



Zika en Colombia:

ten years after the public health emergency

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Zika en Colombia

Due to the emerging nature of Zika virus and the lack of knowledge about its natural history, monitoring symptomatic pregnant women and infants with a history of exposure to the virus became a priority for the Colombian health system.
2016



Foto: cortesía Brigadas INS

Topics

1. Scientific Evidence Generated in Colombia 2016–2026

1.1 Public Health Surveillance / Genomic Surveillance

1.2 Basic Research

1.3 Clinical Findings and Consolidation of Congenital Zika Syndrome (CZS)

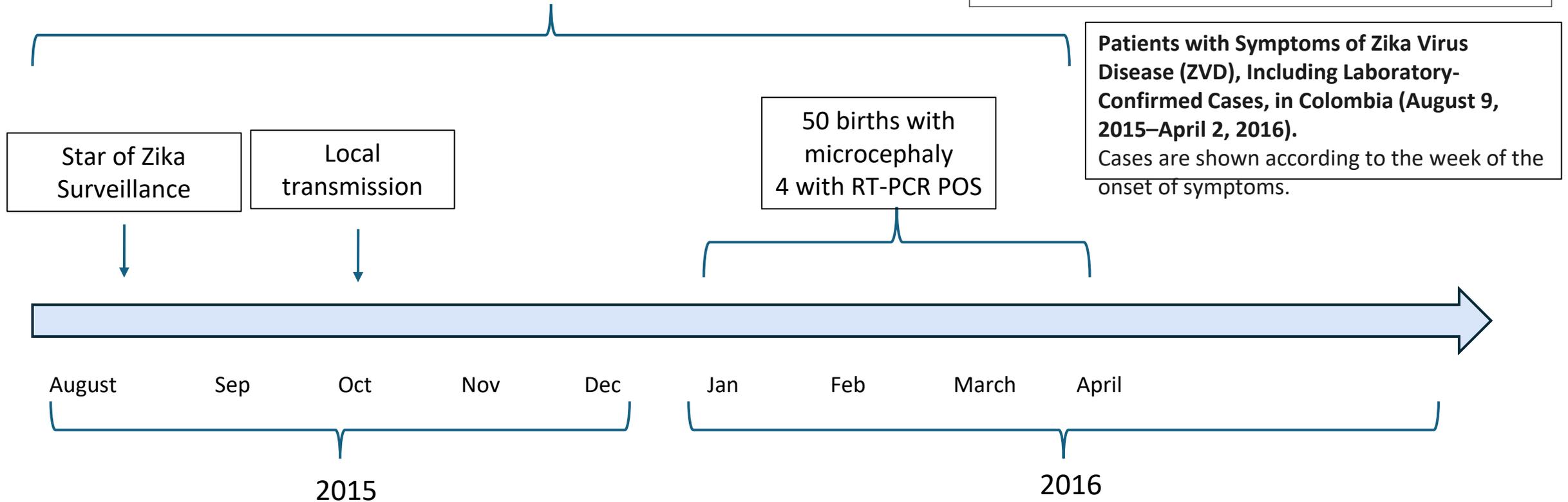
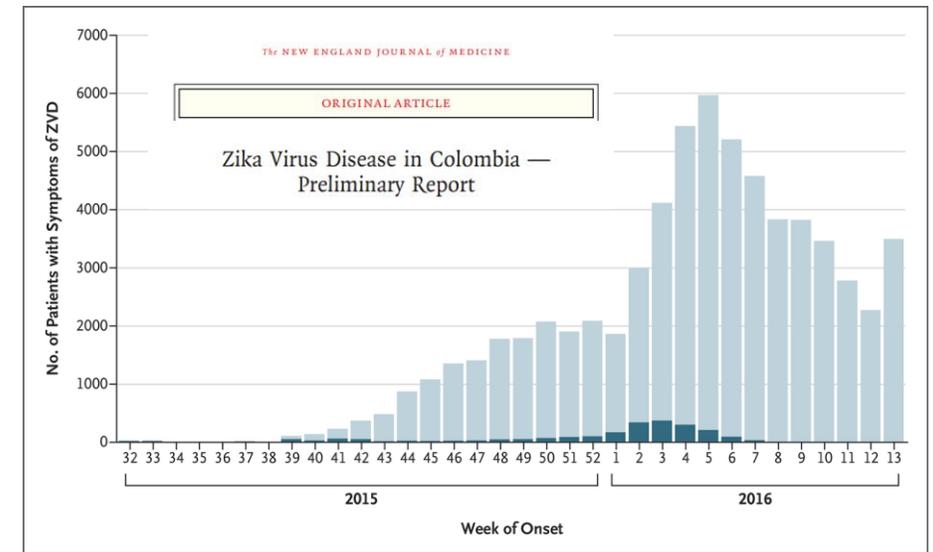
1.4 Public Policies and social innovation

