OVERVIEW

- Lyme Disease Surveillance
- Alpha Gal Syndrome
- Importance of Fever
- Tick Surveillance
- WNV 2021 Season
- Laboratory Testing – WNV & CHIK

LYME DISEASE SURVEILLANCE

- N.J. has a high incidence of Lyme disease: 40.8 cases per 100,000 population (2019)
- Case investigations are significant public health burden (>15,000 reports annually) and help gauge disease surveillance efforts
- Dual approach: 1) laboratory-only surveillance in high-incidence states (no clinical follow-up) and 2) public health surveillance in areas at high risk of infection
- Surveillance only captures individuals who seek medical care
- N.J. has public health resources for outreach and prevention efforts
- All N.J. Lyme disease cases will be reported nationally as PROBABLE
- N.J. DOH will be incorporating new surveillance data sources to help categorize and monitor the burden of Lyme disease
LYME DISEASE SURVEILLANCE

- New confirmatory lab evidence: immunohistochemistry, PCR (B. burgdorferi & B. mayonii), modified two-tiered serologic test (FDA approved 2019)
- Single-tier IgG immunoblot is now presumptive lab evidence (will not be reported in N.J.)
- Other relevant case definition changes
  - Valneva/Pfizer Lyme vaccine candidate
    - Produces Abs that prevent tick to human migration of Borrelia spirochetes during bite
    - Phase II trial results expected 2022; phase III 2022-2024; possible licensure 2024-2025
  - MassBiologics Pre-exposure prophylaxis (PrEP)
    - Purified monoclonal Ab – passive immunity, immediate but short-lived, single annual injection at beginning of tick season
    - Phase I clinical trial results expected 2022; phase II/III prior to 2023 season, possible licensure 2024
- Tick control
  - CDC is supporting many efforts to develop new tick control methods and to evaluate them at scale
- Surveillance activities may change in future to evaluate new prevention strategies

WHAT IS ALPHA-GAL?

Sugar molecule (galactose-α1,3-galactose)

- Found in tissues of:
  - Cattle, pigs, sheep, deer, rabbits, and other mammals
  - Mammal derived products (gelatin, glycerin, capsules)

- Not found in tissues of:
  - Humans, Old World monkeys, and great apes
  - Fish, birds, or reptiles

PHARMACEUTICAL USES

- Medications
  - Antivenoms (crotalid, equine)
  - Hepatitis

- Vaccinations
  - Measles, Mumps, Rubella (MMR)
  - Rabies
  - Varicella
  - Yellow fever

- Xenotransplants
  - Porcine and bovine heart valves
ALPHA GAL SYNDROME (AGS) AKA RED MEAT ALLERGY, OR TICK BITE MEAT ALLERGY

- Alpha gal syndrome (AGS) is a potentially life-threatening hypersensitivity reaction to alpha-gal.
- Symptoms are delayed, typically occurring 2+ hours after consumption of products containing alpha-gal.
- Associated with Lone Star tick (Amblyomma americanum) bites.
- NJDOH is initiating human surveillance for AGS in 2022.

PREVENTING TIK BITE IS THE MAIN STRATEGY FOR AGS PREVENTION!

FEVER IS IMPORTANT FOR VBD SURVEILLANCE

- Fever is required for most under-timber disease surveillance case classifications.
- Penetrating, transmitted, vector-borne, and fungal diseases, and others.
- If patient denies fever then they are a healthcare provider (HCP) report "no fever" or "not known".
- Penetrating vector-borne disease HCP reports "no fever".
- Fever negative but suspect if healthcare provider reports "no fever".
- Patient interview is needed if healthcare provider reports "no fever".
- Opportunity to get additional symptoms, risk factors, travel, blood donation/receipt, etc.

BLOOD DONATION / TRANSFUSION

- Although rare, many VBDs can be transmitted through blood products or organ transplantation.
- Cases who donated blood or who received transfusion are investigated with blood donation centers.

