

Vexing Viruses

*The Latest on the Achoos (Flu)
and
the Boo Hoos
(Rabies/Lab Submission Errors)*

*Susan Vagasky, DVM
Patty Clark, MPH*

The Latest on the Achoos (Flu)

Susan Vagasky, DVM
Influenza Surveillance Epidemiologist
Michigan Department of Community Health

Overview

- Influenza reporting in Michigan
- Surveillance data for 2008-09 season
- Relevant updates
 - Antiviral recommendation changes
 - Vaccine composition
 - Pediatric mortalities
 - Swine-origin A (H1N1) virus

Flu Reporting

- Influenza reporting as required by law
 - Aggregate counts
 - Healthcare providers, LHDs
 - Facility outbreaks
 - Healthcare facilities, daycares, schools, prisons
 - Influenza-associated pediatric mortalities
 - Novel influenza cases



How should cases be reported?

- Private providers/laboratories
 - Notification to the local health jurisdiction
 - Essential for outbreaks, pediatric mortalities and suspect novel flu cases
 - Direct entry into Influenza Case Form in MDSS if have access



How should cases be reported?

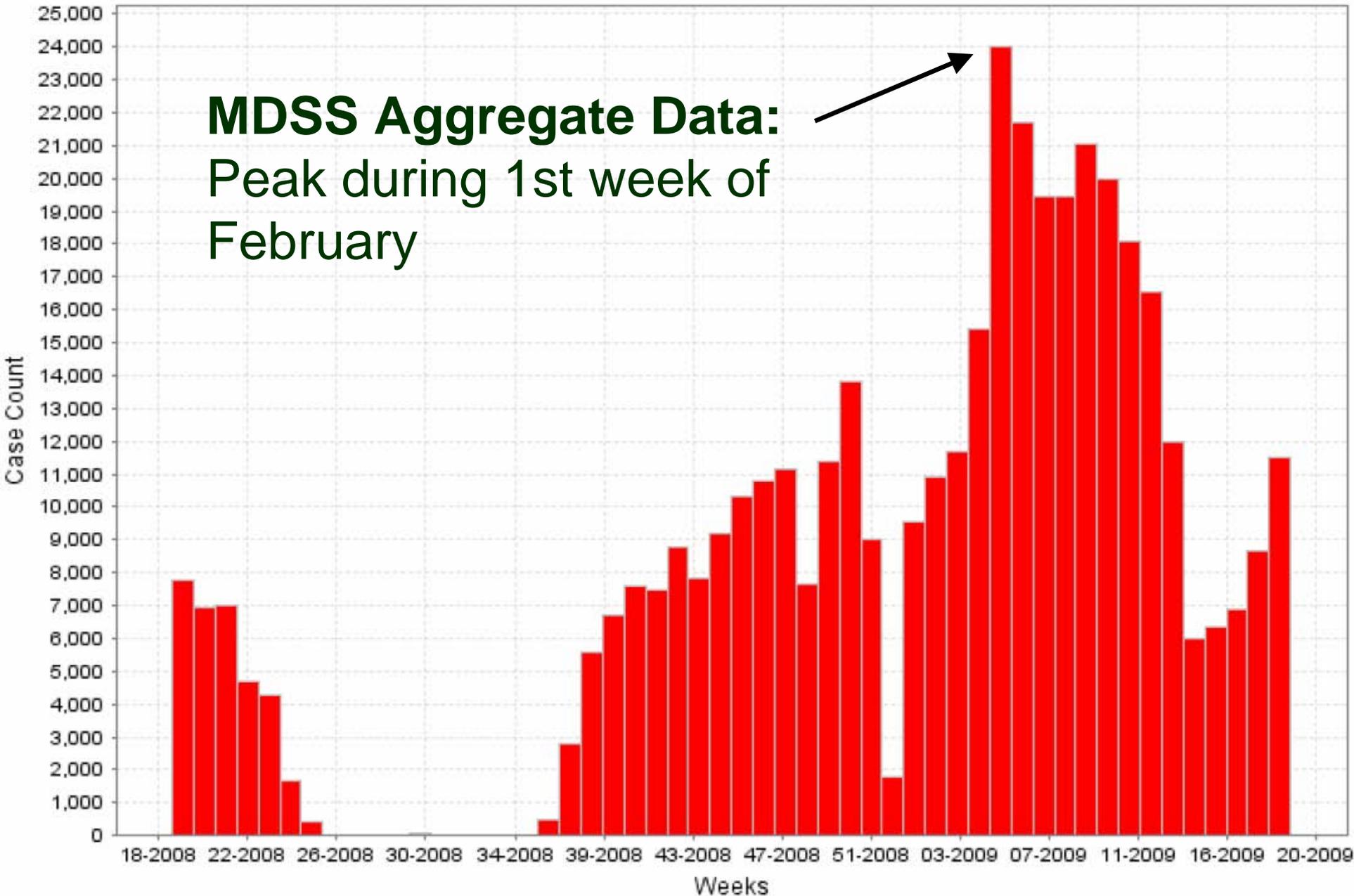
- Local health jurisdictions
 - Standard cases
 - MDSS entry on either individual form or aggregate counts (not both!)
 - Facility outbreaks
 - Phone notification to MDCH
 - Option to report individual cases in MDSS (otherwise use aggregate)
 - Pediatric mortalities/Off season/Unusual severity
 - Phone notification to MDCH
 - Report on MDSS individual Influenza form
 - Novel influenza cases (outside of current H1N1 outbreak)
 - Immediate phone notification

2008-2009 MI Influenza Season

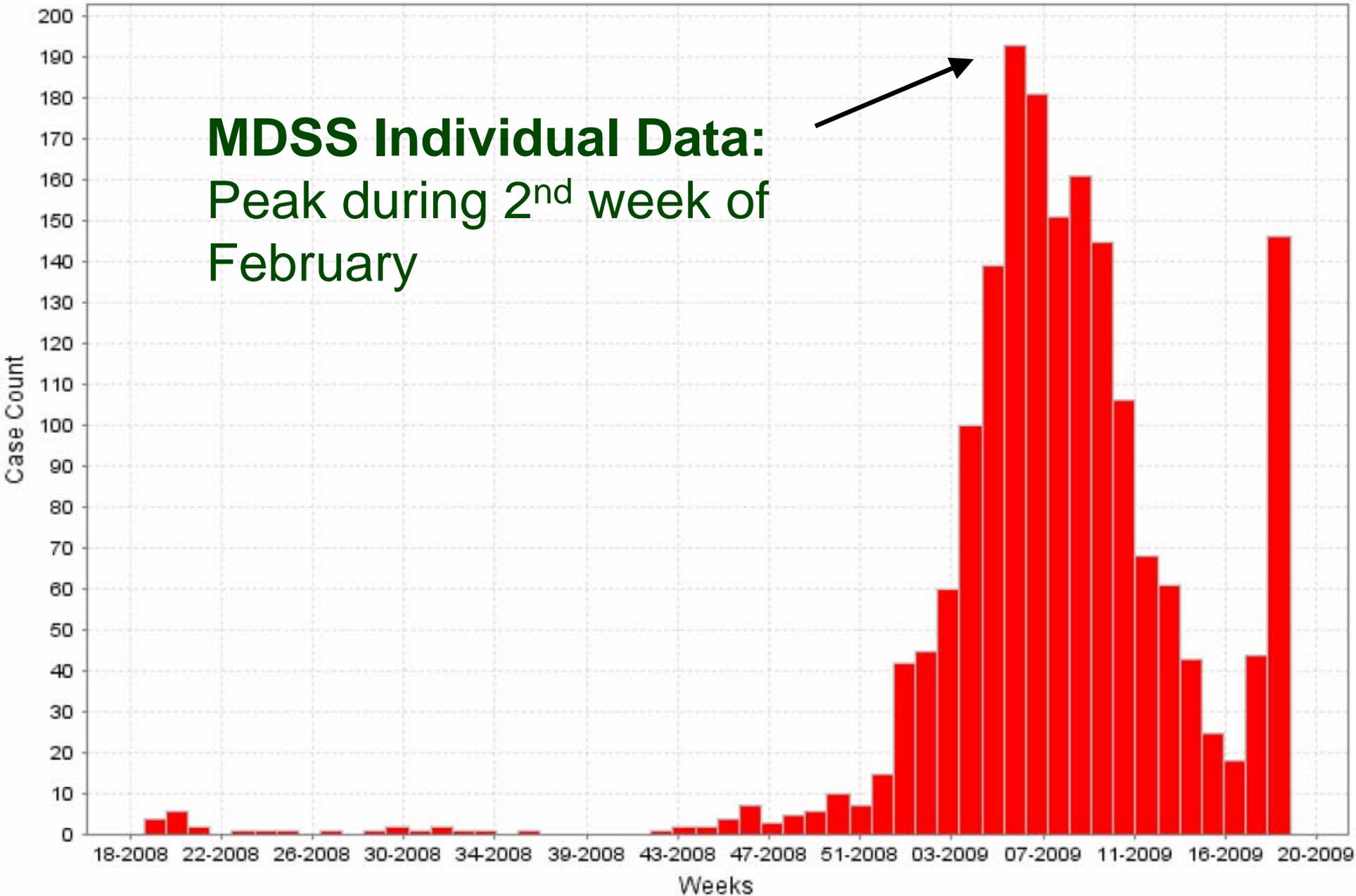
- Mild season overall
- Very similar to nationwide season
- First case identified in early November
- Peak in mid-February
- Never reached “Widespread” activity
- 3 congregate setting outbreaks
 - 1 A, 1 B, 1 unknown
 - 22 previous season
- 3 pediatric deaths
- Mixed results with vaccine match