2. Testimony 10 Years Later

Scientific Evidence: Public Health Surveillance



65,726 cases in the general population (4% PCR positive)
 11,944 cases in pregnant women (12% PCR positive)

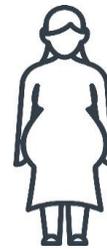
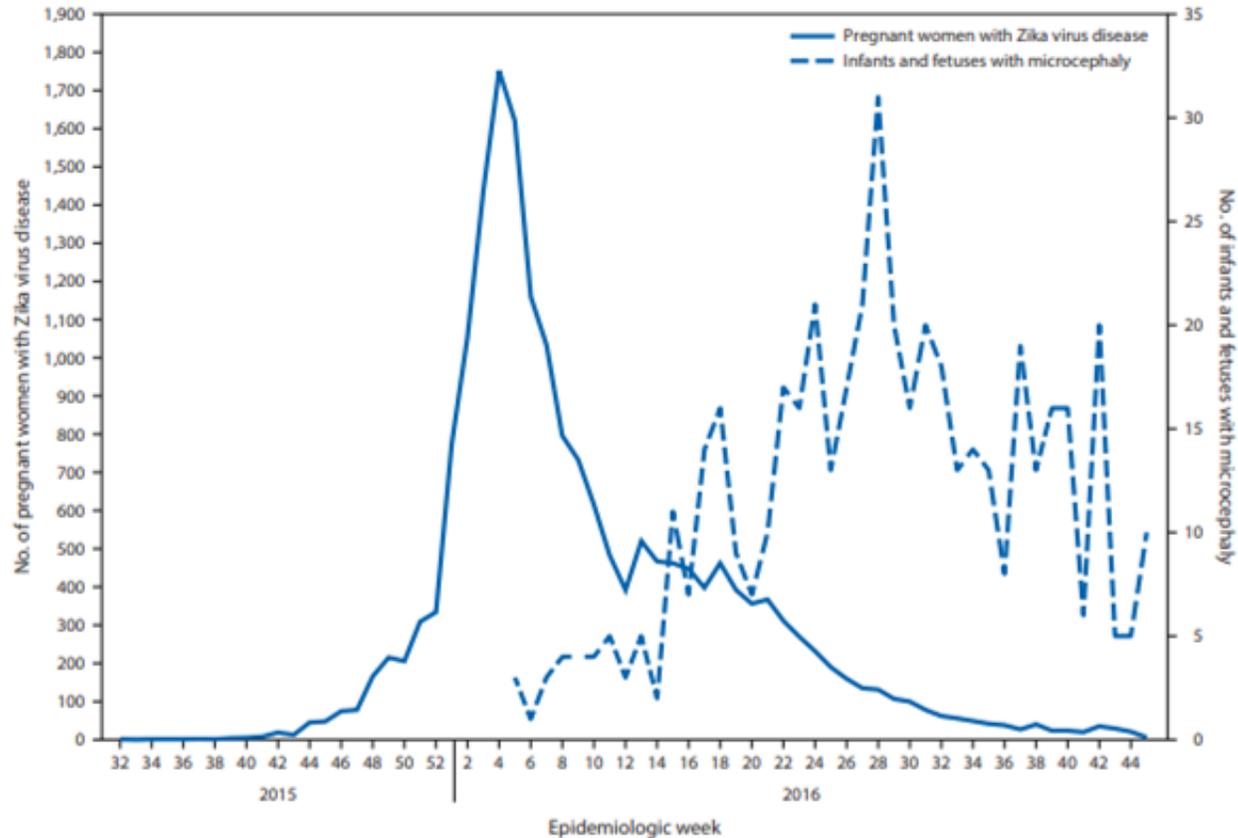


