



**MEDICAL SCHOOL OF ANTANANARIVO  
UNIVERSITY**



# **DIFFERENT CAUSES OF ILLNESS AMONG ADULTS AND CHILDREN HAVING FEVER ATTENDING HEALTH CARE SERVICES IN MADAGASCAR**

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Infectious diseases specialist**

# Data sources

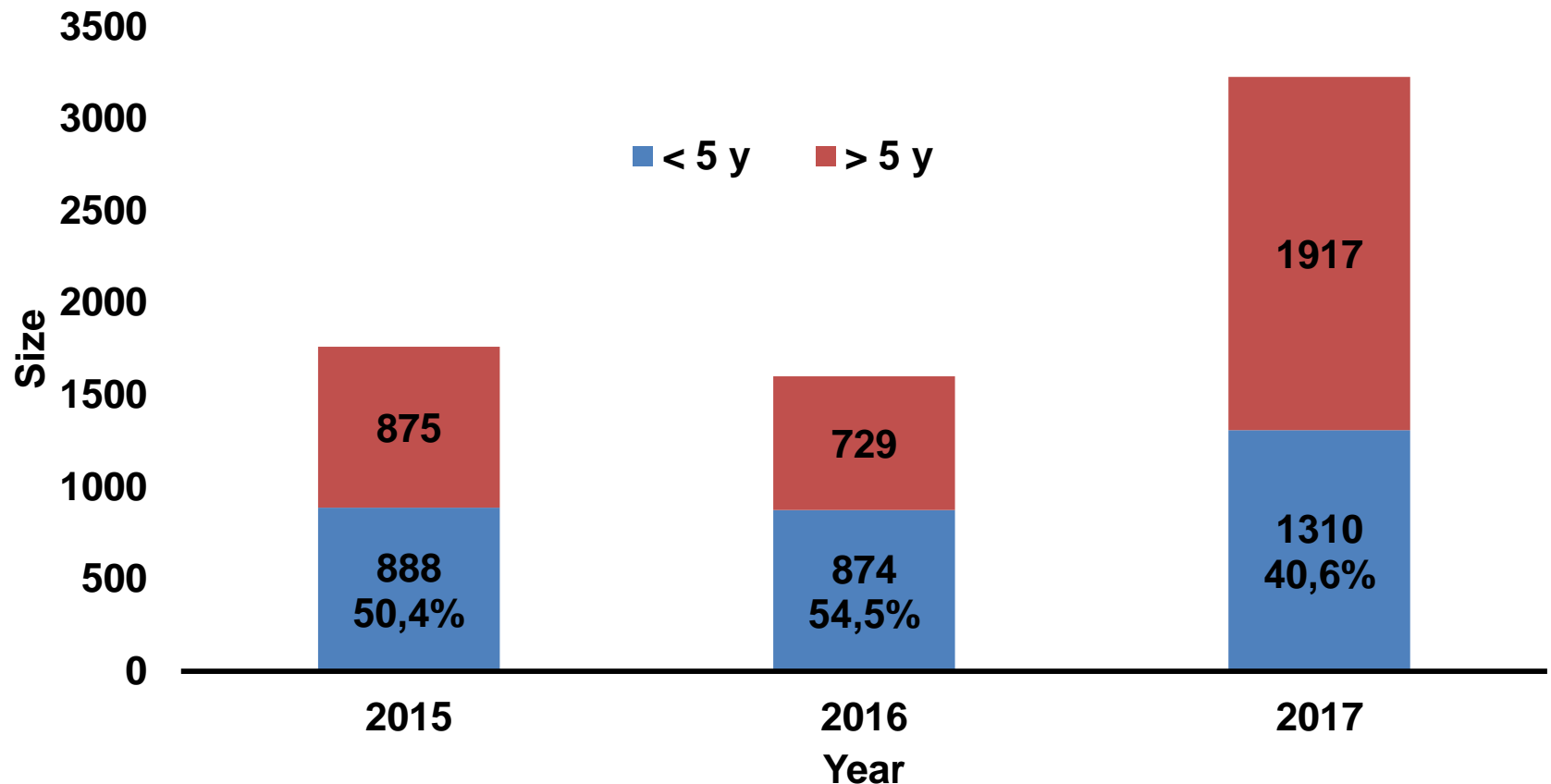
- **University Hospital Center (CHU) data : 2 centers**
  - **University Hospital Joseph Raseta Befelatanana (CHU-JRB)**
    - ✓ **Infectious diseases Unit**
    - ✓ **Hepato-gastroenterology Unit**
    - ✓ **Pneumology Unit**
    - ✓ **Pediatric Unit**
  - **University Pediatric Hospital Tsaralalana (CHU-MET)**

