NEW MEXICO EMERGING INFECTIONS PROGRAM
LABORATORY ACTIVITIES

Adam Aragon
Lisa Onischuk
Paul Torres
NM DOH, Scientific Laboratory Division
New Mexico Scientific Laboratories

Scientific Laboratory Division
SLD

Office of the Medical Investigator
OMI

Veterinary Diagnostic Services
VDS - NMSU
NM EIP Laboratory Activities

- Website Information
- Submission of specimens
  - Why
  - How
- What is done at SLD? (EIP lab activities)
  - Virology
  - General Microbiology
  - Environmental Microbiology
Where does one locate information?

Directory of Services

- Contact numbers
- Link to packaging and shipping information
- Test information, collection and handling
- Link to Notifiable Conditions

SLD webpage: http://sld.state.nm.us/index.aspx
What is a notifiable condition?

- 7.4.3.12 New Mexico Administrative Code, (Emerging Infections Program Specific isolates):
  - Emergency Reporting, requires immediate reporting to Epidemiology and Response Division (ERD) at 505-827-0006.
    - Invasive Meningococcal disease*
    - Invasive *Haemophilus influenzae* infections*
    - Suspected foodborne or water borne infections involving 2 or more unrelated persons*
  - Routine reporting...

*Required to be sent to the Scientific Laboratory Division (SLD)
7.4.3.12 New Mexico Administrative Code, (Emerging Infections Program Specific isolates):

Routine reporting requires reporting within 24 hours of identification to ERD.

- Campylobacter infections*
- E.coli O157:H7*
- Shiga-Toxin producing E.coli (STEC)*
- Salmonella*
- Shigella*
- Vibrio infections*
- Yersinia infections*
- Group A streptococcus, Group B streptococcus
  *Streptococcus pneumoniae* invasive, infections.*
- Listeriosis*
- Legionella
- Influenza, laboratory confirmed hospitalization only

*Required to be sent to the Scientific Laboratory Division (SLD)
General clinical request forms

SLD webpage: http://sld.state.nm.us/index.aspx
General clinical request form

Submitter Code & Name

Clinician Name & Phone

Specimen Source

Date/Time of Collection

Patient name, gender, DOB

Patient ID

Analysis requested

2 forms of ID on both form and specimen
Analysis Requested:

Clinical isolates or samples for
FluSurvNet
ABCS
FOODNET (NARMS)

Retail Meat
Influenza surveillance

Influenza Virus
Reference Testing for Hospitalized Patients
Screen With Influenza A/B RT-PCR
Subtyping of Influenza A Positives by RT-PCR
Viral culture for CDC send outs
Influenza B subtyping and specimens not acceptable for RT-PCR
RT-PCR results in 3-5 days
Specimens Acceptable for RT-PCR

Nasopharyngeal Swabs
Nasal Swabs

Additional acceptable sources in the future

Specimens must be placed into
2-3 ml viral transport media (VTM)
Testing Platforms

- CDC Human Influenza Virus Real-time RT-PCR Detection and Characterization Panel

- CDC Influenza 2009 A(H1N1)pdm
- Real-time RT-PCR Detection Panel

- Roche MagNA Pure LC
- Qiagen Viral RNA Mini Kit

- ABI 7500 DX

- Viral Culture
Storage and Transport

Specimens stored refrigerated must be tested within 72 hours of collection.
Transport on cold packs to maintain refrigerated temperatures.

Specimens may be frozen at ≤-70°C if submission will be delayed.
Transport on dry ice.
The primary container, with parafilm and absorbent material, being placed into a zip-lock bag (the secondary container).

Each specimen should be placed in a separate bag in case of leakage.
- Influenza Testing
- Virus Isolation

List Agent Suspected as Influenza

Include rapid test results if performed
• Place form in outer sleeve of zip-lock bag to separate it from specimen in case of leakage.
Category B

- Shipper
  - Name
  - Address

- Consignee:
  - Name
  - Address

- Responsible person: Name & Phone

- Biological substance, Category B

- UN3373

- Outer markings for DOT, IATA and US mail
FROM (Company)
NM DOH/SCIENTIFIC LABORATORY DIV.
700 Camino de Salud NE

Hub Destination
2535648

City
Albuquerque,

State
NM

ZIP CODE (Required)
87106

Sent by (Print Name)
Pam Morden

Phone (Required)
5058412511

Signature (Sender)

DMC Signature

PICKUP

Date

Time

TO (Company)

PLEASE PRINT NEATLY

Attention (Name/Dept.)
Microbiology Lab

Phone (Required)
505

Account Number

Service

Quick Key No.

PAYMENT

BILL SENDER

BILL RECIPIENT

Amount

Date of Delivery

Time of Delivery

City

State
NM

ZIP CODE (Required)

Consignee (Print Name)

Signature (Consignee)

The shipper is subject to terms and conditions on the reverse side of this document.

Biological Substance Category B

Responsible person: Judy Klumper
(505) 841-2585
Submitter number will ensure return of box.