Scientific Evidence: Public Health Surveillance

Morbidity and Mortality Weekly Report

Preliminary Report of Microcephaly Potentially Associated with Zika Virus Infection During Pregnancy — Colombia, January–November 2016

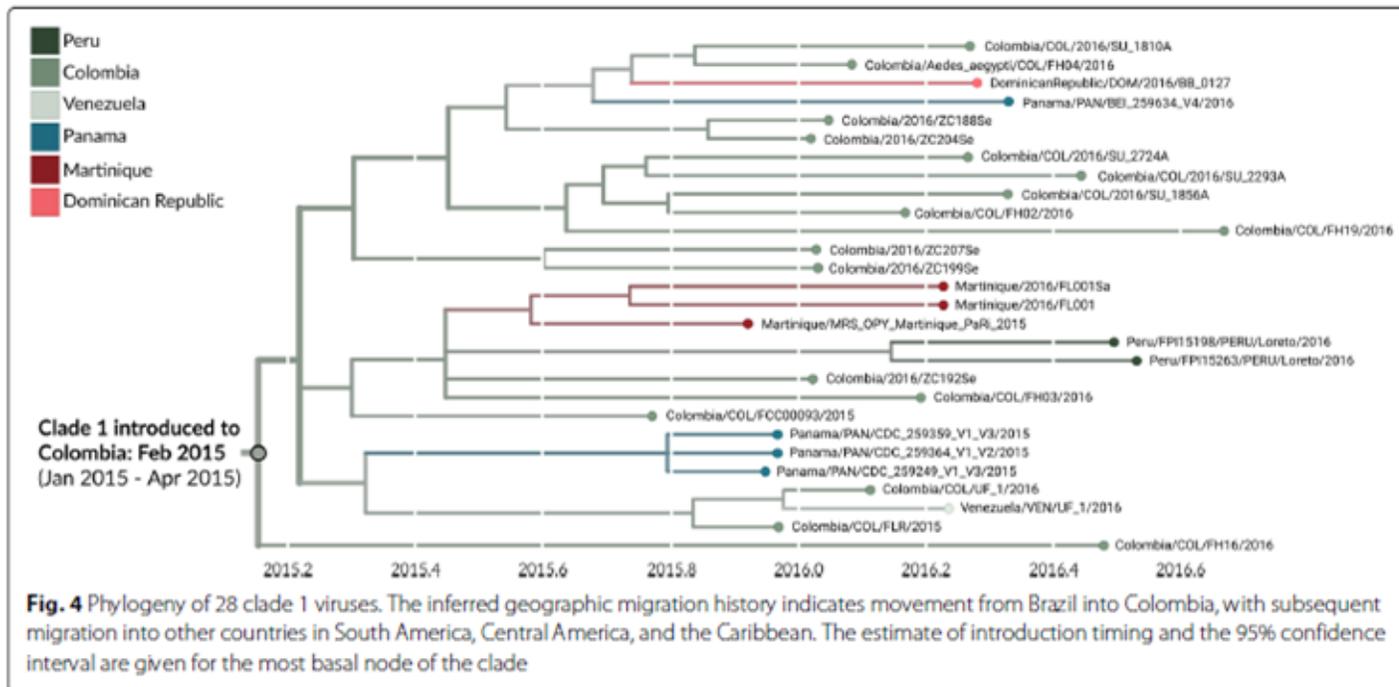
US Department of Health and Human Services/Centers for Disease Control and Prevention MMWR / December 16, 2016 / Vol. 65 / No. 49



Date of symptom onset of reported cases of Zika virus disease among pregnant women* and date of birth of infants or of pregnancy loss for fetuses with reported microcephaly - Colombia, August 9, 2015 (epidemiologic week 32) – November 12, 2016 (week 45)