Case Counts by Week

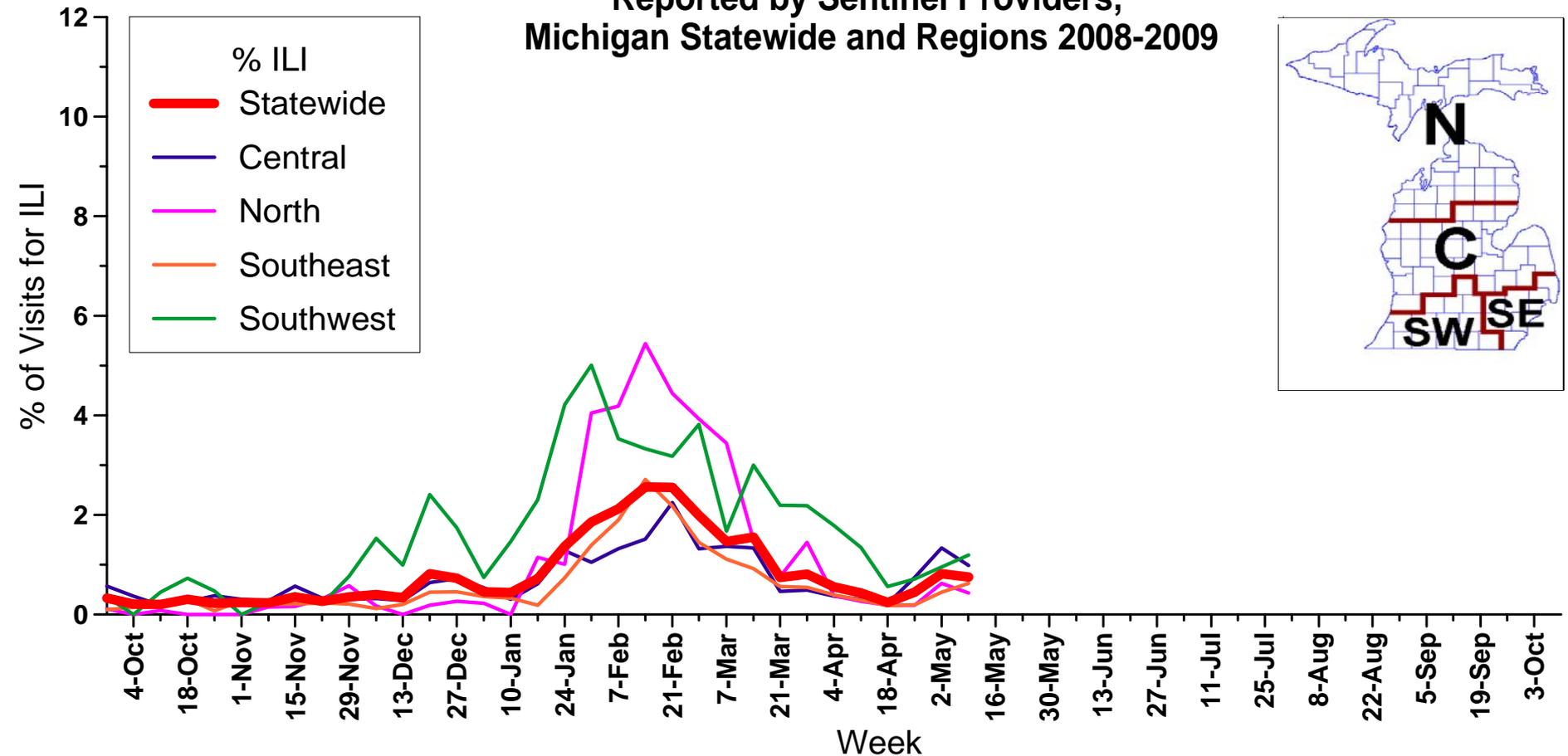


Case Counts by Week



Sentinel Provider Data

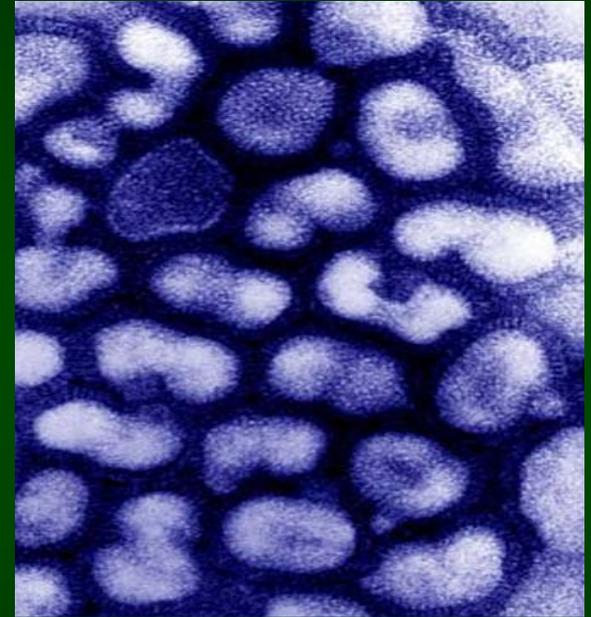
Percentage of Visits for Influenza-like Illness (ILI)
Reported by Sentinel Providers,
Michigan Statewide and Regions 2008-2009



Laboratory Data

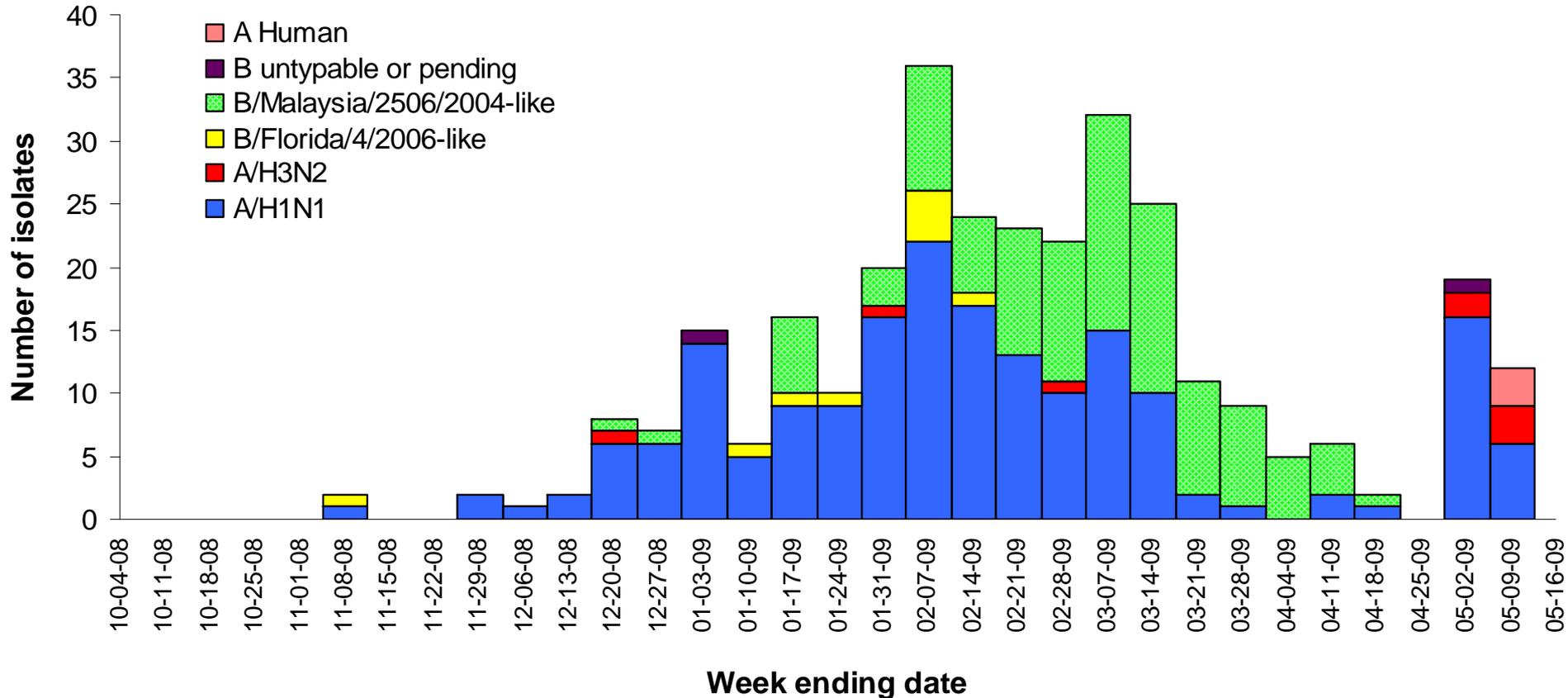
As of May 14, 2009:

