Zika Virus

• Named for Ugandan forest first isolated 1947
• First major recognized outbreak – 2007
  • Yap Islands
  • >70% infected
• Western hemisphere – 2014
• Brazil – May 2015
Zika Virus

- **Flavivirus**
  - West Nile virus
  - Dengue virus
  - Tick-borne encephalitis virus
  - Yellow fever virus
  - Japanese encephalitis virus

Confirmed Transmission Western Hemisphere

Pan American Health Organization/World Health Organization 4/21/16
Epicurve Western Hemisphere

Person to Person

• Minor mode of transmission

• Zika virus detected in:
  • **Blood**
  • Urine
  • **Semen**
  • Saliva
  • CSF
  • **Amniotic fluid**
  • Breast milk
Sexual

• Male to his partners
• Testis - Immunologically privileged
  • Unknowns include
    • Viability time
      • 2 weeks by Cx
      • 62 days by RT-PCR
    • Transmission without symptoms
    • Female to partners
    • Oral sex transmission

Sexual Prevention

• Male with Sx/Dx of Zika
  • Condoms or abstinence for 6 months
• Male who traveled but no Sx
  • Condoms or abstinence for 8 weeks
• No effective lab test for semen
Mosquito Borne

Major means of transmission

**Aedes Mosquitos**

- Females need blood meal to reproduce
  - Sip feeder
  - Black/white stripes on legs
- Daytime biter
- Urban dweller
  - Close proximity to humans
  - Standing H$_2$O

![Aedes aegypti](image)

![Aedes albopictus](image)
ESTIMATED Range Ae. aegypti

ESTIMATED Range Ae. albopictus
Clinical Presentation

• 75-80% asymptomatic
• Incubation period
  • Typically 2-7 days
  • ? Long end of ~14 days
• Mild illness
• Symptoms resolve 2-7 days

Clinical Presentation

• Fever
  • Acute/low grade (37.8-38.5°C)
• M/P rash
  • Typically pruritic/descending
• Arthralgia
  • Typically small joints hands and feet
• Conjunctivitis (non-purulent)
Other Manifestations

• Myalgias
• Headache
• Retro-orbital pain
• Asthenia
• GI
  • Abdominal pain, nausea, diarrhea, mucus membrane ulcers
• Pruritis
• Thrombocytopenia (case reports)
Courtesy of Carolina O Barbosa, MD, and Antonio C Bandeira, MD, Salvador, Brazil.
Differential Diagnosis

- Dengue fever
  - *Flavivirus, aedes* mosquito
- Chikungunya
  - *aedes* mosquito
- Parvovirus, rubella, measles, leptospirosis, malaria, rickettsial infection, group A *Strep*
Differential Diagnosis

• Rule out Dengue, Chikungunya
  • Clinical history/exam often not definitive
  • Antibody testing for dengue, chikungunya
Diagnostic Testing

• Not commercially available
• Need NJDOH approval
  • (609) 826-5964
• Turn around time may be prolonged

Who to Test

• All acutely ill ≥ 1 Sx and within past 2 weeks;
  • Traveled
  • Unprotected IC with male who traveled
• All pregnant women who during 8 weeks before conception;
  • Traveled
  • Unprotected IC with male who was;
    • Dx with Zika
    • Zika compatible Sx and travel
• GBS who traveled
• Infants with certain defects who mothers traveled
• Infants born to mothers who were positive/inconclusive
• Infants symptomatic within 2 weeks of birth whose mothers traveled within 2 weeks of delivery
Available Tests

• RT-PCR
  • Symptomatic for ≤7 days
  • Positive = positive
    • Negative – may have missed window
    • Urine positive longer than serum

Available Tests

• IgM (Zika MAC-ELISA)
  • Begins to turn positive after ~ 4 days
  • ? Declines after 12 weeks
  • Cross reacts with other Flaviviruses
    • Dengue
    • WNV
    • YF, Japanese encephalitis infection or vaccination
Available Tests

• Plaque-Reduction Neutralization Test (PRNT)
  • Used when IgM is positive
  • Still may be inconclusive

Treatment

• Symptomatic
• Avoid NSAIDs, ASA until dengue r/o.
Infection Control

• Standard precautions
  • Minimize exposure to bodily fluids

Complications

• Illness usually mild
• Guillain-Barré syndrome
• Birth defects
  • Neurotropic

Baby with Microcephaly
Fetal Complications

• Confirmed link to microcephaly
• NEJM 3/4/16
  • Fetal abnormalities - 12/42 (29%) pregnant females
    • Lower rates seen in Yap
  • All trimesters
  • Various US abnormalities
    • Microcephaly
    • IUGR
    • Abnormal blood flow
    • Oligo/anhydramnios

Other Adverse Outcomes

• Absent/poorly developed brain structures
• Defects of the eye
• Impaired growth
Antepartum Care

• Positive or inconclusive labs
  • Serial US q 3-4w
  • Refer to MFM specialist

• Negative labs
  • No special care

Ultrasound Abnormalities

Calcifications at 32 weeks

Mlaker, et al, Zika Virus Associated with Microcephaly, NEJM, 3/10/16
Postpartum

• Zika testing for infant if mother traveled AND:
  • Mother had positive or inconclusive labs; OR
  • Infant with microcephaly/intracranial calcifications

• If positive/inconclusive
  • PE for head circumference, length, wt, gestational age
  • Cranial US
  • Evaluate eye, hearing, other neuro abnormalities

• If negative (and no suspected abnormalities)
  • Routine care

Pregnancy

• Avoid travel to Zika areas
• Avoid sex with high risk male partners
• Maternal lab testing if travel or high risk sex
NJ – Outbreak?

• Autochthonous unlikely
  • Physical plant
    • Air conditioning, screens
  • Mosquito control
  • No bird/animal reservoir
    • Unlike WNV
• Sporadic and sexually transmitted likely

Questions?

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