



Food Borne Illness Surveillance (FBIS) in Bangladesh

FBIS Newsletter

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FBIS Inception workshop in
January 2014

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Food Borne Illness Surveillance (FBIS) in Bangladesh

Foodborne illnesses are defined as illnesses that are generally either infectious or toxic in nature and caused by agents that enter the body through the ingestion of food. The first symptoms often occur in the gastrointestinal tract with frequent symptoms of nausea, vomiting, abdominal cramps and diarrhoea. Foodborne illnesses are among the most serious health problems affecting public health, particularly in the developing world. Rapid and unplanned urbanization, inadequate and dilapidated water and sanitation infrastructure, inadequate health delivery services and food safety practices etc. are the major factors for food borne illness in those countries. Additionally industrialization, mass food production, decreasing trade barriers, and human migration have disseminated and increased the incidence and severity of foodborne

illnesses worldwide. Ensuring food safety is a critical and fundamental component of public health and food security. Efficient food safety and quality programme 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 illnesses, reduce poverty and contribute to the achievement of the Millennium Development Goals 1, 4 and 8.

Numerous food safety emergencies have been controlled over the past years in Bangladesh due to Cholera, Anthrax, Nipah, Hepatitis E or Pesticide contamination. Lack of effective prevention and management of food safety events might result in national or even global food safety emergencies having multi-faceted impacts on public health and economy of Bangladesh. (Cont. to page -2)

FBIS Update.

FBIS program started with formation of FBIS-IEDCR Committee headed by Prof. Mahmudur Rahman, Director, IEDCR for smooth implementation of the "Foodborne Illness Surveillance System in Bangladesh (FBIS)" along with the following sub-committees were formed-

- Laboratory-based Surveillance (Pathogen Specific laboratory confirmed FBIS)
- Cell Phone-based Foodborne Illness Surveillance (BRFSS) (Syndromic Cell-phone based FBIS)
- Web-based Foodborne Illness Surveillance (Syndromic Web-based FBIS)
- Food safety emergency response (FSER)

FBIS- Inception workshop held on 15 Jan, 2014



FBIS Sentinel sites in the seven divisions of Bangladesh



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Food Borne Illness Surveillance (FBIS) in Bangladesh

(from page 1)

Bangladesh as a part of its Food Safety Emergency Response program has already drafted National Food Safety Emergency Response Plan. It has been prioritized in the plan that Bangladesh needs to have an effective and well coordinated food safety emergency infrastructure as well as an effective and well coordinated food safety emergency surveillance system capable of identifying, assessing and managing food safety events and potential emergencies in a timely manner, despite limited capacity and resources to prevent or minimize the impact on public health and food trades.

To ensure food safety and thus reduce the illnesses due to unsafe food, establishment of an in-country surveillance system is essential. The term "Food borne illness surveillance" generally refers to the routine monitoring in a population for enteric disease for which a food vehicle may

be involved. The actual vehicle usually is not known during the surveillance process, and transmission ultimately could be due to food, water, person-to-person spread, or other vehicles. Food borne illness surveillance is essential for estimating the burden of illness, monitoring trends, detecting outbreaks and providing data for advocacy and resource allocation.

Considering these, it was planned to establish food borne illness surveillance system in Bangladesh comprising laboratory based surveillance using sentinel sites, web-based surveillance, cell phone based surveillance and community based surveillance in the country to estimate burden of illness, monitoring trends, detecting outbreaks, providing data for risk assessment to ensure safe and quality food for consumers and to enhanced economic benefits associated with the

production of nutritious and safe food products with increased access to food trade both in home and abroad.