# Data sources

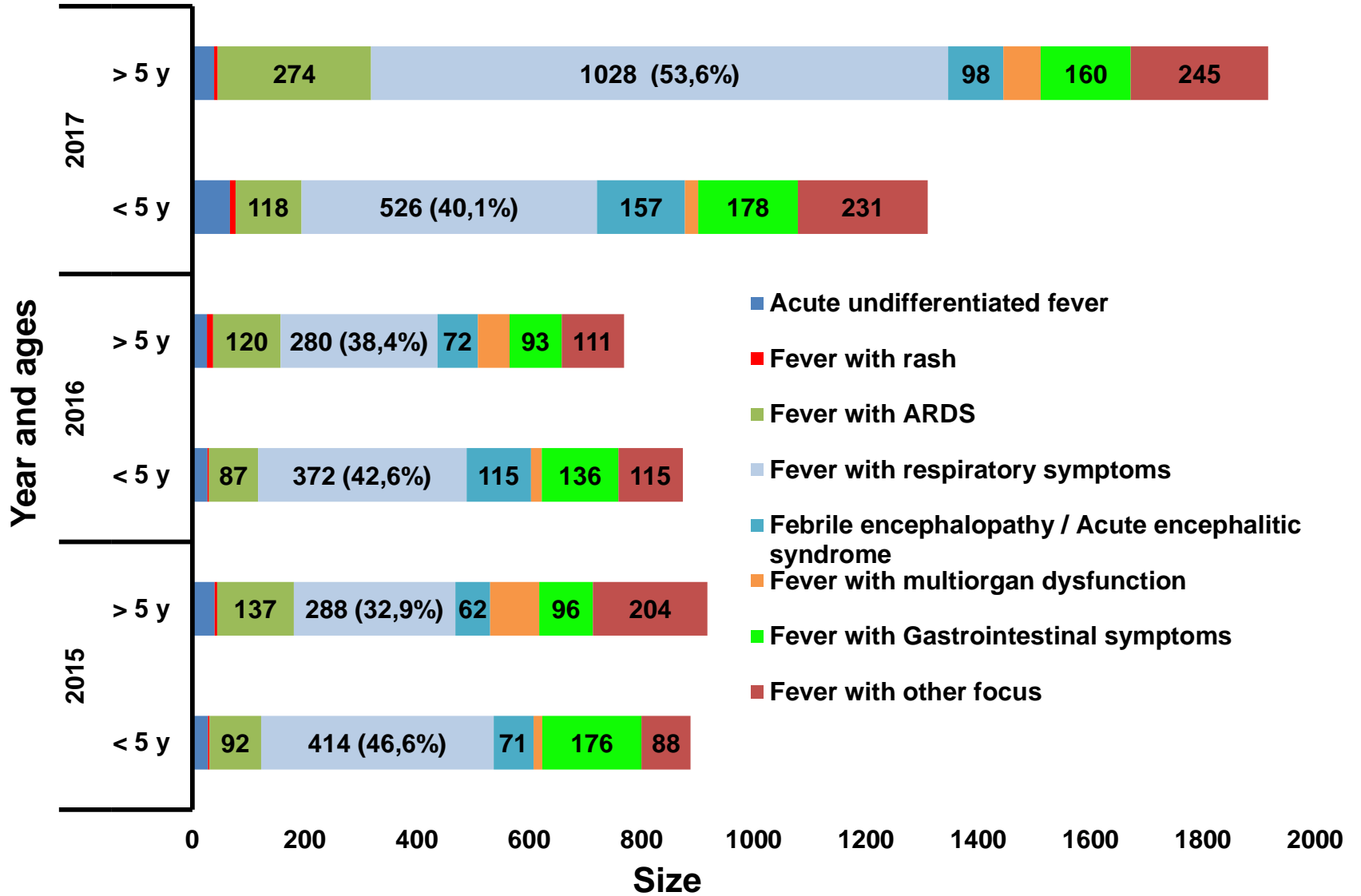
- **Data from 30 districts**
  - **Direction of Health Monitoring and Disease Surveillance (DVSSE)**