2016

Scientific evidence: genomic surveillance of ZIKV



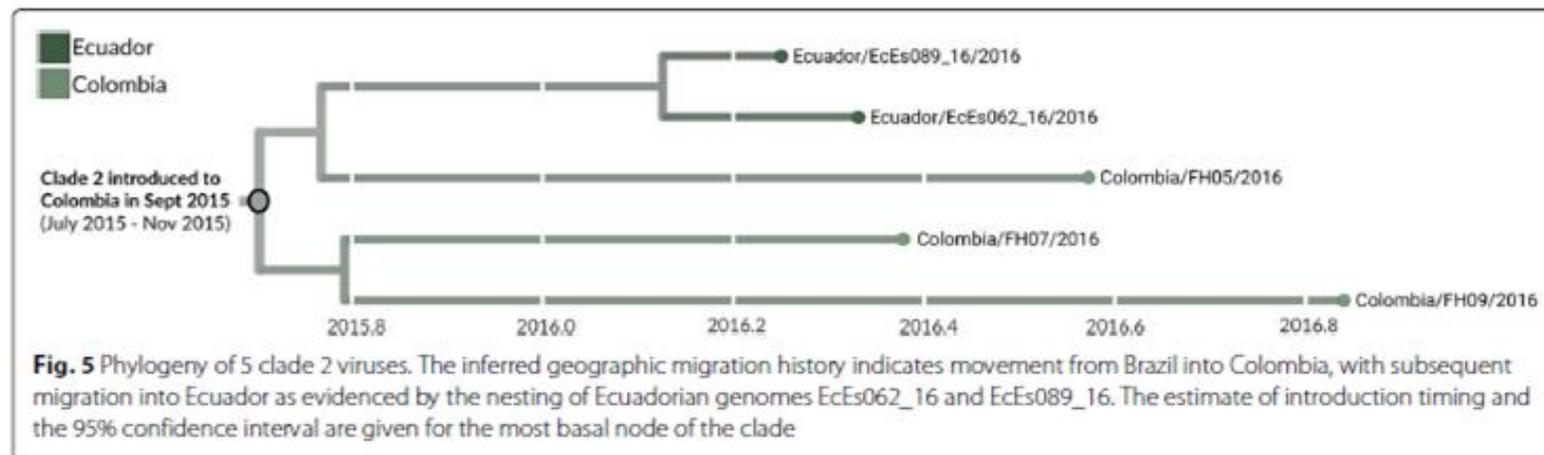
The Author(s) *BMC Infectious Diseases* (2019) 19:963
<https://doi.org/10.1186/s12879-019-4566-2>

BMC Infectious Diseases

RESEARCH ARTICLE

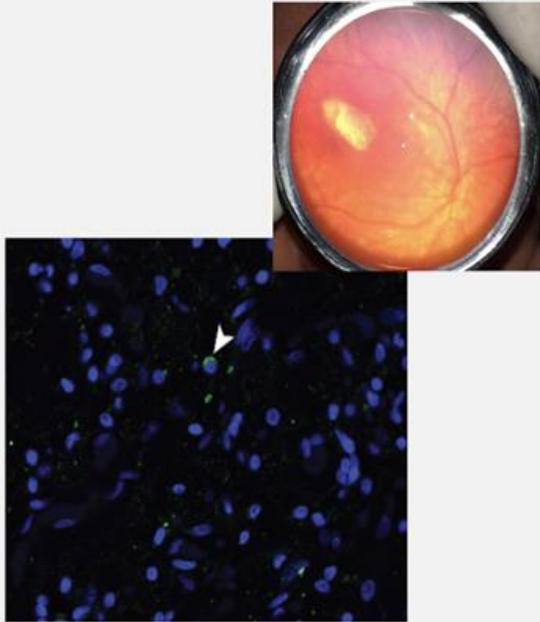
Open Access

Genomic epidemiology supports multiple introductions and cryptic transmission of Zika virus in Colombia



2019

Scientific evidence: basic research



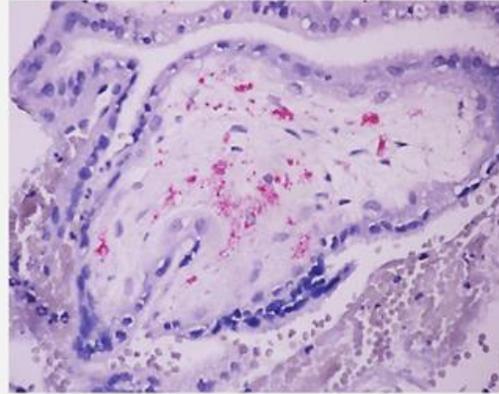
Positive immunofluorescence for ZIKV in optic nerve (NSB2 protein)