2021 Cases (preliminary)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Blood Donation</th>
<th>Transfusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babesiosis</td>
<td>75%</td>
<td>84%</td>
</tr>
<tr>
<td>B. miyamotoi</td>
<td>N/A</td>
<td>81%</td>
</tr>
<tr>
<td>West Nile</td>
<td>75%</td>
<td>78%</td>
</tr>
<tr>
<td>Anaplasma</td>
<td>N/A</td>
<td>73%</td>
</tr>
<tr>
<td>Ehrlichiosis</td>
<td>N/A</td>
<td>73%</td>
</tr>
<tr>
<td>Malaria</td>
<td>63%</td>
<td>65%</td>
</tr>
<tr>
<td>Dengue</td>
<td>58%</td>
<td>58%</td>
</tr>
</tbody>
</table>
New Jersey tick blitz, organized by RUCVB - all 21 counties represented

• Support for D. variabilis "established" status for 16 counties
• Support for A. americanum "established" status for 8 counties
• Support for H. longicornis "established" status for Middlesex 2019–2020

NJDOH-funded exploratory effort with NJDEP to identify sites with Haemaphysalis longicornis (Asian Longhorned Tick)

• 20 counties (absent Monmouth)
• Established populations in three new counties
• Reported populations in five new counties

2021

New NJDOH program for routine tick surveillance in partnership with NJDEP and county mosquito control agencies – activity in 8 counties

• Bergen, Gloucester, Hudson*, Hunterdon*, Salem, Warren
• Ocean, Sussex (NJDOH collections)

* No state resources provided

TICK ESTABLISHMENT STATUS BASED ON 2018-2020 COLLECTION AND CDC DATA (DRAFT)

JerseySurv houses tick surveillance data
Collections and pathogen data reported to CDC
Asian longhorned tick data shared with USDA
Work in progress...

Ixodes scapularis
Amblyomma americanum
Dermacentor variabilis
Haemaphysalis longicornis

Light-colored counties represent "Reported" status. No data from grey counties.

2021 TICK SURVEILLANCE HIGHLIGHTS

• Collection data from 7 counties
• 60 sites explored across the state
• 240 tick collections reported
• 1,060 ticks collected
• Ticks sent to NJPHEL for pathogen testing:
  • Powassan testing ongoing for Ixodes scapularis ticks
  • Testing for other pathogens pending

2021 data preliminary and is subject to change
2022 TICK SURVEILLANCE PLANS

1. Condensing activity into 2
timeframes:
   - Spring (late May through early July) - nymphal tick population peak
   - Fall (late October through December) - adult tick population peak

2. Wider approach - more sites within county:
   - Combination of exploratory collections & standardized tick density sampling

3. Obtain I. scapularis tick density in participating counties

4. Submit pathogen & tick density information to CDC

5. Generate/updating state maps & communications strategy

Average cases 2003-2021:
- Endemic year average 7 cases
- Epidemic year average 39 cases - epidemic seasons roughly every 3 years

WEST NILE VIRUS POSITIVE MOSQUITO POOLS AND HUMAN CASES, BY WEEK, 2021

- Human Cases, NJ, Endemic & Epidemic Level, 2003-2021

- WNV Human Cases, NJ, Endemic & Epidemic Level, 2003-2021

- WNV Human Cases, NJ, Endemic & Epidemic Level, 2003-2021

- WNV Human Cases, NJ, Endemic & Epidemic Level, 2003-2021
WNV 2021, U.S. (PRELIMINARY)

- 2,695 WNV cases, 1,855 (69%) neuroinvasive
- 1,645 cases (61% of cases nationwide) in Arizona – 16x historical average
- NJ & DE (3 cases) higher incidence along east coast

CONFIRMING WNV/CHIK COMMERCIAL TEST RESULTS 2020-2021

- NJDOH generally relies on commercial labs for WNV and Chikungunya, occasional confirmatory tests
- 2020, 57% commercial + WNV (+) and none of the 2 commercial + CHIK confirmed with public health testing
- Low # specimens tested in 2020, but high % false positives, requested all positives be sent to PHEL in 2021

