Banking of Isolates for Epidemiological Purposes

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Large scale banking of clinical isolates at the NPHL began in the fall of 1997, shortly following the move of the public health laboratory from Lincoln to UNMC. The original goal of the banking program was to obtain *Salmonella* isolates from throughout the state for serotyping. Since that time, other isolates of epidemiological importance have been added to the submission list. In 2001, over 650 isolates were forwarded to the NPHL which represented 11 different genera of bacteria **(Table 1).**

The main goal for the banking program today is to provide typing information for outbreak investigations and to evaluate antibiotic resistance trends as they appear and become more prevalent. The availability of these isolates also enables the NPHL to participate in the National Antimicrobial Resistance Monitoring System (NARMS) in collaboration with the CDC, the FDA, USDA, the Food Safety and Inspection Service, the Agricultural Research Service, and other state health departments. This program was developed as a mechanism to monitor antimicrobial resistance in enteric bacteria isolated from humans and animals. The information is used to define trends, essential for the initiation of prevention programs to limit the development and spread of antibiotic resistant microorganisms.

Over the past year, the NPHL has utilized isolates from this collection in a variety of studies. Pulse field gel electrophoresis (PFGE) typing is currently performed on all *E. coli* 0157:H7 isolates submitted to the laboratory. The PFGE patterns are posted electronically (PulseNet System) for a national tracking of the clonality concerning the spread of this pathogen. Local outbreak events, such as that which occurred with meningococcal disease in students from Crete and DeWitt, Nebraska (*Neisseria meningitidis* serogroup B) and the increase in numbers of *Shigella flexnerii* in the Omaha area, were also evaluated using PFGE typing. Susceptibility testing is currently performed on *Campylobacter* species and *Salmonella* serogroups to determine antimicrobial resistance treads within our state. The preliminary results of this testing showed the emergence of increased resistance within specific *Salmonella* serotypes, including resistance to cephalosporins Our results also showed that resistance to fluoroquinolones in both *Salmonella* and *Campylobacter* species does not appear to be a problem within our state at the present time. Finally, the serotyping of *Salmonella* has been useful as an epidemiological tool to evaluate antibiotic resistance within specific serotypes.

In addition to these ongoing evaluations, the NPHL will be studying molecular methods for the species identification of non*jejuni Campylobacter* and for the serotyping of *Salmonella*. The NPHL is also participating in a program with the CDC to study the serotypes of *Haemophilus influenzae* isolates that were associated with invasive disease in children aged <5 years.

To make the banking program a success, we continue to depend on and appreciate the support of laboratorians throughout the state. Listed in **Table 2** is an updated list of the organisms we would like submitted to the NPHL for banking. Questions concerning this program can be addressed to Dr. Peter Iwen at 559-7774.

Table 1. Isolates submitted to the NPHL for banking, 2001.

Campylobacter spp.		334
Salmonella serogroups		153
Shigella sonnei		86
Escherichia coli 0157:H7		53
Staphylococcus aureus	(methicillin-resistant)	18
Neisseria meningitidis	(from sterile body site)	16
Shigella flexnerii		11
Haemophilus influenzae		8
Aeromonas hydrophilia/caviae		2
Group B *Streptococcus*		2
Listeria monocytogenes		2
Yersinia enterocolitica		2

Table 2. Isolates to be routinely submitted to the NPHL for banking.[a,b]

Campylobacter spp.[c]	
Escherichia coli 0157:H7[d]	
Haemophilus influenzae[e]	(from sterile body site)
Listeria monocytogenes[d]	
Neisseria menigitidis[d]	(from sterile body site)
Salmonella serogroups[d]	
Shiga toxin positive stool culture filtrate[d]	
Shigella spp.	
Staphylococcus aureus[d]	(vancomycin nonsusceptible)
Streptococcus pneumoniae[c]	(from sterile body site)

[a]Isolates for submission to the CDC are first forwarded to the NPHL to facilitate shipping, handling, and result reporting.

[b]Banking may include any organism with an unusual susceptibility pattern or outbreak association per request of the Epidemiology Division of NHHSS.

[c]The viability of this organism rapidly decreases over time and it should be sub-cultured to fresh sheep blood agar (*Campylobacter* and *St. pnemoniea*) or chocolate agar (*N. meningitidis*) if >3 days prior to submission.

[d]This organism should be submitted as soon as possible after detection to facilitate epidemiological investigating.

[e]The NPHL will culture specimens that are shiga toxin positive to identify the toxin producing organisms. All E. coli 0157:H7 isolated are tested by PFGE.