Pregnancy care as an opportunity for a sustainable population-based surveillance system: our experience in building research capabilities in Honduras

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November 24, 2022
Background

Epidemiologic surveillance systems

• Provide valid, reliable, and timely information

• Support planning, implementation and evaluation of public health interventions and programs

• Active surveillance complements routine passive surveillance

Challenges for effective active surveillance

• Requires certain level of organization, logistics and infrastructure

• Time, cost and other resources

• Resource constrained setting

• Epidemic, pandemic times
Background

Prenatal and delivery care offer a unique opportunity to collect population-based data.

- Umbilical cord blood samples: collected from birth to perform specific pathogen testing and other analyses.
- Collecting cord blood from the placental side after cutting the cord: non-invasive.
- IgG antibodies cross the placenta: maternal antibodies can be measured in cord blood
Background

Experience in building research capabilities in Honduras

- Geographic rapid spreading
- Exposure: often asymptomatic
- Diagnostic challenges
- Unknowns: Zika or Dengue?
  Frequency of microcephaly?
  Impact on neurodevelopment?

- Timely protocol preparation and IRB approval
- Resources

- Sustainability

Zika epidemic in Honduras
2016

COVID-19 pandemic
2020
Results and Conclusions

ZIPH study: Zika Infection in Pregnant women in Honduras

• Trioplex rRT-PCR in 357 serum samples taken at the first prenatal visit. ZIKV confirmed in 7 pregnancies (7/357, 2.0%).
• Microcephaly (HC >2SDs below the mean): 9 infants (1.6%); 2 (0.3%) with severe microcephaly (HC >3SDs below the mean), both mothers had evidence of ZIKV infection.

Neurodevelopment assessments
• 152 normocephalic children (May 2018-March 2020).
• Mean age 2.0 years; >93% adequate anthropometric growth.
• 60 children exposed to ZIKV during pregnancy (manuscript in preparation).

Results and Conclusions

Currently enrolling

2022, October: 4880 enrolled pregnant women, blood sample at first prenatal visit. Follow up rate at birth: 94%.
Results and Conclusions

Experience in building research capabilities in Honduras

- Building trust
- Increasing capabilities: scalability
  - Data collection
  - Sample collection and storage
- Integration of interdisciplinary, interinstitutional and international collaboration
- Diagnostic capabilities
- Training: on-site and international
  Standard Operative Procedures Manual and guidelines
  Digital training: RedCap
  Scales for neurodevelopment assessment
- Low intensity modality
- Pre-pandemic samples: test specificity of RDTs
- ZIPH: Zero Infection in Pregnant women in Honduras.

Congenital Chagas Disease 2005-2016

Zika epidemic 2016

COVID-19 pandemic 2020
- Matern Child Health J. 2020 Sep;24(9):1099-1103. PMID: 32671537.
Relevant activities

- IRB approval: national and international
- Protocol publication
- Facilitating broad participation in article authorship
- Sustainability of the cohort by its potential to provide information on neonatal outcomes and/or diagnostic challenges: Zika, syphilis, American trypanosomiasis, dengue, chikungunya, COVID-19

Process and Challenges

Zika Virus infection in pregnant women in Honduras: study protocol

PMID: 33007828; PMCID: PMC7709585

Microcephaly Outcomes among Zika Virus–Infected Pregnant Women in Honduras

PMID: 33007828; PMCID: PMC7709585
Acknowledgements