

Congenital Zika virus Syndrome in Brazil

Impact post-Zika outbreak and integrated health and social management of congenital Zika population

Giovanny V A França
Secretariat of Health Surveillance
Ministry of Health - Brazil
giovanny.franca@saude.gov.br



Outline

- Timeline
- Facing the emergency
- Current epidemiological situation
- Ongoing health and social programs
- Advances and challenges



Facts about Brazil

- **Population:** 202,000,000
- **Capital:** Brasília
- **Public Health system:** Decentralized with three levels
 - Federal
 - Federal Units (27)
 - Municipalities (5,570)
- **Bordering countries:** 10





Timeline

Timeline

Rio Grande do Norte:
Rumors of unknown exanthematic Diseases

1st report to MoH of an exanthematic outbreak of unknown etiology
Northeast region

Bahia*:
Circulating Zika virus identified

São Paulo: Zika virus identified in transplanted patient

Bahia*: 1st laboratory RT-qPCR confirmed case published

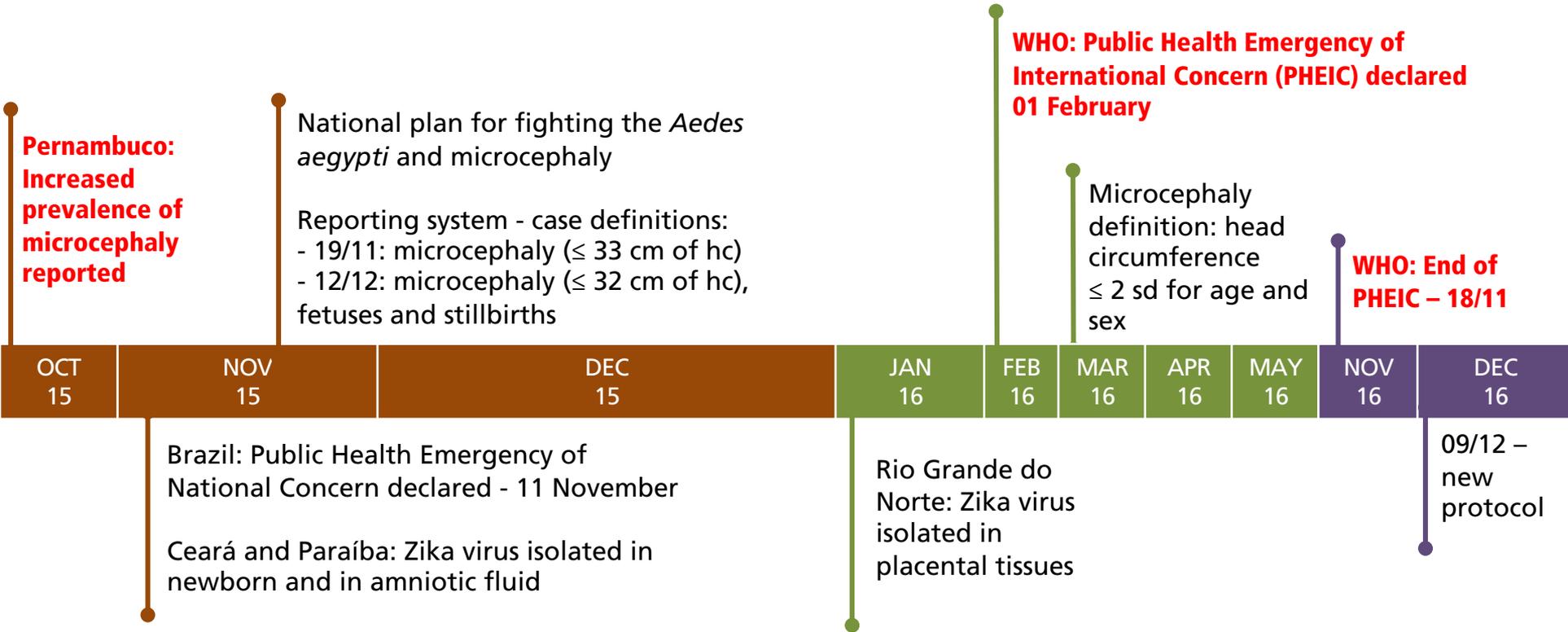
Bahia: First cases of Guillain Barre

Pernambuco:
Increased prevalence of microcephaly observed

RN, PB and MA: First field investigation



Timeline



Microcephaly case definitions

17 Nov to 12 Dec
2015

- Term: ≤ 33 cm for both sexes
- Preterm: ≤ 3 rd centile of the Fenton reference by gestational age and sex

12 Dec 2015 to 12
Mar 2016

- Term: ≤ 32 cm for both sexes
- Preterm: ≤ 3 rd centile of the Fenton reference by gestational age and sex

13 March 2016 to
the present

- Term: < -2 SD (WHO Standards) for term (< 31.5 cm for girls and 31.9 for boys)
- Preterm: < -2 SD of Intergrowth reference by gestational age and sex

Characterizing the Pattern of Anomalies in Congenital Zika Syndrome for Pediatric Clinicians

Cynthia A. Moore, MD, PhD; J. Erin Staples, MD, PhD; William B. Dobyns, MD; André Pessoa, MD; Camila V. Ventura, MD; Eduardo Borges da Fonseca, MD, PhD; Erlane Marques Ribeiro, MD, PhD; Liana O. Ventura, MD; Norberto Nogueira Neto, MD; J. Fernando Arena, MD, PhD; Sonja A. Rasmussen, MD, MS

Figure 2. Brain Findings in Infants With Presumed Congenital Zika Syndrome

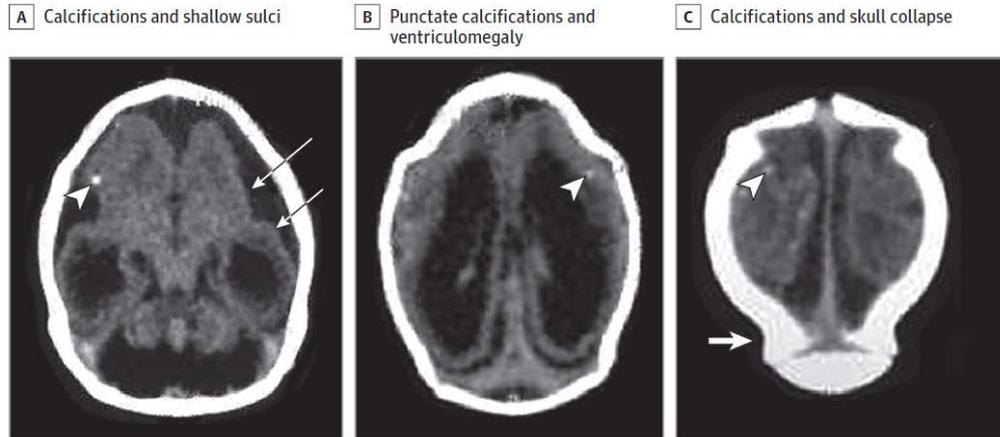
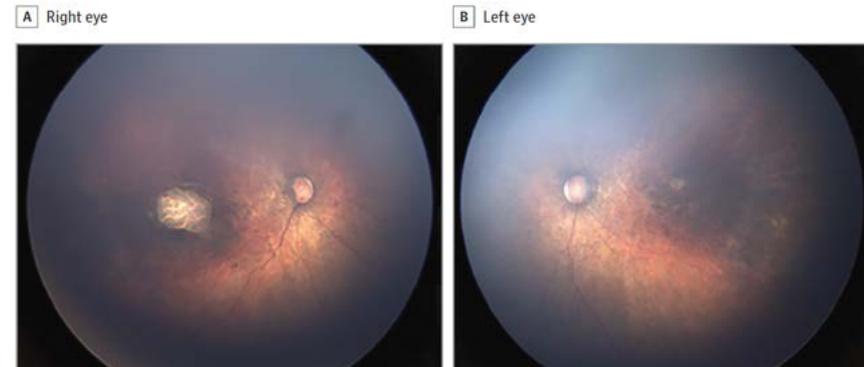


Figure 4. Infants With Congenital Zika Infection, Microcephaly, and Arthrogyposis



Figure 3. Wide-Angle Fundus Images (RetCam) of a Male Infant With Congenital Zika Infection



JAMA Pediatr. doi:10.1001/jamapediatrics.2016.3982
Published online November 3, 2016.