- 312 positive specimens
 - 59% A/H1N1 or A/H1
 - 2.5% A/H3N2 or A/H3
 - 0.3% probable human A
 - 38% B
 - 9 B/Florida/4/2006-like (7.6% of B results)
 - **108 B/Malaysia/2506/2004-like (90.8% of B results)**
 - 1 untypable
 - 1 pending subtyping



MDCH BOL Epi Curve

MDCH Laboratory-Confirmed Influenza
2008-2009 Season
By Specimen Collection Date

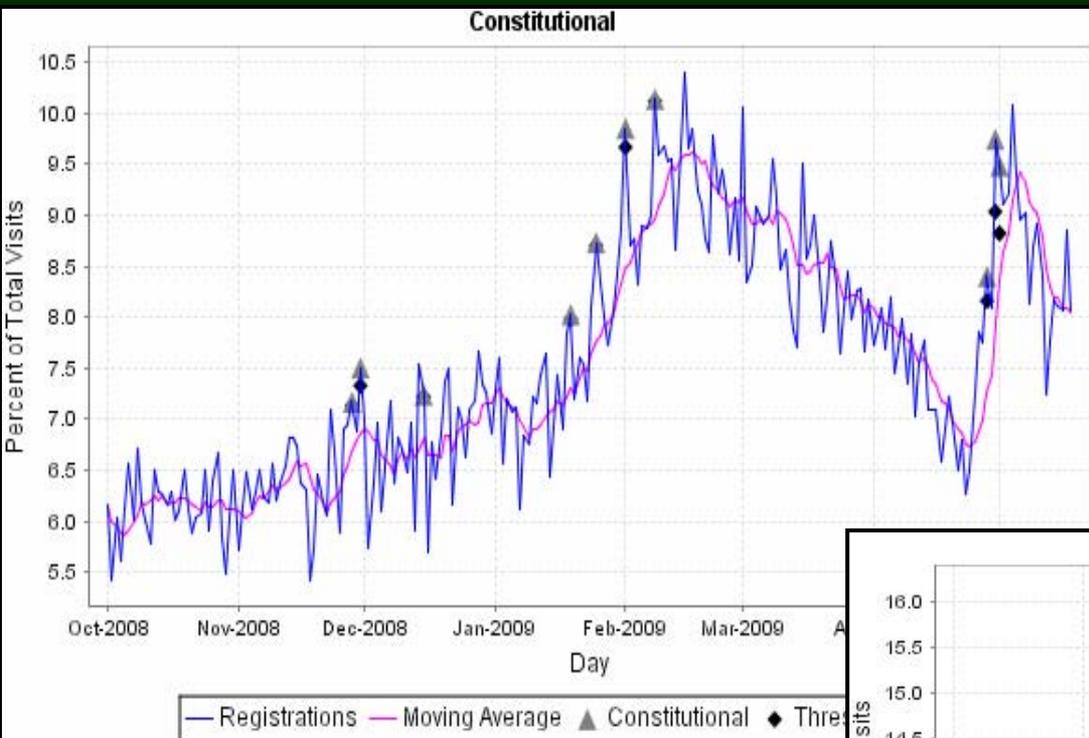


Sentinel Laboratory Data

- 16 labs provided data throughout the season
- 10-12 reports per week
- Extremely important source of isolates
 - 77% of non-sentinel physician BOL specimens
 - 44% of all BOL specimens
- New StarLIMS electronic reporting system

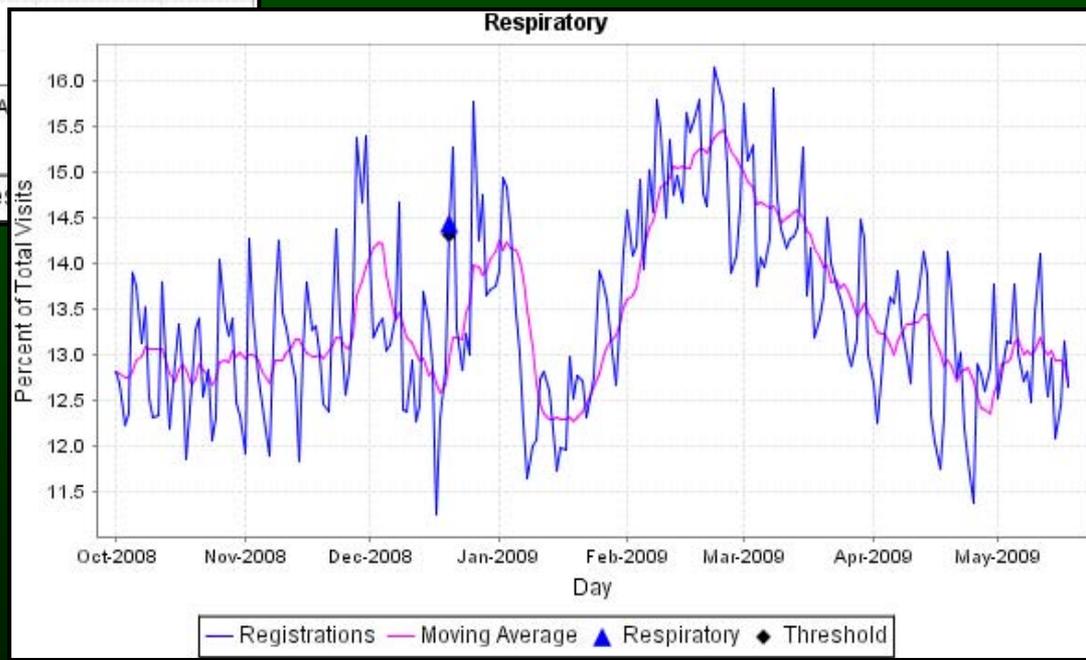


ED Syndromic Data



Constitutional peak: mid-February

Respiratory peak: late February



Antiviral recommendations

- CDC Advisory on Dec. 19, 2008
 - Dominance of oseltamivir-resistant seasonal A (H1N1) virus
 - Antiviral recommendations became more dependent on local surveillance
- Now have swine-origin A (H1N1) virus
 - Susceptible to oseltamivir and zanamivir
 - Resistant to adamantanes

CDC Antiviral Chart

Rapid antigen or other laboratory test	Predominant virus(es) in community	Preferred medication(s)	Alternative (combination antiviral treatment)
Not done or negative, but clinical suspicion for influenza	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine
Not done or negative, but clinical suspicion for influenza	H3N2 or B	Oseltamivir or Zanamivir	None
Positive A	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine
Positive A	H3N2 or B	Oseltamivir or Zanamivir	None
Positive B	Any	Oseltamivir or Zanamivir	None
Positive A+B	H1N1 or unknown	Zanamivir	Oseltamivir + Rimantadine
Positive A+B	H3N2 or B	Oseltamivir or Zanamivir	None

