OBJECTIVES OF SURVEILLANCE

1. Measure disease burden:
   - Assess public health status,
   - Define public health priorities
2. Epidemiologic picture
3. Portray the natural history of a disease
4. Determine geographic distribution of illness
5. Meet National requirement
6. Keep register up to date
7. Ensure that preventive measures were taken
8. Detect outbreak, epidemics, define a problem
9. Generate hypotheses, stimulate research
10. Monitor changes in infectious agents
11. Detect changes in health practices
12. Facilitate planning
13. Provide the medical community a situational awareness
14. To support specific disease prevention programs
15. To guide public health policy and programs
16. To evaluate control and prevention measures

WHO REPORTS

- Physicians, HCW
  - Mainstay of reporting system
  - Regulations require mandatory reporting
  - Difficult to enforce, voluntary compliance necessary
- Microbiology lab: source of reports
  - Most infectious diseases confirmed by lab tests
  - Reporting by lab as reliable
  - Advantage: ability to computerize reporting system, computerized programs to automatically report
  - Inconvenience: lab test is not a diagnosis
- Discharge diagnosis: from hospital notes fail to identify cases who are not hospitalized

MAXIMIZE COMPLIANCE WITH REPORTING

1. Make reporting easy:
   - Provide easy to consult lists of reportable diseases,
   - Provide pre-stamped cards for reporting,
   - Provide telephone or fax reporting facilities
   - Collect from computerized databases
2. Do not require extensive information:
   - Name (+), age, sex, residence, diagnosis
   - May include data on exposure, symptoms, method of diagnosis...
3. Maintain confidentiality
4. Convince that reporting is essential:
   - Provide feedback,
   - Show how the data used for prevention
5. Personal contact

LDH Infectious Disease Prevention Programs

1. Infectious Disease Epidemiology
2. TB control
3. STD control
4. HIV/AIDS control
5. Immunization

SETTING PRIORITIES

- Public health importance of disease in terms of:
  - Magnitude of the problem - incidence and/or prevalence
  - Severity - case-fatality and cause-specific mortality rates
- Additional measures of the public health importance of the disease:
  - Cost of disease
  - Impact on productivity and contribution to premature mortality
  - Prevention options - primary, secondary and tertiary
  - Level of public concern

WHY DO WE NEED THE DATA

1. Measure disease burden:
   - Assess public health status,
   - Define public health priorities
2. Epidemiologic picture
3. Portray the natural history of a disease
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(800)256-2748
The clinician-patient relationship is a contract between two individuals. Medical providers are bound to confidentiality of medical information, by the Hippocratic oath, by their professional code of ethics and by laws. Medical information may only be shared with those who are involved in the care of the patient. These individuals are also bound by medical confidentiality.

The principle of medical confidentiality has been elevated to a fundamental right for individual human beings. The Hippocratic Oath expresses an old tradition widely accepted throughout the world: To respect the trust of the patient and to preserve confidentiality. The survival of the oath through thousands of years demonstrate the fundamental need for this principle. The general principles of the Hippocratic tradition have been incorporated in the Declaration of Geneva in 1948 and in the legal codes of numerous countries, so that tradition and law are in agreement.

However, requirements of secrecy have never been considered absolute. It is generally admitted that the public interest may justify some exceptions to this basic principle. Medical surveillance is indispensable for maintenance of good public health and medical surveillance can only be based on the information obtained through breach of confidentiality.

Most countries have laws specifying exceptions to medical confidentiality:

- When there is a clear and overriding benefit to society as is the case in reporting of infectious diseases, reporting of births and deaths, reporting cause of death,
- When a crime or other major illegal activity has been revealed,
- When information is of paramount importance for medical research and informed consent could not obtained,
- When the patient gives full informed consent

In general the recipient of the information is bound to safeguarding the information received. In the case of reporting of infectious diseases, the information must be maintained confidential.

Maintaining confidentiality may be delicate when the information has to be used, for contact investigations for example. For example, it is generally acceptable to contact an individual and explain – You may have been exposed to syphilis and we would recommend that you be tested by your doctor or come to the public health clinic. The individual invariably asks who is the source, and wants confirmation that their husband, wife, partner were diagnosed with the infection. This specific information should NOT be given out.