Congenital anomalies in infants with congenital Zika virus infection

Clinical Feature	Findings in Infants With Confirmed Congenital ZIKV Infection	Differential Diagnoses	Findings Potentially Unique to Infants With Congenital ZIKV Infection
Cranial morphology	FBDS: severe microcephaly, overlapping cranial sutures, prominent occipital bone, redundant scalp skin, and neurologic impairment	Congenital cytomegalovirus infection; possibly other congenital infections; and gene mutations in <i>JAM3</i> , <i>NDE1</i> , and <i>ANKLE2</i>	FBDS phenotype not unique to congenital ZIKV infection but rarely reported prior to 2015 when local transmission of ZIKV was confirmed in Brazil
Brain anomalies	Cerebral cortex thinning; abnormal gyral patterns; increased fluid spaces (ventriculomegaly or extra-axial); subcortical calcifications; corpus callosum anomalies; decreased white matter; and cerebellar (vermis) hypoplasia	Congenital cytomegalovirus infection; possibly other congenital infections; genetic syndromes, in particular Aicardi-Goutières syndrome and pseudo-TORCH syndrome; and gene mutations in <i>JAM3</i> , <i>NDE1</i> , and <i>ANKLE2</i>	Subcortical location of calcifications in congenital ZIKV infection unique among other congenital infections and genetic syndromes
Ocular anomalies	Structural anomalies (microphthalmia, coloboma); cataracts; and posterior anomalies: chorioretinal atrophy, focal pigmentary mottling, and optic nerve hypoplasia/atrophy	Congenital infections	Chorioretinal atrophy and focal pigmentary mottling, both affecting the macula, unique among other congenital infections
Congenital contractures	Unilateral or bilateral clubfoot and arthrogryposis multiplex congenita	Congenital infections (rubella, varicella, and coxsackie B only)	Contractures not previously reported with the FBDS phenotype
Neurologic sequelae	Motor disabilities; cognitive disabilities; hypertonia/spasticity; hypotonia; irritability/excessive crying; tremors and extrapyramidal symptoms; swallowing dysfunction; vision impairment; hearing impairment; and epilepsy	Congenital cytomegalovirus infections and other congenital infections	Early pyramidal and extrapyramidal symptoms unusual among other congenital infections

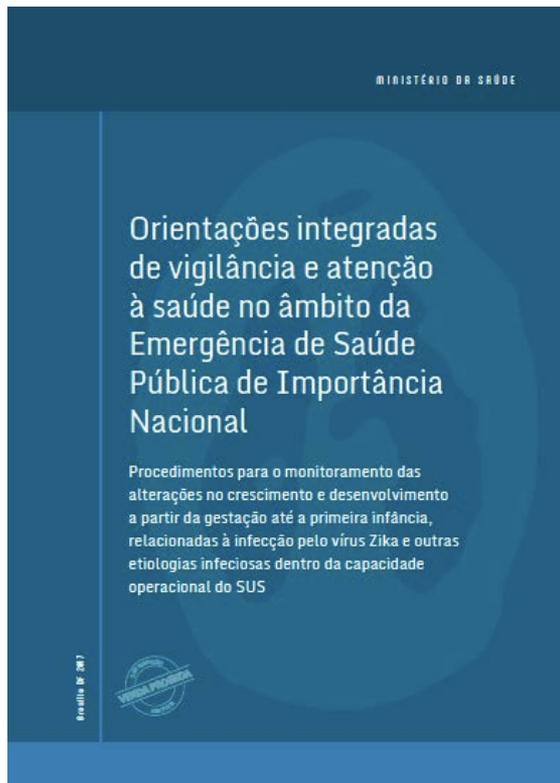
Moore CA, Staples JE, Dobyns WB, et al. Characterizing the Pattern of Anomalies in Congenital Zika Syndrome for Pediatric Clinicians. *JAMA Pediatr.* 2017;171(3):288–295. doi:10.1001/jamapediatrics.2016.3982



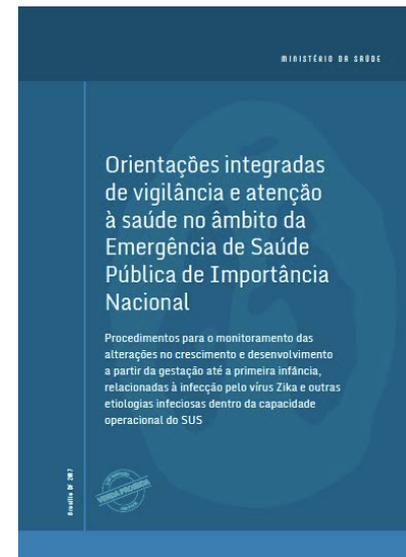
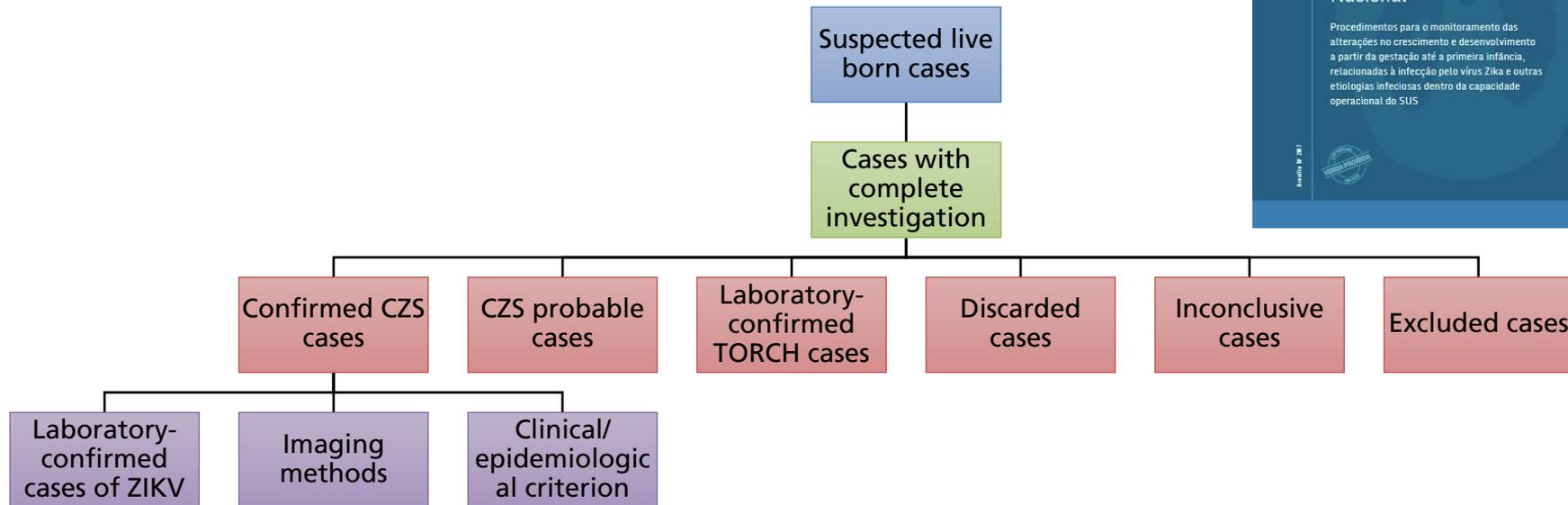
MINISTÉRIO DA SAÚDE