JAMA Ophthalmology

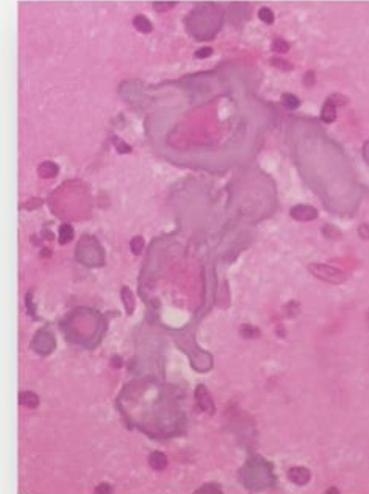
Original Investigation

FREE

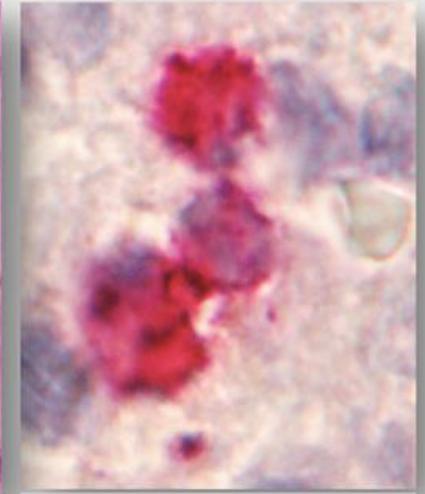
Ocular Histopathologic Features of Congenital Zika Syndrome



Immunodetection of ZIKV in immature chorionic villi (placenta)



Microcalcifications.



ZIKV immunodetection in neuroblasts

TERATOLOGY SOCIETY
58th Annual Meeting June 23-27, 2018
Mechanisms, Models, Mothers and Babies



American Journal of Obstetrics and Gynecology

Volume 222, Issue 6, June 2020, Pages 610.e1-610.e13



Original Research

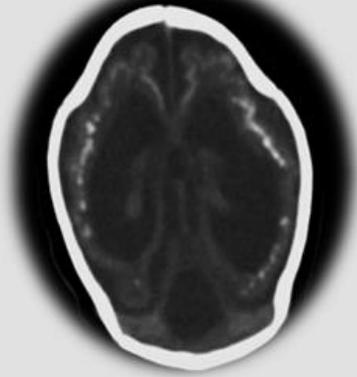
Obstetrics

Zika virus detection in amniotic fluid and Zika-associated birth defects

Scientific evidence: Clinical findings of Congenital Zika Syndrome (CZS)



Severe microcephaly: pattern of fetal brain disruption



Cortical formation compromise



Maculopathy, optic nerve atrophy



Multiple arthrogryposis



Generalized hypertonia and movement disorders

Consolidation of congenital Zika syndrome: A specific pattern of birth defects seen in fetuses and infants infected with the Zika virus during gestation

OBSTETRICS & GYNECOLOGY ACOG

CONTENTS: ORIGINAL RESEARCH

Serial Head and Brain Imaging of 17 Fetuses With Confirmed Zika Virus Infection in Colombia, South America

JAMA Ophthalmology

Original Investigation

FREE

Ocular Histopathologic Features of Congenital Zika Syndrome

Tropical Medicine and Infectious Disease

MDPI

Case Report

Discordant Clinical Outcomes in a Monozygotic Dichorionic-Diamniotic Twin Pregnancy with Probable Zika Virus Exposure. Case Report



Follow-up of the cohort of infants with a history of ZIKV infection during pregnancy in three cities in Colombia



2017 -2023

Scientific evidence: Clinical findings of Congenital Zika Syndrome (CZS) - 2017

Neuroimaging:

Calcifications, neuronal migration disorders, corpus callosum anomaly, and ventriculomegaly (92%)

Associated disorders:

Epilepsy (62%), sleep disorder (51.7%), sensorineural hearing loss (14%), swallowing disorder (37%)

Ocular:

Macular and extramacular retinal involvement and optic nerve involvement (37%)

Craniofacial:

