

Guillain-Barré syndrome and other neurological manifestations possibly related to Zika virus infection - Bahia, 2015

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Background

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



June, 12

↑SGB, encephalitis,
meningoencephalitis
and myelitis

2015

06.10

Situation room

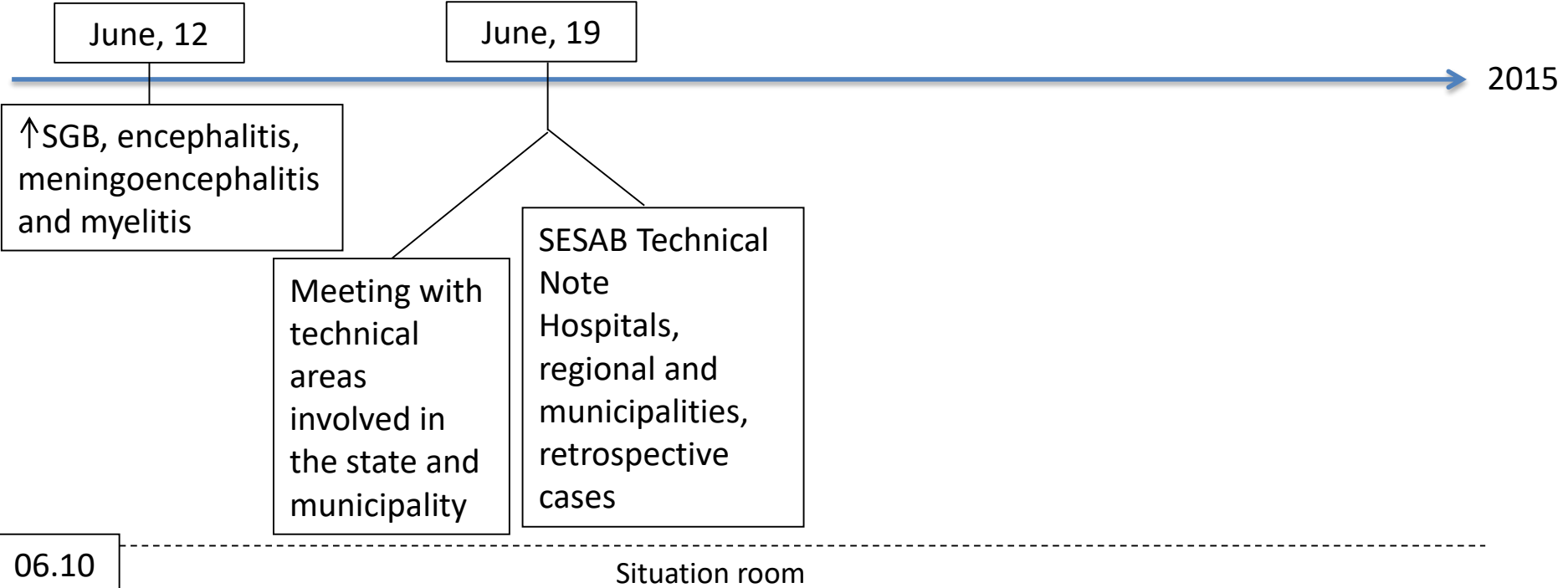


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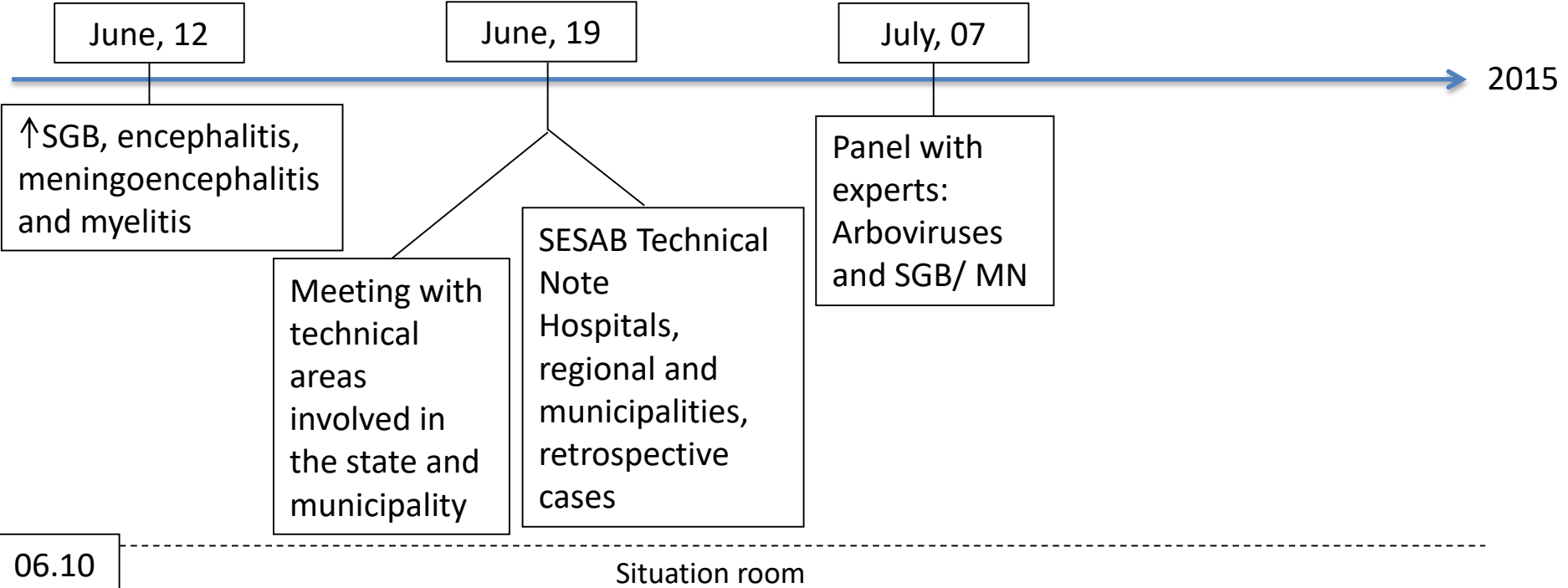
SGB and other neurological manifestations related to Zika virus, Bahia, 2015



