



Nucleic Acid Amplification Testing for Chlamydia and Gonorrhoea

The North Dakota Public Health Laboratory (NDPHL) is pleased to offer the Aptima™ Nucleic Acid Amplification Test for detection of *Chlamydia trachomatis* and *Neisseria gonorrhoea*. The Aptima™ test has replaced the current non-amplified chlamydia and gonorrhoea probe screening procedure.

The Aptima™ assay offers many advantages over the current testing technology, including increased sensitivity and specificity, extended transport times, a unisex swab specimen collection kit and urine based testing capability.

Supplies are available to support the new testing method and can be ordered any time. New Current Procedural Terminology (CPT) codes are 87491 for an amplified chlamydia probe and 87591 for an amplified gonorrhoea probe. Please contact the laboratory for additional information.



Eric Hieb and Kali Erickson discuss the Aptima™ nucleic acid amplification test for chlamydia and gonorrhoea.

Laboratories Prepare for Smallpox

To assist in diagnosis of smallpox, the Centers for Disease Control and Prevention (CDC) has defined risk levels as high, moderate and low risk. These risk levels are based on major and minor smallpox criteria as defined by the CDC (Figure 2). The testing algorithm (Figure 1) used for vesicular or pustular rash illnesses is based on the patient's level of risk for smallpox. Testing may be performed at local laboratories, Laboratory Response Network - Level A Laboratories, the North Dakota Public Health Laboratory (NDPHL) or the CDC depending on the level of risk, laboratory biosafety level and capability.

To protect laboratory personnel, the smallpox risk level should be clearly noted on the laboratory requisition form accompanying any specimen labeled as "vesicle," "blister," "rash" or otherwise suggestive of acute/generalized vesicular or pustular rash illness. Laboratorians who receive such specimens without a risk assessment should obtain the proper information before handling the specimen. Specimens with a moderate or high risk of smallpox should be tested in biosafety level three or four laboratories. Specimens of high risk will be sent to the CDC regional variola laboratory. Rashes associated with adverse reactions to smallpox (vaccinia) vaccination are defined as "moderate" risk. The NDPHL currently has available vaccinia-specific tests.

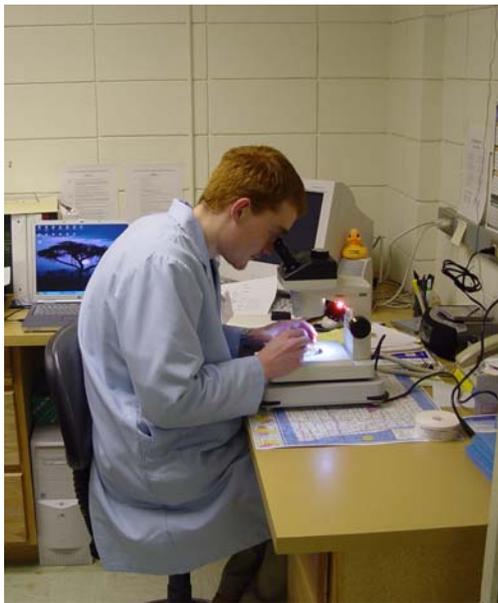
Because of the current immunization program in North Dakota, accidental isolation of vaccinia in the virology laboratory is possible. As a safety precaution, the risk level should be considered before proceeding

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West Nile Virus Found in North Dakota

A vector-borne virus, West Nile virus (WNV) was first recognized in the Western Hemisphere in 1999. Invertebrate vectors, such as mosquitoes, circulate the virus among wild birds. Occasionally, the virus is introduced into other vertebrate populations, such as humans or horses, that serve as incidental hosts.

Since 1999, mosquitoes have been the only vectors associated with outbreaks of WNV in the United States. At least 30 species of mosquitoes have tested positive for WNV, although several of those species most likely are not involved in active transmission of the virus from bird to bird or from bird to mammal.



Travis Schulz, mosquito surveillance coordinator, counts and speciates mosquitoes captured in New Jersey light traps.

WNV affects horses much more often than any other domestic animal. Many horses infected with WNV do not develop illness, but about one-third of horses that become ill will die or need to be euthanized. Other livestock and poultry usually do not show any illness if infected with WNV.

The 2002 Arbovirus Surveillance Program in North Dakota documented the arrival of WNV through laboratory- confirmed cases in humans, horses and birds. In addition, laboratory testing established that

the *Culex tarsalis*, a known mosquito vector for other arboviruses in this state, also was found to be a carrier of the WNV.

Using the WNV enzyme capture ELISA procedure, 371 human specimens were tested by the North Dakota Public Health Laboratory (NDPHL). A total of 17 positive cases (4.5%) were detected. Confirmation was performed at the Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases.

Live trapping of mosquitoes was performed in those areas where equine and human cases were identified. Molecular laboratory testing was performed at the NDPHL on 100 *Culex tarsalis* pools. One pool from the eastern part of the state was positive for the WNV.

