Congenital Zika Syndrome: A Nationwide Cohort Study in Brazil

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Introduction

Zika Virus (ZIKV)

1. Flavivirus (DENV, Yellow Fever)
2. Transmission through arthropods (Aedes), sexual contact, blood transfusion, or **vertical transmission**

Congenital Zika syndrome

1. Spectrum of structural anomalies (e.g., cortical atrophy with microcephaly);
2. Functional impairments (e.g., dysphagia);
3. Clinical sequelae (e.g., epilepsy).

What is the prognosis for live births with CZS ?

Objectives

(i) investigate the overall and cause-specific mortality rates among live births with CZS compared with those without CZS,

(ii) examine the overall hospital admission rates among live births with CZS compared with those without CZS in a smaller subset of our cohort.

Methods

- Live Birth Information System (SINASC)
- Mortality Information System (SIM)
- Public Health Event Record (RESP)
- Hospitalization Information System (SIH)
- Unified Register for Social Programs (CADU)

Interested on administrative data come to our session on Friday 16:30

Methods

Exclusion: (i) other congenital abnormalities registered in SINASC,

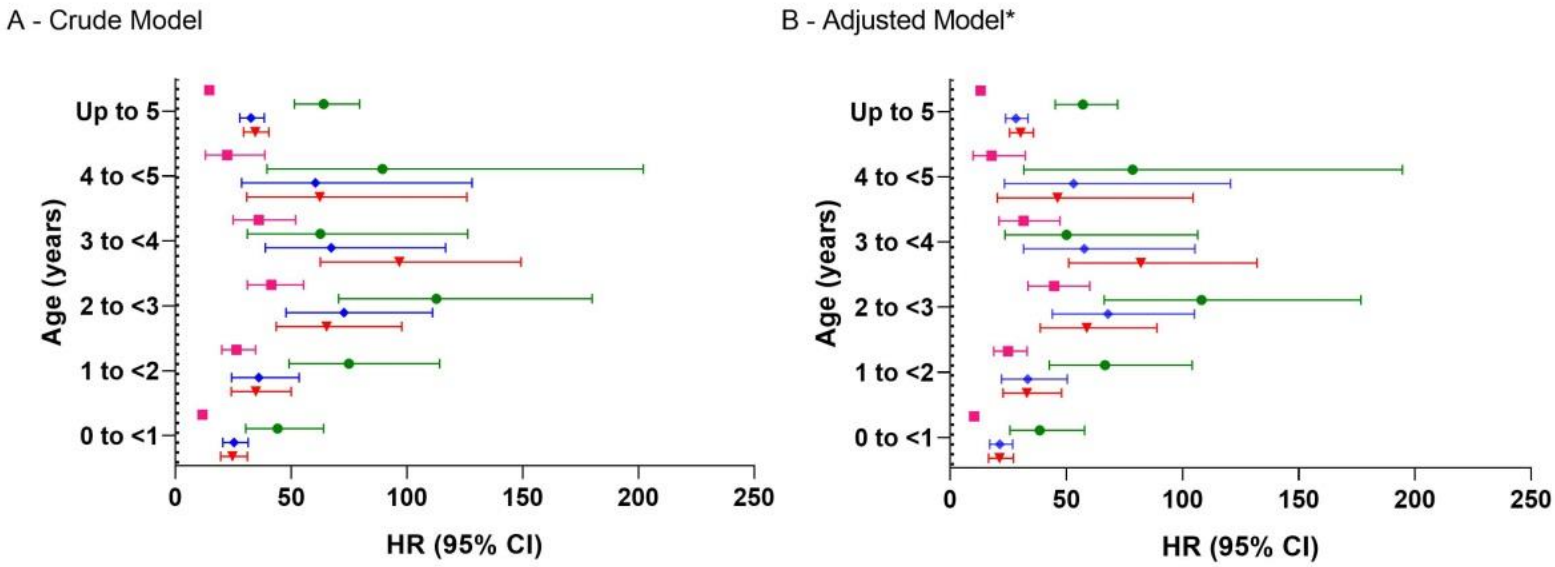
(ii) other congenital STORCH infections registered in RESP, and/or

(iii) an inconclusive, under investigation or ruled out classification of CZS in RESP

Estimated rates and ratios with 95% (CIs);

