

**EBOLA VIRUS DISEASE
(EBOLA HEMORHAGIC FEVER)**



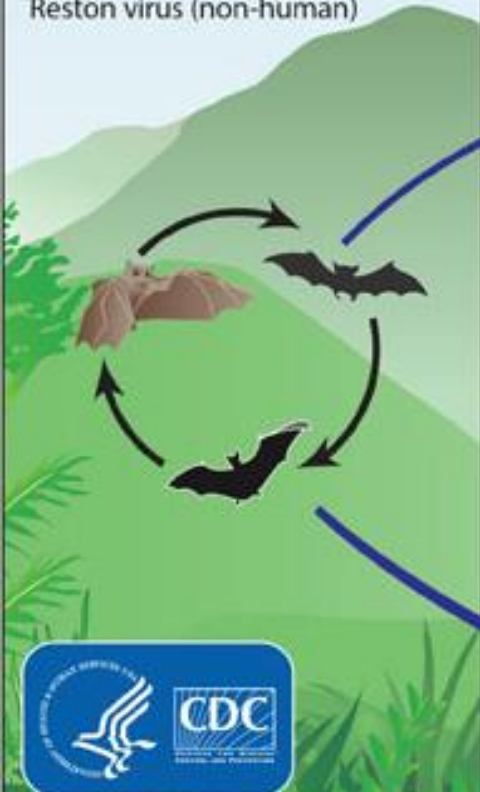
Ebolavirus Ecology

Enzootic Cycle

New evidence strongly implicates bats as the reservoir hosts for ebolaviruses, though the means of local enzootic maintenance and transmission of the virus within bat populations remain unknown.

Ebolaviruses:

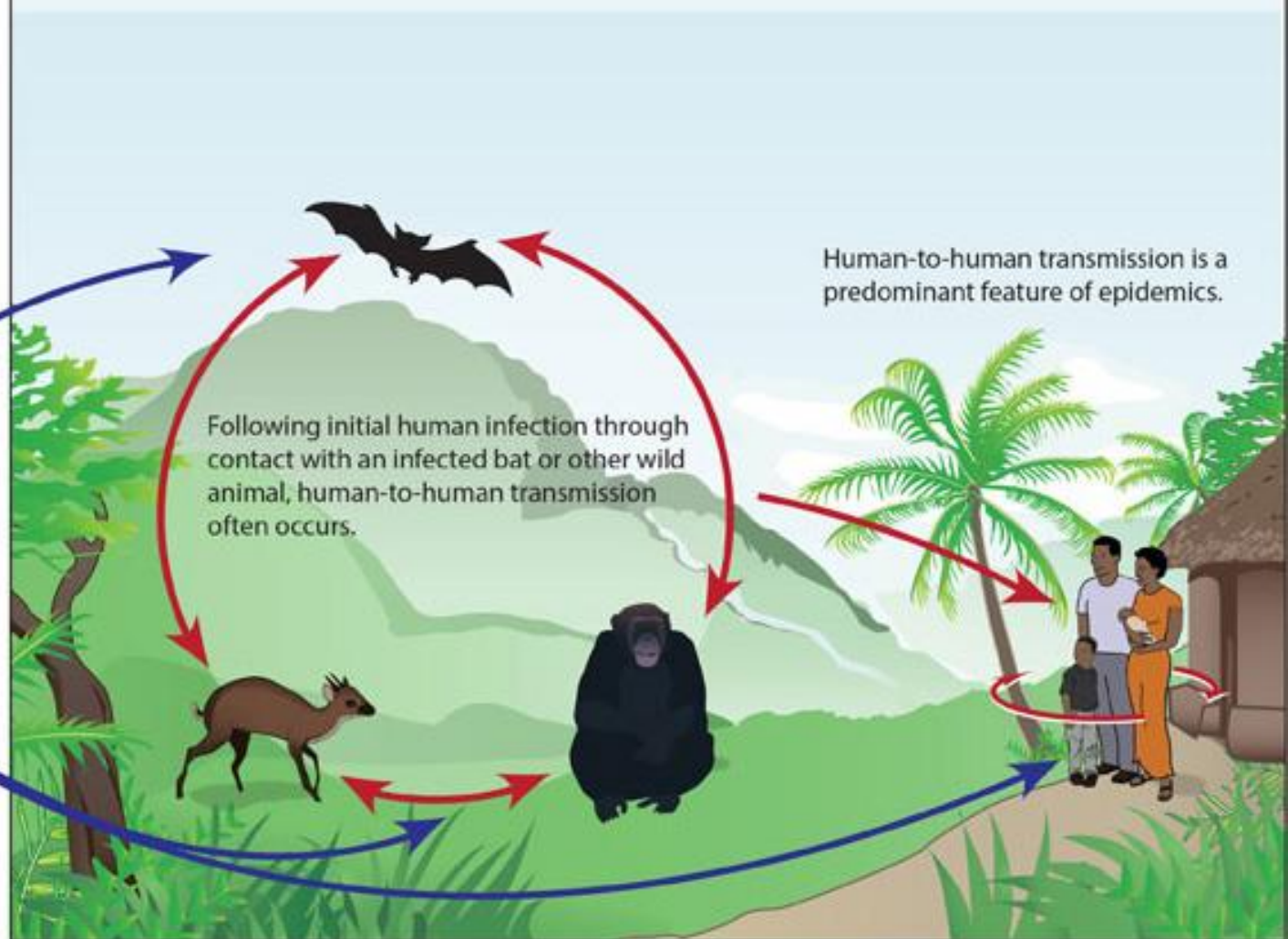
- Ebola virus (formerly Zaire virus)
- Sudan virus
- Tai Forest virus
- Bundibugyo virus
- Reston virus (non-human)