Protocol



Classification of suspected cases





Facing the emergency

National Plan to Combat Aedes and its Consequences



Mobilization
and policies
to combat
Aedes aegypti



Health care



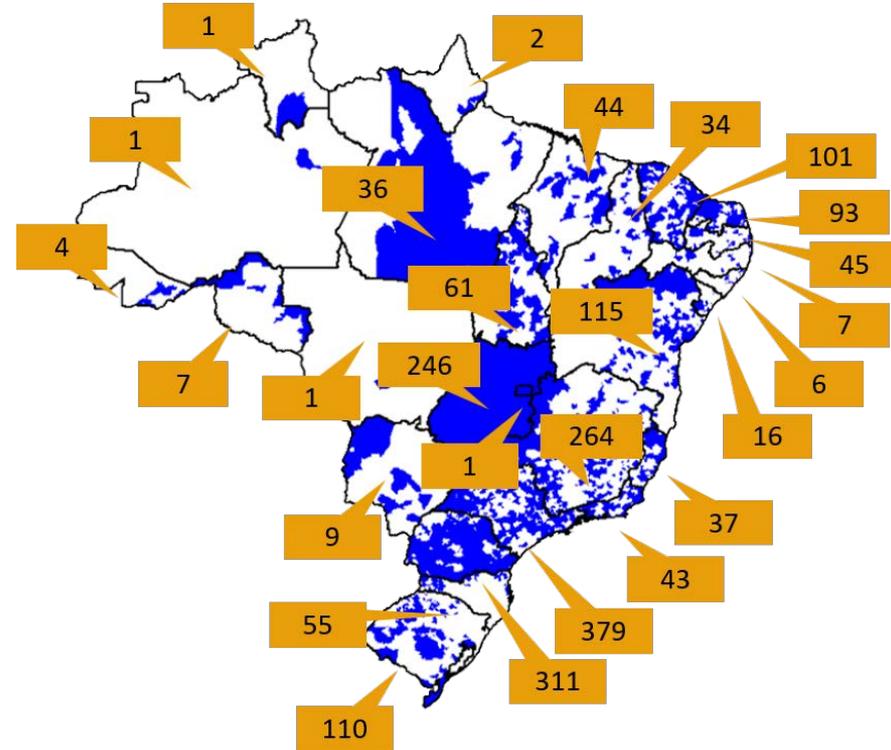
Technological
development,
education and
research

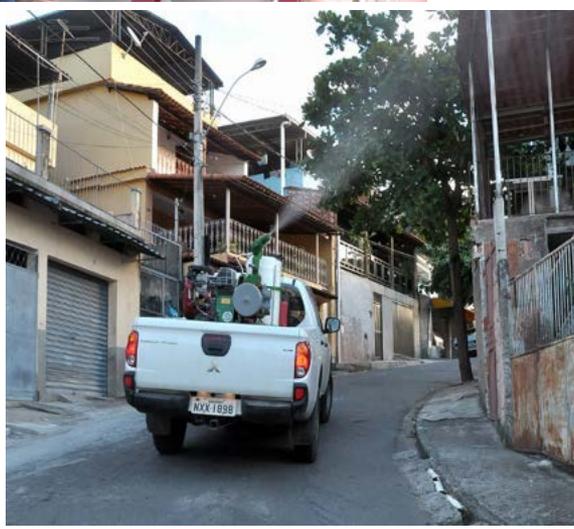


**Mobilization and
policies
to combat *Aedes
aegypti***

Coordination and control rooms

- 2,029 rooms throughout the country
- Monitoring actions to combat *Aedes aegypti*
 - Home visits
 - National campaign: every Friday is a day to eliminate the mosquito
 - Involvement of the school community
 - Monitoring the Aedes Larval/House Index



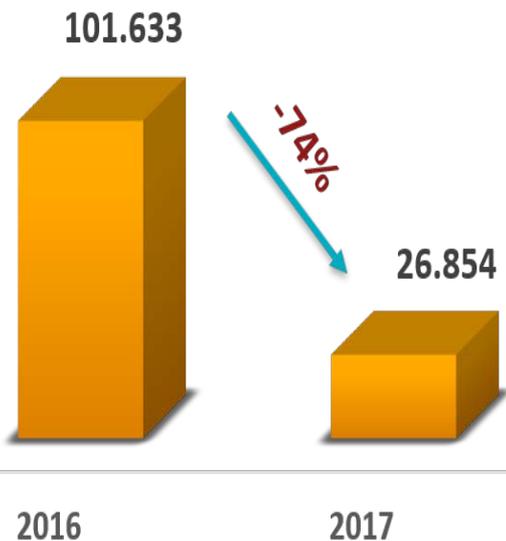


Important decreases in 2017

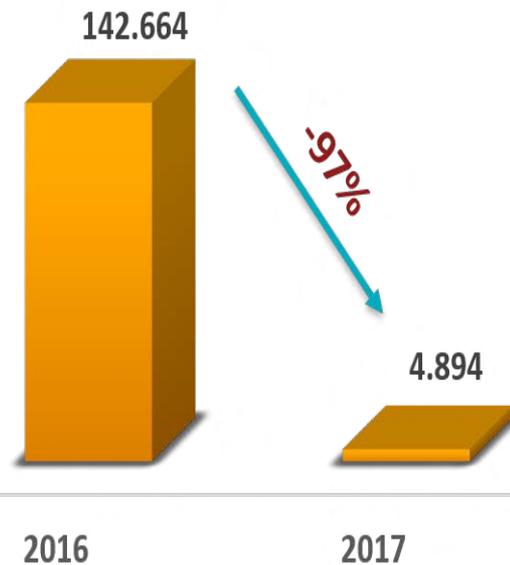
Dengue



Chikungunya

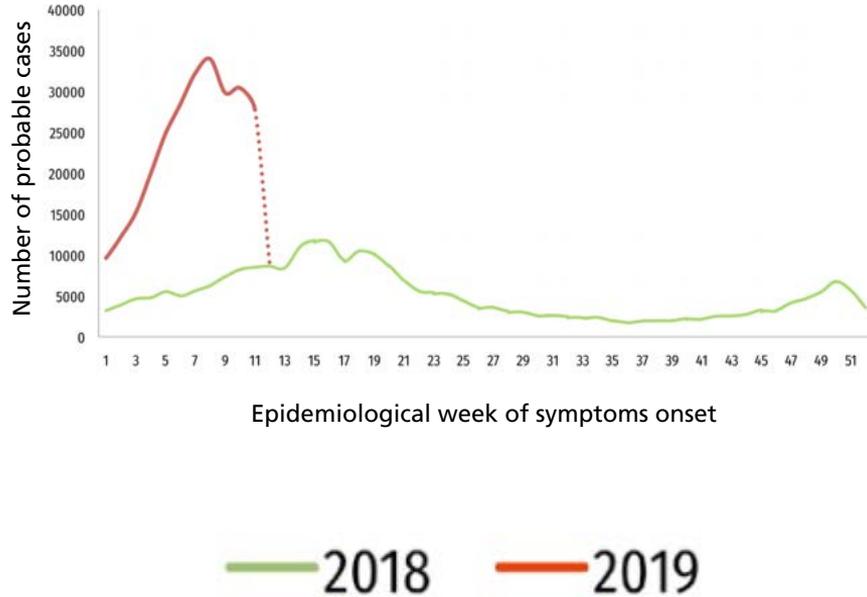


Zika

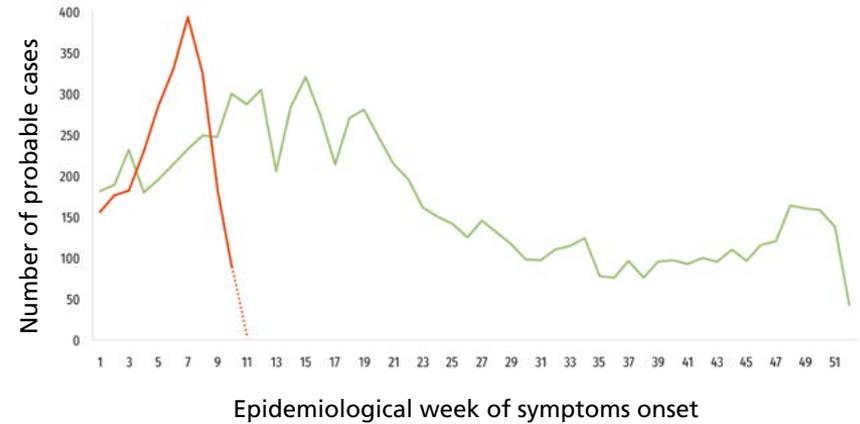


However, in 2019...

