

Food Borne Illness Surveillance (FBIS) in Bangladesh

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**Cell Phone Based Surveillance System (CPBSS)****- Syndromic Approach to Food borne Illness and Influenza in Bangladesh**

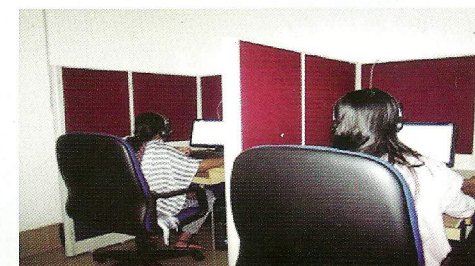
Institute of Epidemiology, Disease Control & Research (IEDCR) is the mandated national institute of the Ministry of Health and Family Welfare (MoH&FW) for conducting disease surveillance, outbreak investigation, training and research on diseases of Public Health importance since 1976. Since then IEDCR has gradually expanded its surveillance activities through sentinel hospital based, event based, community based and web based surveillances. IEDCR again moved one step forward by establishing a cell phone based surveillance system to track health conditions and risk behaviors from all over Bangladesh following the world's largest telephone health survey which is being conducted by the health department of USA since 1984. In 2012, IEDCR conducted a pilot study in Dhaka city corporation area with technical support from CDC Atlanta and funding from International Association of National Public Health Institutes (IANPHI) in collaboration with mobile operator Banglalink. The process was validated and experience revealed that mobile phone based surveillance is cost effective and can cover a wide geographical area within a short period of time.

Currently cell phone penetration in Bangladesh is more than 75% and geographical coverage is 100%. Utilizing the opportunity IEDCR scaled up the surveillance with funding from MoHFW to cover the whole country in 2014. FAO and US CDC came up with additional financial and technical assistance to conduct the surveillance on communicable disease (FAO focused on surveillance of food borne illness through syndromic approach and US CDC on Influenza). This time the Cell Phone Based



Disease Surveillance System (CPBDSS) covering the 7 divisions of the country collaborated with all the major mobile operators (Grameen, Robi, Banglalink, Teletalk, Citycell, Airtel) and conducted one round of data collection in June-July, 2014. After thorough review and necessary modifications in the questionnaire, software was updated and the interviewers underwent refresher trainings. From 2015 onwards, three rounds of surveillance planned to capture the seasonality. By September 2015, two rounds of data collection have been completed.

The accumulated data are routinely monitored for any indication of outbreak due to food borne illness, and analyzed to identify proportion of food borne illness in the country. The collected data are also matched with data from other sources of different platforms to get an overview of the food borne illness in the country. The findings will help the policy makers and the managers of the Ministry of Health and Family Welfare and other concerned ministries to plan properly and take timely measures to address the food safety and food security issues in the country.

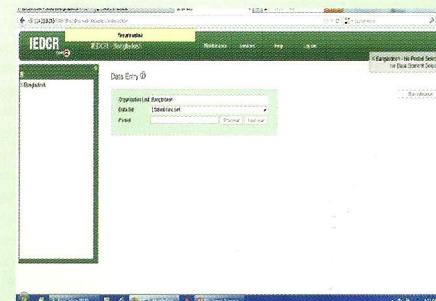
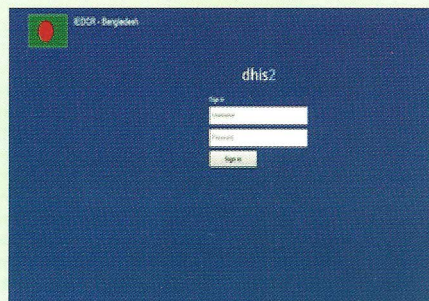


