

# Management of Chikungunya Outbreaks in Central Java Province 2012.

Rudi Hendro Putranto<sup>1</sup>, Sefrina Werni<sup>1</sup>

<sup>1</sup>Research and Development Center for Health Resources and Services, Health Research and Development Body of Indonesia Health Ministry, Jl. Percetakan Negara No. 29 Jakarta Pusat.

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## ABSTRACT

**Background:** Chikungunya remains one of the most contagious diseases that are at risk of causing high morbidity rates and public health problems in some parts of Indonesia. Chikungunya dispersal in Indonesia occurs in endemic areas of dengue hemorrhagic fever because the virus-carrying vectors are transmitted by mosquitoes. Chikungunya events occurring in Central Java Province in Salatiga City, Semarang, Blora is a phenomenon that must be known for certain risk factors that affect Chikungunya events. **Methods:** Data were collected from field investigations by the provincial fast-track team. Serum samples were tested serologically and Polymerase Chain Reaction (PCR). Currently all provinces in Indonesia are potential for Chikungunya outbreak. Outbreaks often occur at the beginning and end of the rainy season. It is necessary to be aware of the emergence of chikungunya disease by knowing the symptoms and signs because this disease entity is associated to a high morbidity. **Results:** Rapid Diagnostic Test (RDT) NS-1 Chikungunya was performed on 7 patients with 5 negative cases and 2 positive cases (Salatiga City). In Blora District total 6 cases were evaluated with RDT NS-1 and the results showed they were all negative. Polymerase Chain Reaction (PCR) Evaluation by Ministry of Health R&D team. PCRs were conducted on 22 cases of Chikungunya suspects and the results revealed that 10 cases were positive of Chikungunya (Salatiga City). In Semarang City, one out of three cases were positively identified as Chikungunya, while in Blora, one out of six 6 cases was identified. **Conclusion:** Chikungunya incidence that occurs in several provinces in Indonesia is a phenomenon that must be known with certainty for the risk factors that affect the incidence of Chikungunya..

**Keywords:** Outbreak, Chikungunya, Central Java.

## INTRODUCTION

Outbreak is a status applied in Indonesia to classify the event of a disease dispersal. The status of "Outbreak" is regulated by Indonesia Health Ministry Regulation No. 949/MENKES/SK/SK/VIII/2004. The criteria of Outbreak status refers to Directorate General Decree No. 451/91, on Outbreak Investigation and Management Guidance.

In the past few decades, the emergence of new diseases and the re-emergence of old diseases that have been declining have been identified. This appearance causes an increase in cases of infection in the world. WHO named these new infectious diseases as Emerging Infectious Diseases (EID). Many factors cause this to happen, such as changes in the environment due to changes in nature or human hands, increased antibiotic resistance so that microbes become immune due to irrational use of drugs, and rapid patterns of population growth so that the land for

housing decreases. Increased cases that are not accompanied by good anticipation will result in outbreaks of disease.

The first Chikungunya Outbreak in Indonesia occurred in 1982 in Samarinda, which then spreaded to another ares in 1983 in DI Yogyakarta, 1999 in Muara Enim, 2001 in Aceh and Bogor. Since then the disease spread to almost every province including in the province of Central Java.

In 2011, in Central Java, there were 568 Chikungunya outbreaks in 4 regencies, Sukoharjo Regency had the highest cases with 337, followed by Pemalang Regency with 103 cases, Sragen Regency 84 cases and Blora Regency with 44 cases.

In the middle of February 2012, the Chikungunya case still occurred and spread in 3 regencies / cities, namely Blora regency, the most cases being 79 people followed by Salatiga, attacking 72 people and in the city of Semarang with 22 people.

A sample of 22 patients in Salatiga City and 3 patients in Semarang City were conducted by Health Research and Development, Ministry of Health, Jakarta. B2P2VRP Salatiga in Salatiga City had also taken vector samples in Salatiga City. Whereas Blora regency had not been sampled. The results of examination of samples from Salatiga City from 22

### Name & Address of Corresponding Author

Dr. Rudi Hendro Putranto,  
Research and Development Center for Health Resources  
and Services,  
Health Research and Development Body of Indonesia  
Health Ministry,  
Jl. Percetakan Negara No. 29 Jakarta Pusat.

positive samples of Chikungunya have 10 samples, for samples from the city of Semarang there was 1 positive case. In addition to the vector examination conducted by BBVRV Salatiga in Salatiga City, the *Aedes Aegypti* mosquito has a positive Chikungunya virus.

The Rapid Diagnostic Test (RDT) examination for the Chikungunya cases was conducted in Salatiga city. Out of 7 cases, there were 5 cases negative and 2 cases were positive. In Blora regency, from total 6 cases, all of them were negative.