Background



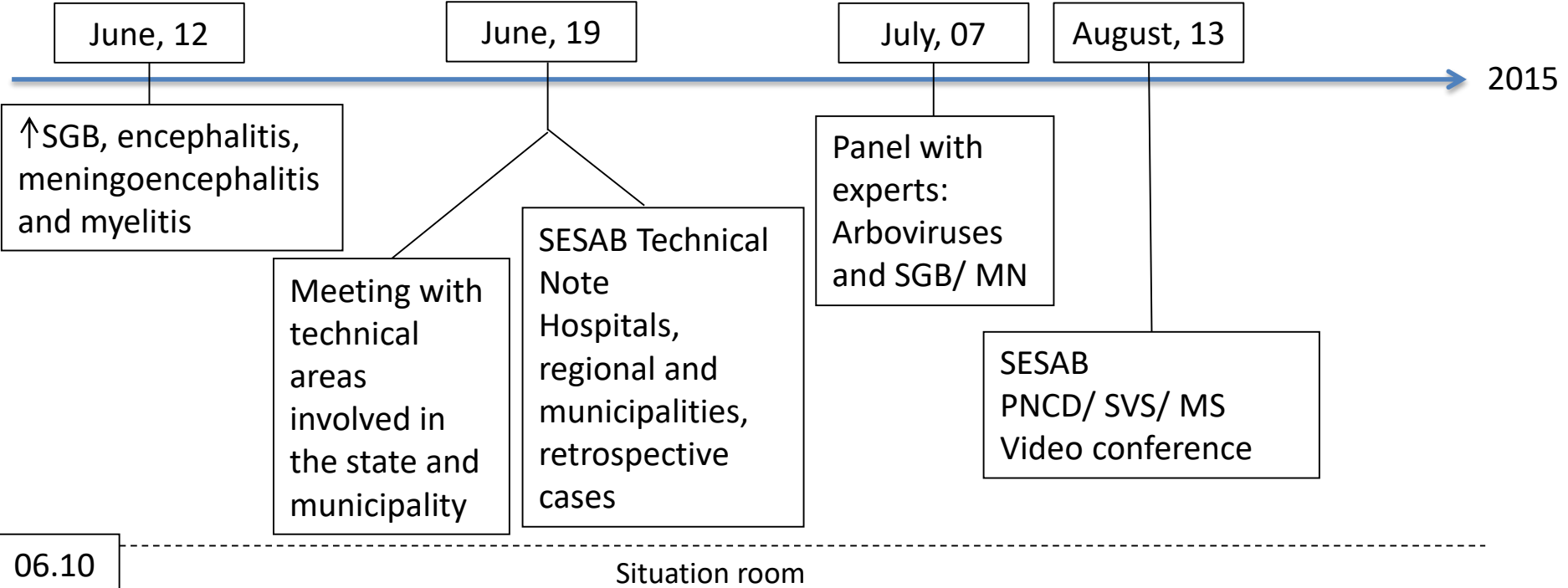
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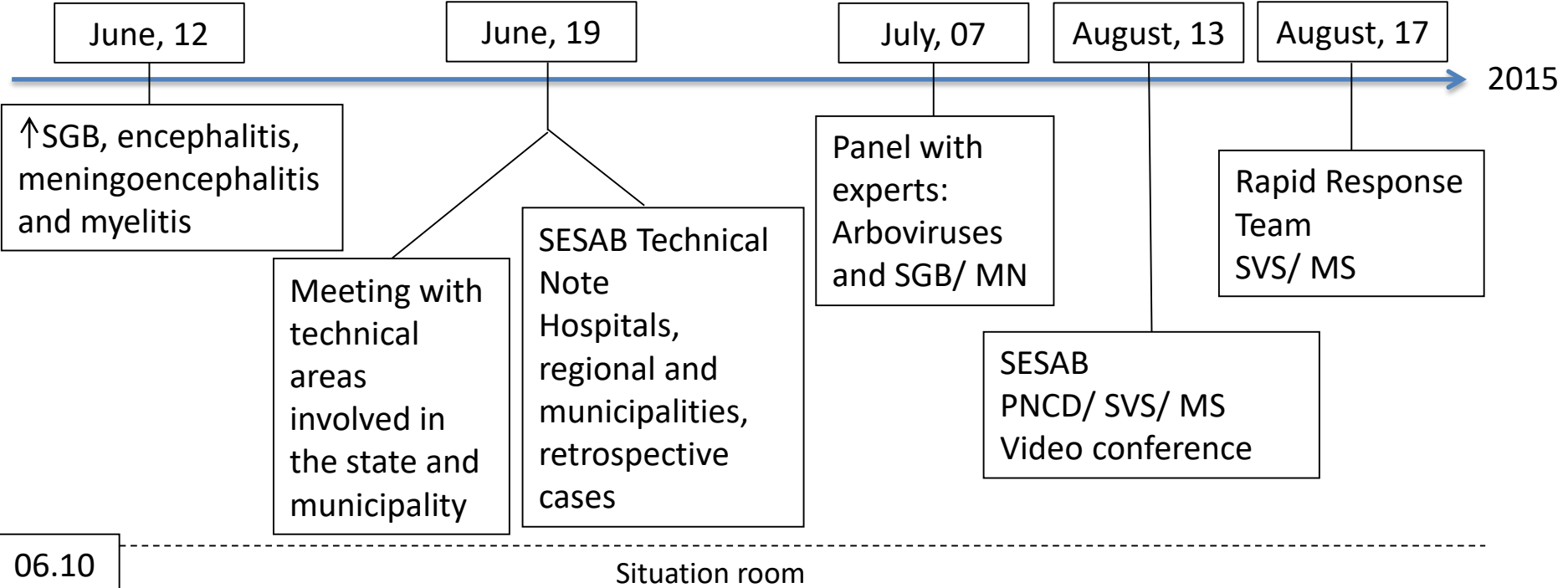
SGB and other neurological manifestations related to Zika virus, Bahia, 2015



Background



SGB and other neurological manifestations related to Zika virus, Bahia, 2015



06.10

Situation room

In Brazil, in 2015, nine pathogenic arboviruses¹

Three stand out as sustainable urban circulation: dengue, chikungunya and Zika virus

Relationship between infection by these arboviruses and central and peripheral nervous system involvement²