Epizootic Cycle

Epizootics caused by ebolaviruses appear sporadically, producing high mortality among non-human primates and duikers and may precede human outbreaks. Epidemics caused by ebolaviruses produce acute disease among

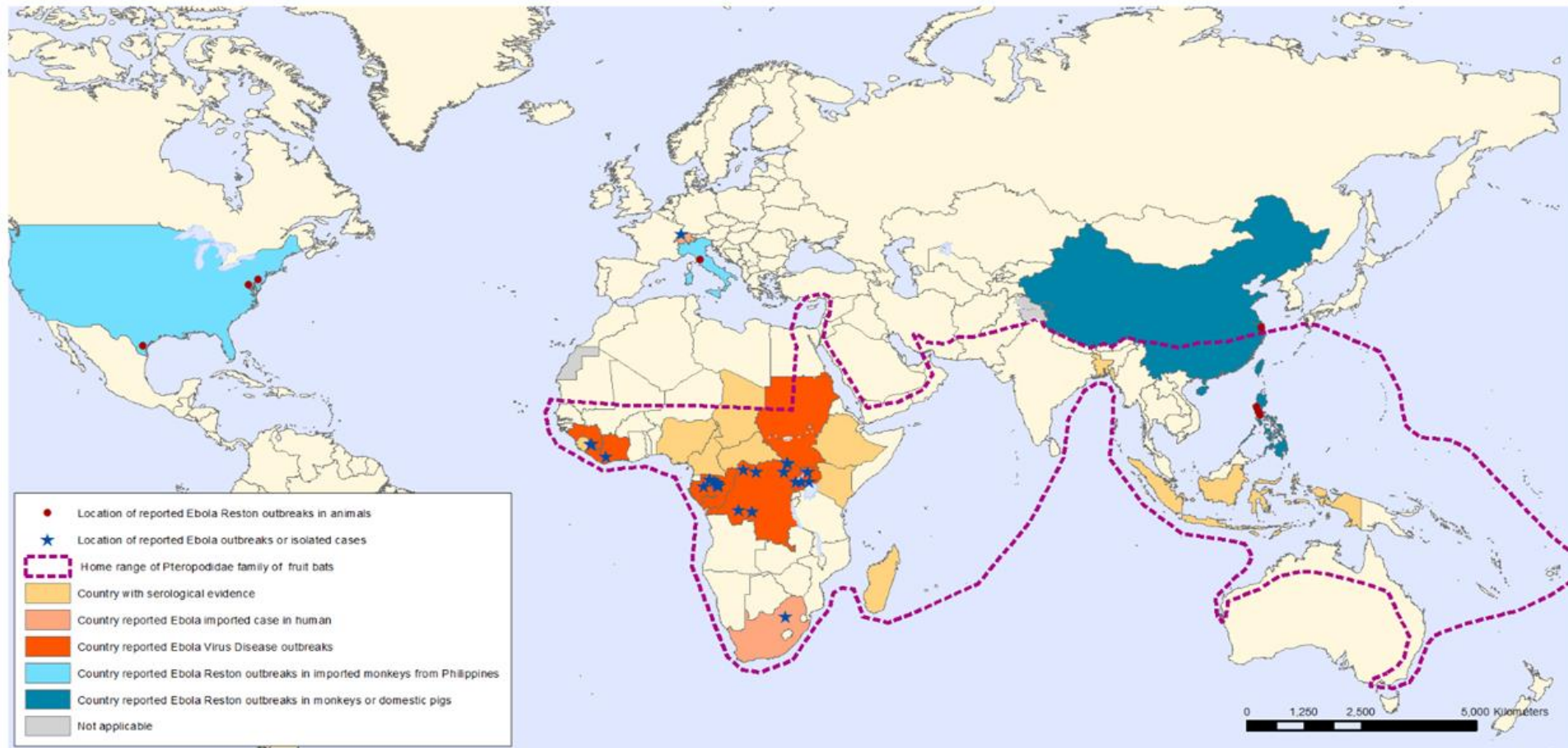
humans, with the exception of Reston virus which does not produce detectable disease in humans. Little is known about how the virus first passes to humans, triggering waves of human-to-human transmission, and an epidemic.



Human-to-human transmission is a predominant feature of epidemics.



Geographic distribution of Ebola virus disease outbreaks in humans and animals



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
 Map Production: Health Statistics and Information Systems (HSI)
 World Health Organization

 **World Health Organization**
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Infeksi Virus Ebola di Indonesia?

OPEN ACCESS Freely available online

PLoS one

Serological Evidence of Ebola Virus Infection in Indonesian Orangutans