Dengue



Zika



Source: Sinan NET (2018 updated 09/01/2019, and 2019 updates 03/19/2019).

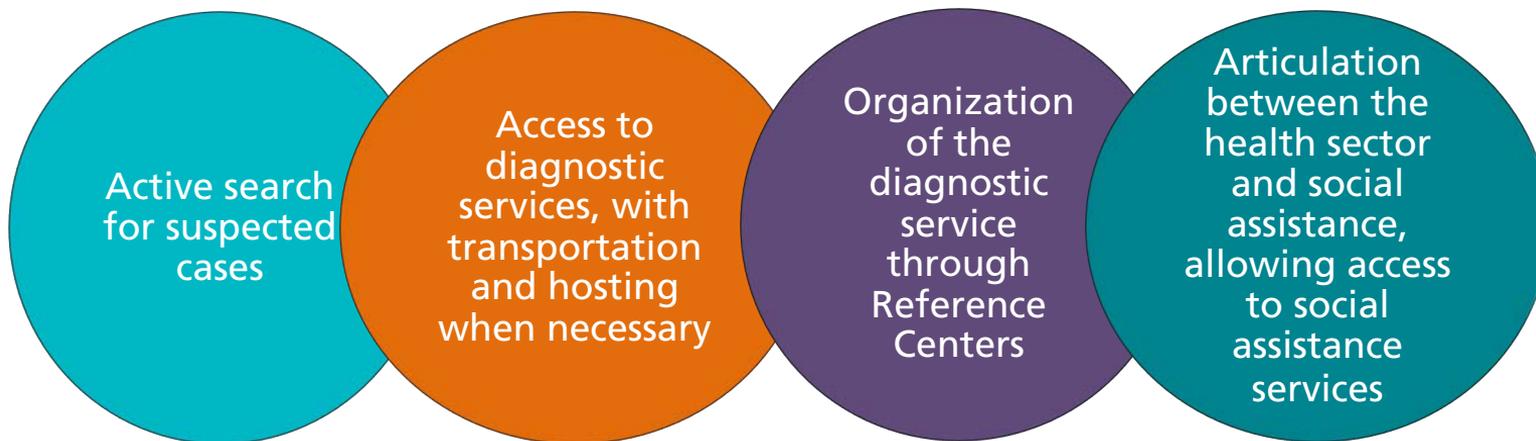


Health care



Rapid Action Strategy

Launched jointly by the Ministry of Health and the Ministry of Social Development in 2016



6,694 cases were investigated and classified

51 new Family Health Support Group (NASF) teams

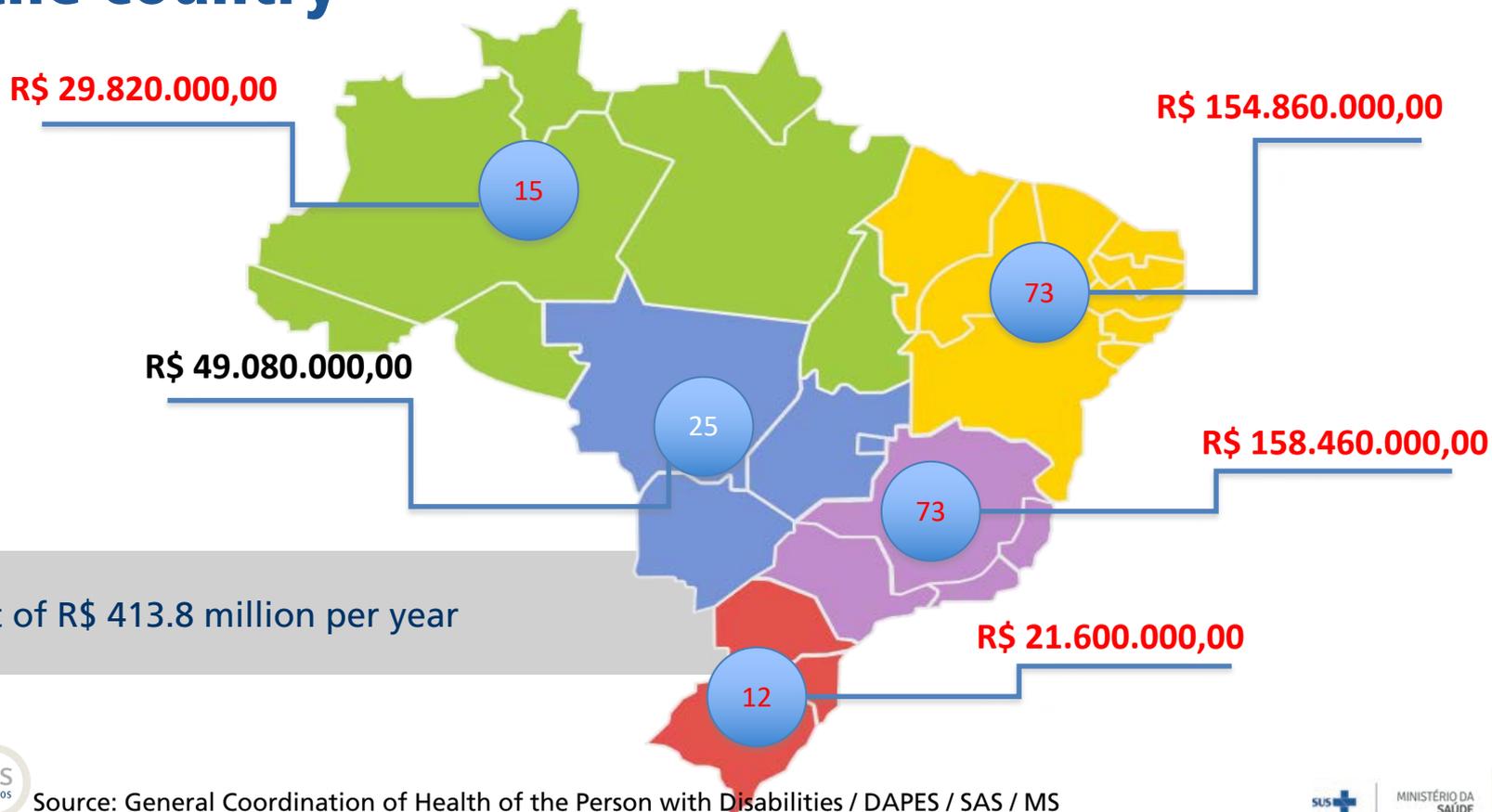


67 new Specialized Rehabilitation Centers (RECs)