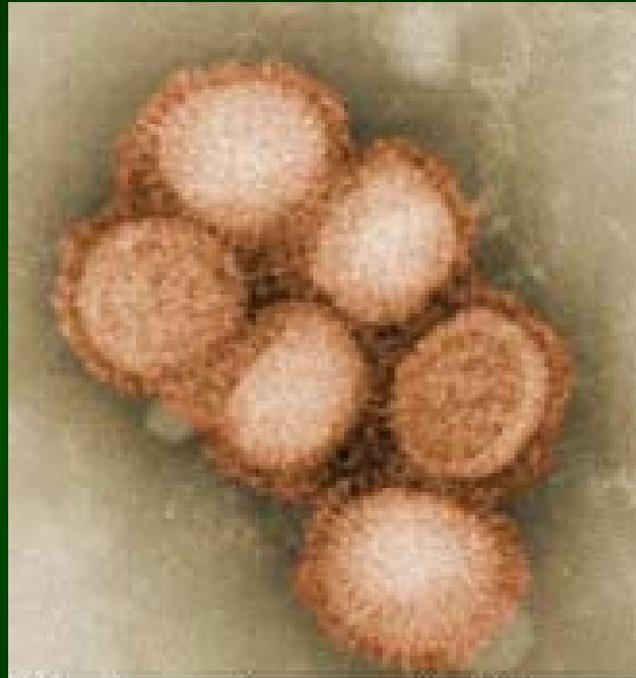
Vaccine Composition

- 2008-2009 season (nationally)
 - 100% match to A (H1N1) component
 - 100% match to A (H3N2) component
 - Influenza B viruses
 - 16% are related to the vaccine strain (B/Florida/04/2006)
 - 84% are not related to the vaccine strain (B/Malaysia/2506/2004-like)
- 2009-2010 season recommendations
 - Keeping A components the same
 - a B/Brisbane/60/2008-like virus

Pediatric Mortalities

- 3 in Michigan this season
 - 1 influenza A, 2 influenza B/Malaysia
 - Ages 2 months, 5 years, 6 years
 - 2 with underlying health conditions
 - 1 vaccinated this season
 - 1 tested negative on rapid test
- 59 nationwide as of May 9
 - S. aureus identified in 61.5% of positive cultures
 - 62.5% of S. aureus isolates were methicillin resistant
 - 76.9% with co-infections were \geq 12 years
- Timely recognition is key to specimen collection

Swine-Origin Influenza A (H1N1)



Electron micrograph of the H1N1 swine flu virus.
Image: U.S. Centers for Disease Control & Prevention

New Influenza A (H1N1), Number of laboratory confirmed cases and deaths as reported to WHO

Status as of 19 May 2009
06:00 GMT



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Public Health Information and Geographic Information Systems (GIS)
World Health Organization



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Map produced: 19 May 2009 07:35 GMT

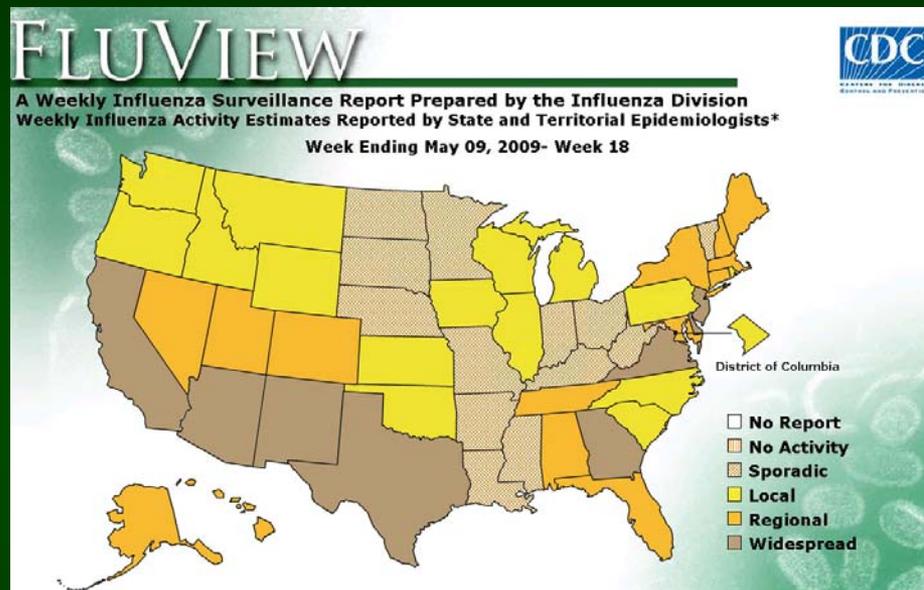
WHO Preliminary Epidemiology

	Seasonal Flu	H1N1 flu*
2 ^o Attack Rate	Range: 5-15%	Range: 22-33%
Age groups	Very young, elderly	Young adults
Reproductive Rate	~1.2	1.4–1.6 or 2.2–3.3
Case Fatality Rate	0.1%	0.1%?
Symptoms	fever, cough, sore throat, body aches	fever, cough, sore throat, body aches

*These data are based on preliminary analyses. As more is learned about the virus, these numbers are expected to change.

National Data

- As of May 19, 2009
 - 5,469 cases
 - 48 states and DC
 - 203 hospitalizations (May 18)
 - 6 deaths
- CDC estimates number of true infections > 100,000
- About half of all flu viruses being detected are novel H1N1 viruses
- Surveillance efforts are transitioning to be similar to seasonal flu

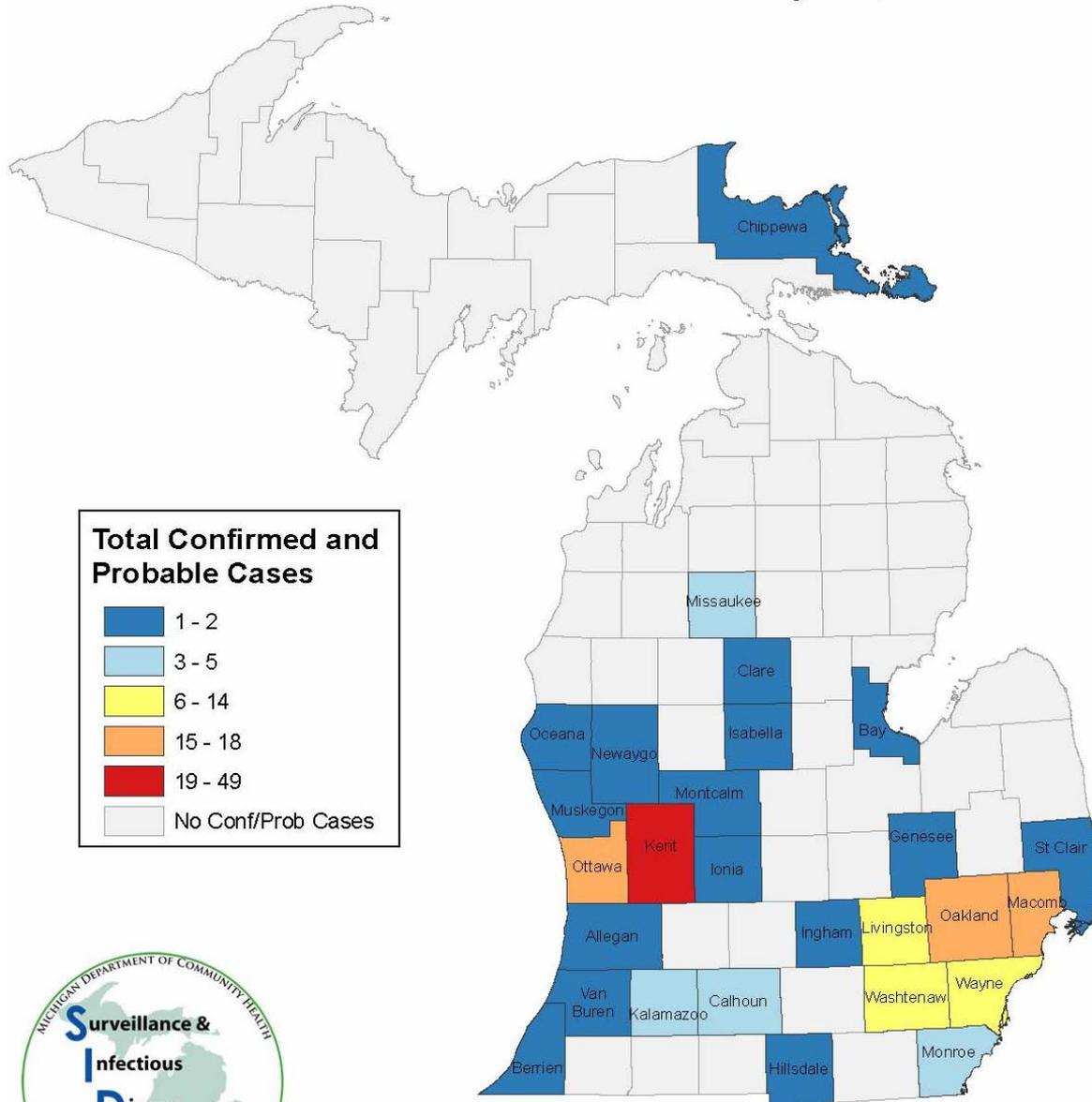


Michigan Epidemiology

As of May 18, 2009:

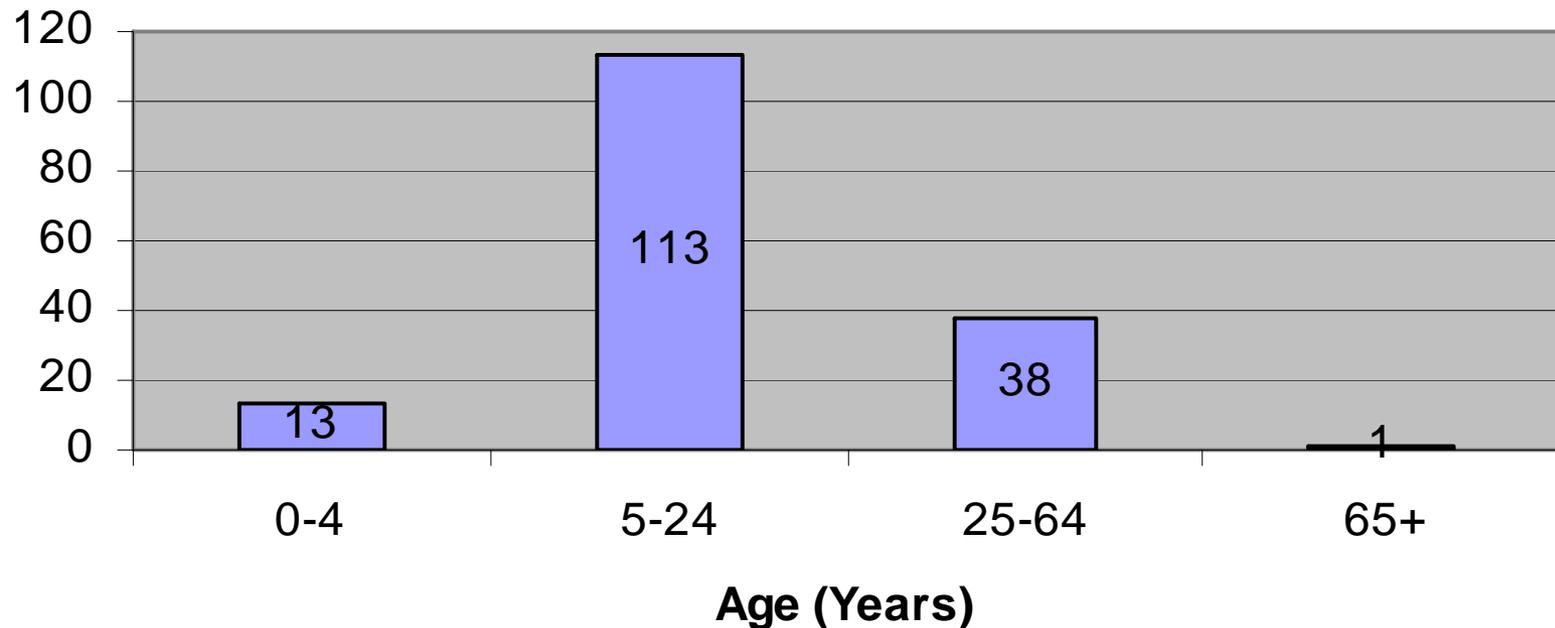
- 164 confirmed and 1 probable case
- Females 51%; Males 49%
- 15 confirmed cases have been hospitalized
- Symptoms reported:
 - Fever: 95%
 - Cough: 87%
 - Sore throat: 55%
 - Diarrhea: 9%
 - Vomiting: 9%
- Of the 144 individuals for whom rapid influenza test results were reported, 136 (94%) were positive

H1N1 (Swine) Novel Influenza Cases as of May 19, 2009



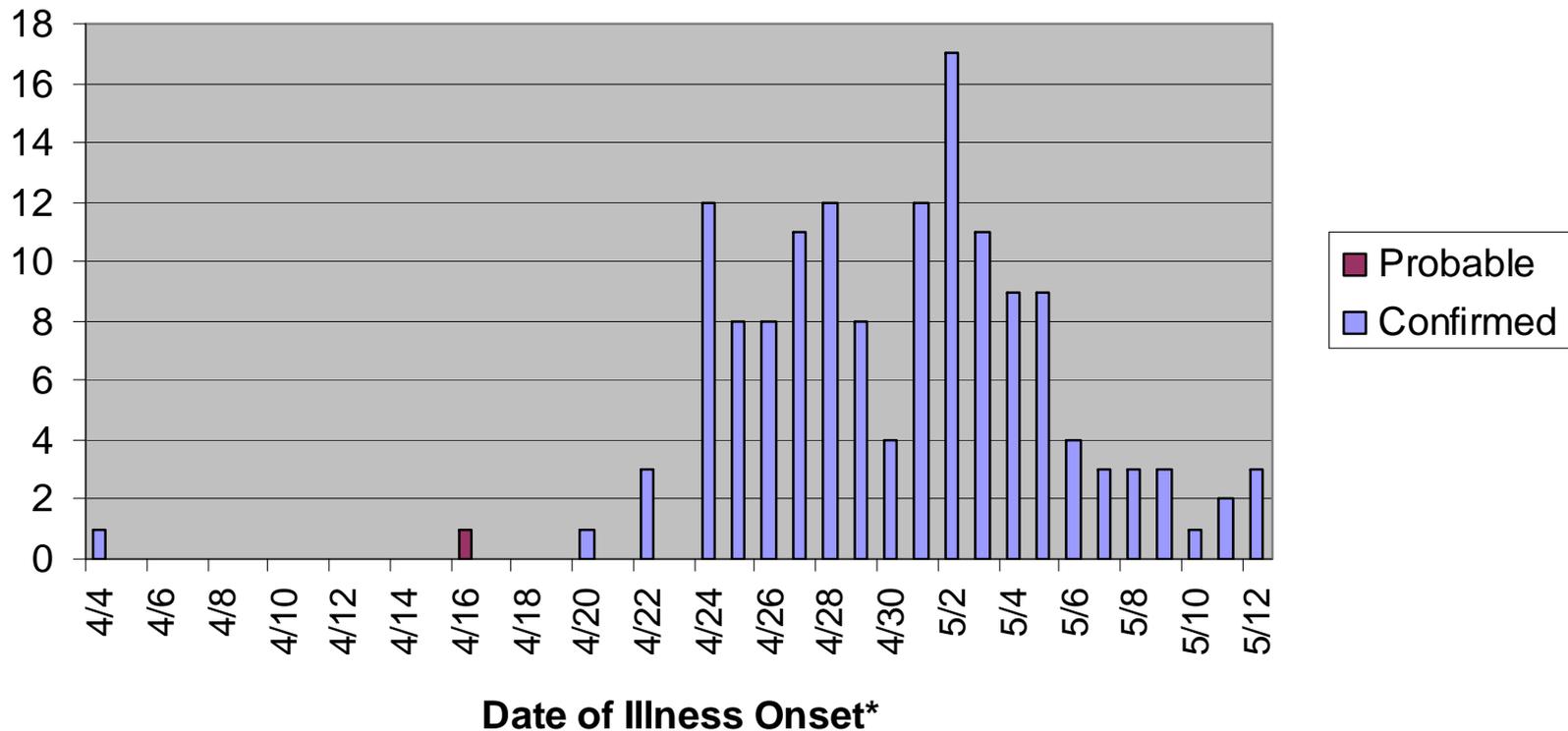
Michigan Age Distribution

**Total Number of Confirmed and Probable
Cases in Michigan by Age (n=165)
(As of May 18, 2009)**



Epi Curve

Novel Influenza A (H1N1) Cases in Michigan (as of 5/18/09 at 5:00pm)



*19 cases are missing date of illness onset information

State-level Response

- Emergency Activation
 - Community Health Emergency Coordination Center (CHECC)
 - State Emergency Operations Center (SEOC)
 - CHECC local health department hotline and email box
 - Daily media briefings
 - Influenza A (H1N1) website
- Additional 24/7 coverage by MDCH BOE
- MDCH BOL weekend lab testing
- Daily MDCH BOL and BOE HAN updates
- Daily reporting to CDC

State-level Response Cont.