Chairul A. Nidom^{1,2,3,4*}, Eri Nakayama^{4,5}, Reviany V. Nidom^{1,3}, Mohamad Y. Alamudi^{1,3}, Syafril Daulay⁵, Indi N. L. P. Dharmayanti⁶, Yoes P. Dachlan⁷, Mohamad Amin³, Manabu Igarashi⁸, Hiroko Miyamoto⁴, Reiko Yoshida⁴, Ayato Takada^{4*}

353 serum samples (201 males, 152 females) were collected from wild-caught healthy orangutans (*Pongo pygmaeus*) in East (Kutai Kartanegara) and Central (Palangka Raya) Kalimantan from December 2005 to December 2006.

Table 2. Filovirus species specificity of the serum IgG antibodies detected in orangutans in East and Central Kalimantan.

Area	Positive rates (number positive/total) ¹					
	ZEBOV	SEBOV	CIEBOV	BEBOV	REBOV	MARV
East Kalimantan	5.3% (10/190) ²	5.8% (11/190)	1.1% (2/190)	3.7% (7/190)	1.6% (3/190)	2.6% (5/190)
Central Kalimantan	14.1% (23/163) ²	1.8% (3/163)	1.2% (2/163)	1.2% (2/163)	1.2% (2/163)	0.6% (1/165)
Total	9.3% (33/353)	4.0% (14/353)	1.1% (4/353)	2.6% (9/353)	1.4% (5/353)	1.7% (6/353)

¹The filovirus species for which each EBOV-positive sample had the highest OD value in the GP-based ELISA was selected when a sample showed cross-reactivity to GPs of multiple species.

