ZIKA VIRUS OUTBREAK
ASSISTED REPRODUCTION PATIENTS SHOULD AVOID PREGNANCY?

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2 Associação Instituto Santére
3 Universidade Federal de São Paulo
INTRODUCTION

ZIKA Virus (ZIKV): Characteristics

- Family Flaviviridae, Group of Arboviruses (ARthropod BOrne VIRUSES)

- Transmission by Aedes mosquitoes, but also perinatal, blood transfusion and sexual relation

- Related to Dengue, Yellow Fever, Encephalitis

- Symptoms: mild fever, conjunctivitis, arthralgia
INTRODUCTION

ZIKA Virus (ZIKV): Epidemiology

✓ Isolated from Rhesus monkeys (*Macaca mulata*) in Ziika Forest, Uganda, 1947

✓ Isolated from humans in 1954, Nigeria

✓ Between 1954 and 1981 – some cases in Africa and Asia

✓ **Brazil:** 2015, April – Universidade Federal da Bahia – ZIKV identification in 8/25 pregnant women.

✓ February, 2016: OMS declared Public Health Emergency of International Concern
ZIKA Virus (ZIKV): Diagnostic

✓ Chromatography Immunoassay (IgM-IgG)  
  - Cross-reaction with others flaviviruses (Dengue, Yellow Fever)  
  - 4 days-12 weeks of infection on blood

✓ ELISA
  - 7 days of infection on blood

✓ PCR
  - 15 days of infection on urine
  - 180 days of infection on semen
Potential Pathways of Global Zika Virus Spread
FIG 3 American countries in which ZIKV circulation has been reported up to January 2016. Abbreviations: ME, Mexico; DR, Dominican Republic; VI, Virgin Islands; SM, Saint Martin; GUAD, Guadeloupe; MA, Martinique; BA, Barbados; HA, Haiti; PR, Puerto Rico; HO, Honduras; GUAT, Guatemala; N, Nicaragua; ES, El Salvador; EC, Costa Rica; PN, Panama; V, Venezuela; GUY, Guyana; S, Suriname; FG, French Guiana; C, Colombia; BR, Brazil; BO, Bolivia; PAR, Paraguay.
INTRODUCTION

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL REPORT

Zika Virus and Birth Defects — Reviewing the Evidence for Causality

Sonja A. Rasmussen, M.D., Denise J. Jamieson, M.D., M.P.H., Margaret A. Honein, Ph.D., M.P.H., and Lyle R. Petersen, M.D., M.P.H.

N ENGL J MED 374;20  NEJM.ORG  MAY 19, 2016
RAPID COMMUNICATIONS

Longitudinal follow-up of Zika virus RNA in semen of a traveller returning from Barbados to the Netherlands with Zika virus disease, March 2016

C Reusken 1, S Pas 1, C GeurtsvanKessel 1, R Mögling 1, J van Kampen 1, T Langerak 1, M Koopmans 1, A van der Eijk 1, E van Gorp 1

1. Department of Viroscience and WHO collaborating Centre for arbovirus and viral hemorrhagic fever reference and research, Erasmus MC, Rotterdam, the Netherlands.
2. These authors contributed equally

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Citation style for this article:

Article submitted on 27 May 2016 / accepted on 09 June 2016 / published on 09 June 2016
Figure

Semi-quantitative kinetics of Zika virus RNA loads in various types of clinical samples according to time post-disease onset, in a Dutch traveller returning from Barbados, March 2016.*
Microcephaly

✓ 7,438 cases reported in Brazil since ZIKV emerged (until May of 2016)
  - 1,326 cases suggestive of congenital infection
  - 205 cases association with ZIKV confirmed

✓ Placental, CNS and Brain changes
INTRODUCTION

Should women simply avoid pregnancy?

- Increase in age decreases the chance of getting pregnant
- Pregnancy with advancing age may open up chances for other diseases
- The population will continue to live with the mosquitoes indefinitely

- How high is the risk of microcephaly caused by ZIKV?
OBJECTIVES

✓ Compare the results of ZIKV tests performed at a university affiliated-IVF center

✓ Discuss critically if ZIKV Outbreaks can negatively affect the woman decision to get pregnant
ZIKV test
- Chromatography immunoassay
- ELISA

# 954 ICSI cycles

# April-November/2016

Critical Discussion
- risk of microcephaly due to ZIKV infection
- prevalence of others harmful pathogens to vulnerable pregnant women and infants
## RESULTS

Distribution of ZIKV testes by Chromatography immunoassay and ELISA in the five Brazilian regions

<table>
<thead>
<tr>
<th>Region</th>
<th>N</th>
<th>%</th>
<th>Chromatography immunoassay test</th>
<th>ELISA test</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>28</td>
<td>3.0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Northeast</td>
<td>27</td>
<td>2.8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Central West</td>
<td>40</td>
<td>4.2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Southeast</td>
<td>830</td>
<td>87.0</td>
<td>112</td>
<td>0</td>
</tr>
<tr>
<td>South</td>
<td>29</td>
<td>3.0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>954</td>
<td>100</td>
<td>112</td>
<td>0</td>
</tr>
</tbody>
</table>
## RESULTS