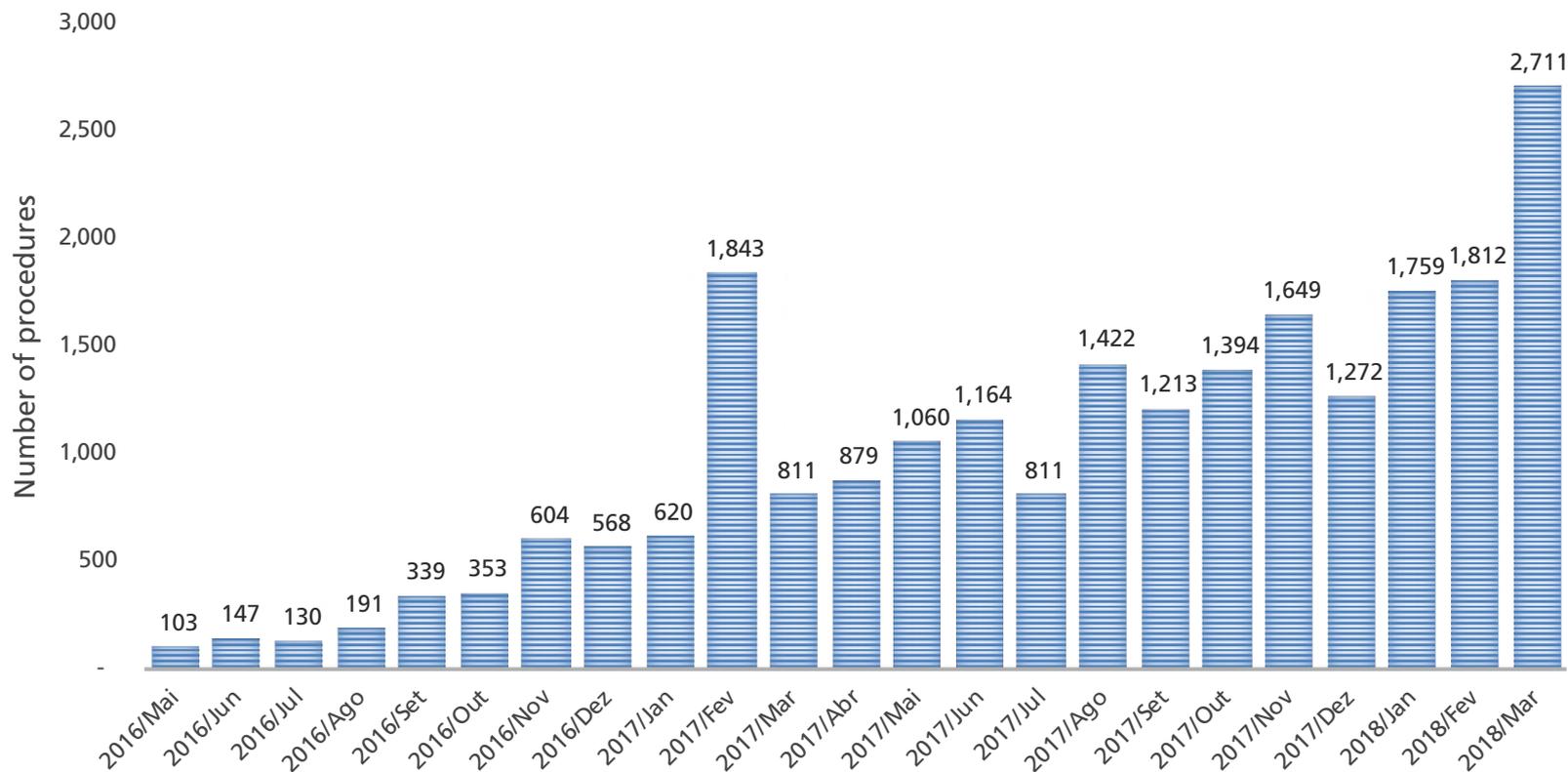


Source: General Coordination of Health of the Person with Disabilities / DAPES / SAS / MS

198 Specialized Rehabilitation Centers throughout the country



Early stimulation procedures performed by NASF

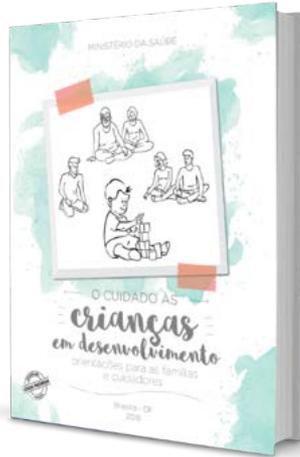




Guidelines for Early Stimulation: children 0 to 3 years of age with delayed neuropsychomotor development



Guidelines for the development of early stimulation in Primary Care



Care for children in development



Qualification and support to health professionals and decision makers

Educational offerings and guidance devices are currently available at:



Universidade Aberta do SUS – UNASUS



Ambiente Virtual de Aprendizagem do SUS – AVASUS



Núcleos de Telessaúde



Portal Saúde Baseada em Evidências



Comunidade de Práticas

513 professionals and families were trained in early stimulation

Partnership with Unicef: project networks of inclusion

- ❖ Training focused on child stimulation
 - ❖ 133 health, education and social protection professionals
 - ❖ 380 families and caregivers
- ❖ 380 multisensory kits were delivered to local authorities





**Technological development,
education and research**

Priorities

142 research projects in progress with investment of approximately R\$433 million

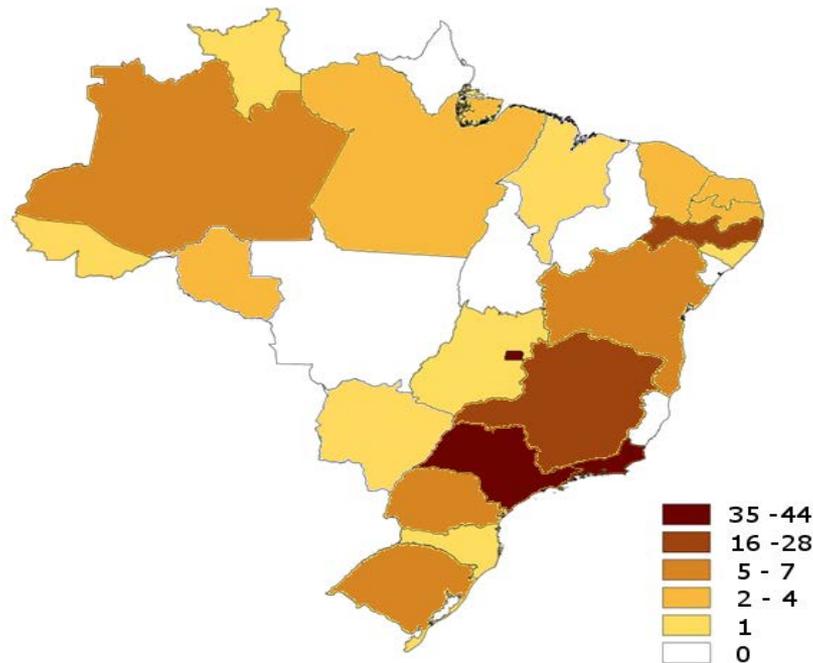


Renezika



National network of experts on Zika and related diseases

- 210 members
- 21 institutions
- Brazil, Canada, USA and England



Consortium of cohorts in Zika

- » Promote joint data discussion and analysis of cohort studies on Congenital Zika virus syndrome in Brazil

to speed up the production of more robust evidence on selected research questions

- » Several Cohorts financed in all regions of the country

investment of R\$ 20 million (Ministry of Health)