¹ Figueiredo, 2015 ² Ferreira *et al*, 2005

Guillain-Barré syndrome^{1,2,3}

Major cause of paralysis in the world, without seasonality described

Annual incidence of 1 to 2 cases / 100,000 inhabitants and peak between 20 and 40 years

↑ 60% of the patients with GBS presented any previous acute illness

2 to 6 weeks before onset of muscle weakness

Acute or subacute onset, symmetrical ascending muscular weakness, with reduction or absence of reflexes

¹ Sejvar et al, 2011, ² Beneti e Silva, 2015,

³ Lastra e Heredero, 2015



AIM

General

To describe the reported cases of Guillain-Barré syndrome and other neurological manifestations with a history of dengue, chikungunya and Zika infection

Specific

To describe the data by person, time and place

To determine the occurrence of neurological manifestation possibly associated with dengue, chikungunya and Zika virus

To indicate recommendations



Method

Place of study

State of Bahia, population - 15,126,371

Type of study

Descriptive

Study population

Patients hospitalized in the Metropolitan Region of Salvador and Feira de Santana

Study period

01th March to 31th August 2015

Case definitions

Suspected

Patients hospitalized in hospitals in the Metropolitan Region of Salvador and Feira de Santana, who presented:

Neurological manifestation (Guillain-Barré syndrome, encephalitis, meningoencephalitis, myelitis and optic neuropathy) with a history of viral infection up to 60 days before the onset of neurological symptoms, from March to August 2015

Case definitions

Probable

Suspected case **without** laboratory confirmation for viral isolation (or by cell culture or molecular biology), but found the following criteria:

Zika virus - patient who presented maculopapular rash accompanied by two or more of the following symptoms: fever, polyarthralgia, conjunctival hyperemia, joint edema and pruritus

Dengue or chikungunya - clinical epidemiological criteria and / or positive serology (IgM reagent)

Case definitions

Confirmed

Suspected case WITH laboratory confirmation (RT-PCR) for arboviruses (dengue, chikungunya or zika virus):

Zika virus by the RT-PCR technique in cerebrospinal fluid, serum or urine

Dengue and chikungunya by the RT-PCR technique in cerebrospinal fluid or serum

Data source

Epidemiological surveillance worksheet (state and municipal CIEVS^a)

Revision of medical records in hospitals

Standardized semi-structured questionnaire

Interviews by phone

Laboratory research

Search results of tests in the laboratory environment system

Rescue of collected and stored samples

Incidence rate

Annual incidence = No cases SGB / population x 100,000

Incidence of the outbreak period = Annual incidence / (Outbreak SE/ 52)

Data processing and analysis

Epi Info™ 7.1.5.0, QGIS 2.8.2, and Office 2010 Package

Ethical considerations

Free and informed consent form (TCLE) - verbal



Results

Results

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



Retrospective search



*In 24 hospitals, a health center
And a prompt service unit



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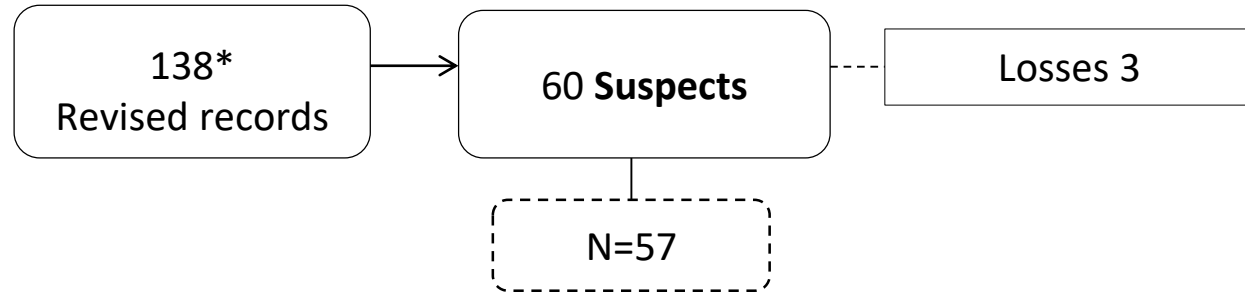
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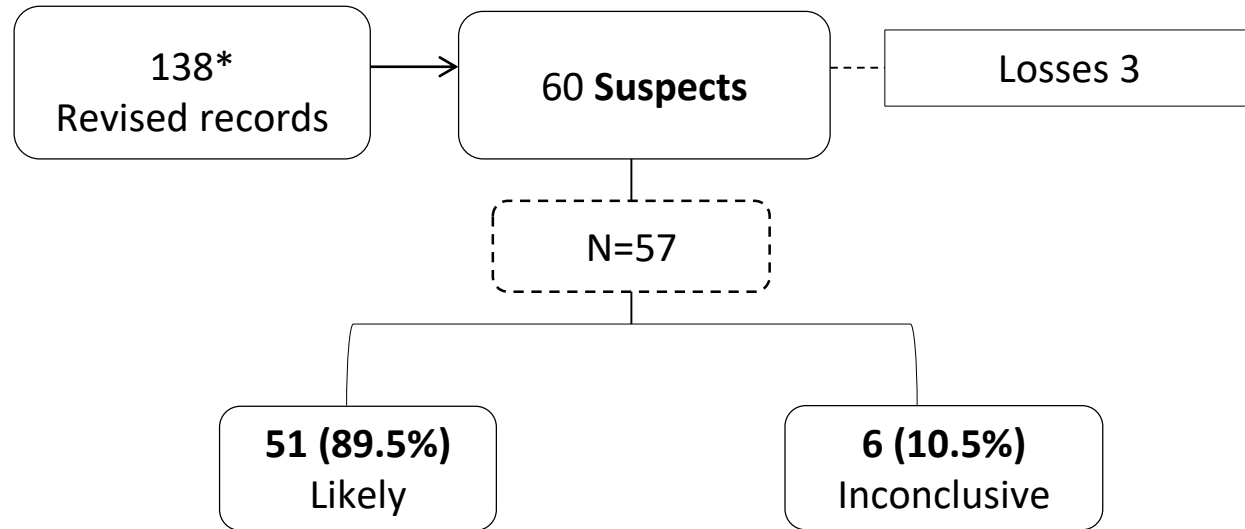
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Results

