



Winter 2006

EPIDEMIOLOGY BULLETIN

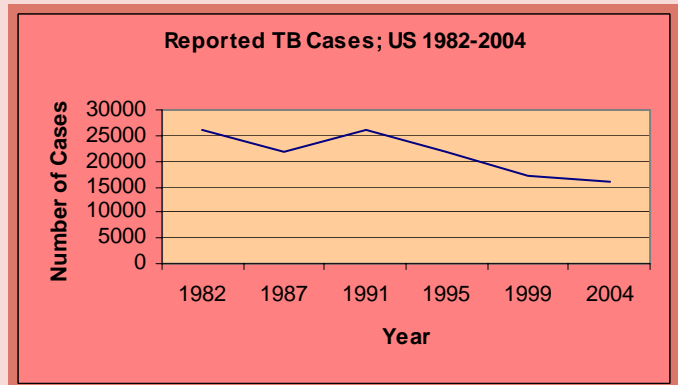
Disease Surveillance

Surveillance is the ongoing, systematic collection, analysis, interpretation, and distribution of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health. The most important strength of a surveillance system is the ability to identify and or detect outbreaks early enough to prompt investigation. It is also invaluable in estimating the impact of a disease or injury, depicting the natural history of a health condition, determining the distribution and spread of illness, generating hypotheses and stimulating research.

The threat of terrorism and high-profile disease outbreaks has increased attention to public health surveillance systems for early detection of outbreaks. Surveillance is carried out at all levels of the government, including local, state, national and international. Some of the well know traditional surveillance tools include:

- National Notifiable Disease Surveillance System, which passes reports from local health department to state to CDC
- Influenza surveillance report
- Tuberculosis surveillance

These systems depend on diagnostic reporting of cases. Statistical tools are applied to screen data for patterns that warrant further investigation and response.



Syndromic Surveillance

Some surveillance systems use data that are not diagnostic of a disease but that might indicate the early stages of an outbreak. This system of surveillance is called Syndromic surveillance. The scope of this framework is broader than traditional systems and needs more understanding and clarification to apply its use.

Syndromic surveillance is an investigational approach where health department staff with the help of a customized automated data acquisition and statistical program, monitor disease indicators in real-time(hourly) or at least daily/ weekly to detect outbreaks of diseases earlier and more completely than might otherwise be possible with traditional public health methods (e.g., by reportable disease surveillance). This system uses new data types reflecting events that might precede a clinical diagnosis.

Some of the examples of data collection include:

- Patients' chief complaints in emergency departments
- Types of clinical impressions on ambulance log sheets
- prescriptions filled
- over the counter drug and product purchases
- school or work absenteeism, and
- group of medical signs and symptoms in persons seen in various clinical settings

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Communicable Disease: Fact Sheet for Champaign County

January-December 2005

Rate Adjusted per 100,000 population

| Selected Reportable Communicable Disease | Champaign-Urbana 2005 | Champaign County 2005 | Champaign-Urbana 2002-2004 | Champaign County 2002-2004 |
|--|-----------------------|-----------------------|----------------------------|----------------------------|
| | | | | |
| Enteric E Coli | 3 | 1 | 2 | 1 |
| Foodborne Illness | 0 | 5 | 8 | 9 |
| Pertussis | 17 | 28 | 8 | 7 |
| Streptococcal Infection | 13 | 3 | 3 | 15 |
| Blastomycosis | 1 | 0 | 1 | 1 |
| Campylobacteriosis | 15 | 11 | 13 | 5 |
| Chickenpox | 2 | 0 | 16 | 4 |
| Chlamydia | 867 | 294 | 882 | 290 |
| Cryptosporidiosis | 4 | 1 | 0 | 3 |
| Tuberculosis | 5 | 0 | 4 | 0 |
| Giardiasis | 13 | 7 | 16 | 11 |
| Gonorrhea | 322 | 100 | 373 | 102 |
| Hepatitis B | 7 | 1 | 14 | 3 |
| Hepatitis C | 56 | 17 | 41 | 16 |
| Histoplasmosis | 2 | 1 | 5 | 5 |
| Meningitis, Aseptic | 8 | 1 | 13 | 8 |
| Salmonella | 16 | 11 | 13 | 8 |
| Shigellosis | 3 | 0 | 2 | 0 |
| Strep Pneumonia | 13 | 3 | 9 | 5 |
| HIV | 3 | 13 | 16 | 3 |
| Rabies, Exposure | 10 | 7 | 6 | 1 |
| Mumps | 1 | 0 | 1 | 0 |
| | | | | |

Population : Champaign-Urbana: 103,913 & Champaign County: 75,756

Please report all suspected communicable disease to Rachella Thompson, Communicable Disease Investigator at 217-531-2927 or email rthompson@cuphd.org

Syndromic Surveillance continued

Advantages :

- Early detection of an outbreak is the primary purpose of syndromic surveillance(This may or may not be related to terrorism preparedness and response)
- Enhanced case-finding and monitoring the course and population characteristics of a recognized outbreak also are potential benefits of this system

Concerns:

- **Reliability** depends on the timely capturing and processing of the data reported
- **Validity** depends on an operational and practical definition of an outbreak. Statistical deviation along with sound judgment based on past experience, severity of the condition and the resources required and available to respond are important to validate the results.
- **Cost** is a major factor of concern. Investing in this system should not deplete resources from more traditional methods of disease surveillance
- **Provider support** is imperative for a comprehensive approach to this process. Also the timeliness of the reporting is critical to the successful implementation of this system

Critiques of this system emphasize the need to move beyond the focus on bioterrorism, which many people associate with syndromic surveillance and recommend using this system as an adjunct to enhance traditional surveillance systems.