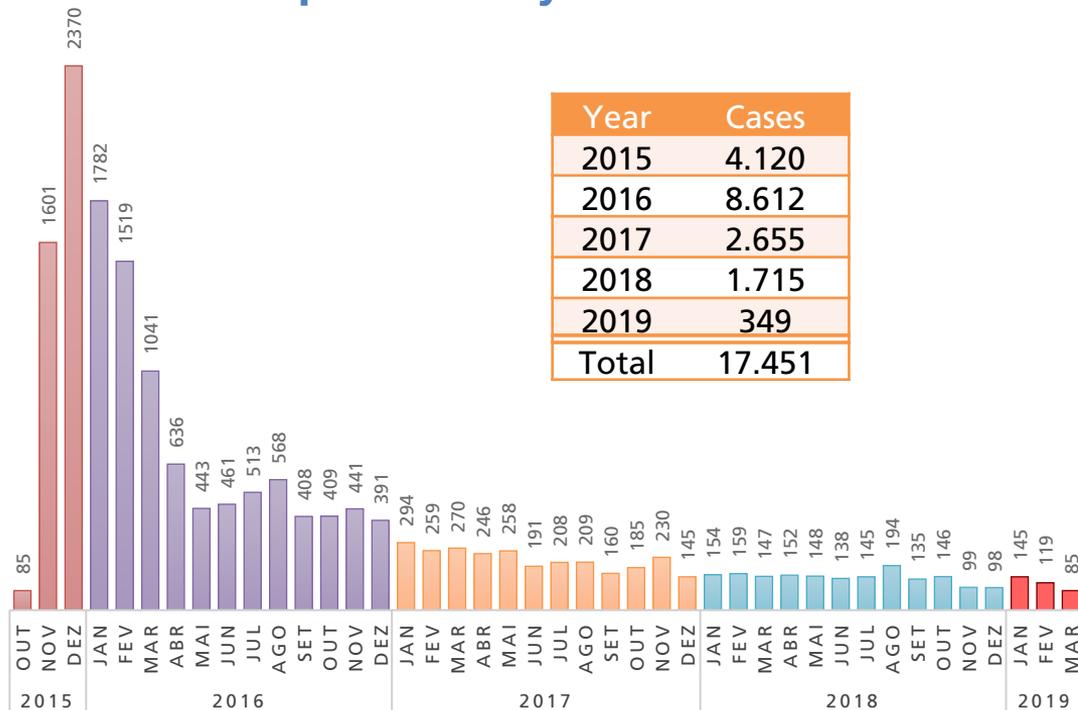




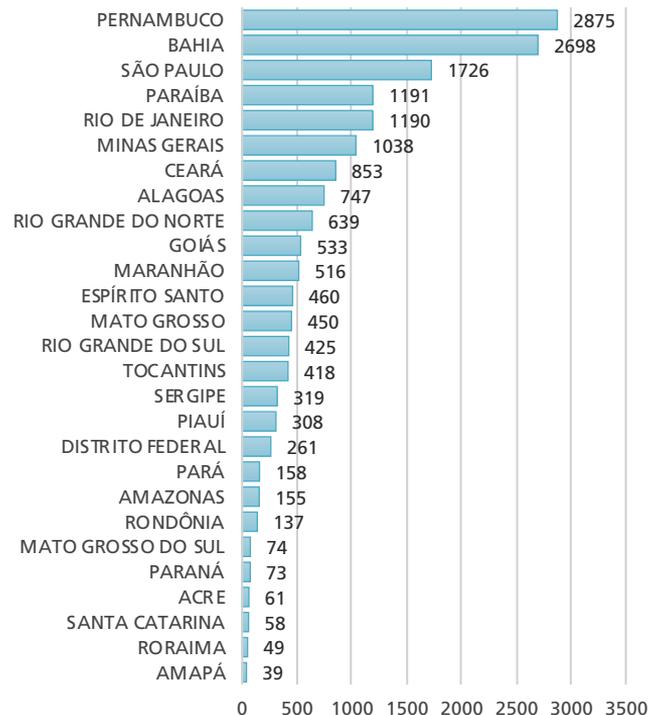
Current epidemiological situation

Reports of suspected cases of Congenital Zika virus syndrome (CZS), Brazil, 2015 to 2019 *

Cases per month / year of notification

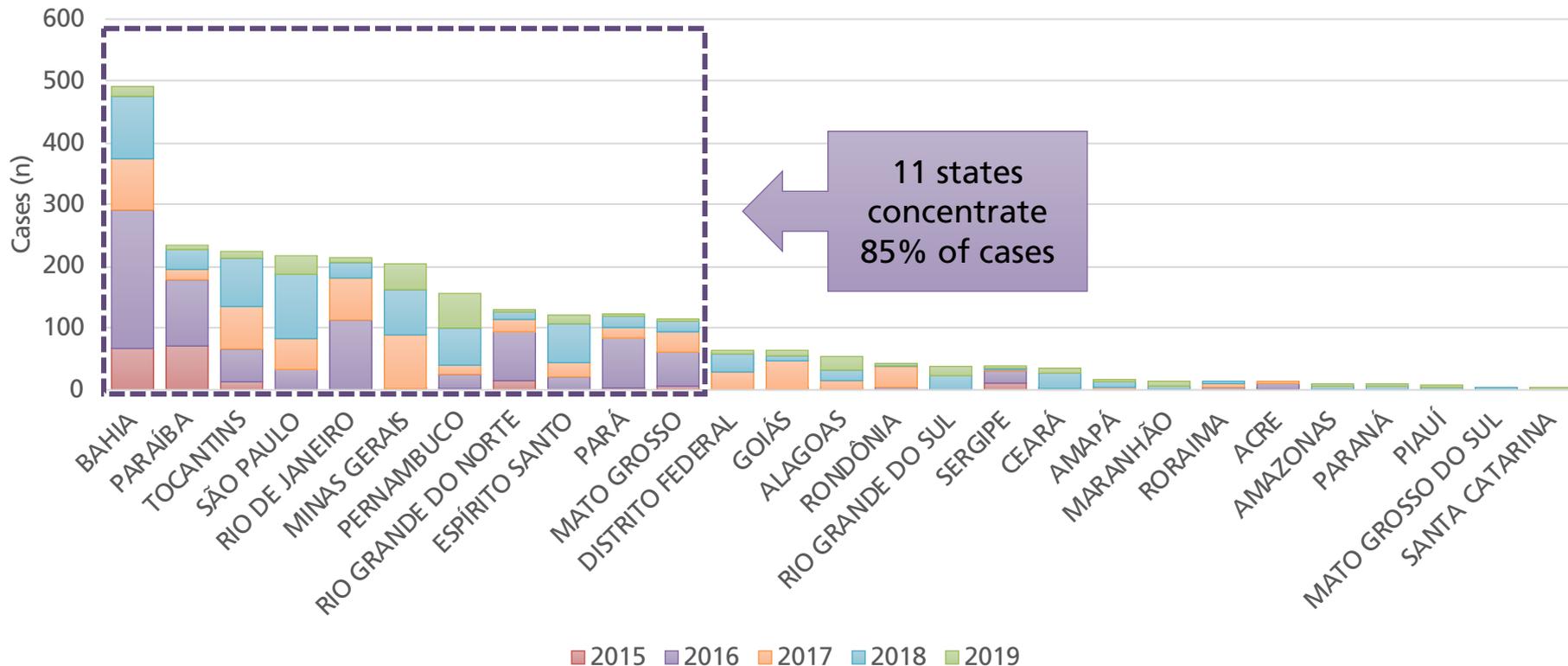


Notifications by state



Source: RESP-Microcefalia. *Updated on 30/03/2019 (EW 13)

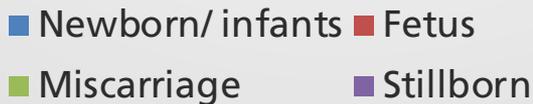
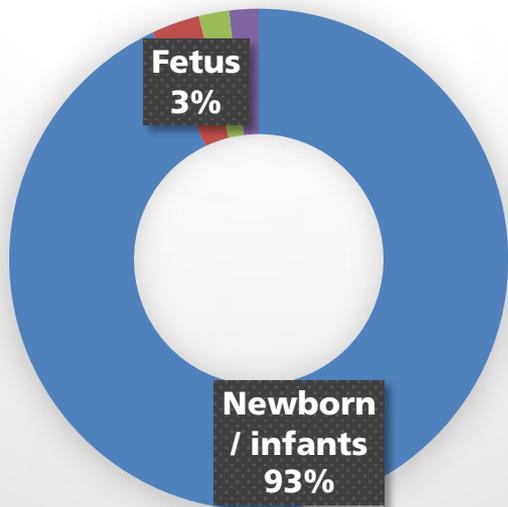
Distribution of the 2,631 suspected cases of CZS under investigation by state of residence and year of notification, 2015 to 2019



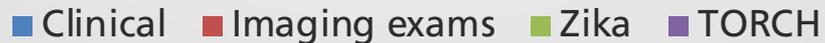
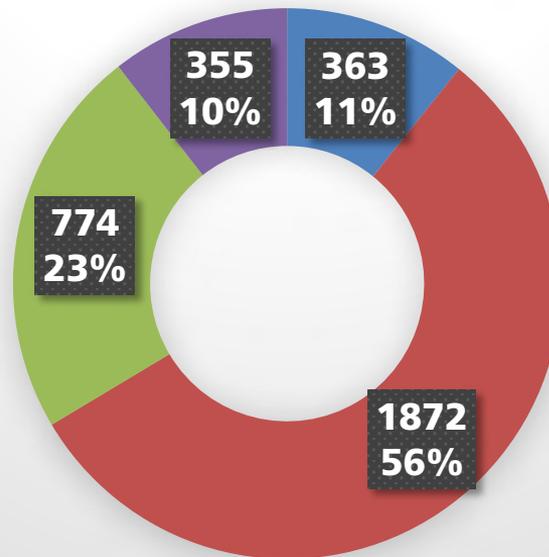
Source: RESP-Microcefalia. *Updated on 30/03/2019 (EW 13)

Distribution of the 3,364 confirmed cases of CZS and TORCH, 2015 to 2019

Cases by notification category



Cases by classification criteria





Ongoing health and social programs

Ordinance 3.502/2017

Strategy to strengthen health care actions aimed at suspected or confirmed cases of congenital Zika virus syndrome and TORCH infections