SGB and other neurological manifestations related to Zika virus, Bahia, 2015

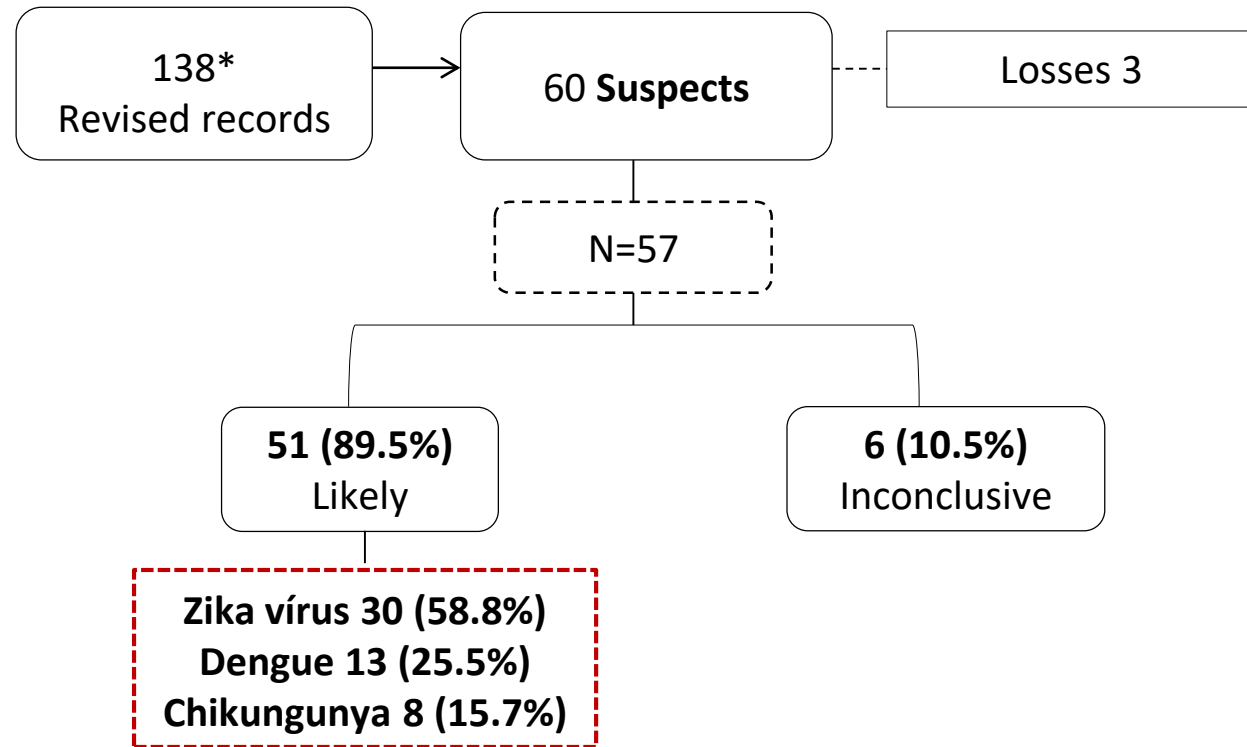


Retrospective search



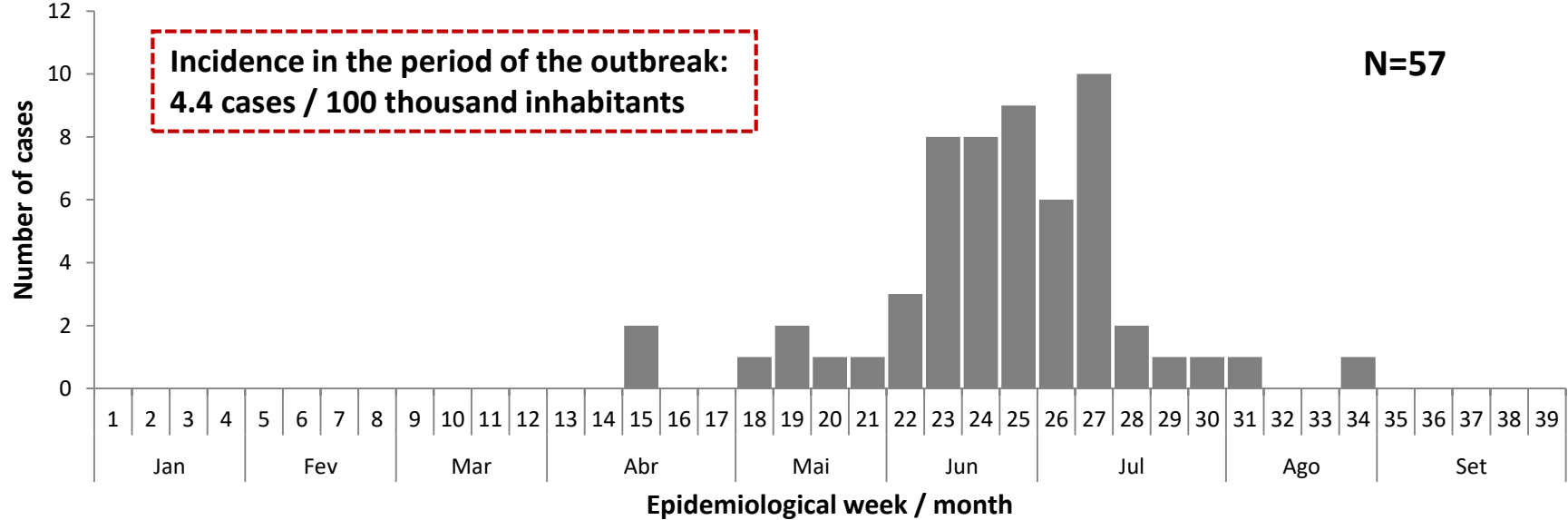
*In 24 hospitals, a health center
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Retrospective search



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Distribution of the frequency of GBS cases and other neurological manifestations according to epidemiological week