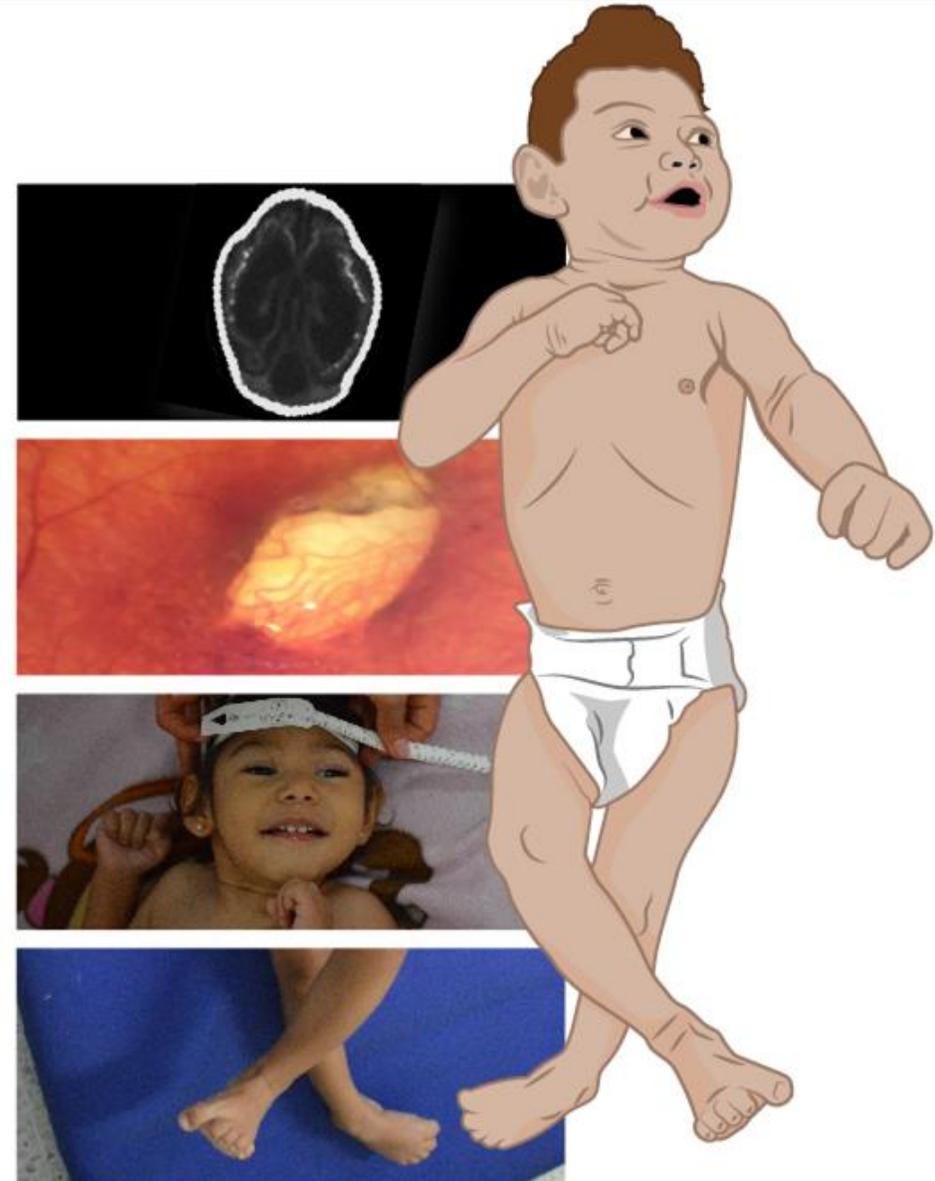
Severe microcephaly, craniofacial disproportion (74%)

Musculoskeletal system:

Muscle atrophy and arthrogryposis (7%)

Tone and posture alterations:

Generalized hypertonia and hyperextension of extremities (85%)



Scientific evidence: Clinical findings of Congenital Zika Syndrome (CZS) - 2023

Seventh assessment: Average age: 6 years

Neurological

Epilepsy: 84.1%

Type of epilepsy:

Epileptic encephalopathy: 84.3% Focal: 0%

Multifocal: 15.7%

Comorbidities

Swallowing disorder: 57%

Gastrostomy tube user: 20%

Hip Dysplasia or dislocation: 23%

Neurodevelopment (Most advanced milestone)

