

# ID Considerations in a Bioskills Setting: Sepsis, HCV, MRSA, Zika, Chikungunya and Dengue

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MJB AND ASSOCIATES, INC.  
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## Bird Flu Hits Florida Trailor Park!



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## Sepsis

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### SIRS Basis for Sepsis

- Two or more of:
  - Temp  $>38C$  or  $\leq 36C$
  - HR  $>90/min$
  - RR  $>20/min$  or PaCO<sub>2</sub>  $<32$  mm Hg
  - WBC  $>12K$  or  $<4K$  or  $>10\%$  bands
- Non-infectious causes:
  - Pancreatitis
  - Vasculitis
  - Adrenal insufficiency
  - Burns
  - Aspiration Pneumonia
  - Cirrhosis
  - Dehydration
  - Drug Reaction
  - Hemorrhagic Shock
  - MI
  - Seizure
  - Upper GI Bleed

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### qSOFA Basis of Sepsis (Bedside)

- qSOFA
  - quick Sepsis-related Organ Failure Assessment
- Any 2 of 3:
  - RR  $>22/min$
  - Altered mental activity
  - sBP  $<100$  mmHg

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### Criteria for Tissue Suitability

- Two Scenarios:
  - High Clinical Suspicion & +Blood Cultures
  - Clinical Diagnosis of Sepsis
- Follow-up Questions:
  - Antibiotics?
  - How Long?
  - Defervescence?

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# MRSA

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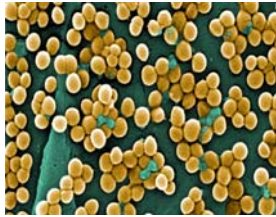
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## MRSA

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About 1% of US population are carriers  
Widespread swab screening now performed in hospitals  
Only of concern if in blood cultures, for the most part  
Skin prep for training/education important  
Treatment of MRSA usually includes a 7 to 10 day course of an antibiotic (by mouth) such as trimethoprim-sulfamethoxazole (brand name: Bactrim), clindamycin, minocycline, doxycycline, linezolid.



[www.cdc.gov](http://www.cdc.gov)

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# HEPATITIS C

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## Chikungunya virus RI cases

- 2 confirmed cases/travelers from Dominican Republic
- Mosquito vector
- Symptoms
- Testing and Treatment
- Travel Advisory Only

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## Chikungunya vs Dengue?

### Is it Chikungunya or Dengue?

Chikungunya and dengue are viruses most commonly transmitted by *Aedes aegypti* and *Aedes albopictus* mosquitoes. Anyone who lives in or has traveled to an area where chikungunya or dengue viruses are found is at risk for infection.

|   |   |  |  |
|---|---|--|--|
| <p><b>Incubation period</b></p> <ul style="list-style-type: none"> <li>1. Approximately 3 to 7 days for chikungunya and dengue viruses</li> <li>2. Incubation 5 to 7 days for dengue</li> <li>3. Some symptoms typically appear within 1 to 10 days</li> <li>4. Symptoms of chikungunya, other arthralgia, and joint pain can last for several weeks</li> <li>5. Recovery is thought to occur 10 days after onset</li> <li>6. Visit <a href="http://www.cdc.gov/chikungunya/about-chikungunya.html">www.cdc.gov/chikungunya/about-chikungunya.html</a></li> </ul> | <p><b>Signs and symptoms</b></p> <ul style="list-style-type: none"> <li>1. Chikungunya begins as an acute febrile illness</li> <li>2. Common symptoms include high fever, muscle and joint pain, headache, and rash</li> <li>3. Some patients have been known to experience a relapse of symptoms</li> <li>4. Symptoms in the elderly, including older adults, may be more severe</li> <li>5. Mortality is low and occurs mainly in older adults</li> </ul> | <p><b>Diagnosis</b></p> <ul style="list-style-type: none"> <li>1. Approximately 10 to 14 people affected with dengue disease</li> <li>2. Incubation 5 to 7 days for dengue</li> <li>3. Symptoms may include high fever, muscle and joint pain, headache, and rash</li> <li>4. Recovery is thought to occur 10 days after onset</li> <li>5. Visit <a href="http://www.cdc.gov/dengue/">www.cdc.gov/dengue/</a></li> </ul>   | <p><b>Prevention for chikungunya and dengue</b></p> <ul style="list-style-type: none"> <li>1. Avoid mosquito bites, particularly during dawn and dusk</li> <li>2. Use repellents</li> <li>3. Avoid mosquito bites during the day</li> <li>4. Use mosquito nets</li> <li>5. Use mosquito coils</li> <li>6. Use mosquito coils</li> <li>7. Use mosquito coils</li> <li>8. Use mosquito coils</li> <li>9. Use mosquito coils</li> <li>10. Use mosquito coils</li> </ul> |
| <p><b>Signs and symptoms</b></p> <ul style="list-style-type: none"> <li>1. Dengue begins as an acute febrile illness</li> <li>2. Common symptoms include high fever, muscle and joint pain, headache, and rash</li> <li>3. Some patients have been known to experience a relapse of symptoms</li> <li>4. Symptoms in the elderly, including older adults, may be more severe</li> <li>5. Mortality is low and occurs mainly in older adults</li> </ul>  | <p><b>Diagnosis</b></p> <ul style="list-style-type: none"> <li>1. Approximately 10 to 14 people affected with dengue disease</li> <li>2. Incubation 5 to 7 days for dengue</li> <li>3. Symptoms may include high fever, muscle and joint pain, headache, and rash</li> <li>4. Recovery is thought to occur 10 days after onset</li> <li>5. Visit <a href="http://www.cdc.gov/dengue/">www.cdc.gov/dengue/</a></li> </ul>                                    | <p><b>Prevention for chikungunya and dengue</b></p> <ul style="list-style-type: none"> <li>1. Avoid mosquito bites, particularly during dawn and dusk</li> <li>2. Use repellents</li> <li>3. Avoid mosquito bites during the day</li> <li>4. Use mosquito nets</li> <li>5. Use mosquito coils</li> <li>6. Use mosquito coils</li> <li>7. Use mosquito coils</li> <li>8. Use mosquito coils</li> <li>9. Use mosquito coils</li> <li>10. Use mosquito coils</li> </ul> | <p><b>Diagnosis</b></p> <ul style="list-style-type: none"> <li>1. Approximately 10 to 14 people affected with dengue disease</li> <li>2. Incubation 5 to 7 days for dengue</li> <li>3. Symptoms may include high fever, muscle and joint pain, headache, and rash</li> <li>4. Recovery is thought to occur 10 days after onset</li> <li>5. Visit <a href="http://www.cdc.gov/dengue/">www.cdc.gov/dengue/</a></li> </ul>   |