The prevalence of bacterial, viral and parasitic infections during pregnancy

<table>
<thead>
<tr>
<th>Type</th>
<th>Pathogens</th>
<th>Prevalence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bacteria</strong></td>
<td>Chlamydia trachomatis</td>
<td>2.57%</td>
<td>(Mylonas 2012)</td>
</tr>
<tr>
<td></td>
<td>Neisseria gonorrhoea</td>
<td>0.7% to 7%,</td>
<td>(Rao et al. 2008)</td>
</tr>
<tr>
<td></td>
<td>Neisseria gonorrhoea (risk group)</td>
<td>15–35%</td>
<td>(Benzaken et al. 2006)</td>
</tr>
<tr>
<td></td>
<td>Treponema pallidum</td>
<td>0.71%</td>
<td>(Gottlieb et al. 2008)</td>
</tr>
<tr>
<td><strong>Parasites</strong></td>
<td>Trypanosoma cruzi</td>
<td>1% to 40%</td>
<td>(Martins-Melo et al. 2014)</td>
</tr>
<tr>
<td></td>
<td>Toxoplasma gondii</td>
<td>8% - 22%</td>
<td>(Hill and Dubey 2016)</td>
</tr>
<tr>
<td></td>
<td>Plasmodium falciparum</td>
<td>2.9%</td>
<td>(Kourtis et al. 2014)</td>
</tr>
<tr>
<td><strong>Virus</strong></td>
<td>Parvovirus B19 (endemic period)</td>
<td>1.5%</td>
<td>(Valeur-Jensen et al. 1999)</td>
</tr>
<tr>
<td></td>
<td>Parvovirus B19 (epidemic period)</td>
<td>13.0%</td>
<td>(Valeur-Jensen et al., 1999)</td>
</tr>
<tr>
<td></td>
<td>Cytomegalovirus</td>
<td>0.3%</td>
<td>(Preece et al. 1986)</td>
</tr>
<tr>
<td></td>
<td>Varicella Zoster</td>
<td>0.16% - 0.46%</td>
<td>(Helmuth et al. 2015)</td>
</tr>
<tr>
<td></td>
<td>Herpes Simplex Virus</td>
<td>2%</td>
<td>(Brown et al. 2005)</td>
</tr>
<tr>
<td></td>
<td>Microcephaly due to ZIKV</td>
<td><strong>0.88%</strong></td>
<td>(Johansson, Mier-y-Teran-Romero et al. 2016)</td>
</tr>
</tbody>
</table>
✓ **ZIKV infection** in patients undergoing ART in a center in the Southeast is **null**, even when performed in patients from the endemic regions
AGÊNCIA NACIONAL DE VIGILÂNCIA SANITÁRIA
DIRETORIA COLEGIADA

RESOLUÇÃO - RDC No- 72, DE 30 DE MARÇO DE 2016

Altera a Resolução da Diretoria Colegiada - RDC n.º 23, de 27 de maio de 2011, que dispõe sobre o regulamento técnico para o funcionamento dos Bancos de Células e Tecidos Germinativos e dá outras providências.

Nota Técnica n.º 008/2016/GSTCO/GGMED/DIARE/ANVISA

<table>
<thead>
<tr>
<th>Referência</th>
<th>RDC nº 72, de 30 de março de 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assunto</td>
<td>Critérios técnicos para o gerenciamento do risco sanitário de células, tecidos germinativos e embriões humanos para uso terapêutico frente aos casos de infecção por vírus Zika no Brasil.</td>
</tr>
</tbody>
</table>
ANEXO – ALGORITMOS

Algoritmo I - Testagem de Zika Virus em Amostras de Pacientes MULHERES em Reprodução Humana Assistida

Amostras Analyzadas: SORO/PLASMA

Teste sorológico (IgG)
- REAGENTE
  - (negativo ou inconclusivo)

Repetir o teste sorológico (IgM)
- em nova amostra após 30 dias

Realizar testes de ácidos nucleicos a qualquer momento

- Positivo
  - Liberar a realização de procedimentos

- Negativo
  - Notificar

Resultados Reagentes e/ou Positivos
Algoritmo II - Testagem de Zika Virus em Amostras de Pacientes HOMENS em Reprodução Humana Assistida

Amostras Analisadas: SORO/PLASMA/SEMEN

Teste sorológico (IgM) soro/plasma: REAGENTE (positivo ou inespecífico)
- Realizar testes de ácidos nucleicos no SEMEN
- Resultados Reagentes e ou Positivos: Notificar
- Positivo: Liberar a realização de procedimentos
- Negativo: Notificar

Teste sorológico (IgM) soro/plasma: NÃO REAGENTE
Do the patients need to suffer even more stress from performing the ZIKV test?

How to ensure that the infection will not occur in the following months?
Although ZIKV infection risk is extremely high, especially in endemic regions, the microcephaly risk due to ZIKV is not higher than the risk of miscarriage and birth defects due to other recognized pathogens.
Pregnant women, or those who wish to become pregnant, should stay away from alarming news that takes away the tranquility of their pregnancies.
Obrigado!
Gracias!

edson@fertility.com.br