- R\$ 15 million for the purchase of 4,143 kits for early stimulation in the Family Health Support Centers (NASF) with professional physiotherapists
- R\$ 11.8 million to re-evaluate the cases (confirmed or under investigation)

Ordinance 3.502/2017

- » 5,375 children to be evaluated
2,737 confirmed
2,638 under investigation
- » Standardized protocol for investigation and classification of cases
- » R\$ 2,200 (~550 US dollars)/ child



Rapid Response to Syphilis in Care Networks

Project with the objective of reducing acquired syphilis and syphilis in pregnancy, as well as eliminating congenital syphilis in Brazil

- Establish an integrated and collaborative response to syphilis
- Strengthen the epidemiological surveillance of acquired syphilis in pregnant women and congenital syphilis
- Articulate the social sectors and communities to strengthen the rapid response to syphilis

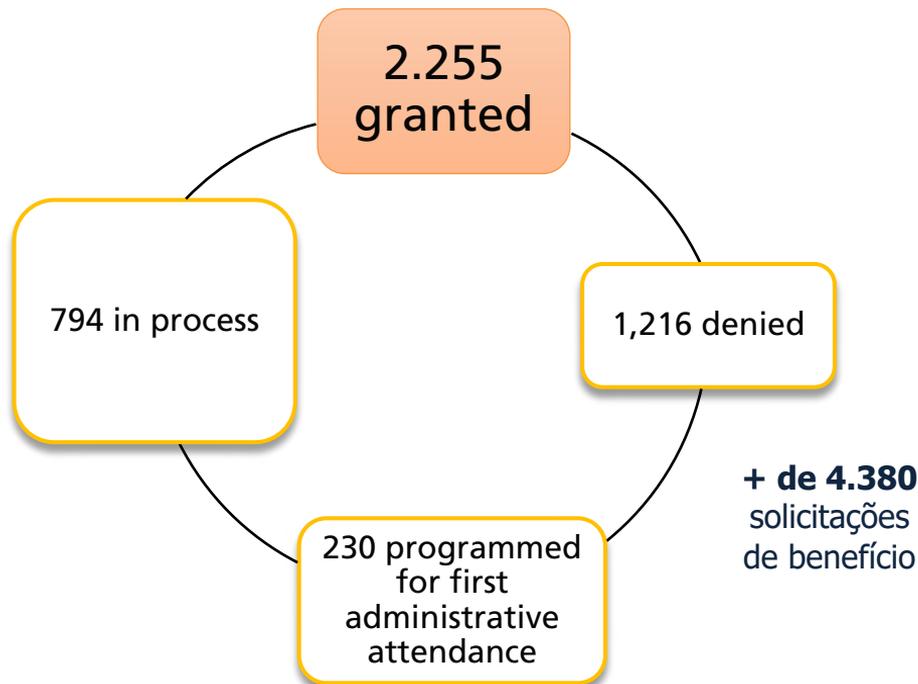


National disability benefit programme

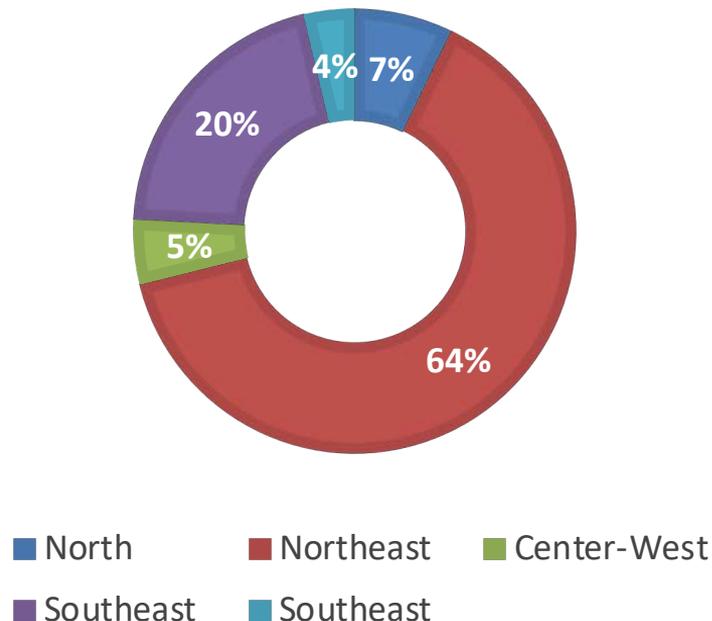
- Restricted to cases of microcephaly (ICD Q02)
 - the congenital zika syndrome comprises many others signs and symptoms, not only microcephaly
- Requirement: household income per capita less than 1/4 of the current minimum wage (~250 US dollars)



More than 2 thousand benefits granted to children born after 2016 (for ICD Q02)



% of benefits granted by region



Profile of demand and Continuous Cash Benefits (BCP) granted to children diagnosed with microcephaly in Brazil

DOI: 10.1590/1413-812320172211.22182017

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Profile of demand and Continuous Cash Benefits (BCP) granted to children diagnosed with microcephaly in Brazil

ARTICLE

This article is also available in audio

Éverton Luís Pereira ¹

Josierton Cruz Bezerra ¹

Jonas Lotufo Brant ¹

Wildo Navegantes de Araújo ²

Leonor Maria Pacheco Santos ¹

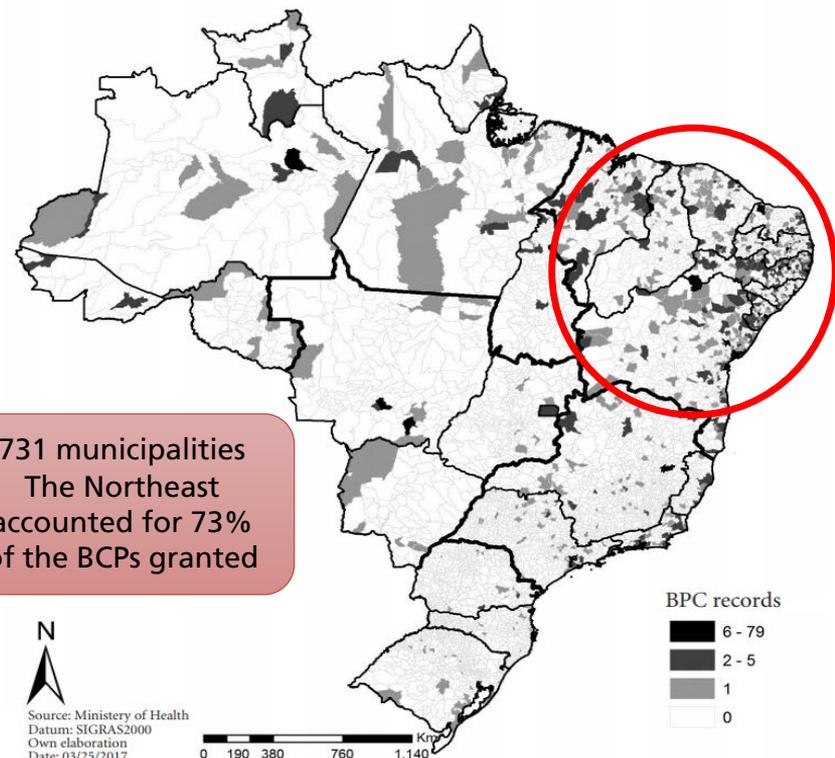
Ciência & Saúde Coletiva, 22(11):3557-3566, 2017

Continuous Cash Benefits (BCP) granted to children diagnosed with microcephaly in Brazil*

BPC granted during 2009-2016



Spatial distribution of BPC in 2016



*Include children under 48 months of life presenting microcephaly

Projects aim to grant lifetime pension for children with microcephaly caused by Zika virus

Projetos concedem pensão vitalícia para crianças com microcefalia causada pelo vírus Zika

Da Redação | 17/07/2018, 10h58



Reprodução/Blog Doctor Pistachio

- Two law projects under review by the Senate
- Benefits would be granted to children from families with income lower than four minimum wages (~1,000 US dollars)



