What’s Happening with Zika Virus Readiness in Kansas?
A Look at State and Local Preparedness Activities

Objectives
• At the completion of the session, participants will be able to:
  – Describe the basic characteristics of Zika virus and its emergence as an international public health concern.
  – Identify public health recommendations for patient testing, surveillance, and prevention and control measures.
  – Discuss state and local level preparedness and response activities and implications for their own organizations.

Outline
• Overview of Zika virus
• Background and situation update
• Update on Kansas response
• Medical provider / public health guidance (including laboratory testing, surveillance and investigation, prevention recommendations, etc.)
• Preparedness and response planning
BACKGROUND

Situation Update

Zika virus

- Discovered in Uganda in 1947 – Isolated from a monkey
- Closely related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses
- First human case in 1952
- Primary transmission through bites of *Aedes aegypti* mosquitoes
  - Also *Aedes albopictus* is competent, but does not have high capacity

Zika virus disease

- Mostly mild or unapparent symptoms (~80%)
- Symptoms (~20%)
  - Fever
  - Rash
  - Joint pain
  - Conjunctivitis
- Symptoms may last several days to a week
Why all the fuss?

• Declared Public Health Emergency of International Concern (WHO)
• Associated with microcephaly and potentially other serious birth defects
  -- First time in more than 50 years that virus has been linked to serious birth defects
• Also associated with Guillain-Barré syndrome
• Vector present in U.S. (including KS)

Historical Epidemiology

• Before 2007: Sporadic human disease cases reported from Africa and southeast Asia
• 2007: First outbreak reported on Yap Island, Federated States of Micronesia
• 2013–2015: >30,000 suspected cases reported from French Polynesia and other Pacific islands
• May, 2015: First locally-acquired cases in the Americas were reported in Brazil

Source: Ingrid Rabe, CDC

Areas with Local Transmission*

*As of 26 July 2016
Cases in U.S. (As of 27 July 2016)

- 1,657 travel-associated cases in U.S. states
  - 15 sexually transmitted
- KS: 8 cases (as of 01 Aug 2016)
- 1 laboratory-acquired case
- 1 person-to-person
- Local transmission in FL

Local Transmission in Florida

- 29 July 2016: FL Dept. of Health confirmed local transmission
- 4 initial cases
- 4 additional cases and 6 asymptomatic infections identified through testing in area
- Travel information
  - Pregnant women avoid
  - Defer pregnancy for 8 weeks after exposure

Primary Zika virus vectors

- Same mosquitoes that transmit chikunkunya and dengue viruses
- Aggressive daytime biters
- Lay eggs in standing water
  - Buckets, pet dishes, flower pots, tires, treeholes
Aedes aegypti

- *Ae. aegypti*
  - Adapted to urban environments
  - Prefers to bite humans
  - Feeds on multiple victims in single egg cycle
  - Difficult to control

Estimated Range of *Ae. aegypti*

- *Ae. aegypti* likely present in U.S. for centuries
- Likely cause of yellow fever and dengue outbreaks in U.S. in 1700's and 1800's

Aedes albopictus

- Demonstrated as competent vector of Zika virus
- But...Lower capacity as Zika virus vector for humans
- Feeds on multiple animal species
Estimated range of *Ae. albopictus*

- First established population of *Ae. albopictus* in U.S. identified in TX in 1985

---

**KANSAS RESPONSE**

**Prevention Recommendations**

- Pregnant women recommended to avoid travel to areas with Zika virus transmission
- For anyone who does travel...
  - During trip
    - Prevent mosquito bites
    - Avoid pregnancy
  - After trip
    - Avoid mosquito bites to prevent infection of local mosquitoes
    - Protection of sexual transmission

Source: CDC

Source: Hahn et al., Journal of Medical Entomology, 2016
Health Care Provider Guidance

LABORATORY TESTING

Diagnostic Tests

• Triplex rRT-PCR
  – Implemented at Kansas Health and Environmental Laboratories the week of 18 July 2016
  – Tests for Zika, dengue, and chikungunya viruses
  – Symptomatic patients <14 days after onset
  – Must meet clinical and epidemiologic criteria
  – Turnaround time expected ~14 days

• Serology: CDC Zika IgM MAC-ELISA
  – Symptomatic patients 4 days to 12 weeks after onset
  – Asymptomatic pregnant women

• Private laboratories – PCR
  – Follow-up serology testing may be indicated if negative

Testing Process Issues

• Health care providers contact KDHE Epidemiology Hotline (877-427-7317)
• Patient history discussed and evaluated
• Patients approved for testing
  – Go to central specimen collection site, or
  – Collection and shipping materials sent to provider
Symptomatic person with:
• travel within the previous 12 weeks to an area with ongoing transmission of Zika virus, or
• Sexual contact* within the past 12 weeks with a person who traveled to an area with ongoing transmission of Zika virus?

