



Infectious Disease Epidemiology Section  
Office of Public Health, Louisiana Dept of Health & Hospitals  
(504) 219-4563 (504) 450-1781 (24 hr number)  
<http://www.dhh.louisiana.gov/offices/?ID=249>

## LOUISIANA STATE ANTIBIOTIC SENSITIVITY ACTIVE SURVEILLANCE SYSTEM

Resistance of common antibiotics is increasingly becoming a problem. These antibiotics work by affecting the cell wall, distorting the cell surface, inhibiting bacterial protein synthesis, or preventing DNA formation. Some bacteria are able to adapt survival mechanisms against these agents, thus weakening our ability to control disease.

Most data published in the literature on antimicrobial resistance is heavily influenced by limited surveys and case reports. A collection of population-based data provides a more representative picture of drug resistance patterns.

The Antibiotic Sensitivity Active Surveillance System started in 1998 in an attempt to track the emergence of antibiotic resistant organisms. This federally funded surveillance program allows Louisiana to be part of a nationwide project to track and evaluate antibiotic resistant trends.

The goal of the Antibiotic Sensitivity Active Surveillance System is to estimate the proportion of selected bacteria in the state that are resistant to antibiotics by the reporting of laboratory aggregate data. This surveillance system has historically monitored three pathogens: Methicillin resistant *Staphylococcus aureus* (MRSA), drug resistant *Streptococcus pneumoniae* (DRSP), and Vancomycin resistant enterococcus (VRE). In accordance with the Centers for Disease Control and Prevention (CDC) recommendations, the Office of Public Health (OPH) is expanding the active laboratory surveillance to include other microorganisms: Streptococci group A, *Neisseria meningitidis*, *E.coli* and *Klebsiella pneumoniae*. Attached is the revised Louisiana Active Surveillance System For Antibiotic Resistant Organisms reporting form.

### What should be reported via the Active Surveillance System?

The Microbiology laboratory should report:

1-Denominator: the total number of isolates of the bacterial species of concern from their lab for each month.

2-Numerator: Among these isolates, the total number of drug resistant or drug intermediate resistant isolates. **Do not count duplicate isolates on a patient** (one isolate per patient per month if possible).

Enclosed is a copy of the Active Surveillance reporting form. This form is to be filled out and returned to the Infectious Disease Epidemiology Department by the 20<sup>th</sup> of the next month. For instance, January data should arrive by the 20<sup>th</sup> of February. A quarterly and annual report of the cumulative data by public health region and statewide will be sent to you.

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The following bacteria are followed in the Active Surveillance System.

## Methicillin Resistant *Staphylococcus aureus*

*Staphylococcus aureus* is commonly found in the nasal cavity, perineum, anal area and finger tips, among other areas. A fraction of these people are colonized with MRSA while others are acutely ill. Methicillin resistance to *S. aureus* is primarily due to the organism's ability to produce  $\beta$ lactamase, which is capable of breaking down the penicillin ring thus making it ineffective. Acquisition of MRSA infections is a common concern among both patients and staff in acute and long-term care facilities. By tracking MRSA, the Office of Public Health can continue to assist in monitoring the rate of serious MRSA infections and any vancomycin resistant *S. aureus* that may arise. Acute infections have become so numerous, in fact, that the amount of resources devoted to processing these reports now outweighs the amount of new and useful information generated from them. Laboratory information from sentinel sites continues to be an efficient and valuable method of tracking antimicrobial resistance within Louisiana.

## Drug Resistant *Streptococcus pneumoniae*

Streptococci are important agents of human disease, colonizers in the human flora and agents of animal disease. *S. pneumoniae* is the most common cause of community acquired pneumonia both in children and adults. It causes approximately half of otitis media cases and it is very frequently the culprit of meningitis and sepsis. This human pathogen is commonly treated with penicillin; however, similar to many other organisms, *S. pneumoniae* has been reported to have a high resistance to penicillin.

## Vancomycin Resistant Enterococcus

Vancomycin resistant enterococcus is ubiquitous in the hospital environment, often found as a contaminant on medical equipment. Most patients are simply colonized and not infected (a ratio of 10:1). Persons at highest risk for VRE infections are those hospitalized with severe underlying or immunosuppressive conditions. These people may be affected by one of two mechanisms: drug resistance developed post-exposure to the antibiotic or via contact with the drug resistant pathogen (person to person or environmental).

Louisiana collects data on unspciated strains, as well as *E. faecalis* and *E. faecium*.