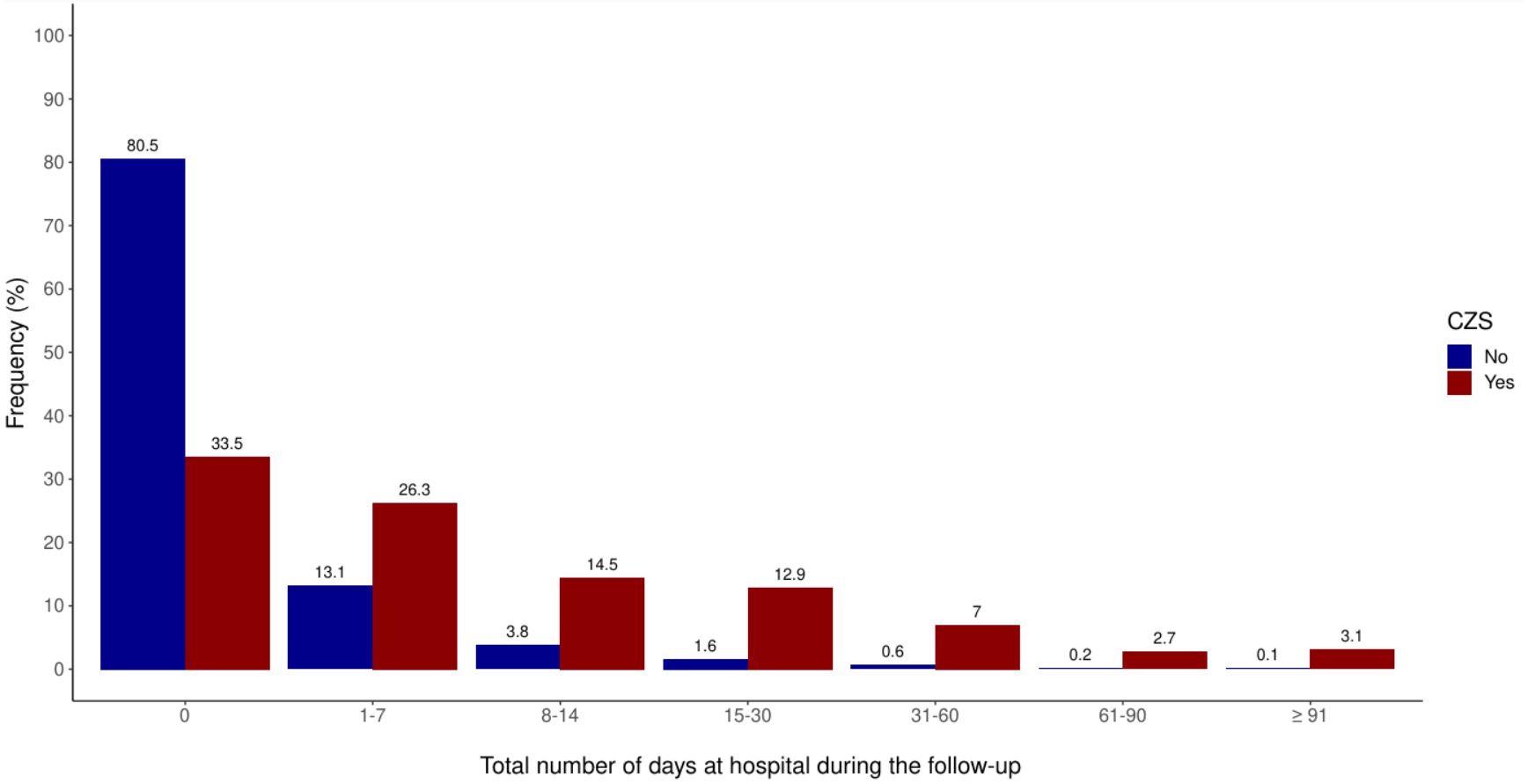
Adjusted: region of birth, year of birth, maternal age, maternal education, maternal race/ethnicity, maternal marital status and sex of the newborn

Results 1 (Mortality)



