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Food contamination monitoring and foodborne disease surveillance at national level
(Prepared by the Philippines)

The epidemiosurveillance of foodborne diseases is a task assigned to the National Epidemiology Center (NEC) which is an agency of the Department of Health (DOH). The NEC implements two surveillance systems: a laboratory-based surveillance, the National Epidemic Sentinel Surveillance System (NESSS) and syndromic surveillance, the Field Health Service Information System (FHSIS). The NESSS is an active surveillance system which functions through a network of approximately 200 sentinel site laboratories in 17 regions of the Philippines. The country is administratively and politically divided into 17 regions. These sentinel site laboratories monitors 14 infectious diseases and are housed in tertiary care private and public hospitals throughout the country. Among the 14 infectious diseases, 4 are food and water borne diseases which are cholera, hepatitis A, typhoid fever and paralytic shellfish poisoning. The basis for inclusion of diseases within the NESSS surveillance system is the following: 1) epidemic potential of the disease, 2) disease is considered targeted for elimination such as poliomyelitis, and 3) availability of control measures for the disease. In addition to surveillance of the 4 selected foodborne diseases, the NEC is tasked to investigate outbreaks and other threats to public health, thus the agency had investigated many outbreaks of foodborne diseases in the past. During outbreaks, suspected food vehicles and human specimens are submitted to the Bureau of Food and Drug (BFAD) and the Enteric Reference Laboratory of the Research Institute for Tropical Medicine (RITM), respectively, two DOH agencies, for testing. The mandate of BFAD covers **processed** food whereas **unprocessed** food and meat products fall under the National Meat Inspection Commission (NMIC) of the Department of Agriculture (DA).

The FHSIS surveillance system is a passive surveillance system which tallies reports of cases clinically diagnosed as "acute water or acute bloody diarrhea" from the first line facility of the healthcare delivery system called the health centers up to the Centers for Health Development which are regional field health offices of the DOH. In the FHSIS system, mandatory reporting of 25 diseases is required by the Law of Reporting of Communicable Diseases.

The RITM also implements a laboratory-based surveillance system called the antimicrobial resistance surveillance program (ARSP) which can potentially be used for surveillance of foodborne infections due to a broader range of microorganisms being monitored. The ARSP has a network of 17 tertiary care referral hospitals in 11 out of 17 regions nationwide. The ARSP had been primarily collecting antimicrobial susceptibility data since 1988 but has available data on etiologic agents of aerobic bacteria from various specimen types as well. Specimens come from hospital inpatients and outpatients and from outbreaks within the area being served by the hospital. The laboratories perform culture, identification and antimicrobial susceptibility testing of bacteria using disc diffusion, but refers isolates specified by the reference laboratory, the antimicrobial resistance surveillance reference laboratory (ARSRL) for confirmatory testing (such as serotyping of Salmonella, determination of minimum inhibitory concentration, etc.)

Because of limited resources, sentinel sites are not able to routinely serotype for organisms such as enterohemorrhagic *E. coli* and other types of *E. coli*, *Shigella*, or *Salmonella*. For financial reasons also, the ARSRL had been unable to utilize molecular typing techniques to tract transmission of disease or identify specific bacterial strains. To ensure good quality data, the ARSRL has been implementing an external quality assurance program among its sentinel sites since 1991 and in turn, had participated in international quality assurance programs such as the WHO Antimicrobial Resistance Monitoring External Quality Assurance and Proficiency Test Program (c/o the Centers for Disease Control, U.S.A), WHO Western Pacific quality assurance program for *Neisseria gonorrhea*, and WHO QA Program for Salmonella. The staff of the ARSRL also performs on-site visits of laboratories using a standard checklist. Data from all sentinel sites are entered and analyzed using the WHONET computer software. Data are collated at the ARSRL.

In 2002, the Philippines started participating in the WHO Global Salmonella Surveillance by initially undergoing four level training courses which ended in 2003. Thereafter, an enhancement of the Salmonella surveillance was initiated which consisted of inclusion of nontyphoidal salmonella as isolates for referral to ARSRL, routine serotyping of all nontyphoidal salmonella. and participation in Salmonella External Quality Assurance Surveillance (EQAS).

The ARSP, NESSS, and FHSIS are independent surveillance systems and have their own complement of personnel and infrastructure. Steps are currently being undertaken to merge data from each of these surveillance systems using a unique identifier. Once complete, the merged data sets can provide both clinical and laboratory data which can be used to better undertake risk assessment of Salmonella infections initially and other etiologic agents of foodborne infections, subsequently.

There is no existing surveillance for neither viral nor parasitic agents of foodborne infections in humans nor is there a nationwide laboratory-based surveillance from animal specimens.

Conclusions

In the DOH, the epidemiosurveillance of food borne diseases is a task assigned to the National Epidemiology Center which implements laboratory-based (NESSS) and syndromic (FHSIS) surveillance systems; however, only 4 food borne infections, namely hepatitis A, typhoid fever, cholera, paralytic shellfish poisoning are included in the laboratory-based surveillance system. Another DOH agency the RITM implements the antimicrobial resistance surveillance program (ARSP), a laboratory-based surveillance program which primarily surveys resistance patterns of aerobic bacteria but has available data on etiologic agents of aerobic bacteria and can therefore potentially function as a more comprehensive laboratory-based surveillance system for food borne infections. The ARSP, NESSS, and FHSIS are independent surveillance systems and have their own complement of personnel and infrastructure. The Philippines is initiating action to strengthen its food borne disease surveillance by trying to integrate its various surveillance systems. There is no existing surveillance for neither viral nor parasitic agents of food borne infections in humans nor is there a nationwide laboratory-based surveillance from animal specimens.