²A significant difference was found in ZEBOV positivity between East and Central Kalimantan ($P=0.0037$).

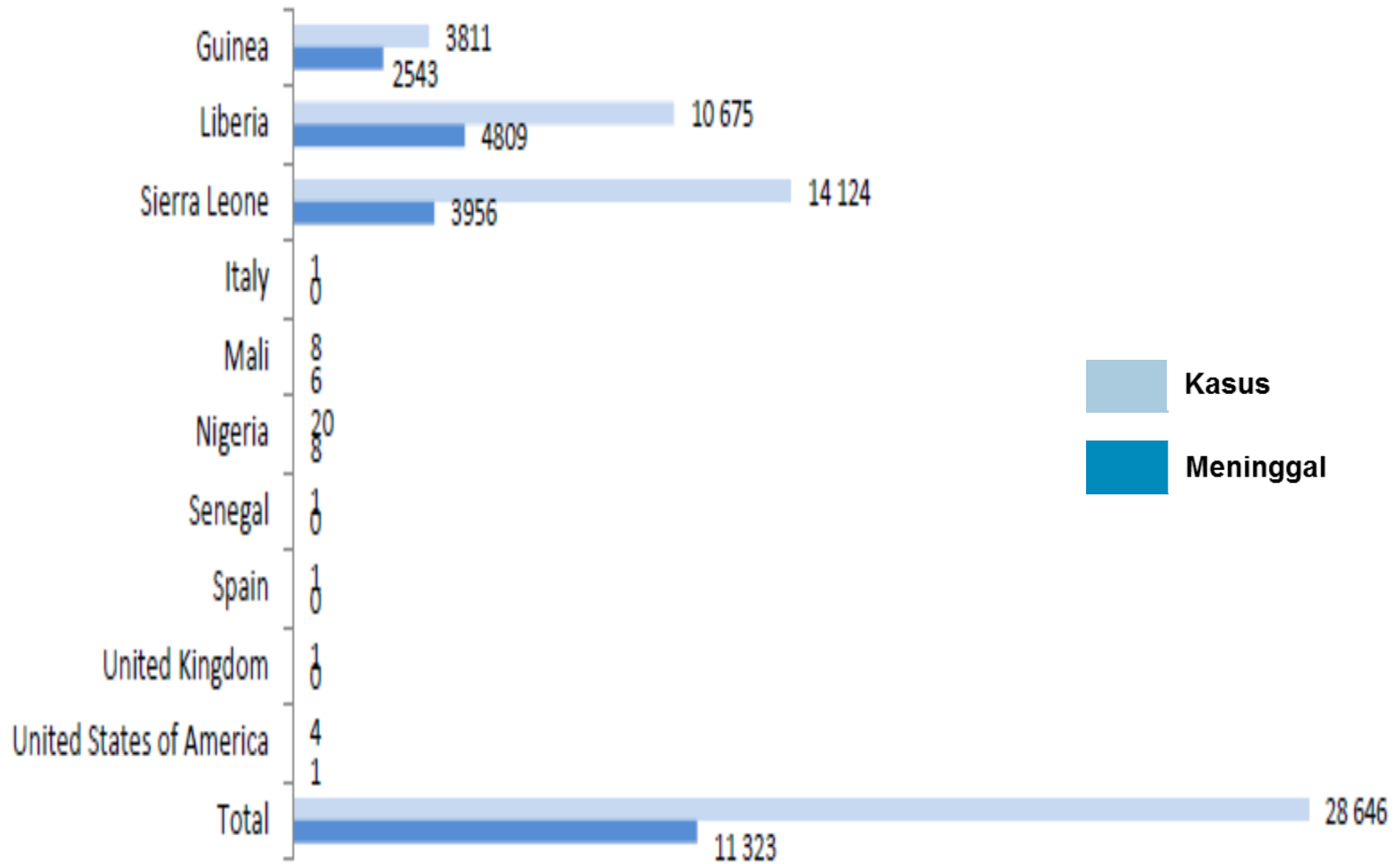
doi:10.1371/journal.pone.0040740.t002

1	KS : NN, 57 Tahun, Laki-laki								Kondisi :	Tidak Sadar
2										Trombo 37.000
3										Leuko 10.800
4		Berangkat dari	Tiba di	Omset	Omset	Pulang	RS	4 a.m	SGOT/SGPT : 129/47	
5	4 th Nigeria	Nigeria	Mdan	Klinik Murti	Klinik Murti	Paksa	Lubuk Pakam	RS Adam Malik		
6		22/8	27/8	3/9	4/9	5/9	6/9	6/9	Malaria +	
7										
8										D/ Malaria Serebral
9										DD/EVD

Page 1

- 18 Surveilans:
- 19 1 Memastikan Spesimen terkirim dan Baik
 - 20 2 Identifikasi Kor a. Keluarga
 - 21 b. Klinik Murti
 - 22 c. RS Haji
 - 23 d. RS Lubuk Pakam Pemantauan
 - 24 e. RS. Adam Malik

Situasi Kasus Ebola di seluruh dunia



Studi EVD

- Studi eksperimental:

- Virus Ebola ditemukan sampai 3 hari pada permukaan tyvek
- Bercak darah kering sampai 5 hari setelah meninggal
- Didalam darah kera sampai 7 hari setelah meninggal
- Didalam air bertahan sampai 3 hari pada suhu 27⁰C ; 6 hari pada suhu 21⁰C.

Robert Fischer,¹ Seth Judson,¹ Kerri Miazgowicz, Trenton Bushmaker, Joseph Prescott, Vincent J. Munster. **Ebola Virus Stability on Surfaces and in Fluids in Simulated Outbreak Environments**, CDC, Emerging Infectious Diseases, Vol. 21, No. 7, July 2015.