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New Source of Information

The North Dakota Department of Health - Division of Disease Control is offering a new source of information. *The Pump Handle* is a monthly electronic mail update of select topics on current laboratory and public health issues.

March 2003 issue highlights:

“Skeeter” Season Already?

Smallpox Vaccination Clinics Underway

New Tuberculosis Treatment Guidelines Issued

Revisions to the North Dakota Reportable Conditions

MRSA, an Increasing Problem



For questions or inquiries, please contact Julie Goplin, Division of Disease Control, at 701.328.2375 or e-mail her at jgoplin@state.nd.us.

with the identification of any unusual cytopathic effect in cell culture (especially giant multinucleated cells when other agents such as varicella zoster and herpes simplex virus have not been identified). If a diagnosis of smallpox or vaccinia cannot be ruled out, store securely, and contact the North Dakota Department of Health for instructions. Do not stain cells suspected of smallpox or vaccinia. Guidelines and mailers for specimen collection and transportation have been distributed to the Level A Laboratories and public health units. Call the NDPHL for collection and transportation instructions.(Figure 3)

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New Face on the Bioterrorism Preparedness Team

Deb Shipman is the new North Dakota Laboratory Response Network (NDLRN) bioterrorism education coordinator. As former employee of Medcenter One Health Systems, Deb has nearly 20 years of experience as a clinical laboratory microbiologist. In addition, Deb taught clinical microbiology for the Clinical Laboratory Technology Program at Bismarck State College for 18 years and played an active role in the clinical microbiology rotation at Medcenter One Health Systems. “At this stage in my life,” Deb said, “I’m ready for a change, and I see this as a great opportunity to expand my horizons and tackle new challenges in the area of bioterrorism. We live in a new era, and the chance to be on the cutting edge of new technology is hard to resist.”

Deb’s extensive bench experience, plus her teaching background and high-energy personality, make her



ideally suited to meet the challenges of coordinating an important and evolving bioterrorism program. Welcome, Deb!

Deb Shipman validates rapid procedures for biothreat agents.

NDLRN Expansions

Deb Shipman, the North Dakota Laboratory Response Network (NDLRN) training coordinator, has conducted site visits to all Level A laboratories in the NDLRN. Rule-out procedures were distributed and a needs assessment was completed at each laboratory. Four areas of need were identified:

- Additional training for microbiologists.
- Surge capacity.
- Access to electronic communications.
- Rapid confirmation procedures.

Addressing the training needs, plans are underway to provide training workshops for all Level A laboratories. Participants will receive on-site instruction at the North Dakota Public Health Laboratory (NDPHL). Each half-day workshop will provide hands-on training with actual or simulated biothreat agents and experience working in a BSL - 3 environment. The training will be scheduled for the first week and last week of June 2003. More information about this training will be provided by direct communication with each NDLRN contact.

Five new Level A laboratories have been added to the NDLRN to assist all areas of the state with adequate coverage and surge capacity:

- Mercy Hospital, Valley City
- Jamestown Hospital, Jamestown
- Presentation Medical Center, Rolla
- West River Regional Medical Center, Hettinger
- Mercy Hospital, Devils Lake

Funding through the CDC Bioterrorism Grant has provided all Level A labs with new computers, high-speed Internet access and facsimile capabilities. Installation of this equipment currently is underway, the first step to rapid communications within the network.

Rapid detection of biothreat agents is available at the Level B/C laboratory (NDPHL). New instrumentation provides real-time polymerase chain reaction and time-resolved fluorescence assays. Both environmental samples and clinical isolates can be tested. Preliminary results are available for most agents within 24 hours. Confirmatory testing will require a longer period of time.

Figure 1:

Smallpox Testing Algorithm



Figure 2

Evaluating Patients for Smallpox

Call the North Dakota Department of Health (NDDoH), if you suspect smallpox, an adverse reaction to smallpox (vaccinia) vaccination or require consultation on an unusual or pustular rash illness.

Division of Disease Control 701.328.2378: After hours or weekends call 800.472.2121

MAJOR Smallpox Criteria

- FEBRILE PRODROME: Occurring one to four days before onset: Fever $\geq 101^{\circ}$ F **and** at least one of the following: prostration, headache, chills, vomiting or severe abdominal pain.
- CLASSIC SMALLPOX LESIONS: Deep-seated, firm/hard, round well-circumscribed vesicles or pustules. As they evolve, lesions may become umbilicated or confluent.
- LESIONS IN THE SAME STAGE OF DEVELOPMENT: On any one part of the body (e.g., the face or arm) all the lesions are in the same stage of development (i.e., all are vesicles, or all are pustules).

MINOR Smallpox Criteria

- Centrifugal distribution: The greatest concentration of lesions is on the face and distal extremities.
- First lesions are on the oral mucosa/palate, face or forearms.
- Patient appears toxic or moribund.
- Slow evolution: Lesions evolve from macules to papules to pustules over days. (Each stage lasts one to two days.)
- Lesions may appear on the palms and soles.