# University Hospital Joseph Rasetta Befelatanana (CHU-JRB)

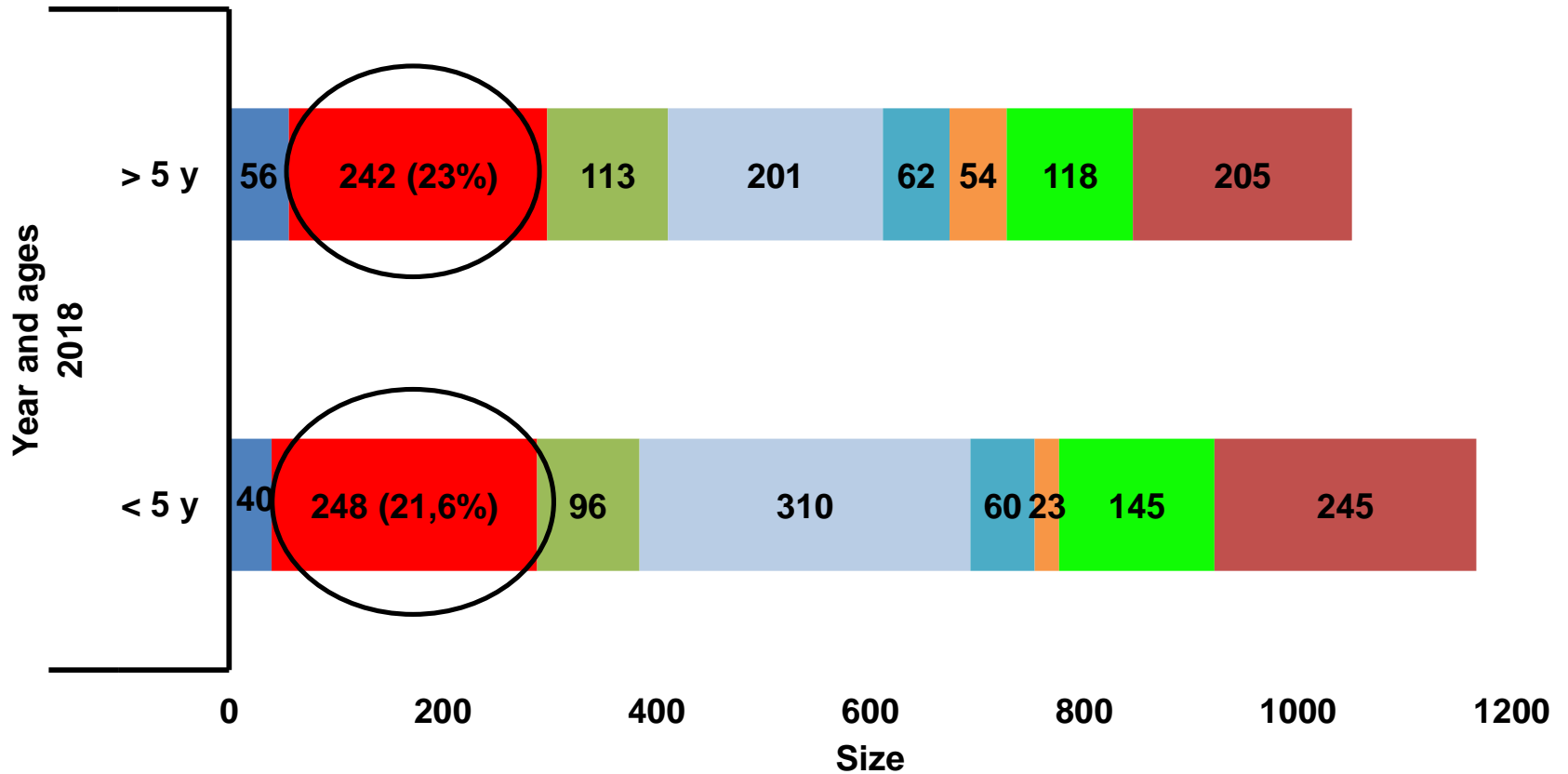
Acute fever CHU-JRB 2015-2017



# Acute fever CHU-JRB 2015-2017



## Acute fever CHU-JRB 2018



- Acute undifferentiated fever
- Fever with rash
- Fever with ARDS
- Fever with respiratory symptoms
- Febrile encephalopathy / Acute encephalitic syndrome
- Fever with multiorgan dysfunction
- Fever with Gastrointestinal symptoms
- Fever with other focus

# University Hospital Joseph Raseta Befelatanana (CHU-JRB)

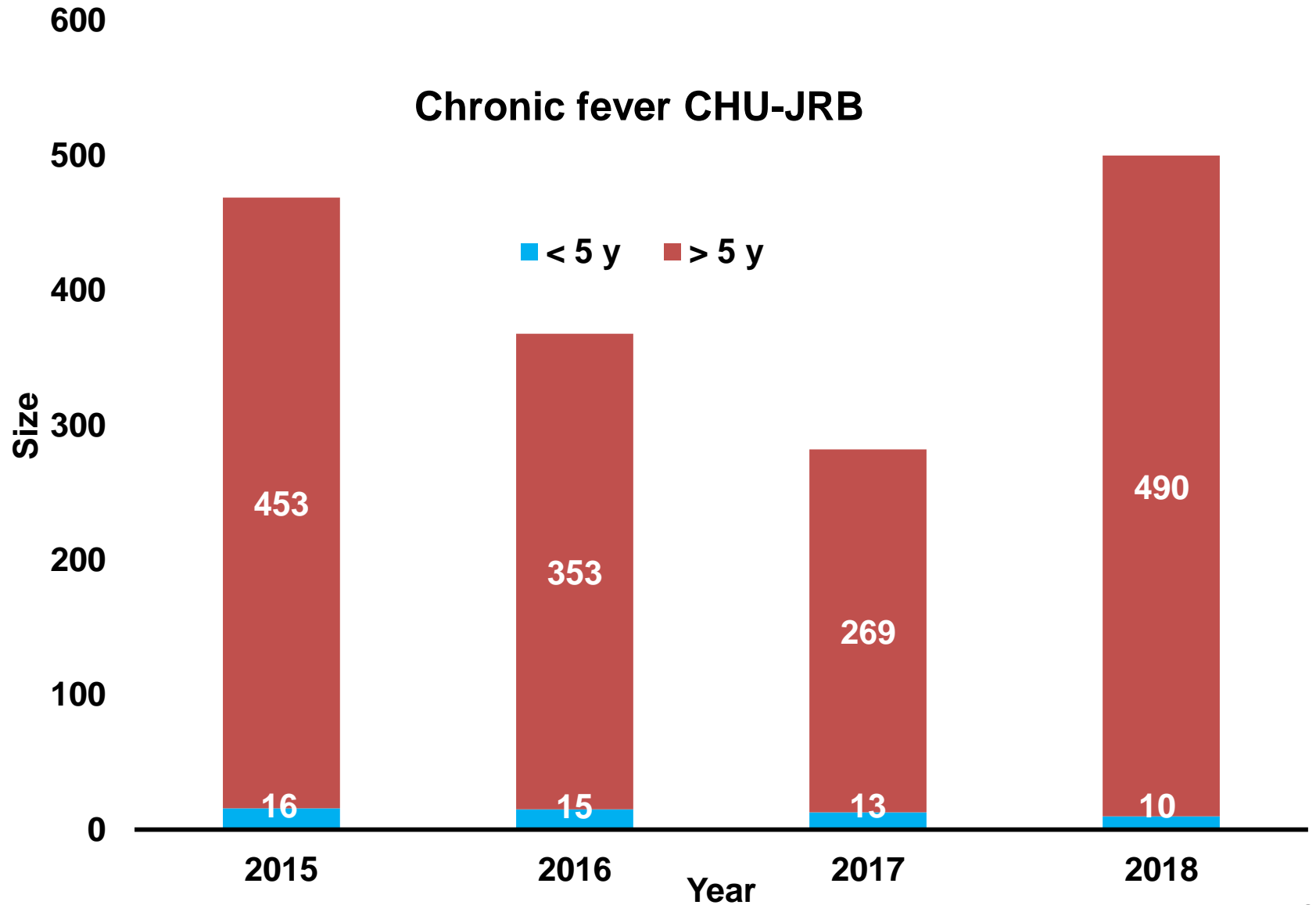
- **Plague Epidemic**

- **Started : August 2017**
- **World Health Organization : 1506 cases between August 1st - October 30th**