- 20 influenza sentinel sites volunteered to report daily ILIs
- Received share of the Strategic National Stockpile
- MCIR All Hazards Data Entry function was activated to track distribution of antiviral and vaccine stockpiles
- Immunization field reps and regional epidemiologists distributed test kits and assisted in enhanced hospital surveillance
- The United States Library of Congress selected the Michigan H1N1 flu website for inclusion in its historic collections of Internet materials related to the Presidential Transition during a Time of Crisis

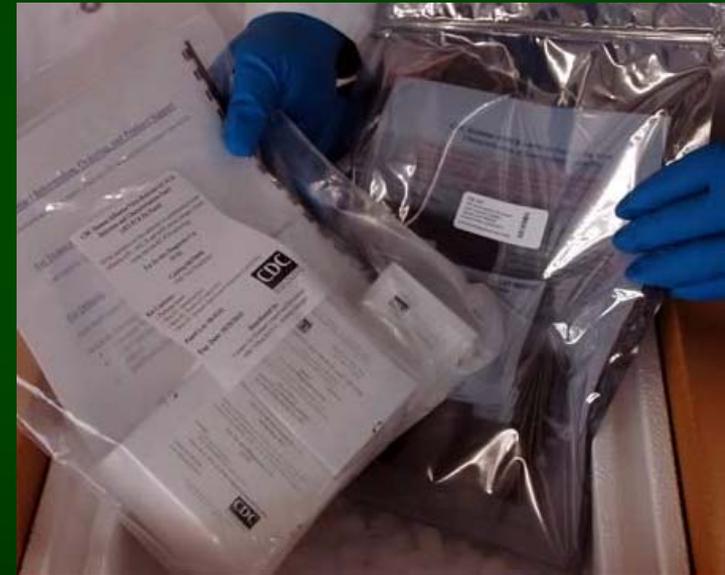
Interesting findings

- On April 30, 2009, CDC-INFO answered the highest number of inquiries on a single topic in its 4-year history, with 3,127 calls and emails answered related to the H1N1 outbreak.
- When 'swine flu' is queried in Google™, top two results:
 - “Swine flu man made” – 15.8 million
 - “Swine flu parties” – 27.3 million

We still have a lot of work to do....

Upcoming Concerns...

- Is this virus going to mutate?
 - How much, if it does?
 - More virulent?
- Will it reassort with seasonal H1N1?
 - Diagnostic difficulties
 - Will it obtain oseltamivir resistance?
- Will it reassort with H5N1?





COLOR ME

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Lab Issues Achoo and Boo Hoo

Flu and Rabies Submission Errors

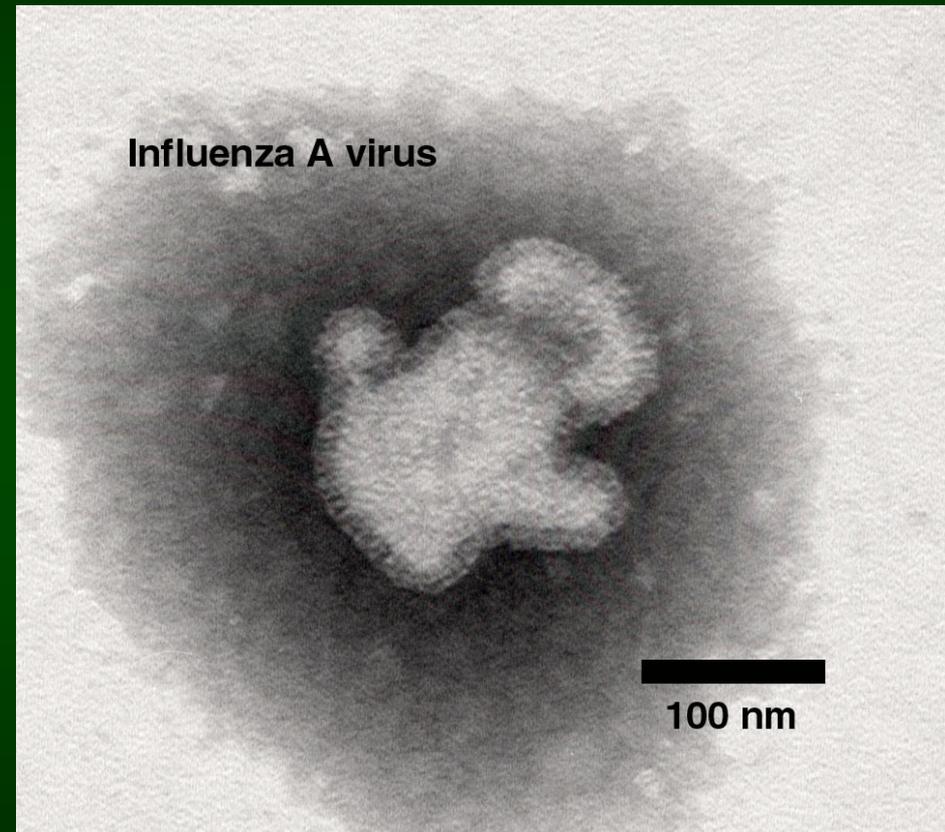
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Influenza Testing at MDCH

- Year round testing available
- Testing protocols
 - Routine flu (seasonal): viral culture
 - Novel flu: PCR
 - Future of routine flu: PCR with culture on negatives



Specimen Submission



The screenshot shows the MDCH website interface. At the top left is the MDCH logo with the text "Michigan.gov Home". To the right is the "Department of Community Health" header with a search bar and "GO" button. Below the header are navigation links: "MDCH Home | Online Services | Sitemap | Contact MDCH".

On the left side, there is a "Providers" menu with the following items:

- > HIPAA
- > Health Professional Shortage Area
- > Institutional Review Board
- > State Loan Repayment Program
- > **Lab Services**

Under "Lab Services", there are sub-links:

- Laboratory Services Guide
- Specimen Submission**
- Guidelines for Labs
- Regional Labs

In the center, there are utility links: "Printer Friendly", "Text Version", "Email Page", and "A- A+Text Size". Below these is the "Quality Assurance" section with a list of links:

- [Quality Assurance Section](#)
- [Specimen Submission Guidelines](#)
- [Specimen Collection Instructions](#)
- [Test Request Forms](#)
- [Clinical Specimen Collection Units](#)

On the right side, there is a "Michigan.gov" logo and "The Official State of Michigan Website" text. Below this is a "Search" bar and a "GO" button. Further down are navigation links: "Departments/Agencies", "Online Services", "Surveys", and "RSS Feeds". Under "RSS Feeds", there is a "Quick Links" section with the following items:

- News Releases
- Health Information Technology (HIT) Commission
- State Job & Internship Opportunities
- Office of Long-Term Care Supports and Services
- Influenza in Michigan

- Info available on BOL web page
 - www.michigan.gov/mdchlab



Ordering Supplies

- Collection Kits Available
 - Laboratory Support Unit, MDCH
 - Ph: 517-335-9867
 - Fax: 517-335-9039

Contents of Unit 45

1 NP swab, 1 lesion swab, VTM, test request form, shipping mailer, blue ice, mailing label, collection and submission directions

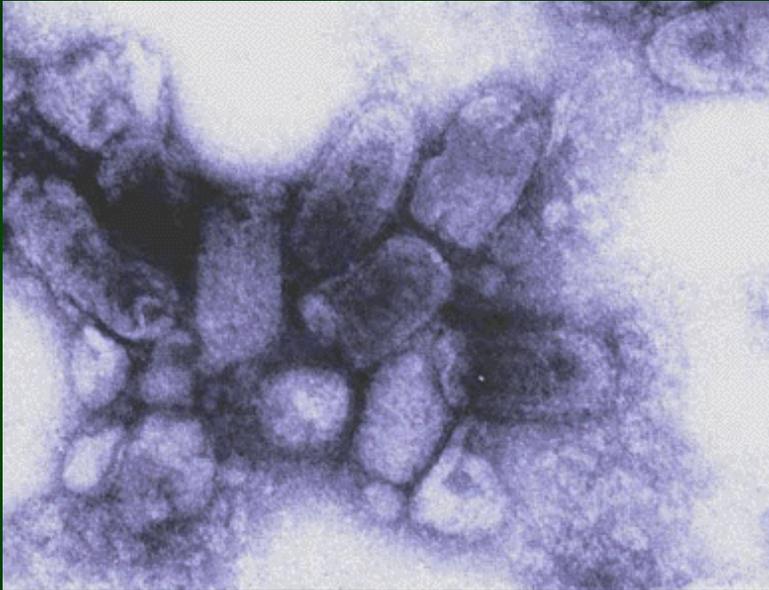


Common Errors in Submission

- Does not arrive at lab in timely manner
- Shipped at ambient temperature
- Collected in expired VTM
- Collected improper sample
- Identifier on sample does not match name on test request form
- Did not completely fill out test req form