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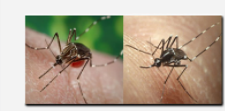
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## Dengue Virus

- Hemorrhagic Fever
- Epidemiology
- Signs/Symptoms
- Fatality Rate
- Laboratory Diagnosis
- Clinical Management



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# Zika Virus

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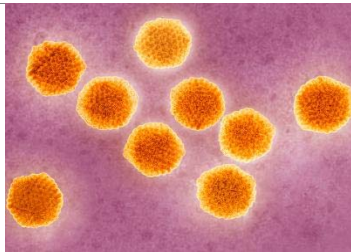
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## Zika Virus

- Areas With Zika
- Transmission
- Clinical Appearance
- Diagnostic Information
- Treatment
- Donor Screening Guidance
- Testing—several options in the works...



[www.texasornidial.healthnet.com](http://www.texasornidial.healthnet.com)

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## Tests for Zika

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### ELISA Antibody Testing

Plates pre-coated with Stellar KLH™

Incubation times may vary. See product insert for specific instructions.

30 - 45 min. \*

30 - 45 min. \*

20 min.

www.stellarbiotechnologies.com

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### ELISA Antibody Tests

- Euroimmune ELISA
- CDC Zika-MAC ELISA

ZIKA VIRUS

www.who.int

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### Principle of NAT PCR Testing

#### Exponential Replication of DNA: The Math Behind PCR

| Target Sequence | 1 cycle (4 copies) | 2 cycles (8 copies) | 3 cycles (16 copies) | 4 cycles (32 copies) |
|-----------------|--------------------|---------------------|----------------------|----------------------|
|                 |                    |                     |                      |                      |

www.goatbiology.com

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**NAT Tests**

Roche RNA PCR

Griffols RNA PCR

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**Availability for Screening**

- Roche will be under IND for blood
- Griffols to follow 8-12 weeks later
- Euroimmune not licensed in United States
- Zika-MAC ELISA emergency approved, but CDC is keeping it to themselves for now

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**Pros and Cons**

Antibody Screening

Nucleic Acid Screening

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# Zika: What's Next?

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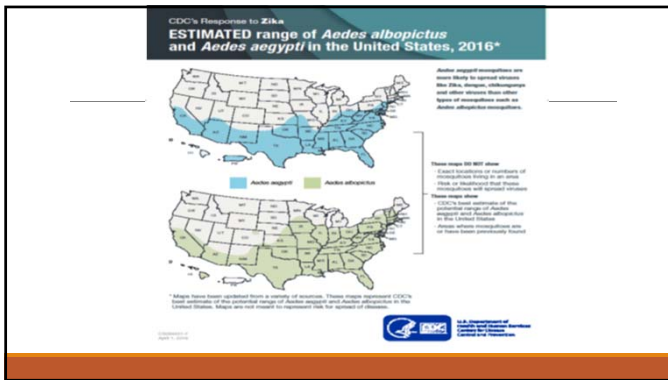
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