Incidence in the period of the outbreak:
4.4 cases / 100 thousand inhabitants

N=57

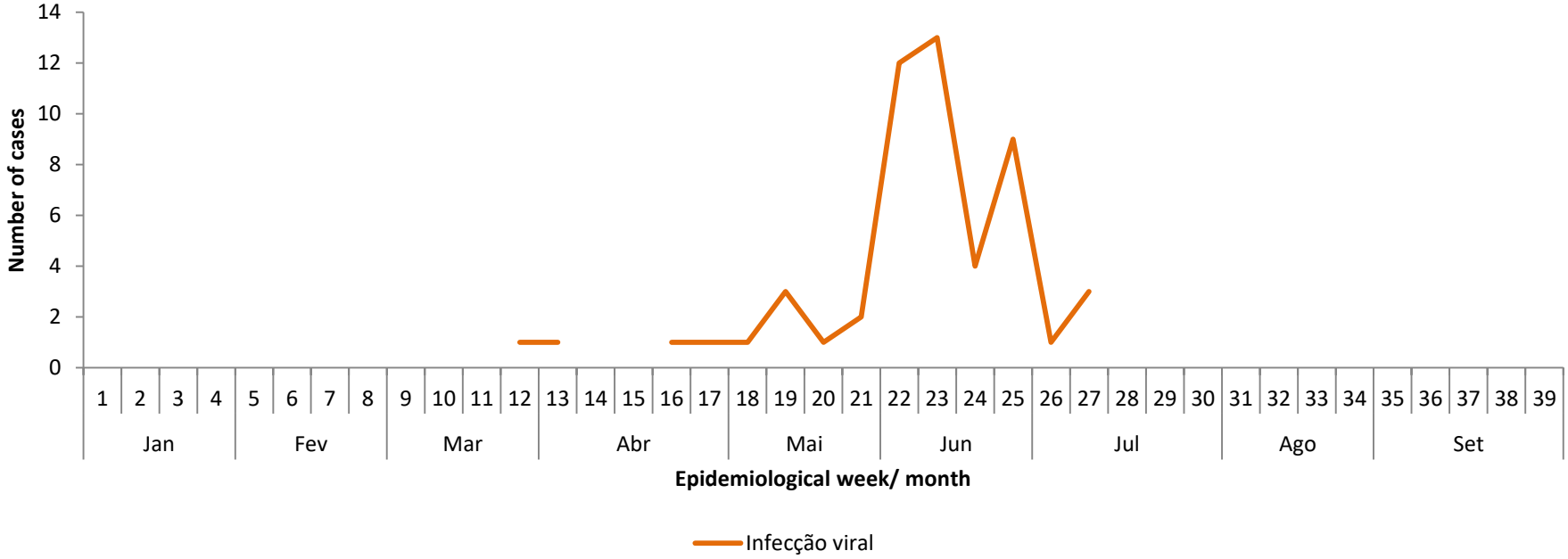
Distribution of the frequency of GBS cases and other neurological manifestations according to neurological manifestations

N=57

Classification of cases	n	%
GBS	46	80.7
Other neurological manifestations	11	19.3
Myelitis	4	7.0
Meningoencephalitis	3	5.3
Others ^a	4	7.0

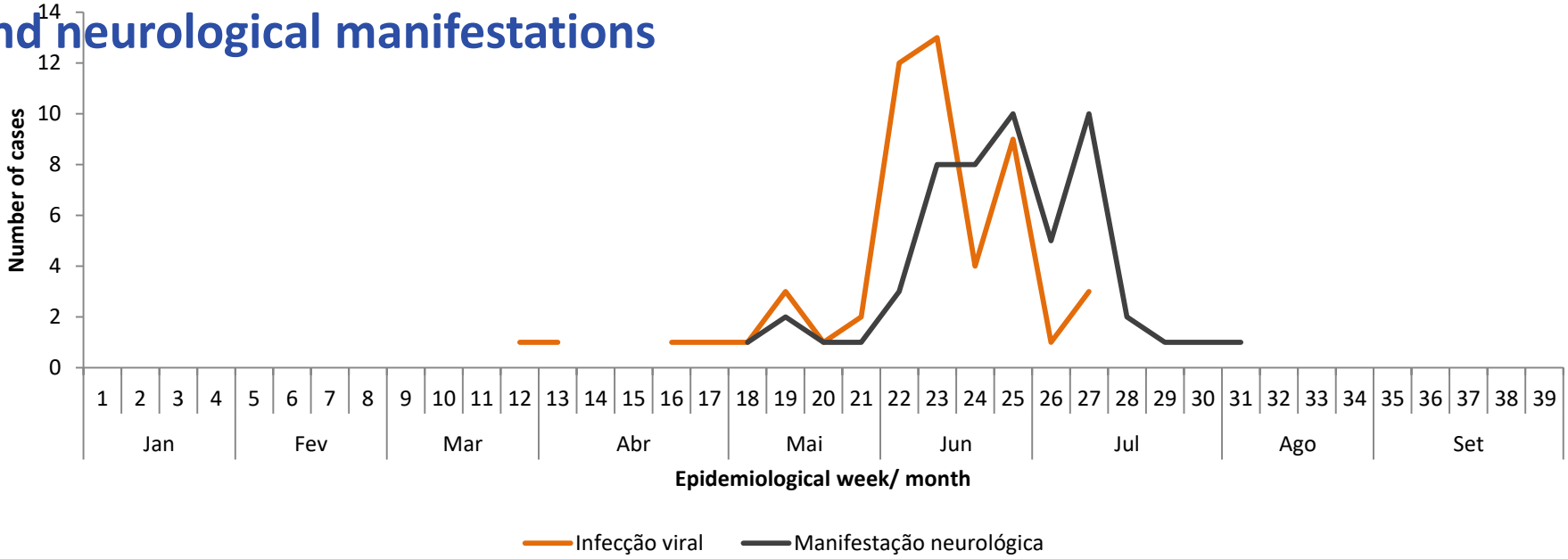
^aDisseminated acute encephalitis, cervical myelopathy, Optic neuritis, unspecified polyneuropathy

Distribution of the frequency of GBS cases and other neurological manifestations according to the date of onset of the previous viral infection