FBIS program is supported by the Gov. of Kingdom of the Netherlands in technical collaboration with FAO-Bangladesh and is being implemented by IEDCR from August 2013, under the National Nutrition Services (NNS) of Health, Population, Nutrition Sector Development Programme (HPNSDP) under the Ministry of Health and Family Welfare. This Programme started with the achievements and the activities carried over from the last European Commission (EC) supported project ended in June 2012. Establishment of Foodborne Illness Surveillance System including response to/risk analysis of food safety emergency/outbreak in Bangladesh is one of the important components of this programme run by

(Contd to page- 4)



More photos of FBIS Inception workshop of January 2014



Moments of advocacy, orientation and training



FBIS Update (contd. From Page 1)

- Lab-capacity at IEDCR assessed and refurbishment work completed
- Procurement of equipments and consumables for laboratory is going on
- FBIS Surveillance site assessment and limited Lab renovation undertaken
- Workshops planned for developing Standard Operating Procedures (SoP)
- Questionnaires and other tools for laboratory-based sentinel surveillance, cell phone-based surveillance and web based surveillance developed
- Soft-ware for Cell phone-based and Web based FBIS developed
- FBIS-Components based monthly "Output progress indicator" developed
- 10 sentinel sites selected and official processes completed
- Recruitment/Selection of human resources for FBIS sentinel sites completed
- Trainings of the sentinel site Surveillance Physician, Surveillance Nurse, Medical Technologist (MT) and Trained Field Assistants (TFAs) completed
- After piloting in three sites, total ten sentinel sites are now functioning
- Collected samples are transported to IEDCR for laboratory testing and regular feedbacks are provided to the sentinel sites

Sentinel Sites	Initiated on
Adhunik District Sador Hospital, Hobigonj	May, 2014
100 Bedded District Hospital, Narsingdi	May, 2014
Uttara Adhunik Medical College Hospital	May, 2014
Adhunik District Sador Hospital, Thakurgaon	July, 2014
Bangladesh Institute of Tropical & Infectious Diseases (BITID), Chittagong	July, 2014
250 Bedded District Hospital, Cox's Bazar	July, 2014
Adhunik Sador Hospital, Naogaon	July, 2014
250 Bedded District Hospital, Patuakhali	Sept, 2014
District Sador Hospital, Satkhira	Sept, 2014
Dhaka Medical College Hospital	Dec, 2014

- Generated data are archived
- Food Safety Emergency Response (FSER) activity started and several out-break investigations conducted
- After training of cell phone based staffs and statistical assistants/statisticians and nurses for web based FBIS, both the activities were initiated and data are generating
- Conducted refreshers training of FBIS Site Surveillance Physician, Nurse, Medical Technologists and Field Assistants
- Supervision and monitoring activities are going on

Editorial

Food-Borne Illness Surveillance in Bangladesh

Food-borne illness (FBI), sometimes referred as food poisoning, is any illness resulting from consumption of contaminated food. Foodstuffs often become contaminated with different microorganisms causing most of the FBIs. In addition, many chemicals and other harmful substances present in the food can also cause FBI. Common FBI causing organisms includes diarrhoeagenic *Escherichia coli*, the Vibrios, Salmonella, Shigella, Campylobacters, *Staphylococcus aureus*, *Clostridium perfringens*, *Listeria monocytogenes*, Hepatitis viruses (HAV and HEV), norovirus, rotavirus *Toxoplasma gondii*, Cryptosporidium, Cyclospora, etc.

FBIs are manifested by different symptoms from diarrhoea, vomiting to jaundice and flaccid paralysis, depending upon the cause. Among the microorganisms, some are distinctly causing diarrhoeal illness (for example Vibrios, *E. coli*, Campylobacters, rotavirus), some are causing febrile illness (for example Salmonella typhi and paratyphi A,B,C), while others cause hepatitis. Foodborne illnesses may vary from one geographical area to other with different food habits. Fast-foods, like hamburgers may be responsible for haemorrhagic colitis caused by *E. coli* O157:H7 (Verotoxin producing *E. coli*, VTEC) contamination, in America, eating raw oysters, consuming sea fishes makes people vulnerable to infection with *Vibrio vulnificus*, *Campylobacter*. People living in the Indian subcontinent and others with poor hygienic practices are prone to develop diarrhoeal diseases principally by *E. coli*, *Vibrio cholerae* and rota virus, principally due to consumption of contaminated drinking water.

