

# CDS PROGRAM UPDATES

# Solving the Mystery of Lyme Disease Investigations



NJDOH, Vectorborne Disease Program

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# Investigating the Crime Scene: Is there a Smoking Gun?

## Exhibit A:

### Bull's Eye Rash

- Erythema migrans  $\geq 5$  cm diameter



**CONFIRMED  
CASE**



## Exhibit B:

### No Bull's Eye Rash

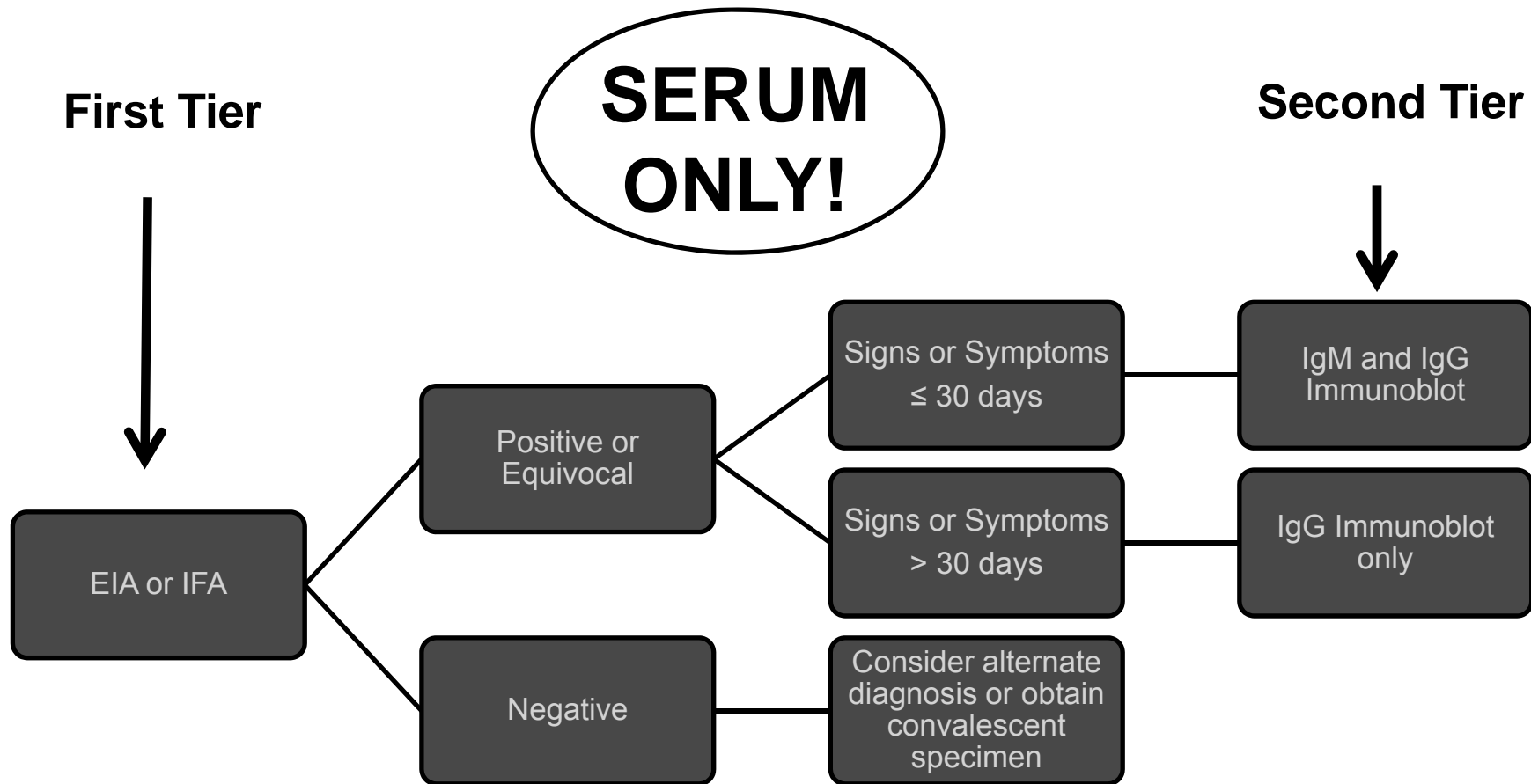
- Need to collect evidence
  - Lab test
  - Onset date
  - Symptoms



# Testing for Lyme Disease

- CLIA certified
- FDA approved
- Direct testing → 
  - Virus isolation
  - PCR
  - Not accepted
- Indirect testing → 
  - EIA / IFA
  - Immunoblot
  - Accepted, but need more evidence