Web Based Disease Surveillance

IEDCR along with the ongoing surveillance activities, initiated the web based disease surveillance (WBDS) of priority communicable diseases in July 2009 with support from the US CDC. Software was developed and provided to all district civil surgeon office with necessary logistics such as, desktop computer, printer, modem etc. At that

time all related staffs were gradually trained in IEDCR. Reporting forms were supplied to the Upazila Health Complex's (UHC) and the statistical assistant/statisticians of UHC filled in the report forms. Each week filled in reports from UHCs were then sent to the Civil Surgeon (CS) offices. The statistical assistant/statisticians of the CS

office were filling up the PCD software offline and upon completion, sent it to the IEDCR server within the following week. In the mean time Management Information System (MIS) provided computers and additional logistics to districts and Upazila (sub-district) level for online transmission of data and other information. (cont to page 4)



Food Safety Emergency Response (FSER) -Outbreak investigation and response

Food safety emergencies or outbreaks of anthrax, hepatitis, nipah, pesticide poisoning, consumption of poisonous puffer fish in recent years has put extra pressure on the limited resources allocated for the routine public health services in Bangladesh. Food safety is an important part of food security. Lack of effective management of food safety events could result in national or even global food safety emergencies. It can have multi-faceted impacts on public health and economy of the country.

Bangladesh is the most densely populated country in the world. This population density puts the people at high risk of infectious diseases transmitted from person to person. In addition, humans have frequent and intense contact with wild and domestic animals in Bangladesh, resulting in opportunities for cross-species transmission of infections and emergence of novel human pathogens.

The majority of the Bangladeshi still live in poverty, making them vulnerable to diseases associated with poor hygiene and insufficient access to safe food, water, and high quality medical care. In this context, the Government of Bangladesh is committed to detect, investigate and contain outbreaks quickly to limit their spread and identify, in a timely manner, the diseases reportable under the International Health Regulations.

Objectives of the outbreak investigation include: (i) To describe the outbreak in terms of person, place and time; (ii) To identify the etiology of illness; (iii) To determine the social, behavioral or environmental context that propagated outbreaks ; (iv) To estimate the magnitude of the outbreak. The methods followed are: The investigations are conducted with a team consisting of public health specialists, clinicians, epidemiologists,

microbiologists, environmental scientists and anthropologists.

The field team performs physical examination of the affected cases, visit the affected area from where the cases are coming and conduct a survey of the affected individuals and their household members using a structured, pretested questionnaire during the investigation. In-depth interviews with affected patients are undertaken to determine their behavior and practices including living style, hand washing practices, water use and food consumption behavior. In order to estimate the extent of the outbreak, health workers conduct door-to-door search in the affected area, identify and list all outbreak-associated cases in the area. The team also take the GPS coordinates of the affected households, the water supply pumps and (cont to page 3)

Editorial

Disease surveillance system is essential for monitoring the trends of health issues. It plays a key role in detecting outbreaks and area wise disease profile. Institute of Epidemiology, Disease Control and Research (IEDCR) is doing this activities as the mandated organization of the People's Republic of Bangladesh. In doing so, IEDCR has moved further to use the modern technologies for disease surveillance e.g. the web based disease surveillance and the cell phone based disease surveillance system. These are unique in Bangladesh and are not common, even in the developed countries. These are running for the last few years successfully and were covering the priority communicable diseases. Soon IEDCR is going to include major non communicable diseases (NCD) in the cell phone based surveillance system along with some behavioral components of NCDs. Hope all these efforts will enrich our knowledge and policy decisions in this field for future program strengthening in Bangladesh.

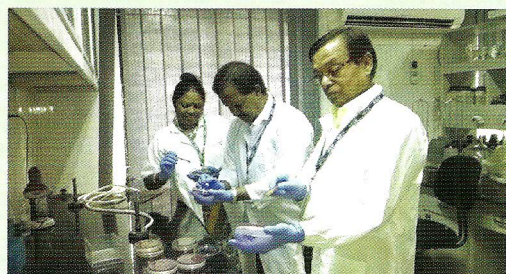
Food Safety Emergency Response-Outbreak investigation and response (cont from page 2)

other probable sources of spread in the area. Biological samples including, stool/rectal swab, blood, throat/nasal/lesion swab etc. are collected accordingly as needed. Environmental samples including water samples from affected households, central pumping stations, tube wells, taps and other sources of drinking water are collected to test for water quality during diarrheal disease outbreaks. Food items, when available are also collected for chemical and microbiological analysis. In relevant cases, pesticides, fertilizers and other materials are also collected. The team discusses with affected individuals, local elites, water supply and municipal/city corporation authority to identify potential sources of infection. Informal discussions are also conducted to generate hypotheses regarding potential sources of infection, perceptions regarding the illness outbreak and ways of prevention and control. After getting the test results, findings of the investigations are shared with the local authority with further recommendation to control the current and future incidence.