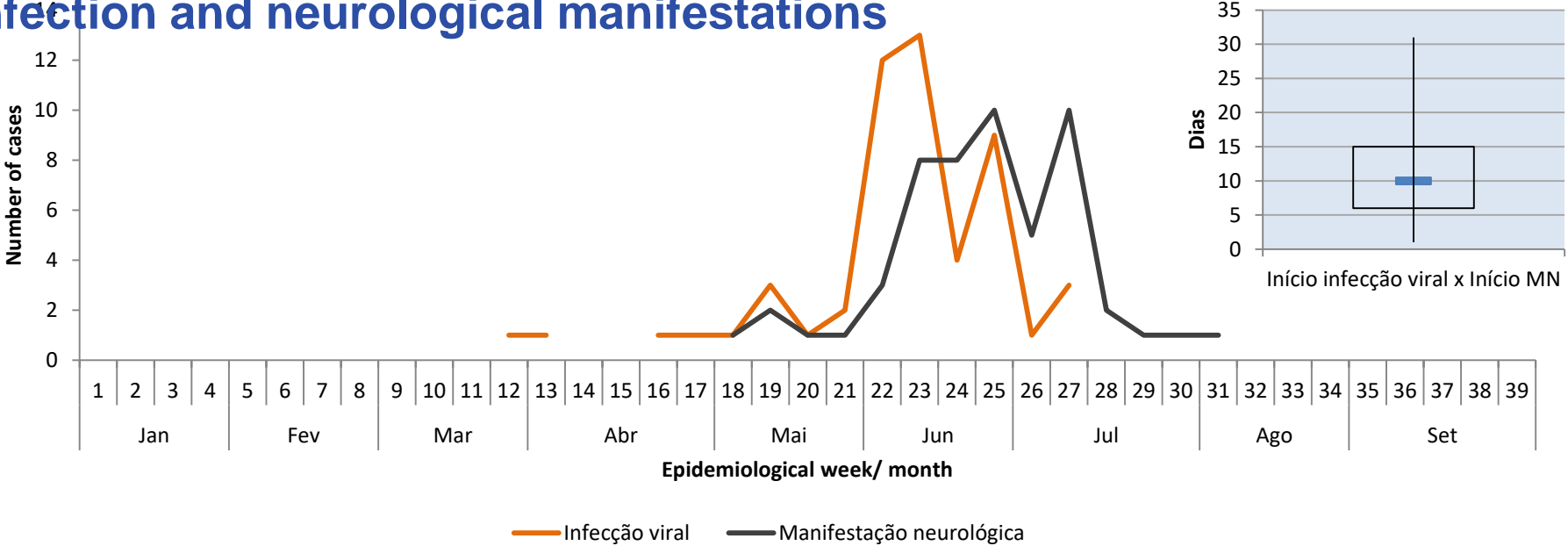
Source: SINAN NET / ONLINE and Epidemiological research bank

Distribution of the frequency of GBS cases and other neurological manifestations according to the date of onset of the previous viral infection and neurological manifestations



Source: SINAN NET / ONLINE and Epidemiological research bank

Distribution of the frequency of GBS cases and other neurological manifestations according to the date of onset of the previous viral infection and neurological manifestations



Source: SINAN NET / ONLINE and Epidemiological research bank

Distribution of the frequency of GBS cases and other neurological manifestations according to sociodemographic data

N=57		
Sociodemographic	n	%
Sex, female	77	69.4
Age Group (years)		
≤10	2	3.5
11-20	7	12.3
21-40	15	26.3
41-60	20	35.1
>60	13	22.8
	Median (range)	
Age (years)	44	2-83

Distribution of the frequency of GBS cases and other neurological manifestations according to variables of care and hospitalization

	n	%
Comorbidities, yes	26	45.6
Hospitalized	57	100.0
Intensive care unit	20	35.1
Use of IVIG (N=46)	41	89.1
	Median	(ranger)
Interval in days (Home neuro symptoms – Home Use IVIG)	8	6-14

Distribution of the frequency of GBS cases and other neurological manifestations according to the evolution of cases

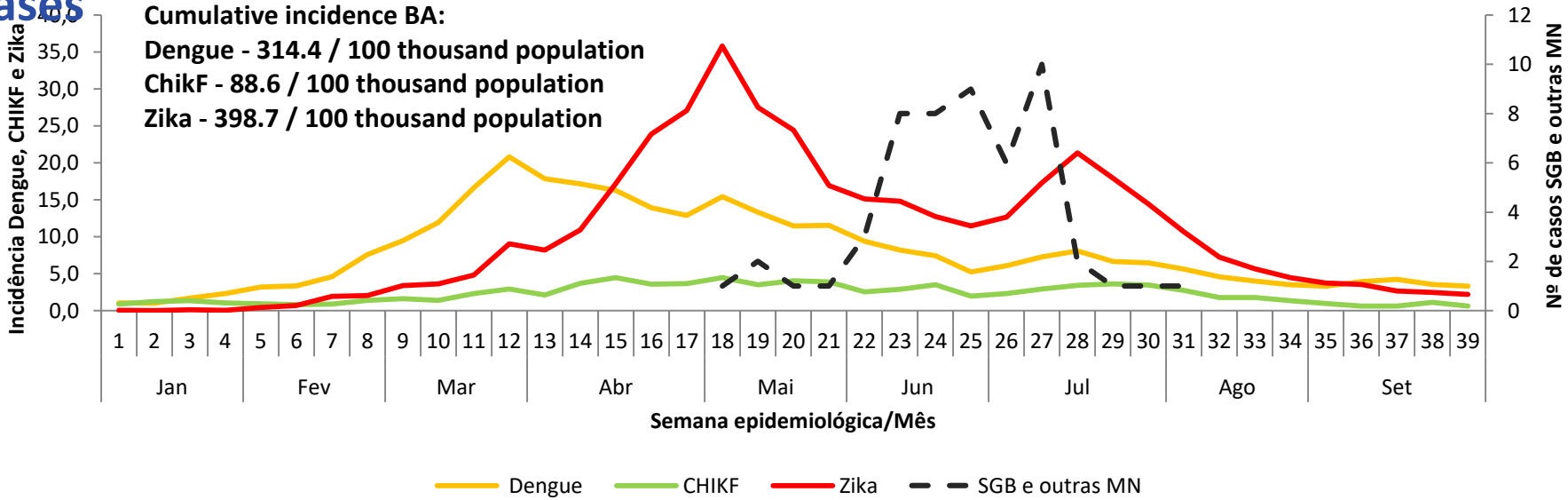
N=57		
Evolution of cases	n	%
High with improvement	48	84.2
Transferred to another hospital	6	10.5
Evolved to death	2	3.5
Relapse improvement	1	1.8