# Two-Tiered Approach

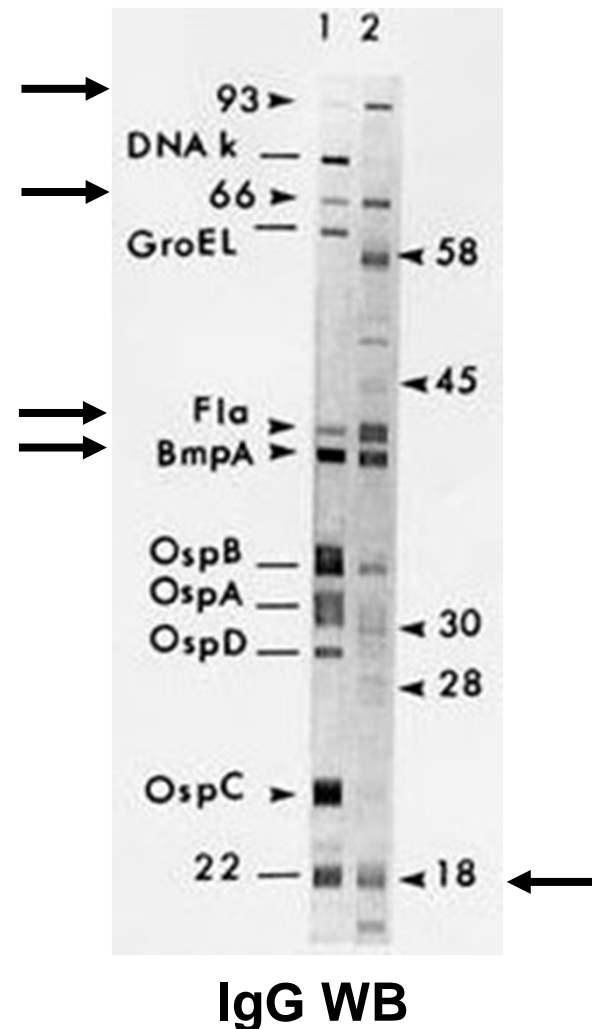


# Lyme Disease EIA / IFA

- Sensitive assay
- Not recommended during EM phase
- Examples include:
  - ELISA
  - C6
  - Screening test
  - Titer / antibody
  - Borrelia burgdorferi
  - Borrelia burgdorferi antibody
  - Borrelia burgdorferi AB
  - Borrelia burgdorferi AB.IGG+IGM
- Possible cross-reaction
  - Tick-borne relapsing fever
  - Leptospirosis
  - Syphilis
  - Anaplasmosis
  - Epstein-Barr virus
  - *Helicobacter pylori*
  - Bacterial endocarditis
  - Autoimmune disorders

# Lyme Disease Immunoblots

- Specific assay
- Similar to a bar code
- Each line represents antibodies to a part of the Bb bacterium
- Not all lines are meaningful
- IgG  $\geq 5$  positive/10 kDa: 18, 21 (OspC), 28, 30, 39 (BmpA), 41 (Fla), 45, 58, 66, 93
- IgM  $\geq 2$  positive/3 kDa: 24 (OspC), 39 (BmpA), 41 (Fla)



# Admissable Lab Evidence

- Screening test\* positive, Western Blot IgM and IgG positive
- Screening test\* positive, Western Blot IgM positive only within 30 days of symptom onset
- Screening test\* positive, Western Blot IgG positive only
- Western Blot IgG positive only

\*Includes screening test, EIA, IFA, ELISA and C6

**SERUM  
ONLY!**



# Inadmissible Lab Evidence

- Screening test\* positive, Western Blot IgM and IgG positive
- Screening test\* positive, Western Blot IgM positive only within 30 days of symptom onset
- Screening test\* positive, Western Blot IgG positive only
- Western Blot IgG positive only

\*Includes screening test, EIA, IFA, ELISA and C6

**Synovial  
Fluid**

**CSF**

**Urine**

# Inadmissible Lab Evidence

- Screening test\* positive only
- Western immunoblot (WB) IgM only
- Any Western immunoblot that does not meet CDC criteria for bands positive (eg, “in-house” tests)
- IgA antibody tests
- PCR
- Capture assays for antigens in urine
- Lymphocyte transformation tests
- “Reverse western blots”

\*Includes screening test, EIA, IFA, ELISA and C6

# Completing the Investigation

- ✓ Bull's eye rash → CONFIRMED
- ✓ No Bull's eye rash → LAB TEST IS ACCEPTABLE
- ✓ Onset date
- Symptoms
  - Neurologic → CONFIRMED
  - Musculoskeletal → CONFIRMED
  - Cardiac → CONFIRMED
  - Non-specific with physician diagnosis → PROBABLE
  - Non-specific only → POSSIBLE
  - No symptoms or response → POSSIBLE

# Going to Trial

- Labs will enter results into CDRSS. Check your pending screen...
  - If tests will not meet case definition → E-sorted
  - If a new lab is added to E-sorted → Re-opened
  - Some labs will enter negative results, too
  - REVIEW THE SAMPLE TYPE
  - REVIEW THE WB RESULT (+ BANDS)
  - COMPARE TO ONSET DATE (IgM)
- Other things to remember...

