Date of Manufacture: ____/____/____ Expiration Date: ____/____/____
mm yy mm yy

Package size (g,ml): _____ Packaging Type: Paper Can Plastic Other _____

Place of purchase: _____ Name of Manufacturer: _____

Location address: _____ Tel. no.() _____

For official use only

Investigation Notes:

Suspected Diagnosis:

Confirmed Diagnosis:

Investigated by: _____

Signature: _____

Date: _____

Incubation Periods for Selected Organisms

| | Min | Max | | Min | Max | | Min | Max |
|-------------------------|------|--------|-------------------------------|---------|--------|------------------------|-------|-------|
| <i>B. cereus(short)</i> | 1hr | 6hrs | <i>E. coli O157:H7</i> | 3days | 8days | <i>Staph. aureus</i> | 30min | 8hrs |
| <i>B. cereus(long)</i> | 6hrs | 24hrs | <i>Hepatitis A</i> | 15days | 50days | <i>Shigella</i> | 12hrs | 96hrs |
| <i>Campylobacter</i> | 1day | 10days | <i>Salmonella (non-typhi)</i> | 6hrs | 72hrs | <i>Vibrio cholerae</i> | 2hrs | 5days |
| <i>Cyclospora</i> | 1day | 14days | <i>Salmonella typhi</i> | 1wk | 3wks | <i>Viral GI</i> | 12hrs | 48hrs |
| <i>C. pefringens</i> | 6hrs | 24hrs | <i>Shellfish poisoning</i> | Minutes | few hr | <i>Yersinia</i> | 3days | 7days |
| <i>Hepatitis E</i> | 3wks | 8wks | | | | | | |

E

Person Completing Form

Surname: _____ First Name: _____ Middle Name: _____

Tel No.:() _____ Date of Completion of Form: _____

Name of Facility: _____