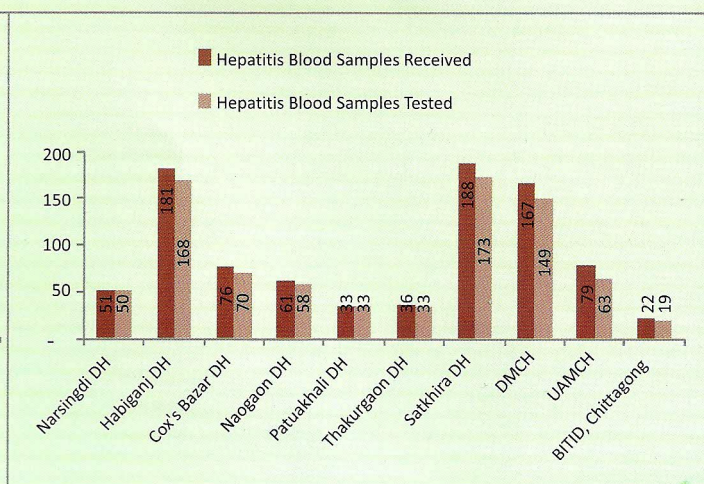
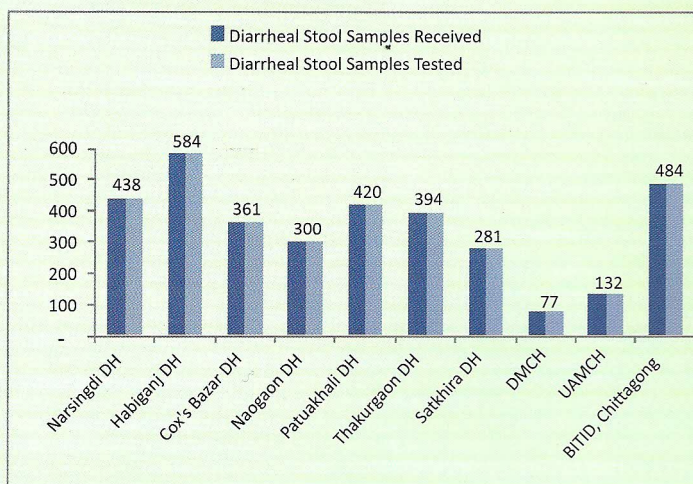
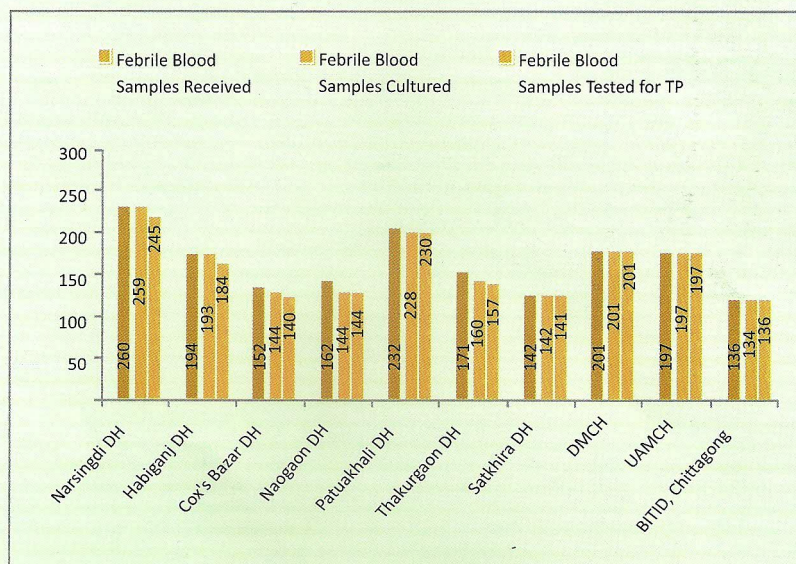
Between January and December 2014; IEDCR investigated and responded to 18 outbreaks from the national level. The major outbreaks investigated includes: four outbreaks of cutaneous anthrax, two outbreaks of cholera, and two foodborne illness outbreaks linked with consumption of contaminated watermelons, one nipah encephalitis.