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Types of Surveillance

TYPES OF SURVEILLANCE

- PASSIVE VS ACTIVE
- POPULATION BASED, INSTITUTION BASED, TARGETED
- SENTINEL
- ELECTRONIC LABORATORY REPORTING (ELC)
- ELECTRONIC HEALTH RECORD (EHR)
- SYNDROMIC
- INTEGRATED ELECTRONIC

PASSIVE REPORTING

- Most common form in old days: Cards, Phone, Fax
- Agency sets guidelines, rules and format and periodically reminds healthcare (HC) providers of reporting requirements
- Agency acts as receiver of reports, waiting for their arrival and conducts periodic analysis of data

PASSIVE REPORTING through COMPUTER DATA ENTRY by Provider

- Most common form in old days: Cards, Phone, Fax
- Agency sets guidelines, rules and format and periodically reminds healthcare (HC) providers of reporting requirements
- Agency acts as receiver of reports, waiting for their arrival and conducts periodic analysis of data

National Surveillance

- Maintained by the CDC Epidemiology Program Office (EPO)
- NNDSS is a mechanism for the regular collection, compilation, and publication of reports of disease notifiable at the national level
- Published weekly in the MMWR, at year-end in Summary of Notifiable Diseases, US
- http://www.cdc.gov/epo/dphsi/phs.htm

Limitations of Surveillance

Surveillance Data Needs Interpretation

Survey = investigation in which information is systematically collected
Surveys are more defined in time and space, usually more finite than surveillance
Surveillance system may be built around serial surveys.

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### HEALTH CARE ASSOCIATED INFECTIONS

- Surveillance = focal point for infection control activities. The term surveillance implies that the observational data are regularly analyzed.
- Surveillance activities may provide valuable epidemiologic data such as:
  - identification of epidemics,
  - priorities for infection control activities,
  - shifts in microbial pathogens,
  - infection rates,
  - outcomes of hospital-acquired infection.
- Surveillance activities provide the additional benefits of
  - increasing the visibility of the infection control team in the hospital during the infection preventionist ward rounds,
  - allowing an opportunity for informal consultation and education to unit nurses and physicians.

### Active vs. Passive

<table>
<thead>
<tr>
<th>Active</th>
<th>Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trained personnel (IP) use various data source to get information</td>
<td>Identification /reporting of HAI by other than ICP</td>
</tr>
<tr>
<td>IP documents on real-time</td>
<td>Use of report forms completed by physicians, nurses, or other</td>
</tr>
<tr>
<td>IP well trained, no delay in reporting</td>
<td>Requires non-IC personnel to understand and to consistently apply definitions and take time to notify</td>
</tr>
<tr>
<td>Less error, more consistent, better data quality</td>
<td>Frequently fragmented, definitions not consistently applied</td>
</tr>
<tr>
<td>Sensitivity = 0.85 to 1.0</td>
<td>Sensitivity = 0.15 to 0.35</td>
</tr>
</tbody>
</table>

### Prospective vs. Retrospective

<table>
<thead>
<tr>
<th>Prospective</th>
<th>Retrospective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring patient by IP while in facility</td>
<td>Medical record review by IC or medical record technician after discharge</td>
</tr>
<tr>
<td>Sensitivity (0.75 to 0.95)</td>
<td>Sensitivity (0.75 to 0.95)</td>
</tr>
<tr>
<td>Identify clusters of infection</td>
<td>Clusters often missed</td>
</tr>
<tr>
<td>Increased visibility of IP and IC Program</td>
<td>Low visibility</td>
</tr>
<tr>
<td>Real-time feed back to clinicians</td>
<td>Delayed feedback</td>
</tr>
<tr>
<td>Team building</td>
<td>No effect on team</td>
</tr>
<tr>
<td>Expensive</td>
<td>Cheap</td>
</tr>
</tbody>
</table>

### Advantages

- **Hospital-wide Surveillance**
  - Collects data on all infections sites, and units. Identifies clusters and units. Identifies clusters.
  - Expensive, labor intensive
  - No defined management objectives
- **Objective /Priority-based**
  - Adaptable to hospitals with special interests and resources
  - Focuses on specific problems at the individual institution
  - No baseline rates of infection; may miss clusters and outbreaks
- **Targeted Surveillance**
  - Flexible, can be mixed with other strategies
  - No defined management objectives
- **Site Specific, Unit Specific**
  - Focus on patients at greater risk
  - Requires less personnel
  - Simplifies surveillance effort
  - No baseline rates in other units.
  - May miss clusters
- **Rotating**
  - Less expensive
  - Less time-consuming
  - Requires less personnel
  - Can miss clusters of infection
- **Outbreak**
  - Valuable when used with all types of surveillance

### Disadvantages

- **Hospital-wide Surveillance**
  - Expensive, labor intensive
  - No defined management objectives
- **Objective /Priority-based**
  - No baseline rates of infection; may miss clusters and outbreaks
- **Targeted Surveillance**
  - No defined management objectives
- **Site Specific, Unit Specific**
  - No baseline rates in other units.
  - May miss clusters
- **Rotating**
  - Can miss clusters of infection
- **Outbreak**
  - Valuable when used with all types of surveillance

### Limited Periodic Surveillance

- Decreases possibility of missing an outbreak
- Liberates ICP to perform other activities.
- Utilizes nurse resources more effectively
- Reduces time spent doing surveillance 45%.