2021: WNV
- 84.6% of WNV IgM positive results (n=39) were confirmed
- 63.6% from January-August & 92.9% from September-November
  - All commercial IgM positives with quantitative results ≥ 4.00 were confirmed; 50% of values < 4.00 were confirmed
  - 75% of commercial IgM qualitative results were confirmed
- 94.4% of WNV IgM positive specimens that re-tested positive at PHEL were also positive for neutralizing antibodies at CDC

2021: CHIK
- 60% IgM positive results (n=5) were confirmed

RECOMMENDATION S FOR 2022 (PROPOSED)

- Retest commercial positive/equivocal IgM for CHIK at CDC if cases meet clinical criteria
- Retest commercial positive IgM for WNV at PHEL when -
  - Specimen collection is between November and June
  - First positive test result > June
  - Case resulted in fatality
  - Specimen collection between July and October IF quantitative IgM value is <4.00
- PHEL positives will be sent to CDC for PRNTs
- PHEL negatives will be tested EEE/SLE/POW and if negative, for JC/LAC and Heartland/Bourbon viruses if indicated
Introduction to Project Firstline

The mission of Project Firstline and its partners is to help prevent the spread of infectious diseases in healthcare settings.

Our vision for Project Firstline is to help empower every frontline healthcare worker with the knowledge and confidence to understand infection control principles and protocols and feel they can confidently apply them to protect themselves, their facility, their family, and their community.
Our Goals

- Offer multi-platform training events which cover a variety of IPC topics and include a diverse group of frontline healthcare workers
- Expand reach to include students/non-clinical support staff and place an added focus on LTC & AC facilities
- Engage in and support the increase of promotional activities for Project Firstline

Available Infection Control Trainings

<table>
<thead>
<tr>
<th>Available Infection Control Trainings Continued...</th>
</tr>
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</table>

- In person and virtual trainings can be modified to adapt to any time constraints healthcare facilities may experience.
- 10-minute, 20-minute, and 60-minute sessions are available for the previously presented topics.
- Over 30 infection control educational videos available that cover training topics in further detail.
Our Learning Needs Assessment Results

Preferred Infection Prevention and Control Training Topic by New Jersey County

Note: Data current as of March 4, 2022. Total number of participants are 1,139. IPC topics that are not shown are microbiology basics and personal protective equipment.

NJDOH Project Firstline Sub-Grantee:
NJ Association of County and City Health Officials (NJACCHO)

• NJACCHO is offering Infection Control trainings to local health department staff.
• Trainings consist of a web-based, two-day, train-the-trainer course targeted to local health department staff (LHD), who will in turn train other LHD’s staff and healthcare professionals in their jurisdiction.
• LHD staff members and Health Educators are welcome to enroll if they commit to training staff at healthcare facilities, specifically targeting Long-Term Care Facilities (primary target), outpatient medical facilities (i.e., dialysis centers) and daycares.
• Each course has a limit of 25 participants, and CE’s will be awarded upon completion.

For more information, interested LHDs can contact Michael Hodges, NJACCHO Project Firstline Grant Coordinator at njaacchogrants@gmail.com or (973-943-1201).

How You Can Support Project Firstline

• Help get the word out and promote Project Firstline
• Sign up for a training/host a training
• In the development and delivery of future trainings
Influenza and Respiratory Illness Surveillance

Deepam Thomas
Foodborne and Respiratory Illness Unit Coordinator

Goals

• Track spatial and temporal spread
• Inform clinical community
  • Treatment
  • Infection control
• Describe clinical infections, track epidemiologic changes, and determine groups at highest risk
• Monitor illness severity
• Detect unusual events
• Monitor outbreaks of disease

THANK YOU!
Influenza Lab Reporting NJAC 8:57 - 1.7

- Positive influenza laboratory reports are required to be reported CODRSS
- Labs with CODRSS connection (ELR*)
  - Report all positive tests
  - Aggregate rapid data in ILI (now SIC) Module
- Manual entry laboratories
  - Enter Culture and PCR only
  - Aggregate rapid data in ILI Module