In Bangladesh adequate data are not available to address the FBIs. A surveillance system is essential to understand the FBI situation in Bangladesh. On this backdrop, IEDCR, with financial and technical support from FAO has launched FBIS in ten sentinel sites in the seven divisions of Bangladesh targeting diarrhoea, febrile illness and hepatitis. This initiative also aims to strengthen the laboratory capacity at public health laboratories to handle those cases. Skills and protocols will be shared with other laboratories dealing with FBI globally. IEDCR hopes to create a national database to understand the FBI situation in Bangladesh and develop appropriate prevention and control measures against those.

References: 1. Centers for Disease Control and Prevention. Food Safety. Web page viewed at: <http://www.cdc.gov/foodsafety/facts.html> on September, 10, 2014. 2. Wilde K.D. Foodborne diseases- an update part II. BD Lab. O 2005; 16(1): 1-2. 3. Wikipedia. Foodborne illness. Web page at: http://en.wikipedia.org/wiki/Foodborne_illness viewed on September, 10, 2014.

IEDCR News



The Institute of Epidemiology, Disease Control and Research (IEDCR) was established in the year 1976 as the national institute for conducting disease surveillance, and outbreak investigation and controlling diseases. IEDCR is involved in researches on events of public health importance. IEDCR is the World Health Organization recognized National Influenza Centre (NIC) in Bangladesh. The 8th Global Disease Detection (GDD) regional centre for US CDC is housed in IEDCR.

Major Activities of IEDCR:

1. Disease Surveillance

- Web Based Integrated Disease Surveillance (IDS)
- Event Based Surveillance
- Hospital Based Influenza Surveillance (HBIS)
- National Influenza Surveillance, Bangladesh (NISB)
- High-risk group avian influenza surveillance among live bird handlers in wet markets of Dhaka City corporation area
- Nipah Surveillance
- Acute Meningo-Encephalitis surveillance (AMES) focusing Japanese Encephalitis and Nipah infection
- Cell phone based disease surveillance
- National HIV/AIDS sero-surveillance

- Hospital Based Rota Virus and Intussusceptions Surveillance (HBRIS)
- Food Borne Illness Surveillance (Enteric Disease Surveillance)

2. Outbreak Investigation

- IEDCR responds to any unusual health events or diseases on an emergency basis.

3. Training and workshops

4. Research work, Publications and Guidelines

5. Courses conducted

- MSc in Applied Epidemiology (FETP,B)
- MPH in One Health and Bio-security
- Clinical Epidemiology (Short Course)

Food Borne Illness Surveillance (FBIS) in Bangladesh (contd. from page-2)

Institute of Epidemiology, Disease Control and Research (IEDCR), as a part of strengthening laboratory network, the International Centre for Diarrhoeal Disease Research, Bangladesh (icddr,b) is involved with FBIS and later with icddr,b IRB approved protocol titled "Enteric Disease Surveillance in Bangladesh" was also executed under the FBIS surveillance activities. Within this collaboration, icddr,b is supporting in few lab-diagnostic procedures, human resources at the sentinel sites and partial specimen transportation cost of FBIS.

The activities under the FBIS programme are:

1. Establish a food borne illness surveillance system in the country comprising laboratory-based surveillance using sentinel sites, web-based surveillance, cell phone-

based surveillance and community-based surveillance;

2. Strengthening of laboratory network;
3. Activities on risk communication and development of communication materials following food safety risk assessment;
4. Organise meetings, workshops, seminars to achieve the project objectives;
5. Response to/risk analysis of food safety emergency/outbreak;
6. Validation/simulation of the draft food safety emergency response plan in Bangladesh;
7. Develop and reproduce guidelines, protocols, standard operating procedures, manuals on foodborne illness, outbreak investigations;
8. Publish newsletter on food borne illness activities and achievements of project;

9. Develop and maintenance of website for food safety emergency, including blog for interaction;

10. Capacity development for foodborne illness surveillance and response to/risk analysis of food safety emergency/outbreak;

11. Develop collaboration and cooperation with national, international and UN agencies;

12. Formation of an internal team to oversee the implementation and monitoring and evaluation (Internal IME team) of the activities.

It's only the beginning, but with the gathered experiences, FBIS intend to expand in more facilities, utilize information to create awareness among the communities and recommend specific policies for intervention towards food safety.

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