### Additional Resources

- [http://www.infectiousdisease.dhh.louisiana.gov](http://www.infectiousdisease.dhh.louisiana.gov)
- (800)256-2748
AB, M, 21, presented at an ED at 2 pm for fever, headache, nausea and vomiting. Symptoms started at noon the day before with fever and headache. Also complains that since this am, light bothers him and feels very weak. Previously healthy.

Facility Data Confidential
Aggregate Public Info

Dump data into a warehouse

Creates reports sent back to facility

Useful to debunk:
• Katrina cough,
• Asthma outbreak after oil spill

Applications
• Detection of outbreaks (diarrhea, URTI)
• Influenza surveillance (ILI)
• Encephalitis, meningitis, WN suspects
• Bioterrorism events (?)
• Hurricane ID & injury surveillance
• Fulminant infectious syndromes
• Pesticide & other poisoning
• Post-discharge surgical site infection
• Drug & alcohol abuse
• Injuries
• Exposures to environmental disasters

Possible extension to ICU...

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2009 novel H1N1 was first detected in the United States in April 2009. This virus was a unique combination of influenza virus genes never previously identified in either animals or people. The first positive sample in Louisiana was collected on April 22, 2009. By June 3, 2009 all 50 states had reported cases of 2009 H1N1. The World Health Organization (WHO) declared a pandemic on June 11, 2009, the first global flu epidemic in 41 years. Fourteen months later, on August 10, 2010 WHO declared an end to the 2009 H1N1 pandemic.

Louisiana experienced two waves of activity during the pandemic: one when it was first detected (week 17, Apr 22) and another in the fall of 2009 (week 34). There were 2,412 confirmed cases of novel H1N1 in Louisiana but based on and extrapolation from CDC data, the real case count is closer to 313,000. Distribution of cases by gender is similar to the population distribution by gender. The highest proportion of outpatient and hospitalized cases occurred in the 5-24 year age group. Clinical data collected on cases show that the majority (71%) of cases experienced typical influenza-like illness. There were 736 hospitalized cases and 54 deaths. The most common risk factors among cases were asthma (7%) and obesity (6%). Eighty-three of the confirmed cases were pregnant.
In Louisiana, there have been 422 reports of health complaints believed to be related to exposure to pollutants from the oil spill, including cases of heat stress. Three hundred and thirty-five (335) reports came from workers and 87 from the general population (see limitations of these data explained on page 2). Most frequently reported symptoms include headache, dizziness, nausea, vomiting, weakness/fatigue and upper respiratory irritation. One hundred seventy-one (171) workers had heat-related complaints. Eighteen (18) workers had short hospitalizations. The general population complaints were primarily related to odors with mostly mild symptoms being reported.

The syndromic surveillance system is monitoring emergency department (ED) visits in seven hospitals in Regions 1, 3 and 9 to determine if there are increases in upper respiratory illnesses (URI) and asthma in the region. This year’s weekly data (percentage of asthma and URI among ED visits) are compared with the past three years. There is no increase to report.

Because of the nature of environmental exposures, the exact cause of symptoms or exposures cannot be confirmed. Health complaints are the symptoms and signs reported by the person affected. Some of these are objective (vomiting, for example), others are subjective (nausea, for example). There are large variations in how subjective symptoms are perceived and reported.

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FEEDBACK

TALKING POINTS

• Speaker must be knowledgeable & credible
• Answer unexpected questions

WEBSITE

Epidemiology Manual
School Manual
Annual Infectious Disease Surveillance Reports
Antibiotic Sensitivity
Foodborne / Waterborne Disease
Healthcare Associated Infections
Hepatitis
Influenza Surveillance
Louisiana Morbidity Report
MRSA
Reportable Disease Surveillance
School Resources
Special Studies
Syndromic Surveillance - LEEDS
Veterinary Information
Rabies
West Nile Virus

PUBLIC MEETING

EDUCATIONAL PROGRAM

Figure 5: Salmonella Average Incidence Rate (Cases per 100,000 Population)
Louisiana, 2008-2017