Questions?

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# ***COMMUNICABLE DISEASE SURVEILLANCE UPDATES***

# ED Surveillance in NJ = EpiCenter

- Secure online system that collects ED registration data in real-time
- 78 of 80 NJ acute care & satellite EDs connected
- Access to data available for local health users
  - Contact staff
- Uses chief complaint to “classify” the data into categories like respiratory or GI
  - Classification based on keywords and text patterns
- Unexpected increases in number of visits for a classification generates an email alert to epidemiology and surveillance staff
  - A weekly summary report of these alerts is sent to local health surveillance contacts each Tuesday

# Capabilities for local use

- Jurisdiction
  - County,  
Zip, Facility
- Counts or symptoms
- Charts
- Patient lists

The screenshot displays the HMS (Health Management System) interface. The top navigation bar includes 'Summary', 'Charts', 'Maps', 'Reports', 'Custom Classifier', and 'Options'. The main content area is titled 'New Jersey - Acute Care Interactions (by HOME)'. On the left, there are several filter panels: 'Acute Care Interactions' with a 'Total Counts' dropdown, 'Age Group' with options like 'Unknown' and 'Infant (0-2)', 'Gender' with 'All Genders' selected, and 'Provider Type' with 'Hospital' selected. The central part of the interface features a line chart showing the number of records over time, with a peak around late March. Below the chart is a 'Chart Details' window showing a table of patient interactions. The table has columns for Date, Age, Gender, Patient Zip, Facility Name, Visit Number, Reason, and Classification. The bottom of the interface shows 'Page 1 of 3122' and 'Displaying 1 - 100 of 3122'.

Date	Age	Gender	Patient Zip	Facility Name	Visit Number	Reason	Classification
03/17/2015 00:00	39	F	08360	Inspira Health Medical C...	77026647	CHEST PAIN, VOMITING, SI...	Diseases of the Resp
03/17/2015 00:00	43	F	08585	(outside visible region)	7439762	chest pain	25-49
03/17/2015 00:00	29	F	08012	(outside visible region)	123751433	PREGNANCY/DEHYDRATION...	Heatstroke - No Feve
03/17/2015 00:01	21	F	07105	Christiana Medical Ce...	000002875...	ABD BREST. REFERRAL W/...	19-24
03/17/2015 00:01	95	F	08109	Cooper Hospital	0000066085	EMS FALL. TAA FALL	Injury,55+
03/17/2015 00:01	36	F	08104	Our Lady of Lourdes Me...	000001539...	PFLU ABD PAIN	Gastrointestinal,Abdc
03/17/2015 00:01	52	F	08003	Virtua Marlton	000006423...	BACK PAIN. BACKACHE NOS	Diseases of the Musc
03/17/2015 00:01	94	M	07716	Riverview Medical Center	000003106...	CHEST PAIN	65+
03/17/2015 00:01	19	M	07017	East Orange General Ho...	6260906	cut on left eye/assaulted	Injury,19-24,Violenc
03/17/2015 00:01	80	F	07087	Palisades Medical Center	000001074...	SOB NO TRAVEL	ILI Symptoms,Respir
03/17/2015 00:01	55	F	07203	Robert Wood Johnson U...	111518971	PAIN DOWN RIGHT SIDE O...	Diseases of the Musc
03/17/2015 00:01	2	M	07083	University Hospital (UM...	48665849	Cold Like Symptoms	0-4,Respiratory,Ente



# World Meeting of Families & Pope's Visit to Philadelphia – Sept 22-27

- Surveillance planning activities
  - NJ-PA-Philadelphia planning committee
  - Two systems used to monitor
    - EpiCenter
      - NJ, PA and Philadelphia use same system
      - WMF “region” created
      - NJDOH staff reviewed ED data
      - Specialized reports and anomaly reports for informing local partners
    - Communicable Disease Reporting and Surveillance System (CDRSS)

# EpiCenter Expanded Data Project

- Continuing a project to incorporate more enhanced data types into EpiCenter
  - Targeted data types: triage notes, vital signs, progress notes, laboratory results
- Enhancement for population health surveillance initiatives and Ebola preparedness measures
  - Benefits both local and state public health agencies
  - Access to county, facility and zip code level data
- Funding for 10 additional facilities to provide additional data elements (expires May 2016)

# THANK YOU!

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