#### **Information Sources For 2012 Incidences**

1. Semarang City: Information via phone by Cakra Semarang TV to Head of Disease Prevention and Eradication Division on suspected Chikungunya cases in large number in the region of Cinde, Jomblang Village, Candisari Subdistrict, in January 19, 2012.
2. Salatiga City: The people from Sinoman, Sidorejo Lor Village, Sidorejo Subdistrict, Salatiga city reported to Community Health Center in January 8, 2012.
3. Blora Regency: Community Health Center personnels reported to Regencial Health Office in January 16, 2012.

### **MATERIALS AND METHODS**

The incidence of Chikungunya occurring in several provinces in Indonesia is a phenomenon that must be known with certainty about various risk factors that influence the incidence of Chikungunya. There are several risk factors associated with Chikungunya incidents including the condition of the home environment and community behavior in controlling the disease. Laboratory investigation and examination as a definitive diagnosis, laboratory investigations are also useful for determining the type (type, serotype and even genotype) of microorganisms that cause outbreaks. This is useful for determining the prognosis of the disease, mapping the spread of the disease, determining sensitive antibiotics, and others. In addition to

laboratories, investigation of factors related to an outbreak needs to be investigated. The introduction of the characteristics of this outbreak is very much needed to take quick and appropriate follow-up steps, and to prevent possible outbreaks in the future.

### **RESULTS & DISCUSSION**

#### **A. Investigation**

Chikungunya Outbreaks occurring in Central Java Province were distributed in 3 (three) regencies/cities, namely Salatiga, Semarang and Blora Regency.

Chikungunya Outbreak Epidemiology Investigation Team consisted of personnels from Community Health Center, Regional Health Office, Provincial Health Office, FETP students from UGM and B2P2VRP of Salatiga city. Epidemiology investigations were all performed in January 2012 as shown in the [Table 1].

**Table 1: Chikungunya Epidemiology Investigation in Central Java 2012.**

No	Reg/City	EI date	EI team
1	salatiga	9-12 Jan	Community Health Center, Local Health Office, FETP, B2P2VRP Health Office of Central Java and Health Ministry R&D
2	Semarang	19-20 Jan	Community Health Center, Local Health Office, Binwil
3	blora regency	11-19 Jan	Community Health Center, Local Health Office, FETP
		9-20 Jan	Community Health Center, Local Health Office, FETP

**Table 2: Distribution of suspected Chikungunya in Central Java 2012.**

NO	REG/CITY	Total Cases
1	Salatiga	85
2	Semarang	22
3	Blora	79
Total		186

**Table 3: Distribution of Chikungunya suspects in Central Java 2012.**

No	Reg/city	Cases	Symptoms									
			Fever	Joint Pain	Rash	Muscle Pain	Headache	Itchy rash	Swelling	Chills	Vomiting	Red conjunctiva
1	salatiga	85	84	79	29	5	3	0	0	0	6	2
2	semarang	22	22	22	8	0	0	0	4	0	0	0
3	blora	79	79	77	40	75	75	24	4	42	45	8
TOTAL		186	185	178	77	80	78	24	8	42	51	10
Percentage (%)			99.5	95.7	41	43	42	12.9	4.3	23	29	13

#### **B. Distribution of Cases :**

The number of cases of Chikungunya suspects that occurred in 3 regencies / cities in Central Java Province until mid-February 2012 there were 186 cases, the most cases occurring in the city of Salatiga, which was 85 cases. The distribution of

Chikungunya suspect cases can be seen from the [Table 2].

#### **C. Distribution of Symptoms :**

The most common symptom of Chikungunya suspect was fever (99.5%) and Joint Pain (95.7%) followed by other symptoms as can be seen from the [Table 3].

**D. Diagnosis establishment**

Diagnosis of suspected Chikungunya was established as follow:

**1. Salatiga**

Diagnosis of suspected Chikungunya was established from clinical symptoms confirmed by laboratory test with 2 steps:

- Rapid Diagnostic Test (RDT) NS-1 Chikungunya was performed in 7 patient with the results showed 7 cases were negative and 2 cases were positive (slightly doubtful results due to less firm lines). RDT Chikungunya was used for the first time in Salatiga City, making the human error was highly possible.
- Polymerase Chain Reaction (PCR) evaluation by Indonesia Health Ministry R&D. PCR was performed to 22 cases of suspected chikungunya. The results showed 10 cases were positive.
- B2P2VRP in Salatiga city have collected vector samples and the evaluation results confirmed Aedes Aegypti that positively contained Chikungunya.
- It was confirmed that in Sinoman, RT 06 and 11 of RW 08, Sidorejo Lor village, Sidorejo Subdistrict, Salatiga City, there had been Chikungunya virus dispersal as shown by laboratory results in human and vector (*Aedes aegypti*).