Gross motor skills

Head control: 87%

Walking with support: 13%

Type of cerebral palsy

Tetraplegia: 85.7%

Hemiplegia: 14.3%

Sleep disorder

87.7%



2023

Scientific evidence: Follow-up of a child without CZS with a history of ZIKV infection during pregnancy

Neurodevelopmental
Risk of hearing and language development disorders 39%

Neurological impairment
Hemiparesis 4.6%
Complex febrile seizure 2.1%

Hearing impairment
Sensorineural hearing loss 2.7%



Scientific evidence: Public policies and social innovation

Recommendations for the care and follow-up of pediatric patients with a history of ZIKV infection

Paciente con defecto congénito compatible con Zika (Actividades)		Paciente sin defecto congénito (Actividades)		
Nacimiento Definir diagnóstico	<ul style="list-style-type: none"> • Ecografía transfontanelar • Tamizaje auditivo neonatal <ul style="list-style-type: none"> • Medición perímetro cefálico • Laboratorios para STORCH, ZIKV y Cariotipo 	Evaluar compromiso asociado a infección prenatal por virus Zika	Nacimiento	<ul style="list-style-type: none"> • Ecografía transfontanelar • Tamizaje auditivo neonatal <ul style="list-style-type: none"> • Medición perímetro cefálico • Laboratorios para ZIKV
Primer mes Definir diagnóstico	<ul style="list-style-type: none"> • Valoración especialidades pediátricas: Oftalmología, neurología, genética, fisiatría. • Imagen por resonancia magnética cerebral • Electroencefalogram 		Primer mes	<ul style="list-style-type: none"> • Valoración por neurología pediátrica • Valoración por oftalmología
3-9 meses Identificar y tratar condiciones asociadas	<ul style="list-style-type: none"> • Determinar presencia enfermedad respiratoria • Potenciales evocados • Potenciales evocados 		3-9 meses	<ul style="list-style-type: none"> • Seguimiento de desarrollo infantil identificando e interviniendo alertas tempranamente
12-24 meses Definir funcionalidad y metas de rehabilitación	<ul style="list-style-type: none"> • Potenciales evocados • Potenciales evocados • Valoración por especialista ortopedia, nutrición 		12-24 meses	<ul style="list-style-type: none"> • Valoración por neurología pediátrica • Seguimiento de desarrollo infantil identificando e interviniendo alertas tempranamente

*Recommendations included in the Health Benefits Plan, 2019.

Scientific evidence: Public policies and social innovation



BMJ Journals

Processes and systems

Early-stage innovation report

Social Innovation in Health: research, public policy and agency capacity in the Colombian Zika Kids programme

Marcela Daza ¹, Martha Milena Bautista-Gomez ^{2,3},
Laura Sofia Zuluaga ^{2,3}, Marcela Mercado-Reyes⁴

This initiative was implemented between 2017 and 2023 and generated remarkable results, including over 80% participation of affected families in health brigades and support activities. At the policy level, the pediatric care recommendations related to Zika were incorporated into Resolutions 5857 and 3280 of the Ministry of Health and Social Protection in 2018. The strategy included specific procedures and medications for children affected by Zika who were identified as "high risk" in health policies, benefiting more than 18,000 families.



Fundación “Milagros de Dios, niños del Zika”. Neiva, Colombia.



Fundación “Ángeles sobre ruedas”, Barranquilla, Colombia.



Lack of specific programs for children with CZS

Health complications

Requirement of a full-time caregiver

Multiple medical needs

Neglect by the state

Medication shortages

Current challenges and difficulties



Mamá: Yesika
Valencia
Hija: Samanta León

GRACIAS

Mamás y Bebés

Marcela Daza Calero MD Pediatra

Blanca Rodríguez MD Neuropediatra

María Fernanda Lengua MD Neuropediatra

Johana Osorio MD Epidemióloga

Yojaima Casas Anillo Estomatóloga Pediatra

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Sheryll Corchuelo Chavarro Bióloga Mol

Alexander Casas Diseñador

Adriana Sánchez Auxiliar en Salud Pública

Maritza González MD Epidemióloga

Grupo de Defectos Congénitos CDC

“Never before in history has there been a situation where a bite from a mosquito could result in a devastating malformation.”

– Dr. Tom Frieden, CDC Director

Fortune, April 13, 2016