Risk of Smallpox

High Risk of Smallpox - Report immediately.

1. Febrile prodrome (defined at left) **AND**
2. Classic smallpox lesion (defined at left) **AND**
3. Lesions in same stage of development (defined at left)

Moderate Risk of Smallpox - Urgent Evaluation.

1. Febrile prodrome (defined at left) **AND**
2. One other **MAJOR** smallpox criteria (defined at left)

OR

1. Febrile prodrome (defined at left) **AND**
2. Greater than or equal to four **MINOR** smallpox criteria (defined at left)

Low Risk of Smallpox - Manage as clinically indicated.

1. No febrile prodrome

OR

1. Febrile prodrome **AND**
2. Less than four **MINOR** smallpox criteria (defined at left)

*Department of Health and Human Services
Centers for Disease Control and Prevention*

Figure 3:

Specimen Collection and Transportation

Moderate or High Risk of Smallpox

Call the North Dakota Public Health Laboratory for consultation regarding sample collection/shipment.

701.328.5262 After hours: 800.472.2121

Specimen mailers with collection instructions will be provided.

- Obtain fluid and cells from two or more unroofed vesicles/pustules.
- Collect a minimum of four touch preparation slides.
- Collect two to four non-cotton swabs in viral transport media.

Other potential specimens include skin from the top of lesions, scabs, punch biopsies and blood.

- Collect acute serum.
- Samples from patients with a moderate risk of smallpox may be raised to the high-risk category if a non-variola diagnosis cannot be established.

Low Risk of Smallpox

- Collect specimens according to the institution's protocols for rash-like illnesses such as VZV, HSV and enterovirus or for other diseases in the differential diagnosis.
- Routine Diagnostic Shippers can be used to transport specimens of low risk for smallpox.
- If a diagnosis cannot be made and vaccinia virus and variola virus infection cannot be ruled out by the laboratory or clinical findings, contact the NDDoH. The patient's risk category may be increased in such circumstances.

MicroReport

North Dakota Department of Health
Public Health Laboratory
P.O. Box 5520
Bismarck, N.D. 58506-5520

General information: 701.328.5262
E-mail address: jtrythal@state.nd.us
Website: www.health.state.nd.us

Address Service Requested

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Deputy State Health Officer
Arvy Smith

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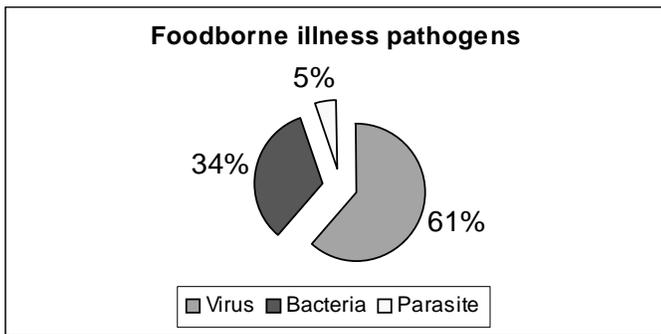
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North Dakota Department of Health
Public Health Laboratory
1205 Ave. A West
(P.O. Box 5520)
Bismarck, N.D. 58506-5520
701.328.5262

NDPHL Adds Norwalk Testing

An estimated 76 million cases of foodborne illnesses causing 325,000 hospitalizations occur annually in the United States. The cause for these illnesses is determined in only 14 million cases.(1)



The North Dakota Public Health Laboratory (NDPHL) has added one more “tool” to help solve these foodborne mysteries: a molecular-based diagnostic procedure for Norwalk-like viruses, also referred to as “noroviruses.”

Noroviruses are members of the family *Caliciviridae* and are well-recognized etiological agents of nonbacterial acute gastroenteritis (AGE).(2) Norovirus is one of the leading causes of hospitalization for foodborne transmission of AGE.

Discovering the responsible pathogen not only removes the contaminated food from the market but also aids in preventing future outbreaks. Assessment of trends in pathogens and foods helps to develop sound guidelines for public health policy.(1) Although much attention has been drawn to recent outbreaks of norovirus on cruise ships, an estimated 60 percent to 80 percent of all AGE outbreaks occur on land. In addition, the potential for norovirus to cause large outbreaks in institutional settings through nonfoodborne transmission should not be overlooked.(3)

References:

- (1) National Laboratory Training Network, Western Office, Foodborne Illness Workshop, Diane Luck, MHS, CLS 3-27-2000
- (2) Outbreaks of Gastroenteritis Associated with Norovirus on Cruise Ships---United States, 2002: MMWR Dec. 2002/51 (49); 1112-1115
- (3) Norovirus Activity---United States, 2002: MMWR Jan. 24, 2002/52(03); 41-45