Some of the Nationally used Systems:

RODS: Real Time Outbreak and Disease Surveillance system developed by University of Pittsburgh and Carnegie Melon researchers.

EARS: Early Aberrant Reporting System developed by Center for Disease Control and Prevention

ESSENCE: Electronic Surveillance System for Early Notification of Community based Epidemics developed by the Department of Defense

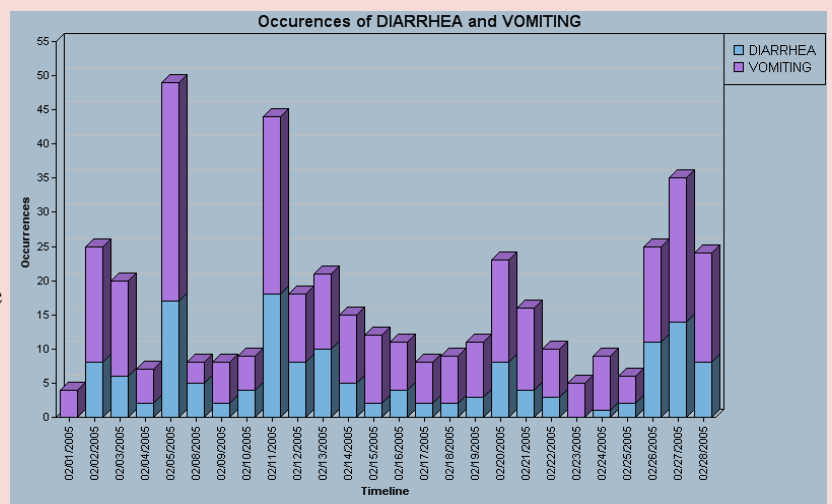
NRDM: The National Retail Data Monitor is used with the RODS system to track over-the-counter retail sales

What is Champaign-Urbana Public Health Doing?

Currently, the health department collects Patient Advisory Nurse data from one of the local hospitals and the staff at the health department tracks the system for early signs of disease outbreaks and/or bioterrorism threat.

Prospectively, the department is collaborating with the National Center for Supercomputing Applications and local hospitals to develop a comprehensive system to incorporate all the components of surveillance(ER visits, physician visits, over the counter pharmacy sales, absenteeism from schools and work place) to be able to effectively detect community outbreaks as well as demonstrate trends of disease based on geographic locations.

Syndromic Surveillance: Champaign Urbana Public Health District



References:

www.cdc.gov, www.syndromic.org, www.medscape.com

What is BDS?

Did you know that Champaign is one of only 11 locations in the state to have a BDS? It's located at the Champaign Postal Processing and Distribution Facility on North Mattis. It was installed on August 6, 2005.

BDS stands for Biohazard Detection System. It tests all flat first class mail for biohazards. Presently it tests only for anthrax, but it has the potential to test for other bioagents. Basically, the machine takes a sample of air as mail passes through the mail sorting equipment. If it detects a biohazard in the mail, it sets off an alarm and numerous officials and first responders are notified.

Biohazard Detection System was developed after the anthrax letter deliveries on Capitol Hill in 2001. Since postal mail touches every person in America in one way or another, the Department of Homeland Security was directed by Congress to work with the United States Postal Service to develop equipment and plans to combat postal service vulnerabilities in regards to terrorism. According to the U.S Postal Service, there are 730 BDS units in 110 facilities across the United States.

Role of Public Health

Champaign-Urbana Public Health District has the responsibility to provide antibiotics or preventive medicine to employees and customers who may have been exposed if something was detected by the BDS system. It takes 24 to 48 hours to confirm the test, but protocol dictates that treatment must be provided immediately after the alarm goes off and all employees and customers in the facility are decontaminated. All potentially exposed individuals will be given a three day supply of antibiotics to start and health officials will continue working to determine if there was an actual exposure or a false alarm. To date, there have not been any "false positive" alarms on any BDS machines throughout the county. Other responders in our community are working with our postal facility to serve the facility and our community. The health district has conducted drills in conjunction with the Postal Facility to prepare for a BDS alarm. This is just another way community partners are ensuring the safety of Champaign, Urbana and Champaign County.



Champaign Urbana Public Health District



Serving Champaign County

Mission: To Improve the health of the Champaign County Community