**2. Semarang:**

Diagnosis of suspected Chikungunya was established from clinical symptoms confirmed by laboratory test with the following steps:

- Polymerase Chain Reaction (PCR) evaluation by Indonesia Health Ministry R&D. PCR evaluations were performed to 3 suspected Chikungunya cases. The results revealed 1 cases was positive for Chikungunya.
- It was confirmed that in incidence location, Cinde, Jomblang Village, Candisari Subdistrict, there had been Chikungunya virus dispersal as confirmed by laboratory test on human.

**Tabel 4: Hasil Akhir kasus tersangka Chikungunya di Jawa Tengah tahun 2012.**

No	Reg/City	Total Cases	End Results	
			Headed	Note
1	Salatiga	85	85	
2	Semarang	22	22	
3	Blora	79	79	
	Giyanti Village	31	31	
	Ngroto Village	26	26	
	Tbk Kromo Village	13	13	1 case was temporarily hospitalized
	Balun Village	9	9	4 cases were temporarily hospitalized
Total		186	186	

**3. Blora regency:**

Diagnosis of suspected Chikungunya was established from clinical symptoms confirmed by laboratory test with 2 steps:

- Rapid Diagnostic Test (RDT) NS-1 Chikungunya was performed in 6 patients with negative results for all.
- Polymerase Chain Reaction (PCR) evaluation by Indonesia Health Ministry R&D with 1 case was positive
- Blora Regency had Chikungunya Outbreak for 2 years consecutively from 2011 to 2012.

**E. End Results:**

All suspected Chikungunya cases were successfully treated with no fatal outcome. There were 5 cases temporarily hospitalized, all of them from Blora regency, as shown in the [Table 4].

**F. Epidemiological Characteristics (People, Location and Time)****1. By people****a) By gender**

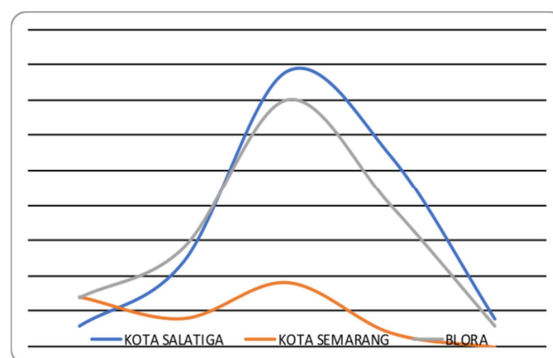
According to epidemiological characteristics of Chikungunya outbreak by gender, percentage of female (58.6%) was higher than male (41.4%) as can be seen in the [Table 5]

**Table 5 : Chikungunya outbreak by gender 2012**

No	Reg/City	Total Case	Gender		Percentage (%)	
			M	F	M	F
1	Salatiga	85	41	44	48.2	51.8
2	Semarang	22	10	12	45.5	54.5
3	Blora	79	26	53	32.9	67.1
Total		186	77	109	41.4	58.6

**b) By age**

Epidemiological description of Chikungunya outbreak according to age, the highest number was in productive age (15-44 years old) as can be seen in the following [Figure 1].



**Figure 1: Chikungunya outbreak by age in Central Java 2012**

**2. By location**

Epidemiological description of Chikungunya outbreak according to the place of occurrence, the location with highest incidence was in Blora

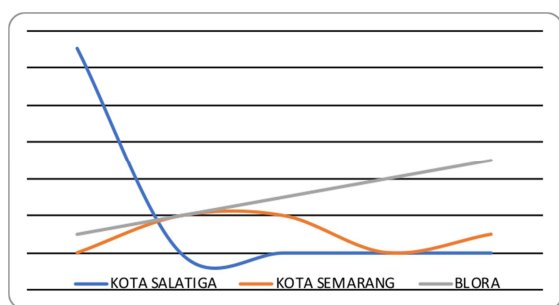
Regency with distribution in 6 RTs, 4 RWs and 4 Villages, in 2 Districts as can be seen in the following [Table 6].