To/From address label (can include responsible person information)

Courier form
For dry ice shipments: Add dry ice label and the words:

Dry Ice
UN 1845
___ kg

(Maximum quantity of dry ice is 2.3kg)
Date Shipped
No. of Pieces
Weight

Special Instructions

Biological Substance Category B

Responsible Person: Judy Klauber
(505) 841-2535

Dry ice UN1845 3 kg

Account Number
Service
Quick Key No.

SLDABQ01

Routed

PAYMENT
☐ BILL SENDER ☐ BILL Recipient

Amount
$
• Active Bacterial Core Surveillance

- EIP Isolate: ________ (for GAS, GBS, SPN only)
- H. influenzae typing
- N. meningitidis typing

Invasive bacterial disease, isolated from normally sterile clinical samples.
What is done at SLD?

- ABCs
  - GAS, GBS, SPN
    - Viability check, logged, frozen, feedback, shipped
  - H. influenzae, N. meningitidis
    - Serotype, confirmation if non-typable, logged, frozen, feedback, shipped
NARMS/FOODNET
(Clinical, General Bacteriology)

- Campylobacter species
- E. Coli O157:H7
- Salmonella, serotype
- Shigella, serotype
- Shiga Toxin test/isolation
- Yersinia entercolitica
- Gram Positive LISTERIA
- Vibrio
What is done at SLD?

Campylobacter

• Confirmation by combined culture and molecular methods, feedback, logged, shipped

• Challenges

Campylobacter jejuni
photo by Kim Reiten, SLD
Salmonella and Shigella

- Confirmation by culture, serotype,
- PFGE,
- representative samples shipped to CDC

Salmonella sp
photo by Kim Reiten, SLD
What is done at SLD?

- E.coli O157
  - Shiga toxin production
  - Confirmation
  - Serotype
  - PFGE
  - CDC

- STEC
  - Shiga toxin production
  - Isolate/identify/confirm
  - Serotype
  - PFGE
  - CDC
Three Arms of NARMS

Farm Level
- USDA
  - Salmonella, Campylobacter, E. coli, Enterococcus

Retail Level
- FDA
  - Salmonella, Campylobacter, E. coli, Enterococcus

Human Level
- CDC
  - Salmonella, Shigella, E. coli O157, Campylobacter

Various states ~ isolates Obtained from various federally inspected slaughter houses / processing plants and farms

11 states

All 50 states
Retail Meat Study

Sampling Scheme
40 samples per month
Ground Beef
Ground Turkey
Pork Chops
Chicken Breasts

Testing
Are currently 11 states now ~ CA, CO, CT, GA, MD, MN, NM, NY, OR, TN, and PA ('08)
Culture meat and poultry for *Salmonella*
Culture poultry only for *Campylobacter*
In addition there are currently three sites (GA, OR & TN) that also test for *E. coli* and *Enterococcus spp.*, 
Isolates obtained are shipped to FDA-CVM-OR Lab for confirmation of identification and antimicrobial sensitivity testing.

*Taken from Dr. David White’s RMS NARMS ppt presentation 4-5-2007*
DAY #1

25-g sample + 225-mL BPW

15 minutes@1100 rpms

50-mL rinsate

50-mL 2X Bolton Broth

DAY #2

Remainder BPW

35°C, 0/N

0.1-mL to RVR10

42°C, 0/N

PCR

Salmonella

Not Isolated

XLD and SalICHROM agar

35°C, 0/N

PCR -

PCR +

DAY #3

PCR

Campylobacter

42°C, 48-hr w/ Campy gas

Campy Cefex

42°C, 48-hr w/ Campy gas
DAY #4

Suspect picks taken from plates

DAY #5

Presumptive + picks g-stain/oxidase set up to BAP & H-broths

DAYS 6 - 8

Biochemically confirm Serotyping PFGE and uploaded to PulseNet

35°C, O/N

Campylobacter

Salmonella

42°C, w/ Campy gas

Suspect picks taken from plates

Salmonella

Examine for typical colonies

Presumptive + picks g-stain/oxidase set up to BAP & H-broths

Gram stain Catalase Oxidase motility Dryspot Hipp PCR

42°C, 24-48-hr w/ Campy gas

Sample Negative

cefex

+

Sample Negative

Shipped out to CVM lab frozen
DNA fingerprints of all *Salmonella* isolates at SLD are routinely uploaded to CDC’s PulseNet.

PulseNet is internet based fingerprinting System that enables labs to rapidly share bacterial DNA fingerprint information thus detecting outbreaks in rapid fashion.

Keyed off investigators to emphasize Ground Turkey as the potential source.

~ go Epi

Ultimately pinpointed the source of the outbreak in a timely fashion.
Communication

- Biological Sciences Bureau Chief- Dr. Sharon Master
  - (505) 383-9122

Virology - Adam Aragon
  - (505) 383-9124

General Microbiology- Lisa Onischuk
  - (505) 383-9128

Environmental Microbiology – Paul Torres
  - (505) 383-9129
Thank You!