- **Measles Epidemic**

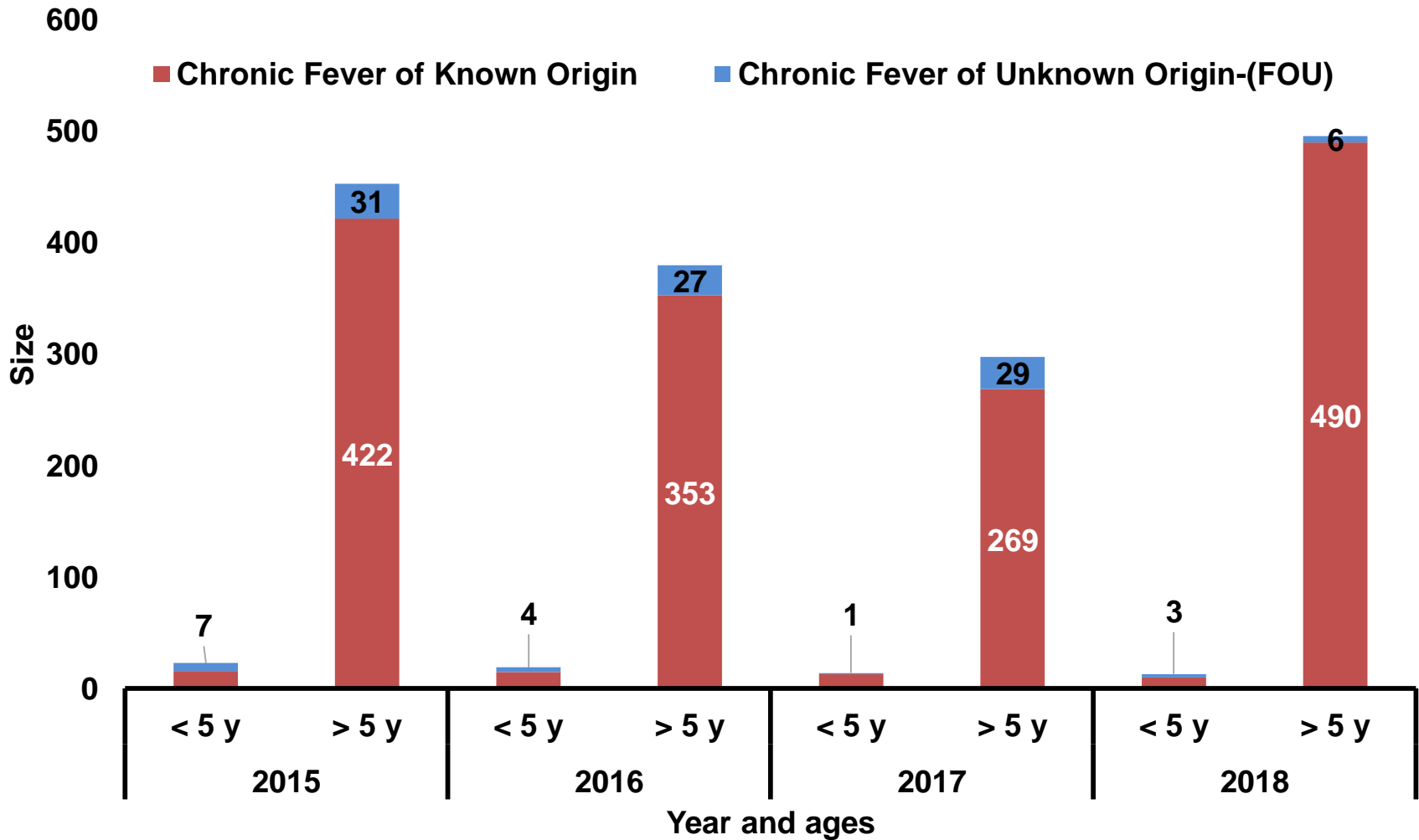
- **Started : October 2018**
- **Minister of public health : more than 15000 cases**
- **Low vaccination rate**