Rabies Testing



Rabies virus from Wadsworth Center, NY State DOH

- Animals Tested
 - Suspect animals that have exposed a person or pet
- Non-suspect Animals
 - Chipmunk, gopher, hamster, mouse, rat, prairie dog, squirrel, gerbil, guinea pig, mole, muskrat, rabbit, shrew, vole

Rabies Holiday/Weekend Testing

- Must be pre-approved
 - (517) 335-8165 during normal business hours
 - (517) 335-9030 after hours
- Must be a provoked attack
- Must be a suspect animal
- Only available for nonvaccinated animals that have exposed a person



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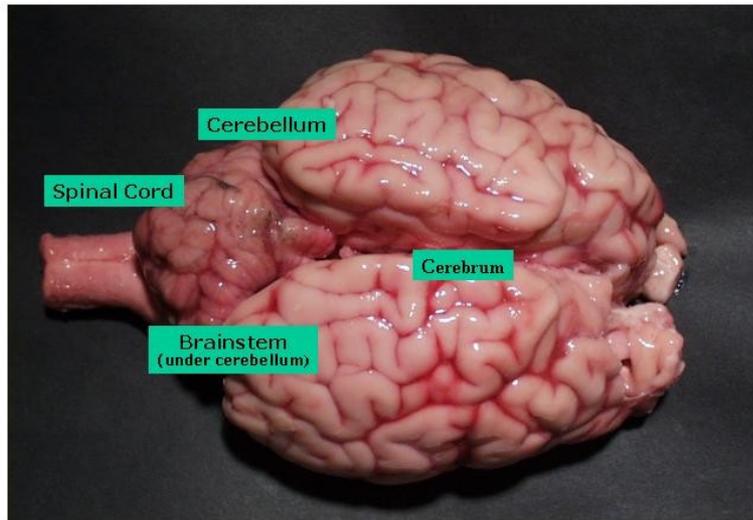


Figure 2. Dorsal view of brain.

- Sending in a non-suspect animal
- Sending a large animal directly to MDCH
- Sending in a frozen head
- Not sending in complete SC plus cerebellum

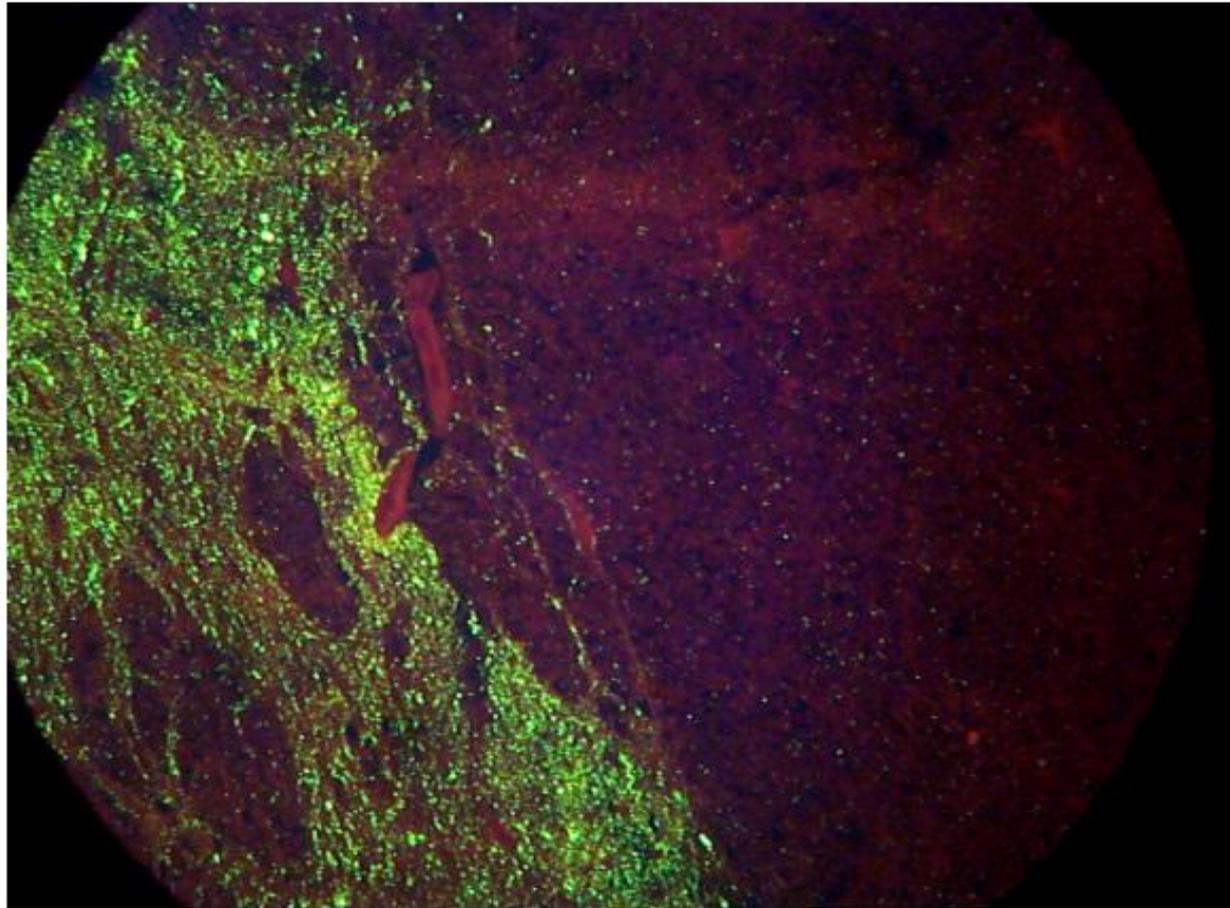


Figure 1. DFA test of a transverse section (cross-section) of Brain stem from a rabies infected donkey showing unilateral virus spread (200X magnification, frozen section).

Special Announcement

- Rabies testing is now available in the Houghton laboratory.
 - Will test all samples from the UP
 - Decrease shipment time
 - Increase numbers tested from UP (hopefully)

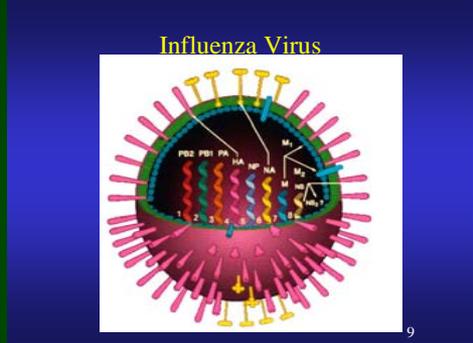
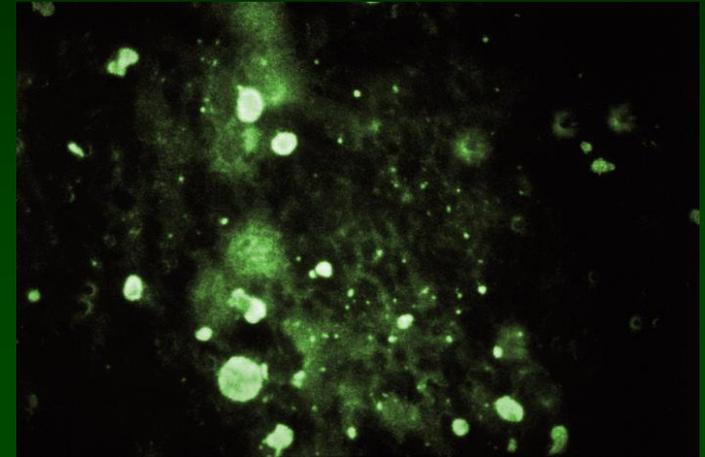


Rabies Submission Changes Lansing Guard

- Lansing guard to be present only 8-5 M-F
- Change to take place this summer



Questions?