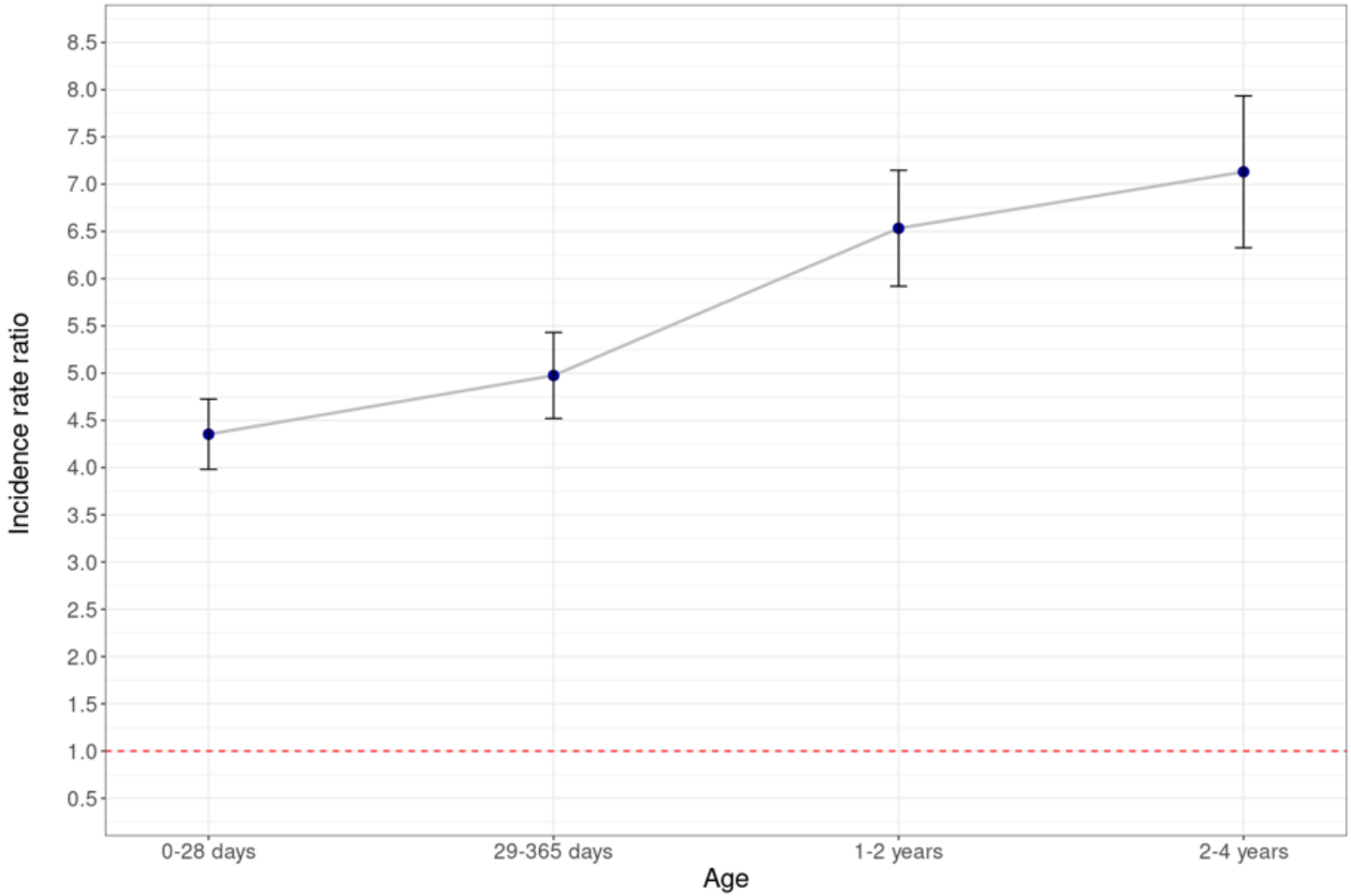
HR: Hazard Ratio
CI: Confidence Interval
*Adusted by region, year of birth, maternal age, maternal education, maternal race/ethnicity, marital status and sex of the newborn

Results 2 (Hospital admission)



Results 3 (Hospital admission)

Figure 2 – Adjusted incidence rate ratios and 95% CI for all-cause hospital admissions for CZS patients compared to controls by age at admission.



Results 4 (Hospital admission)

	CZS			
	No microcephaly (N = 1098)		Microcephaly (N = 796)	
Age categories	Person-years	Rate*	Person-years	Rate*
0-28 days	80.8	582.9	59.7	524.4
29 – 365 days	913.9	46.8	691.4	36.3
1-2 years	903.1	38.5	697.0	41.6
2-4 years	772.9	28.5	574.4	28.6

*Rate represents number of hospital admissions per 100 person-years.

Discussion

Strengths

- Large sample size (Confirmed and probable CZS)
- Included a population-representative comparison group
- Control for confounding.
- Including only confirmed cases showed the robustness of our findings.

Limitations

- Lack of relevant clinical data
- Potential underreporting in the RESP, mainly among those fetuses prenatally exposed to ZIKV during pregnancy, but without detectable malformations at birth.
- Linkage error.

Conclusion

Protocols

There is a higher mortality and morbidity risk in live births with CZS than live births without CZS that persists throughout the first five years. Highlights a need for instituting well-established postnatal protocols, including early intervention, which may help to lessen adverse medical and developmental sequelae and improve survival of these children.

Acknowledgment

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Thank you!

Thank you to Luciana Cardim and Joao Guilherme Giancursi Tedde

wellcome

cidacs

Study of Early-life Exposures during Developmental Stages