Between January and October 2015; IEDCR investigated nine outbreaks under the FBIS platform and among them five were due to cholera, two due to pesticides, one cutaneous anthrax and one nipah encephalitis.

FBIS Updates: Site Wise Different Samples Received and Tested for FBIS Study (Period: May-2014 to 31 October-2015)



FBIS Lab staffs (▲ IEDCR, ▼ Thakurgaon DH)



Visit to RIVM, Netherlands

IEDCR NEWS



IEDCR, with financial support from FAOs “Improving Food Safety in Bangladesh Project”, has initiated the FBIS in sentinel sites since September 2013 along with food-borne outbreak response, web based and cell-phone based surveillance in Bangladesh. To fulfill the project objectives, FAO organized a tour of concerned officials from the MoHFW, IEDCR, IPH and FAO to the RIVM, Netherlands from 20 October, 2015 to 22 October, 2015. The purpose of this visit was to expose the officials to approaches and practices for food-borne illness surveillance in a developed country, this instance, in Netherlands and also to identify areas of collaboration between the institutions. The Bangladeshi delegates were lead by Professor Dr Mahmudur Rahman, Director, IEDCR and the other members were Mr Khaja Abdul Hannan, from MoHFW, Dr.

Tahmina Shirin, Dr. Iqbal Ansary Khan, Dr. M Salim Uzzaman, Dr. Ahmad Raihan Sharif and Dr. A K M Muraduzzaman from IEDCR, Dr. Shahnaila Ferdousi and Dr. Ahmed Nawsher Alam from IPH and Dr Mahfuzur Rahman from FAO.



RIVM- Rijksinstituut voor Volksgezondheid en Milieu -The National Institute for Public Health and the Environment is a knowledge and research institute dedicated to provide advises on policy and helps to implement that policy with a view to promoting public health and maintaining a safe and clean environment. The organization, an autonomous body, is working as a watchdog and supporting the Dutch, other EU governments and WHO by providing proper policy making information in the relevant field. The activities of this institution are well planned with necessary legislative and budgeted support from the government of the Netherlands and other international organizations.

After three days of fruitful discussions, major area of collaborations identified were, strengthening the existing surveillance system, analysis of data along with modeling to find out DALY and burden of disease, establishing anti microbial resistance (AMR) surveillance, technical support for laboratories, training and exchange visits, capacity building on water safety, biosafety, collaborative researches etc. It was decided that, both the institutes will revisit the identified topics for other collaborative issues and prioritization. RIVM may develop project proposals and will present to the ministry for approval and funding. On the other hand FAO and IEDCR will look in to the current existing budgeted project to find out some ways for collaboration within the allocated resources. It was felt that an MOU is essential to move forward, which will ease a fruitful collaboration and the timeline was set at first quarter of 2016 for these initial preparatory activities.

Web Based Disease Surveillance (cont from page 2)

From January 2012, WBDS continued as Web Based Integrated Disease Surveillance (WBIDS) with support from the International Association of National Public Health Institutes (IANPHI). This time IEDCR used District Health Information Software 2 (dhis2) for online data generation at UHCs. ‘dhis2’ is an open source software platform for reporting, analysis and dissemination of data for all health programs, developed by the Health Information Systems Program. Phase wise the Nurses, Statistical Assistants/Statisticians and UHC managers were trained, and, now all the 493 Upazila’s are connected. In 2014, Food Borne Disease Surveillance was included in the WBIDS after gradual refresher’s training of all staffs. It is expected that the web based integrated disease surveillance (WBIDS) will be a useful tool in the health system in Bangladesh to control and prevent priority communicable diseases.

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