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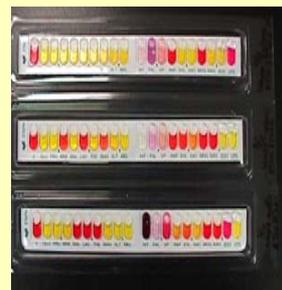
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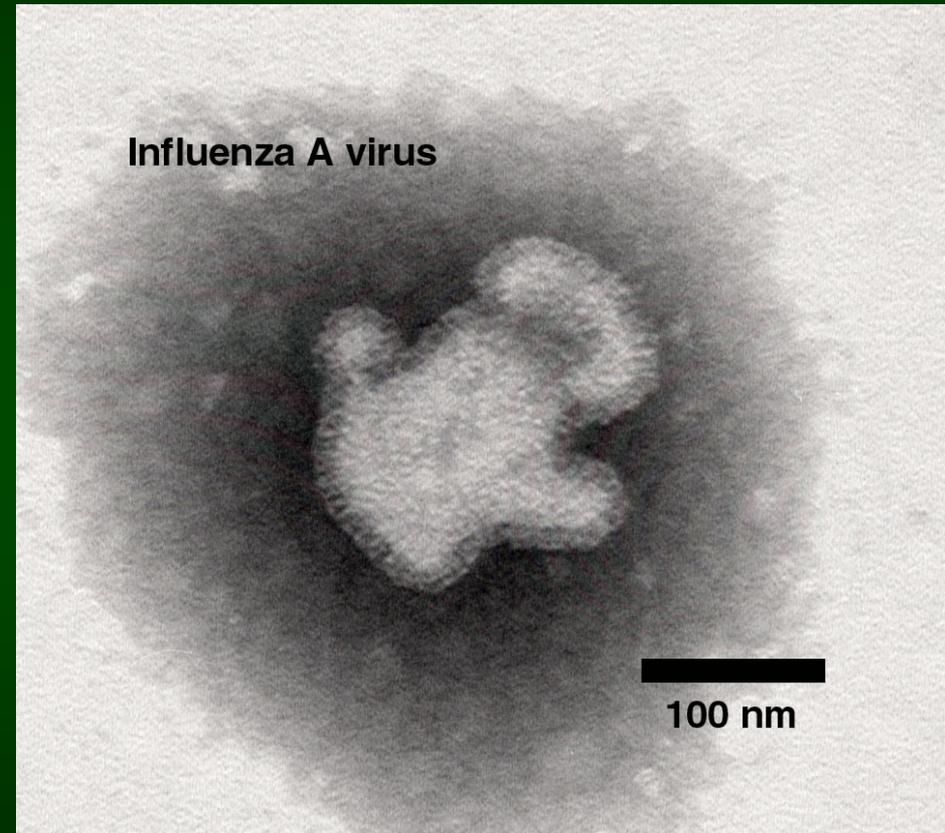
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Michigan.gov
The Official State of Michigan Website

Search

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Guidelines for Labs
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Printer Friendly | Text Version | Email Page | A- A+ Text Size

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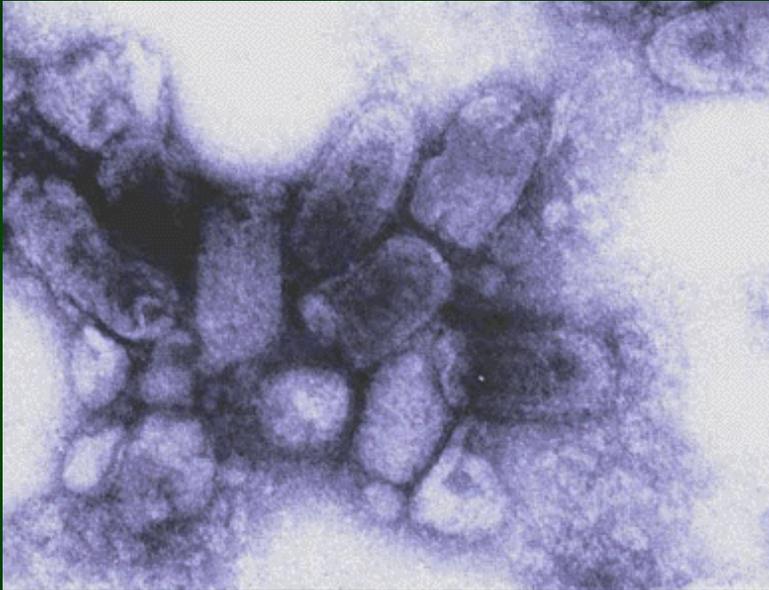


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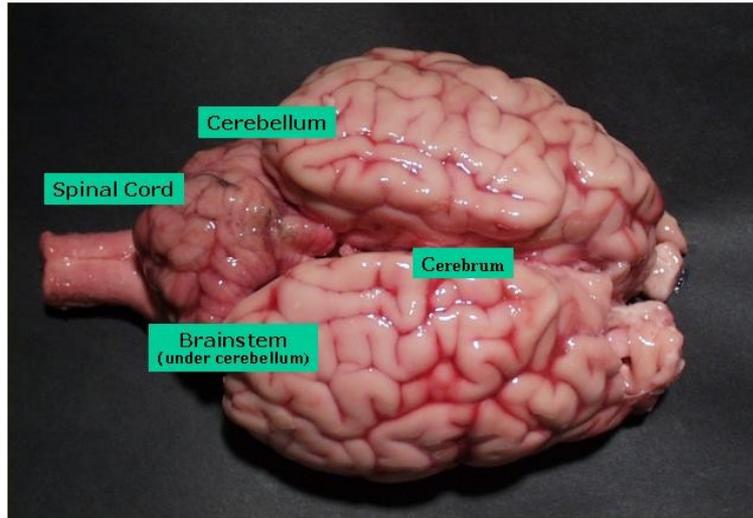


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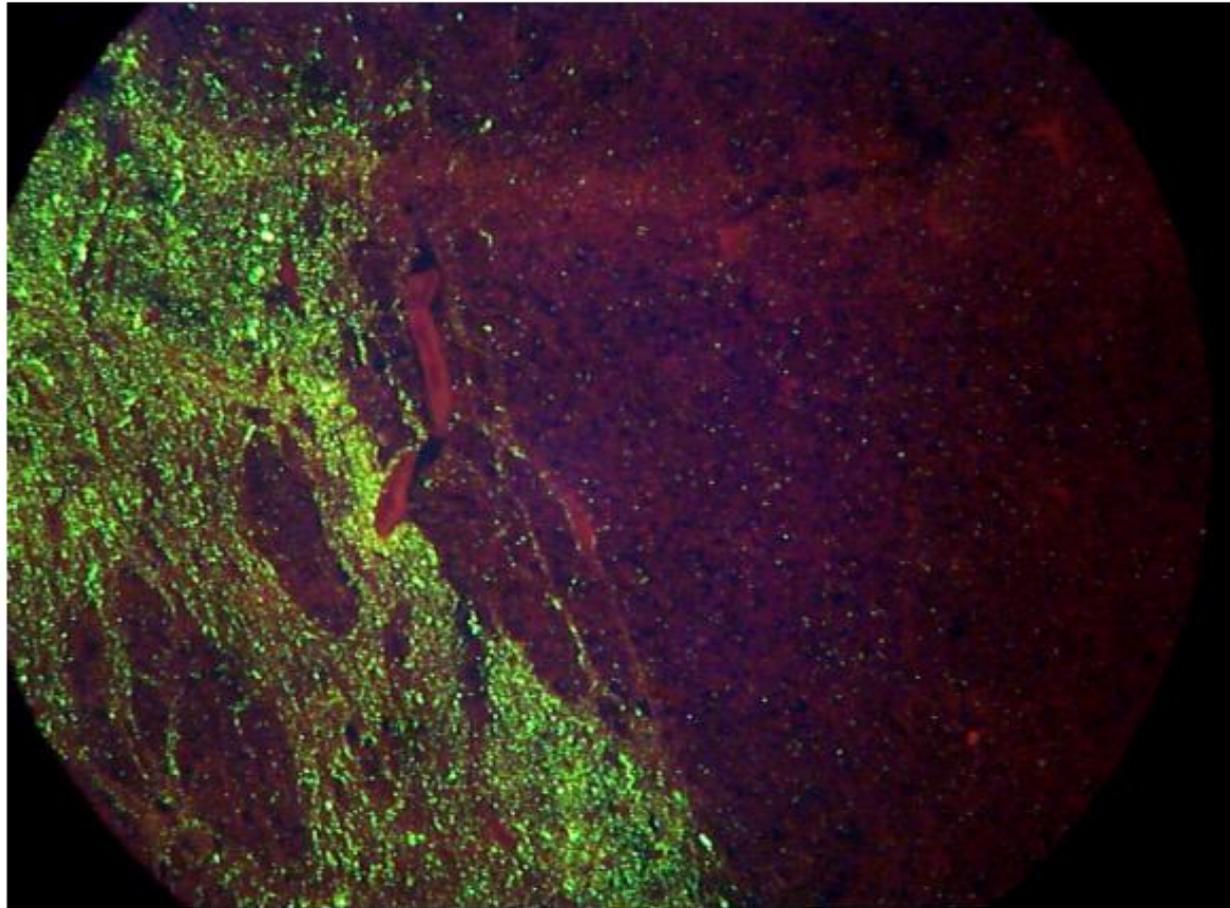


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