Distribution of the frequency of GBS cases and other neurological manifestations according to signs and symptoms of previous acute infection

Signals and symptoms	Probable cases			
	Zika (n=30)	Dengue (n=13)	ChikF (n=8)	Inconclusive (n=6)
Exanthema	30	7		1
Fever	24	11	8	5
Polyarthralgia	22	3	8	4
Itching	23	6	2	2
Myalgia	22	11	3	
Headache	10	6	1	5
Joint edema	7	1	1	
Retroorbital pain	6	2		1
Conjunctival hyperemia	3	1		

Distribution of the frequency of GBS cases and other neurological manifestations according to the incidence of Dengue, Chikungunya and Zika

casos



Source: SINAN NET / ONLINE and Epidemiological research bank



Limitations

Difficulty to remember, due to the long period between previous viral infection and the interview

Few laboratory diagnostic results of previous viral infection prevented the classification of arboviruses



Discussion and conclusion

Discussion and conclusion

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



It was identified an outbreak of GBS and other neurological manifestations between SE 18 to 31 and the observed incidence of GBS in the study population was approximately 3 times higher than the expected rate¹

Interval found between previous viral infection and neurological status, seems to be smaller than the range reported in the literature^{1,2}

the introduction and spread of the Zika virus in Bahia, and simultaneous circulation of the dengue virus and chikungunya

¹ Sejevar et al, 2011; ² Beneti e Silva , 2015

Discussion and conclusion

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



There are records of neurological manifestations after infectious processes since the 1960s by the dengue virus and chikungunya¹

There were reports of neurological complications following zika virus since 2007, following outbreaks in Micronesia and French Polynesia¹

Increased number of cases of GBS and other neurological manifestations was identified following the explosion of Zika virus cases in the Bahia State

¹ Brasil, 2015

Discussion and conclusion

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



The cases with IgM reagent results for dengue, may be false positive. Because the serology for dengue can present a cross-reaction with other flaviviruses¹

A study carried out in French Polynesia with patients presenting with GBS, most had a history of exanthematic syndrome, 98% had IgM or IgG markers and neutralizing antibodies against Zika virus²

¹ Marcílio, 2015; ² Cao-Lormeau *et al*, 2015

Discussion and conclusion

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



The event of neurological manifestations with a history of viral infection may be expected in Brazil, and no longer unusual due to the speed of Zika virus dispersion in the country

The etiology for this increase in GBS cases and other manifestations even with the hypothesis raised remains in research



Recommendations

Recommendations

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



Prospective study aiming at the possibility of collection and confirmation of case for viral diagnosis

Carry out an analytical study to identify and establish the possible relationship and factors associated with the development of GBS and other neurological manifestations and Zika virus infection

Acknowledgments

SGB and other neurological manifestations related to Zika virus, Bahia, 2015



State Department of Health / BA

Municipal Health Secretariat of Salvador / BA

Municipal Health Department of Feira de Santana / BA

Hospitals of public and private network of the state of Bahia

Central Laboratory of Public Health - Lacen / BA

Instituto Evandro Chagas – IEC

Secretariat of Health Surveillance - SVS/MS

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Definição de caso

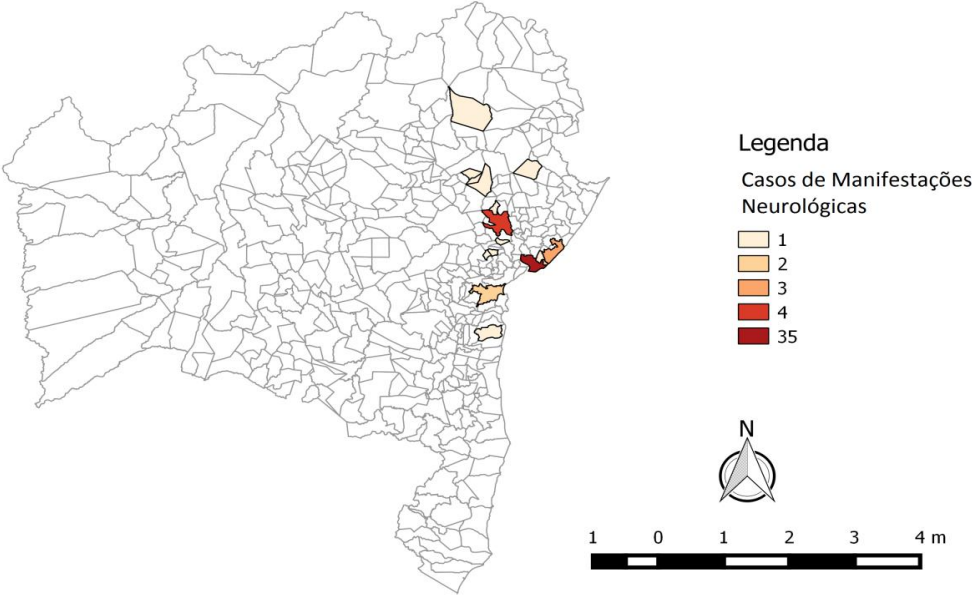
Descartado

Caso suspeito confirmado para outro agente etiológico ou que apresentou outro diagnóstico médico