## Chronic fever CHU-JRB



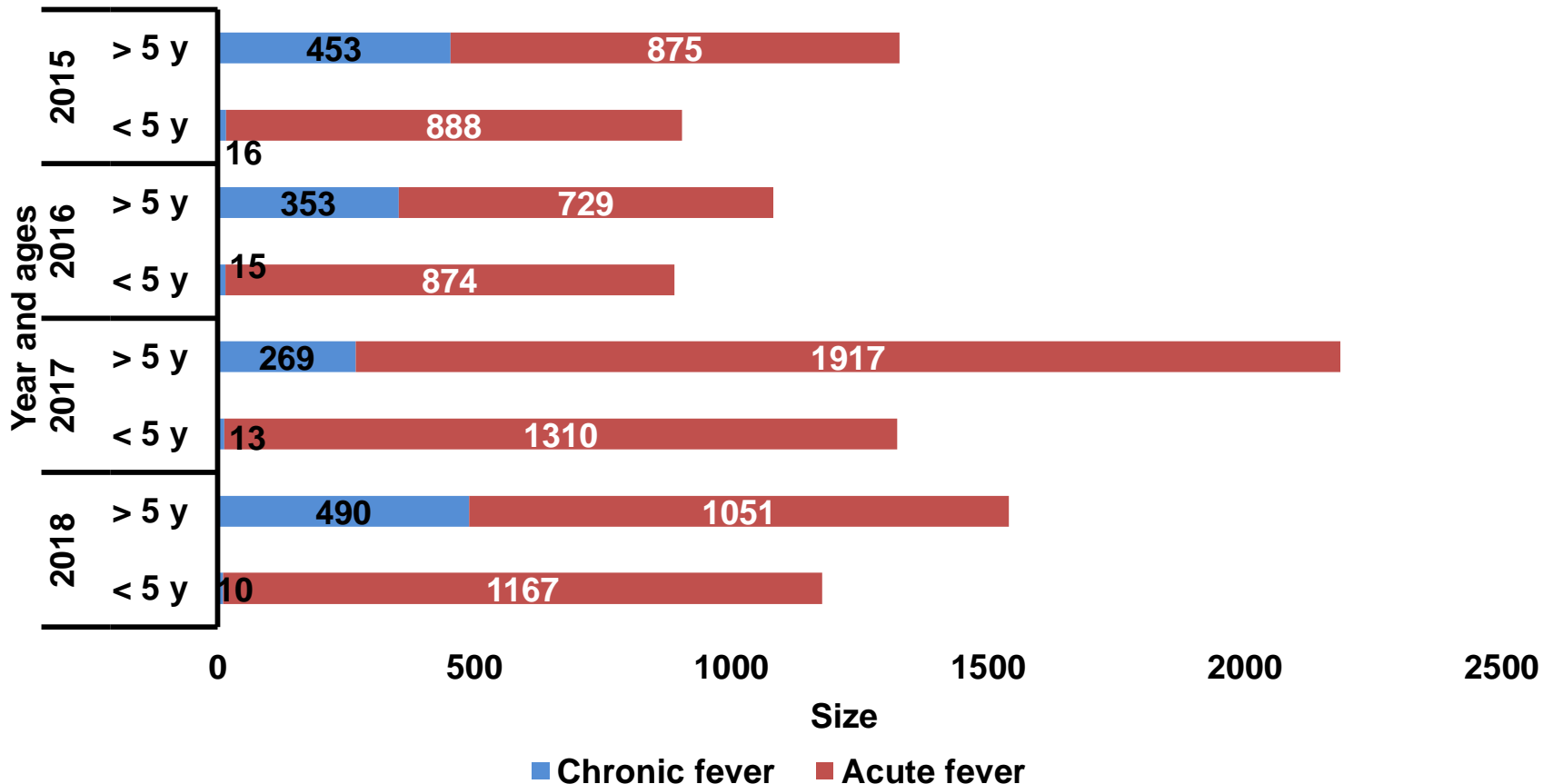


## Chronic fever CHU-JRB



# University Hospital Joseph Rasetta Befelatanana (CHU-JRB)

## Acute fever and chronic fever



Country:	Madagascar							
Hospital name / Location:	CHUJRB							
Catchment area:	Antananarivo							
Cases / Year	2015		2016		2017		2018	
	No of Cases < 5 y	No of Cases > 5 y	No of Cases < 5 y	No of Cases > 5 y	No of Cases < 5 y	No of Cases > 5 y	No of Cases < 5 y	No of Cases > 5 y
Acute undifferentiated fever (acute fever without any localizing signs)	28	40	27	26	67	39	40	56
Acute differentiated fever (acute fever with symptoms)	860	835	847	703	1243	1878	1127	995
Fever with rash	3	4	3	11	10	6	248	242
Fever with ARDS: Acute onset fever with respiratory distress in the form of SpO2 <90% at room air or frank ARDS with PaO2/FiO2 ratio <200.	92	137	87	120	118	274	96	113
Fever with respiratory symptoms (upper or lower respiratory tract) other than ARDS	414	288	372	240	526	1028	310	201
Febrile encephalopathy / Acute encephalitic syndrome	71	62	115	72	157	98	60	62
Fever with multiorgan dysfunction	16	87	19	56	23	67	23	54
Fever with Gastrointestinal symptoms	176	96	136	93	178	160	145	118
Fever with other focus	88	204	115	111	231	245	245	205
Chronic FEVER of Unknown Origin-(FOU)	7	31	4	27	1	29	3	6
Totals	895	949	875	756	1311	1946	1170	1057

# University Hospital Joseph Raseta Befelatanana (CHU-JRB)

- **Infectious diseases unit in 2018**
  - **Number of hospitalisation : 648 patients**
  - **Febrile diseases : 472 (72,83%)**
- **Pediatric unit in 2018**
  - **Number of hospitalisation : 2207 patients**
  - **Febrile diseases : 1333 (60,39%)**

# University Hospital Joseph Raseta Befelatanana (CHU-JRB)

- **Infectious diseases unit in 2018**

<b>Diagnostic</b>	<b>n</b>	<b>%</b>
<b>Measles</b>	<b>126</b>	<b>26,69</b>
<b>Tuberculosis (without HIV)</b>	<b>101</b>	<b>21,40</b>
<b>Malaria</b>	<b>73</b>	<b>15,47</b>
<b>HIV infection</b>	<b>63</b>	<b>13,35</b>
<b>Bacterial pneumonia</b>	<b>34</b>	<b>07,20</b>
<b>CNS bacterial infection*</b>	<b>24</b>	<b>05,08</b>
<b>Typhoid fever and febrile diarrhea</b>	<b>21</b>	<b>04,45</b>
<b>Urinary tract infection</b>	<b>11</b>	<b>02,33</b>
<b>Other</b>	<b>19</b>	<b>04,03</b>
<b>TOTAL</b>	<b>472</b>	<b>100</b>

\*central nervous system

# University Hospital Joseph Raseta Befelatanana (CHU-JRB)

- **Pediatric unit in 2018**

<b>Diagnostic</b>	<b>n</b>	<b>%</b>
<b>Measles</b>	<b>358</b>	<b>26,86</b>
<b>Neonatal infection</b>	<b>239</b>	<b>17,93</b>
<b>Bronchiolitis</b>	<b>231</b>	<b>17,33</b>
<b>Gastroenteritis</b>	<b>155</b>	<b>11,63</b>
<b>Bacterial pneumonia</b>	<b>124</b>	<b>09,30</b>
<b>CNS infection*</b>	<b>80</b>	<b>06,00</b>
<b>Other</b>	<b>146</b>	<b>10,95</b>
<b>TOTAL</b>	<b>1333</b>	<b>100</b>