## Antibiotic Resistant Streptococci group A

*Streptococcus pyogenes*, Group A Strep, is found in the nasopharynx of healthy carriers. It may cause pharyngitis, the most common clinical expression.  $\beta$ -lactam antibiotics are the treatment of choice, particularly amoxicillin or penicillin. Resistance to penicillin has not developed to this day however this resistance needs to be monitored. Resistance to erythromycin has become common in some countries.

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## Antibiotic Resistant *Neisseria meningitidis*

*Neisseria meningitidis* is a colonizer of a few percent of the population and also an important cause of septicemia and pyogenic meningitis. Reduced susceptibility to rifampin is of concern since this antibiotic is often used for prophylaxis of close contacts.

## Antibiotic Resistant *E.coli*

*E.coli* is a normal inhabitant of the human gastrointestinal tract. It produces disease when it is in other habitats such as the urinary tract, biliary tract, blood or meninges. A few isolates are not part of the human flora and when introduced in humans cause gastroenteritis (entero-toxicogenic, entero-invasive and entero-hemorrhagic *E. coli*). It is one of the most frequently isolated Gram negative bacteria. Resistance to broad spectrum cephalosporins is largely mediated by extended-spectrum  $\beta$ -lactamases (ESBL). Depending on the amino-acid substitution at the active site of the enzyme, susceptibility to cefotaxime, ceftazidime and aztreonam may be diminished. CDC estimated that the rate of ESBL producing *E.coli* was 6% in US intensive care units. Resistance to fluoroquinolones and aminoglycosides are also of concern.

## Antibiotic Resistant *Klebsiella pneumoniae*

*Klebsiella pneumoniae* may cause community acquired lobar pneumonia in patients with severe underlying medical conditions. More importantly, these organisms have a predisposition to cause nosocomial infections such as ventilator associated pneumonia, meningitis, cellulitis and UTIs.

ESBL production by *Klebsiella pneumoniae* strains is estimated by CDC to be 14% in US intensive care units. Other resistance patterns of concern are resistance to fluoroquinolones and aminoglycosides.

**For Additional information call Zahidul Islam, Active Laboratory Surveillance Epidemiologist at 504-219-4564 or Theresa Sokol, Chief of Disease Surveillance at 504-219-4539.**

# Louisiana Antibiotic Sensitivity Active Surveillance System Enrollment Form, 2006

Please fill out completely and return to the Epidemiology Section as soon as possible.

Complete Hospital Name: \_\_\_\_\_

## **Infection Control Nurse:**

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ ZIP: \_\_\_\_\_

Phone Number (    ) \_\_\_\_\_ Fax Number (    ) \_\_\_\_\_

E-mail Address \_\_\_\_\_

## **Laboratory:**

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

City: \_\_\_\_\_ ZIP: \_\_\_\_\_

Phone Number (    ) \_\_\_\_\_ Fax Number (    ) \_\_\_\_\_

E-mail Address \_\_\_\_\_

Please specify the primary contact person (*the person who submits the report each month and whom we should contact if there is a question or problem*):

\_\_\_\_\_

**Fax to: (504) 219-4563  
Thank you!**

**Louisiana Active Surveillance System  
For Antibiotic Resistant Organisms (Rev. 2006)**

Month

Year

Hospital Name :  
Contact Person:  
Contact Phone Number:

<b><i>Streptococcus pneumoniae</i></b>	
Total # isolated	
# penicillin resistant	
# penicillin intermediate	

<b>Group A Streptococci</b>	
Total # isolated	
# Erythromycin resistant	
# Penicillin resistant	

<b><i>Staphylococcus aureus</i></b>	
Total # isolated	
# Methicillin resistant	
# Vancomycin resistant	

<b><i>Neisseria meningitidis</i></b>	
Total # isolated	
# Rifampicin resistant	

<b><i>Escherichia coli</i></b>	
Total # isolated	
# ESBL producer isolated	
# Fluoroquinolone resistant	
# Aminoglycoside resistant	

<b><i>Klebsiella pneumoniae</i></b>	
Total # isolated	
# ESBL producer isolated	
# Fluoroquinolone resistant	
# Aminoglycoside resistant	

<b><i>Enterococcus faecalis</i></b>	
Total # isolated	
# Vancomycin resistant	
# Vancomycin intermediate	

<b><i>Enterococcus faecium</i></b>	
Total # isolated	
# Vancomycin resistant	
# Vancomycin intermediate	

<b>Enterococcus species</b>	
Total # isolated	
# Vancomycin resistant	
# Vancomycin intermediate	

Please remember to not include duplicate records. The Active Surveillance System requires only one isolate being reported, per patient, per hospitalization. Remember to include all isolated bacteria (colonized & infected).