Experienced fever, rash, conjunctivitis, or arthralgia during their travel or within two weeks of exposure?

It is now >14 days after symptom onset?

Collect serum and urine and test via PCR. If negative, then test via ELISA.

Testing is not recommended.

Asymptomatic pregnant female with:
• travel within the previous 12 weeks to an area with ongoing transmission of Zika virus, or
• Sexual contact* within the past 12 weeks with a person who traveled to an area with ongoing transmission of Zika virus?

It is now >14 days after return from travel or exposure?

Collect serum and urine and test via PCR. If negative, then test via ELISA.

Collect serum and urine between 14 and 12 weeks and test via ELISA.

*Greatest risk is among those who had sexual contact with a male within 6 months of the male experiencing symptoms.

*For sexual contact with an asymptomatic male, greatest risk is contact within 6 weeks of travel.

*Other time frames may be considered for pregnant females with sexual contact within the previous 2 to 12 weeks of specimen collection.

Update on Activities

PREPAREDNESS AND RESPONSE
Funding

• Epidemiology and Laboratory Capacity Program for Infectious Diseases – Zika virus and arboviral disease component
• Public Health Preparedness and Response (PHPR) Cooperative Agreement for All-Hazards Public Health Emergencies: Zika 2016
• Surveillance, Intervention, and Referral to Services Activities for infants with Microcephaly or other Adverse Outcomes Linked with the Zika Virus

ELC Cooperative Agreement

• Funding only guaranteed for one year
• Support laboratory clinical diagnostic testing
• Enhance mosquito surveillance
  – Complete survey for Aedes species
  – Implement larval surveillance in five communities
• Support for participation in U.S. Zika Pregnancy Registry
  – Medical record review / abstraction
• Education / awareness
  – Clinical guidance targeted to health care providers
  – Prevention messages re: waste tires
• Waste tire abatement

PHPR Cooperative Agreement

• Two-year project period
• Mass media / communications campaign
  – Awareness of Zika virus risks
  – Guidance regarding travel
  – Prevention of mosquito bites
  – Reduction of mosquito breeding habitats
  – Reduce risks of sexual transmission
• Virtual town hall meeting
• Increase participation in KS-HAN
Birth Defects Surveillance Cooperative Agreement

- Five year project period
- Strategies and Activities
  - Surveillance
  - Capacity Development
  - Referral to Services
  - Data Analyses and Reporting
  - Health and Developmental Outcomes of Children

Birth Defects Surveillance Cooperative Agreement

- Enhance current passive birth defects surveillance system
- Establish rapid "real time" active surveillance of microcephaly and select adverse outcomes
  - KS (2009 – 2013): 47 microcephaly cases / 101 hydrocephaly cases
  - IA (2009 – 2013): 225 microcephaly cases / 234 hydrocephaly cases
- Retrospective paired chart review of microcephaly and hydrocephaly cases (moms and babies)
- Partnership development to increase knowledge and awareness among health care providers
- Support prevention education / awareness to reduce occurrence of Zika virus infection among pregnant women
- Support referral services to families with children born to Zika virus-infected women
- Add to the body of knowledge

Stay tuned...

- Guidance from CDC changes rapidly as new knowledge is gained
- Updated case definition adopted at Council of State and Territorial Epidemiologists (CSTE) Conference in June, 2016
- Updated Disease Investigation Guideline
- Virtual town hall meeting
- Participation in larval surveillance
- ...And more!
Know where your patient has been.

#ThinkTravelHistory

- Dengue Fever
- Ebola
- MERS Coronavirus
- Zika
- Rabies
- Malaria
- Pertussis
- Typhus
- Tuberculosis
- Plague
- Tetanus
- Ebola
- Measles
- Smallpox
- Chikungunya
- Encephalitis