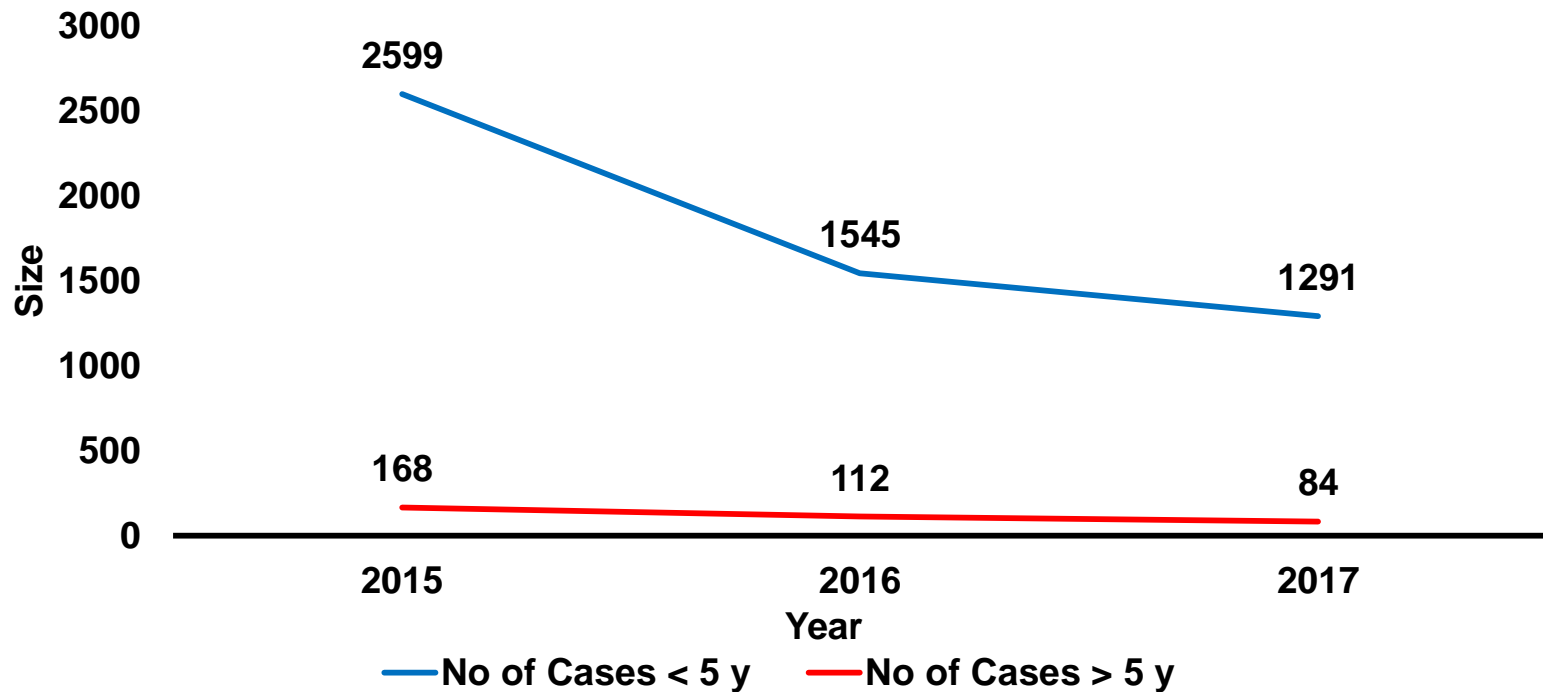
\*central nervous system

# Site Capacity Description CHU-JRB

LABORATORY	Availability	Equipment / Type	Numbers performed per month
Blood culture	Oui	MANUAL	56
CSF cultures	Oui	MANUAL	33
Other Microbiological cultures	Oui	MANUAL	160
Realtime PCR for pathogen detection	Non		
CLINICAL	Answer		
Hospital level	Tertiary		
In-patients and outpatients average admissions per months	IN PATIENTS : 1300		
Hospital number of beds	450		