Advances and challenges



Strengthening integration between surveillance and health care



Supporting priority states

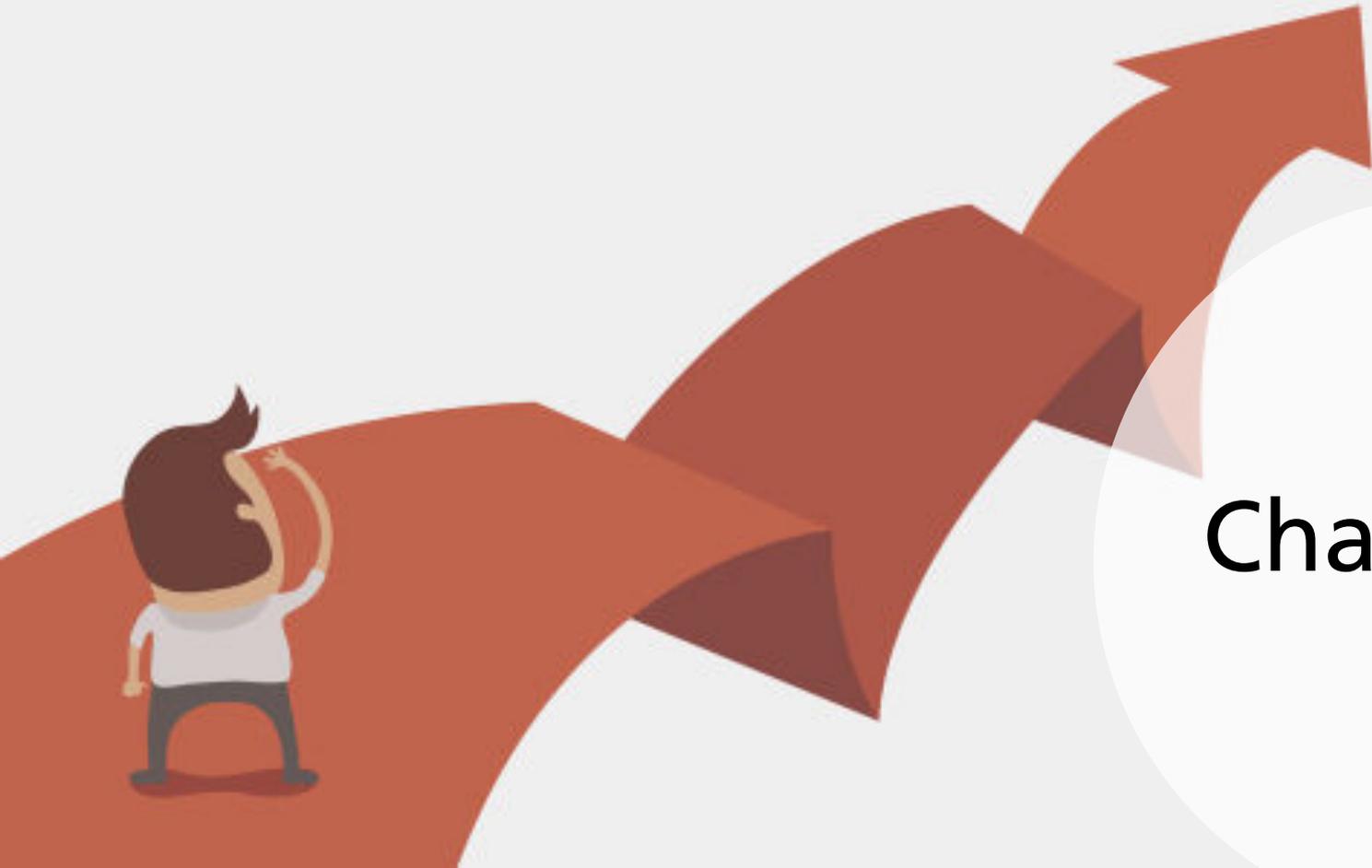
Decreasing the number of
cases under investigation
reported during 2015-2017



Funding the cohort consortium on Zika and its consequences

Reassessment of children with CZS



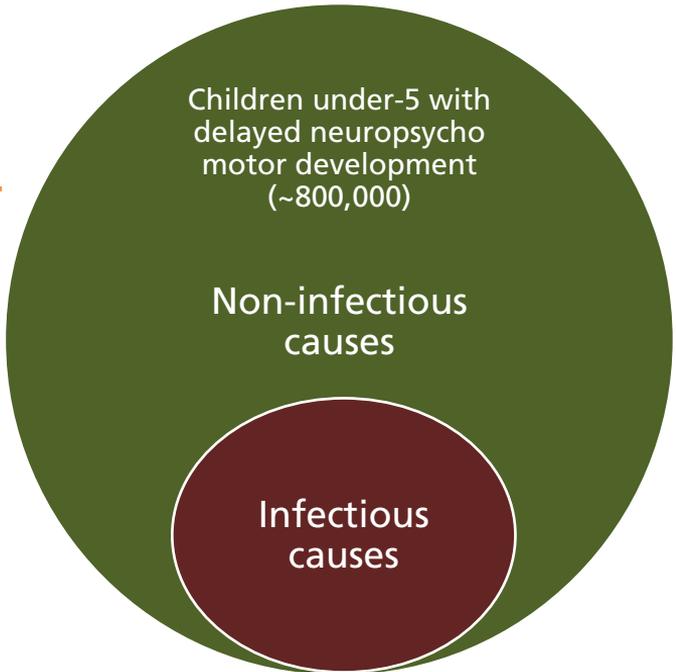
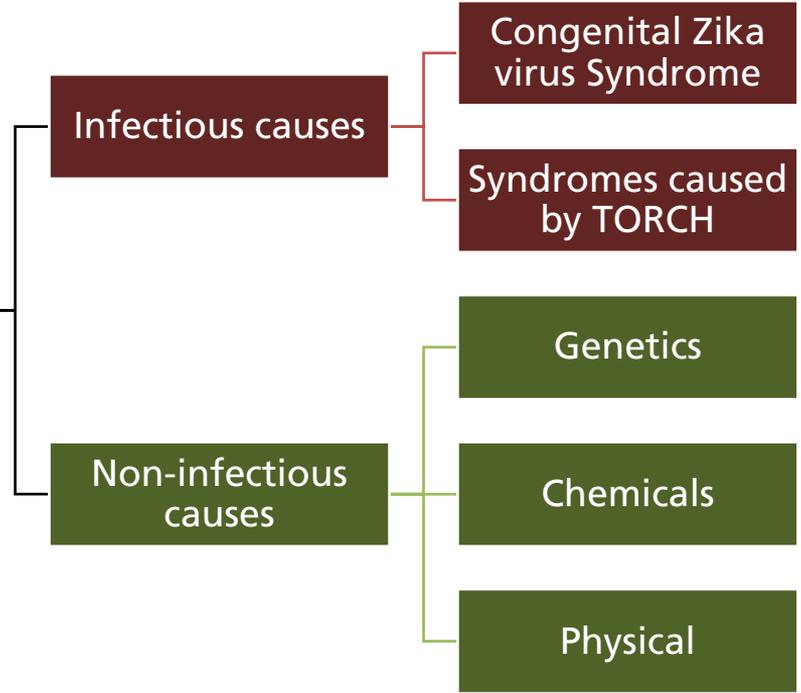


Challenges
—

Challenges

- ❖ Promote actions aimed at sexual and reproductive health for women and men in all life cycles
- ❖ Tracking children's growth and development
- ❖ Expand psychosocial care
- ❖ Strengthening primary health care and its role in the articulation of the health care network
- ❖ Expand access to diagnosis, treatment and rehabilitation of children
- ❖ Prioritize strategies to qualify surveillance and health care for congenital anomalies

Integrated Monitoring of Congenital Defects



Estimated DNPM:
4.5% up to 5 years of age
Population 2015 - 0 to 5 years: 17,803,562
DNPM: 801,160 children



Acknowledgment

- » Brazilian Ministry of Health
- » Surveillance teams of Health Secretaries of the states and municipalities





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Thank you!

By Joelson Souza – ParaMuitos
<http://www.paramuitos.com.br/macroamor/>



Thank you!



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