**Table 6 : Chikungunya outbreak by location 2012**

No	Reg/City	Rt	Rw	Village	Sub-District
1	Salatiga	Rt 06, 11	8	Sidorejo Lor	Sidorejo
2	Semarang	Rt 5,6,7,8	8	Jombang	
3	Blora				
	Giyanti	Rt 01, 02, 04	1	Giyanti	Sambong
	Ngroto	Rt 05	2	Ngroto	Cepu
	Tbk Kromo	Rt 03	8	Tbk Kromo	Cepu
	Balun	Rt 02	15	Balun	Cepu

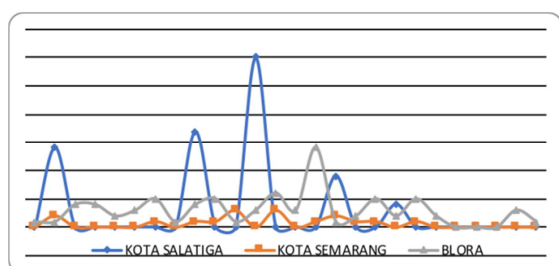
### 3. By time

The incidence of Chikungunya suspects was started in December 21, 2011 in 2 regency/city, Salatiga and Blora, which were then followed by Semarang in December 24, 2011 as can be seen from the following [Figure 2].



**Figure 2 : Chikungunya Outbreak During December 2011 in Central Java**

Epidemiology of Chikungunya outbreak by time, cases of Chikungunya suspects developing in January 2012 in 3 districts / cities can be seen in the following [Figure 3]



**Figure 3: Chikungunya outbreak during Januari 2012 in Central Java**

### Follow-Up Planning

1. Movement to Eradicate Mosquito Nests simultaneously, in bulk, routinely and on target with reporting.
2. Monitor the progress of cases and PSN movements through cadres and monitored by puskesmas officers.

3. Monitoring 2 times the incubation period of Chikungunya outbreak and Clean and Healthy Life Behavior

## CONCLUSION

Chikungunya incidence that occurs in several provinces in Indonesia is a phenomenon that must be known with certainty for the risk factors that affect the incidence of Chikungunya. Data were collected from field investigations by the fast-moving team in the province. Serum testing was carried out by serology and Polymerase Chain Reaction (PCR). The number of cases of Chikungunya suspects that occurred in 3 regencies / cities in Central Java Province, namely Salatiga, Semarang and Blora until mid-February 2012 were 186 cases, the most cases of which occurred in the city of Salatiga (85 cases). Outbreaks often occur at the beginning and end of the rainy season. It is necessary to be aware of the appearance of chikungunya disease by knowing the symptoms and signs because this disease is associated to a high morbidity rate.

## REFERENCES

1. Kementerian Kesehatan Republik Indonesia, 2004. Peraturan Menteri Kesehatan No. 949/MENKES/SK/VIII/2004 tentang Pedoman Penyelenggaraan Sistem Kewaspadaan Dini Kejadian Luar Biasa (KLB).
2. Sejarah Chikungunya di Indonesia, Suatu Penyakit re emerging. Wibowo\* \*Pusat Penelitian dan Pengembangan Biomedis dan Farmasi. Suplemen Media Penelitian dan Pengembangan Kesehatan Volume XX tahun 2010.
3. <http://www.depkes.go.id/article/view/491/waspada-demam-chikungunya.html>
4. <http://www.who.int/news-room/fact-sheets/detail/chikungunya>
5. Buku Pedoman Pengendalian Demam Chikungunya. Edisi 2. Direktorat Jendral Pengendalian Penyakit dan Penyehatan Lingkungan. Kementerian Kesehatan Republik Indonesia. 2012.
6. Masri Sembiring Maha dan Subangkit. Manifestasi Klinik Infeksi Virus Chikungunya pada Kejadian Luar Biasa di Indonesia. Jurnal Biotek Medisiana Indonesia . Vol.3.1.2014:11-16. <https://media.neliti.com/media/publications/75680-ID-manifestasi-klinis-infeksi-virus-chikung.pdf>
7. Amirullah. Chikungunya: Transmisi dan Permasalahannya. Aspirator vol. 3 no. 2 tahun 2011: 100-106 <http://ejournal.litbang.depkes.go.id/index.php/aspirator/article/viewFile/2964/2149>
8. Ardanty Nuary Kasih. Faktor Risiko Lingkungan dan Perilaku Terhadap Kejadian Chikungunya di Wilayah Luar Biasa di Puskesmas Gunungpati tahun 2013. Jurusan Ilmu Kesehatan Masyarakat Fakultas Ilmu Keolahragaan 2015. <http://lib.unnes.ac.id/20619/1/6411409022-S.pdf>
9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5657184/>
10. <https://dokterairlangga.wordpress.com/2017/10/03/gejala-dan-penanganan-demam-chikungunya/>
11. <http://kumpulan-makalah-dan-artikel.blogspot.com/2013/05/Contoh-Makalah-Tentang-Penyakit-Chikungunya.html>
12. Dian Indra dewi\* \*Staf Loka Litbang P2B2 Banjarnegara. CHIKUNGUNYA. <file:///D:/SDM%202018/ARTIKEL%202018/Artikel%20pak%20Rudi/Hasil%20browsing/2597-2648-1-PB.pdf>

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