# University Pediatric Hospital Tsaralalana CHU-MET

Children admitted for fever



➡ **Decrease by 40% admission capacity due the renovation of the hospital**



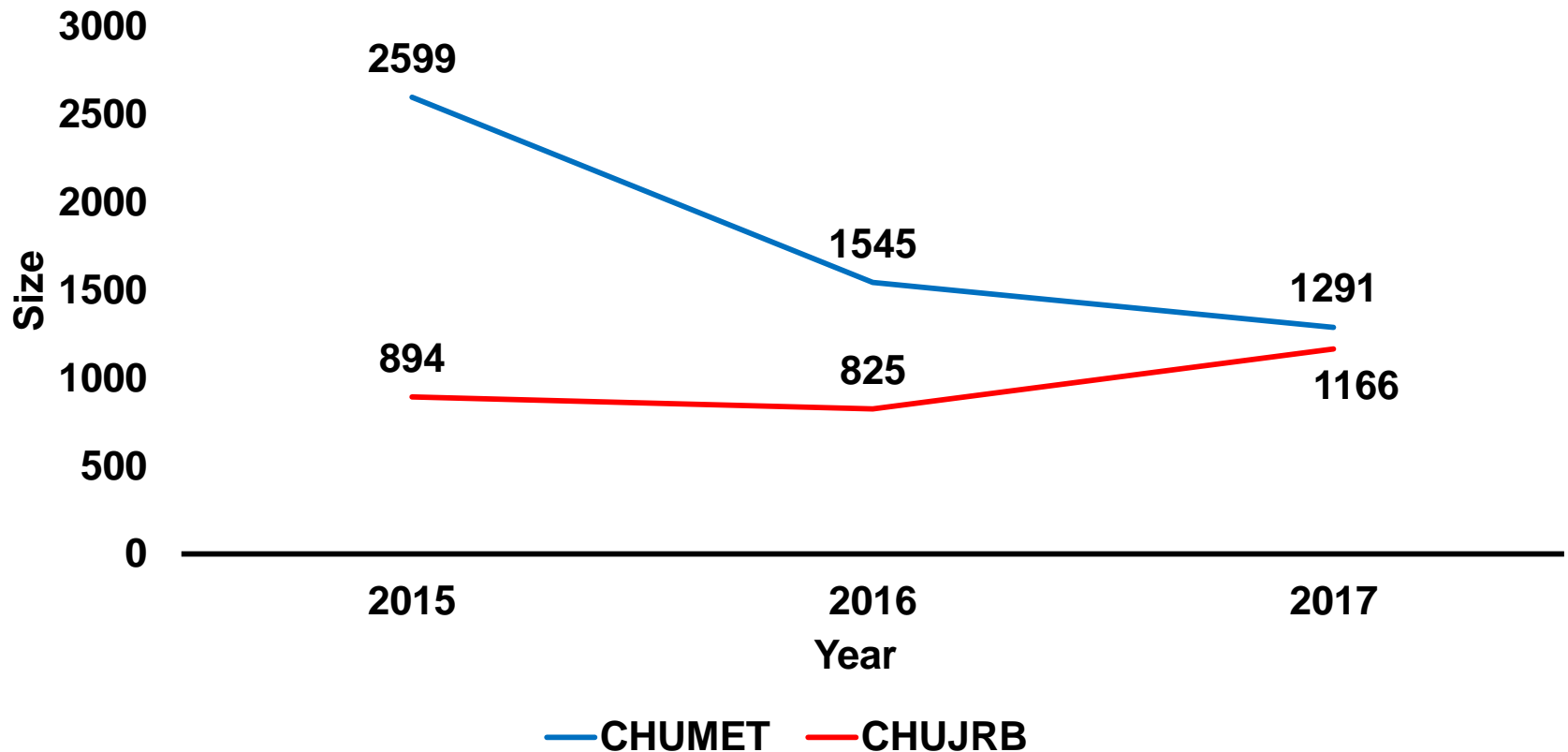
Country:	MADAGASCAR					
Hospital name / Location:	CHU-MET					
Catchment area:	Antananarivo					
Cases / Year	2015		2016		2017	
	No of Cases < 5 y	No of Cases > 5 y	No of Cases < 5 y	No of Cases > 5 y	No of Cases < 5 y	No of Cases > 5 y
Acute undifferentiated fever (acute fever without any localizing signs)	26	8	29	3	10	2
Acute differentiated fever (acute fever with symptoms)	1147	98	713	52	607	45
Fever with rash	14	1	3	1	4	0
Fever with ARDS: Acute onset fever with respiratory distress in the form of SpO2 <90% at room air or frank ARDS with PaO2/FiO2 ratio <200.	40	3	17	2	51	4
Fever with respiratory symptoms (upper or lower respiratory tract) other than ARDS	683	3	336	17	254	11
Febrile encephalopathy / Acute encephalitic syndrome	284	17	111	8	145	0
Fever with multiorgan dysfunction	40	6	8	0	20	0
Fever with Gastrointestinal symptoms	188	2	177	7	117	0
Fever with other focus	175	30	150	21	81	22
Chronic Fever of Unknown Origin-(FOU)	2	0	1	1	2	17
<b>Total</b>	<b>2599</b>	<b>168</b>	<b>1545</b>	<b>112</b>	<b>1291</b>	<b>84</b>

# Site Capacity Description CHU-MET

LABORATORY	Availability	Equipment / Type	Numbers performed per month
Blood culture	YES	MANUAL	19
CSF cultures	YES	MANUAL	31
Other Microbiological cultures	YES	MANUAL	37
Realtime PCR for pathogen detection	NO		
CLINICAL	Answer		
Hospital level	TERTIARY		
In-patients and outpatients average admissions per months	IN PATIENTS : 195		
Hospital number of beds	59		

# CHU-MET vs CHU-JRB

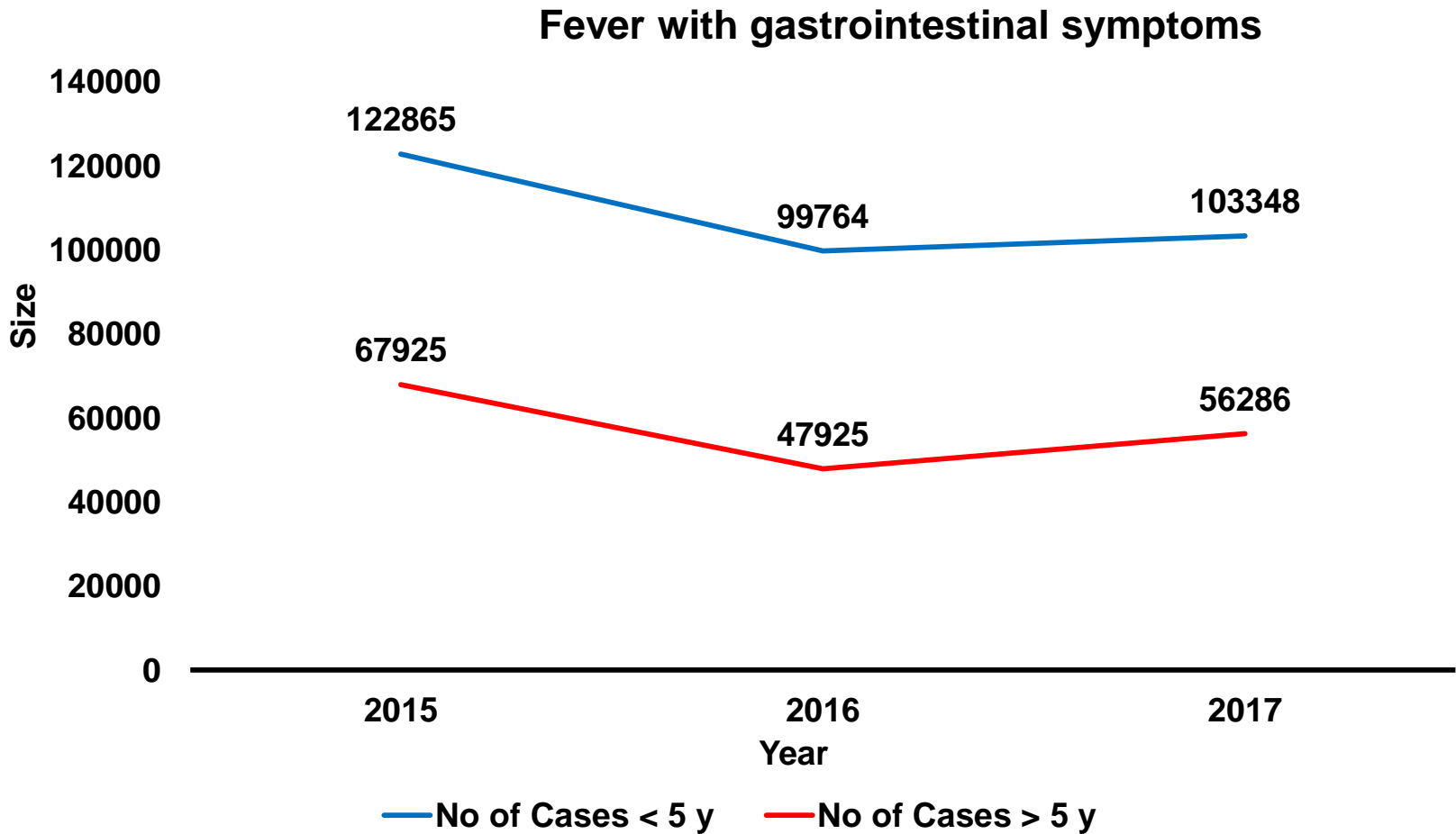
Number of children admitted into hospital due to febrile illness at CHU-MET and CHU-JRB