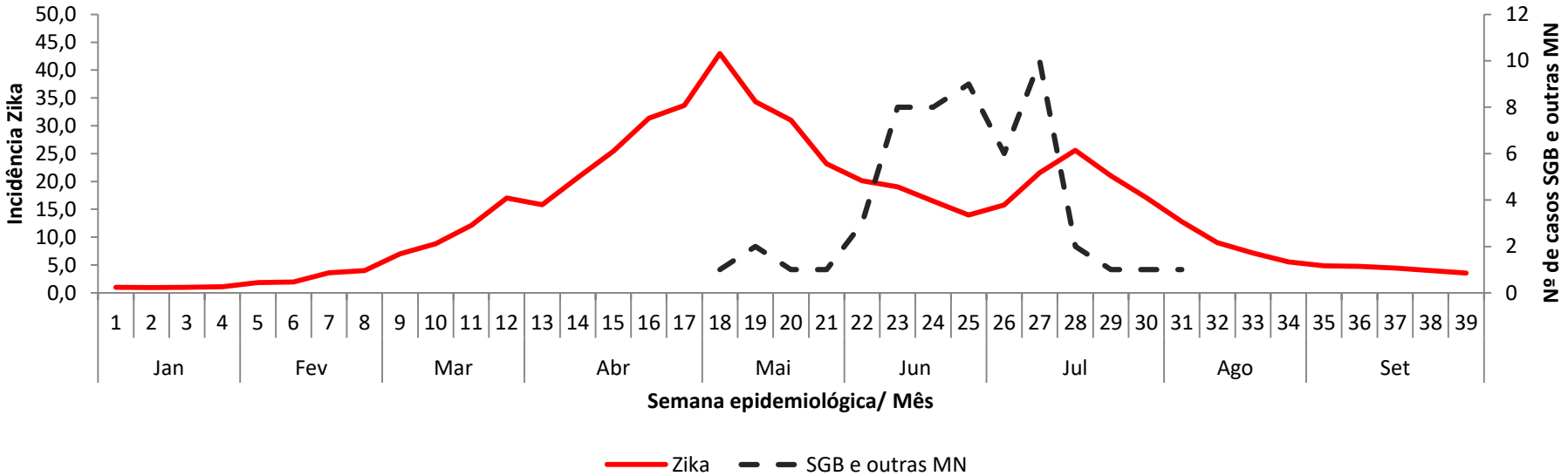
Perda

Ausência do contato telefônico e impossibilidade de realizar entrevista após quatro tentativas em dias e turnos alternados

Distribuição da frequência de casos de manifestações neurológicas com histórico de infecção aguda segundo município de residência



Distribuição da frequência de casos SGB e outras manifestações neurológicas segundo incidência de casos de Zika^a



^aCasos notificados de vírus Zika +descartados de dengue e chikungunya

21/07/2015 14h53 - Atualizado em 21/07/2015 14h53

Casos de 'Guillain-Barré' já chegam a 50 na Bahia, indica balanço da Sesab

Dados foram divulgados nesta terça-feira (21) pela Secretaria de Saúde. Do total, 48 apresentavam doenças como dengue, zika ou chikungunya.

Bahia de Pernambuco - PE
25/07/2015 - 07:32



Luz vermelha acesa para doença "rara"
Estados do Nordeste começam a adotar estratégias para investigar a misteriosa Síndrome de Guillain-Barré

10/07/2015 16h09 - Atualizado em 10/07/2015 17h27

Síndrome de Guillain-Barré tem 10 casos confirmados no Maranhão

Dados são da Secretaria de Estado da Saúde (SES). Seis pacientes apresentaram sintomas do Zika vírus antes da síndrome.

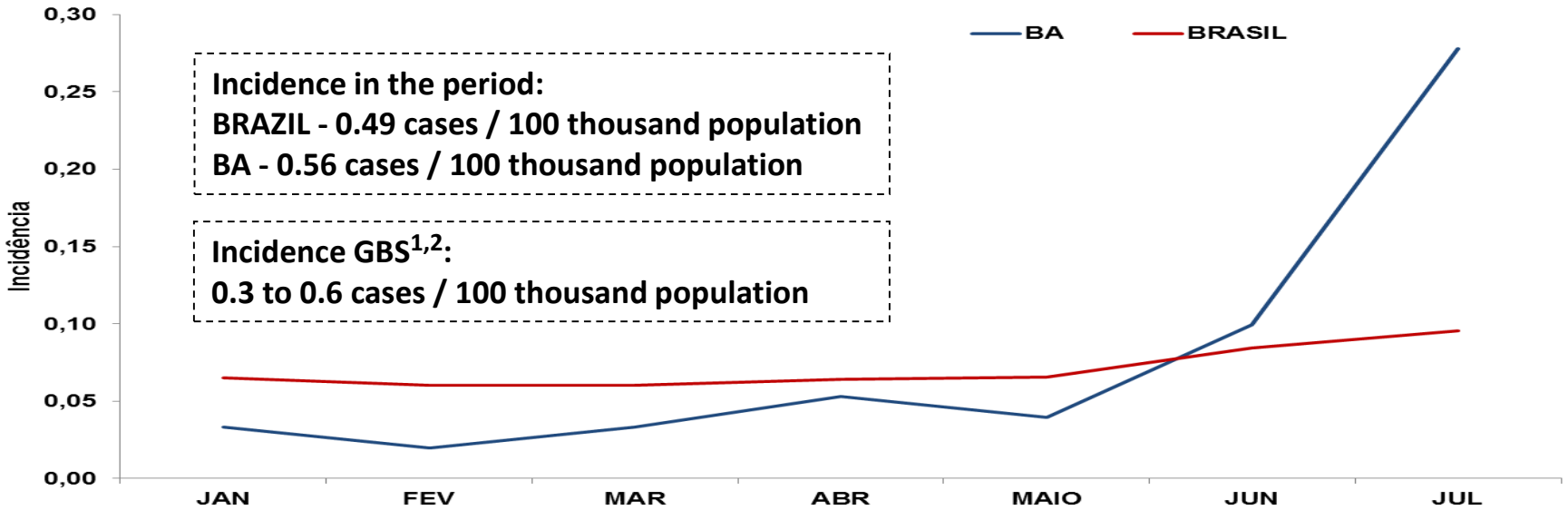
Entre janeiro e julho de 2015, alguns estados da região Nordeste notificaram à Secretaria de Vigilância em Saúde (SVS/MS) a ocorrência de 121 casos de manifestações neurológicas e Síndrome de Guillain-Barré com histórico de doença exantemática prévia. Investigações estão sendo conduzidas pelo Ministério da Saúde, Secretarias de Saúde de Estados e Municípios da região e outras instituições, como o Instituto Evandro Chagas (IEC/SVS/MS) e Fundação Oswaldo Cruz (Fiocruz/MS), para subsidiar os Estados e Municípios com orientações amparadas em evidências mais robustas.

Introduction



SGB and other neurological manifestations related to Zika virus, Bahia, 2015

Incidence by Guillain-Barré syndrome (GBS), per month of hospitalization. Bahia and Brazil 2015 *



Source: SIH/SUS - Datasus

¹ Dourado et al, 2012; ² Rocha et al, 2004

*Data relating to the period of January to July, 2014 - 2015