Influenza/Respiratory Surveillance

NJDOH Virologic Surveillance
ILI Surveillance
Sentinel Providers
PCR Positives
Rapid Flu
RSV
Pediatric Flu
Influenza Reporting/Investigation

- Conduct an investigation if:
  - Pediatric influenza
  - The laboratory report is indicative of a novel strain of influenza (e.g., H5N1, AVI, A unsubtypeable)
  - Confirmed or suspected outbreaks
  - Case reports in CODRSS which do not fall into one of the above criteria DO NOT need to be investigated by the LHD
What's New? – RSV Percent Positive (NREVSS)

What's New? – Single Table (NJ Influenza Activity Level)

Highly Pathogenic Avian Influenza (HPAI)
- Disease in birds – Influenza Type A virus
- Wild aquatic birds, domestic poultry, other bird and animal species
- Two categories:
  - Low Pathogenic Avian Influenza (LPAI)
  - Highly Pathogenic Avian Influenza (HPAI)
- Concerns:
  - LPAI can evolve to HPAI
  - Rapid spread, significant illness, and death among poultry
  - Economic impact
  - Transmission to humans
Current HPAI Situation – A(H5N1)

- Commercial and backyard poultry detections
- Primarily animal health issue
- Signs and symptoms
- Monitoring
- Guidance
  - NJ guidance (https://www.state.nj.us/health/cd/topics/novel_flu.shtml)

Testing/Treatment/Prophylaxis
- Prevention

Resources

- NJDOH Influenza
  - https://www.state.nj.us/health/cd/topics/flu.shtml
- NJDOH Novel Influenza
  - https://www.state.nj.us/health/cd/topics/novel_flu.shtml
- NJDOH Weekly Surveillance Reports
- CDC Weekly Flu Surveillance Reports
  - https://www.cdc.gov/flu/weekly/index.html

Foodborne Illness Surveillance

Deepam Thomas
Foodborne and Respiratory Illness Unit Coordinator
CDC estimates that each year roughly 1 in 6 Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases.

Estimated Cost of Foodborne Illness in the United States: $51 billion/year

Common Causative Agents
- Bacteria
  - Bacillus cereus
  - Campylobacter
  - Clostridium botulinum
  - Clostridium perfringens
  - Escherichia coli
  - Shiga toxin-producing E. coli
  - Enterotoxin producing E. coli
  - Enteroinvasive E. coli
  - Enteropathogenic E. coli
  - Listeria monocytogenes
  - Salmonella, Typhi and non-typhoid
  - Shigella
  - Staphylococcus aureus
  - Vibrio (Species causing Vibriosis)
  - Vibrio cholerae
  - Yersinia enterocolitica
- Viruses
  - Norovirus
  - Astrovirus
  - Hepatitis A virus
- Parasites
  - Cryptosporidium
  - Cyclospora cayetanensis
  - Entamoeba histolytica
  - Giardia intestinalis
  - Trichinella
- Chemicals/Other
  - Heavy metals
  - Pesticides
  - Fungal toxins
  - Fish toxins
**Cronobacter Illnesses Linked to Powdered Infant Formula**

**Background:**
- Cronobacter sakazakii
- Symptoms
- Action Items
- Resources

**Resources**
- CDC (https://www.cdc.gov/cronobacter/outbreaks/infant-formula.html)

**Fast Facts:**
- Total Illnesses: 4
- States: 3 (MN, OH, TX)
- NJ: 0
- Hospitalizations: 4
- Deaths: 2
- Recall: Yes

**Listeria Outbreak Linked to Packaged Salads Produced by Fresh Express**

**Background:**
- Listeria monocytogenes
- Symptoms
- Action Items
- Resources

**Resources**
- CDC (https://www.cdc.gov/listeria/outbreaks/packaged-salad-12-21-b/index.html)

**Fast Facts:**
- Total Illnesses: 10
- States: 8 (IL, MA, MI, NJ, NY, OH, PA, VA)
- NJ: 2
- Hospitalizations: 10
- Deaths: 1
- Recall: Yes
Contact Information
- Deepam Thomas
- Deepam.Thomas@doh.nj.gov
- Influenza and Respiratory Illness Unit
  - InfluenzaAdvisoryGroup@doh.nj.gov
- Foodborne Illness Unit
  - nj.fb@doh.nj.gov