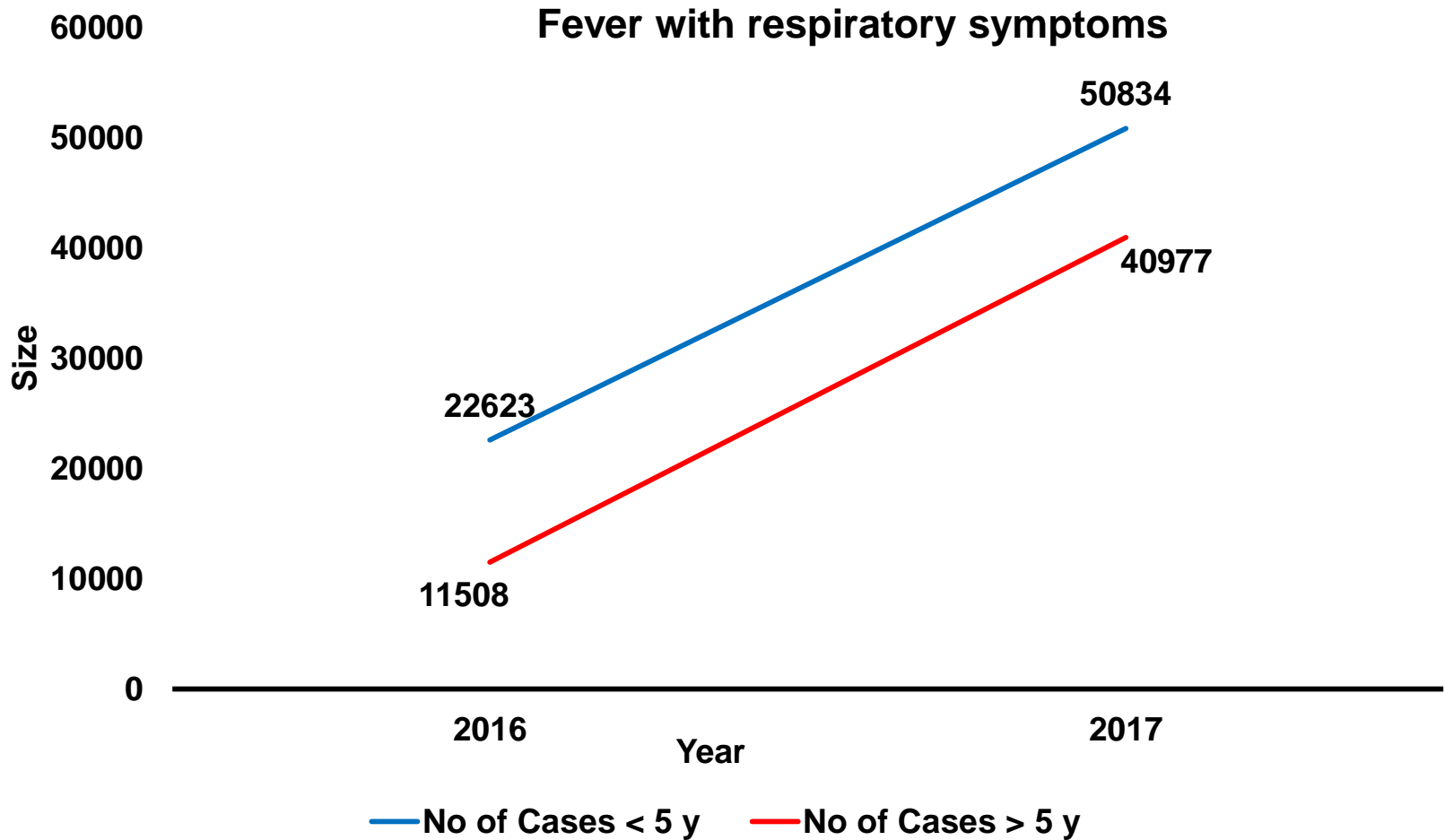
# Direction of Health Monitoring and Disease Surveillance

- **Epidemiological surveillance**
  - **The main causes of fever in the 30 districts in Madagascar**
    - ✓ **1<sup>st</sup> : fever + gastrointestinal symptoms**
    - ✓ **2<sup>rd</sup> : fever + respiratory symptoms**

# Direction of Health Monitoring and Disease Surveillance



# Direction of Health Monitoring and Disease Surveillance



# Conclusion

- **Causes of illness among adults and children having fever**
    - **In hospitals**
      - ✓ **1<sup>st</sup> : fever + respiratory symptoms**
    - **Direction of health monitoring and diseases surveillance**
      - ✓ **1<sup>st</sup> : fever + gastrointestinal symptoms**
- Change of the deal during the epidemics**

**THANK YOU FOR YOUR ATTENTION**