Review of Hepatitis C Performance Measures in CDRSS
Timeliness & Completeness

Hepatitis C Team
Communicable Disease Service
March 22, 2022

Performance Measures for Viral Hepatitis
Timeliness and Completeness

90% of case reports are complete for age, gender, race/ethnicity, county of residence, and outbreak status.

90% of case reports are complete for risk factors.

90% of case reports are submitted to CDC by the health department within 90 days of case investigation start date.
How did we do in 2021?
Demographics - Acute HBV, Acute HCV and Chronic HCV

- Age, gender, county and outbreak status - All at 90% complete or above
- Race/Ethnicity - We have some opportunity for improvement to get to 90%

Risk Factors – Acute HBV and Acute HCV

- Risk Behaviors - Completeness for each risk behavior or exposure with drop down response of YES or NO with attributes noted as indicated.
- Risk behaviors must be reported in RISK FACTOR section
- There are 12 specific risk factors that require a response
- Goal is 90% completion

Specific Risk Factors Monitored

<table>
<thead>
<tr>
<th>Risk Factor Description</th>
<th>CDRSS Risk Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection drug use</td>
<td>Has the patient ever injected drugs not prescribed by a doctor, even if once or a few times?</td>
</tr>
<tr>
<td>Sexual Contact</td>
<td>Did the patient have exposure to a HCV-infected person? Select yes if contact was non-sexual, and track non-sexual contact if known.</td>
</tr>
<tr>
<td>Multiple sex partners</td>
<td>Is the number of female sex partners known?</td>
</tr>
<tr>
<td>Surgery related</td>
<td>In the 6 weeks-6 months prior to onset, did the patient have surgery other than oral?</td>
</tr>
</tbody>
</table>

How did we do in 2021?
Risk factor list continued

<table>
<thead>
<tr>
<th>CDC-Risk Factor</th>
<th>CDSS-Risk Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialysis-related</td>
<td>Did the patient undergo hemodialysis, please specify?</td>
</tr>
<tr>
<td>Transplant (tissue or organ)</td>
<td>Did the patient receive an organ transplant? Please specify</td>
</tr>
<tr>
<td>Needlestick</td>
<td>Did the patient have an accidental needlestick or puncture with a needle or other object contaminated with blood?</td>
</tr>
<tr>
<td>Occupational Exposure to Blood</td>
<td>Is the patient a healthcare worker/public safety worker/veteran? Please specify</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Has the patient ever smoked, please specify</td>
</tr>
<tr>
<td>Non-injection drug use</td>
<td>In the past 12 months, did the subject use street drugs that were not injected?</td>
</tr>
<tr>
<td>Tattoo Recipient</td>
<td>Does the patient have a tattoo? If yes, please specify attributes where it was obtained</td>
</tr>
<tr>
<td>International travel</td>
<td>Is the patient foreign born in areas where hepatitis is endemic</td>
</tr>
</tbody>
</table>

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How did we do in 2021?

Timeliness — Acute HCV and Chronic HCV

- Proxy for investigation start date is the case was created in CDRSS
- Performance measure for timeliness is 90% of cases closed within 90 days
- Non-Priority cases (>40 years of age, not acute, not perinatal or pregnancy, no dialysis) only require a single attempt to get information.

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Wrap Up

Coming Soon!

Interactive Dashboard for Case Completeness

Questions? Please contact:

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Maryellen Wiggins maryellen.wiggins@doh.nj.gov
Questions