- Persistensi Virus Ebola

- Bertahan dalam cairan tubuh beberapa orang.: Mata, Semen, Cairan amnion, placenta, ASI, SSP.
- Pada cairan SEMEN virus dapat ditemukan sampai 9 bulan lebih setelah sembuh. Antara bulan ke 4 – 6 virus masih ditemukan pada 65% populasi studi dan antara bulan 7 – 9 masih ditemukan pada 26% populasi studi.

G.F. Deen, B. Knust, N. Broutet, F.R. Sesay, P. Formenty, C. Ross, A.E. Thorson, T.A. Massaquoi, J.E. Marrinan, E. Ervin, A. Jambai, S.L.R. McDonald, K. Bernstein, A.H. Wurie, M.S. Dumbuya, N. Abad, B. Idriss, T. Wi, S.D. Bennett, T. Davies, F.K. Ebrahim, E. Meites, D. Naidoo, S. Smith, A. Banerjee, B.R. Erickson, A. Brault, K.N. Durski, J. Winter, T. Sealy, S.T. Nichol, M. Lamunu, U. Str. her, O. Morgan, and F. Sahr. **Ebola RNA Persistence in Semen of Ebola Virus Disease Survivors — Preliminary Report**, October 14, 2015 DOI: 10.1056/NEJMoa1511410

Progres virus ebola

↳ Masa inkubasi 2 – 21 hari



Day 7-9

Headache,
fatigue, fever,
muscle
soreness



Day 10

Sudden high
fever, vomiting
blood, passive
behavior



Day 11

Bruising, brain
damage,
bleeding from
nose, mouth,
eyes, anus



**Final
stages**

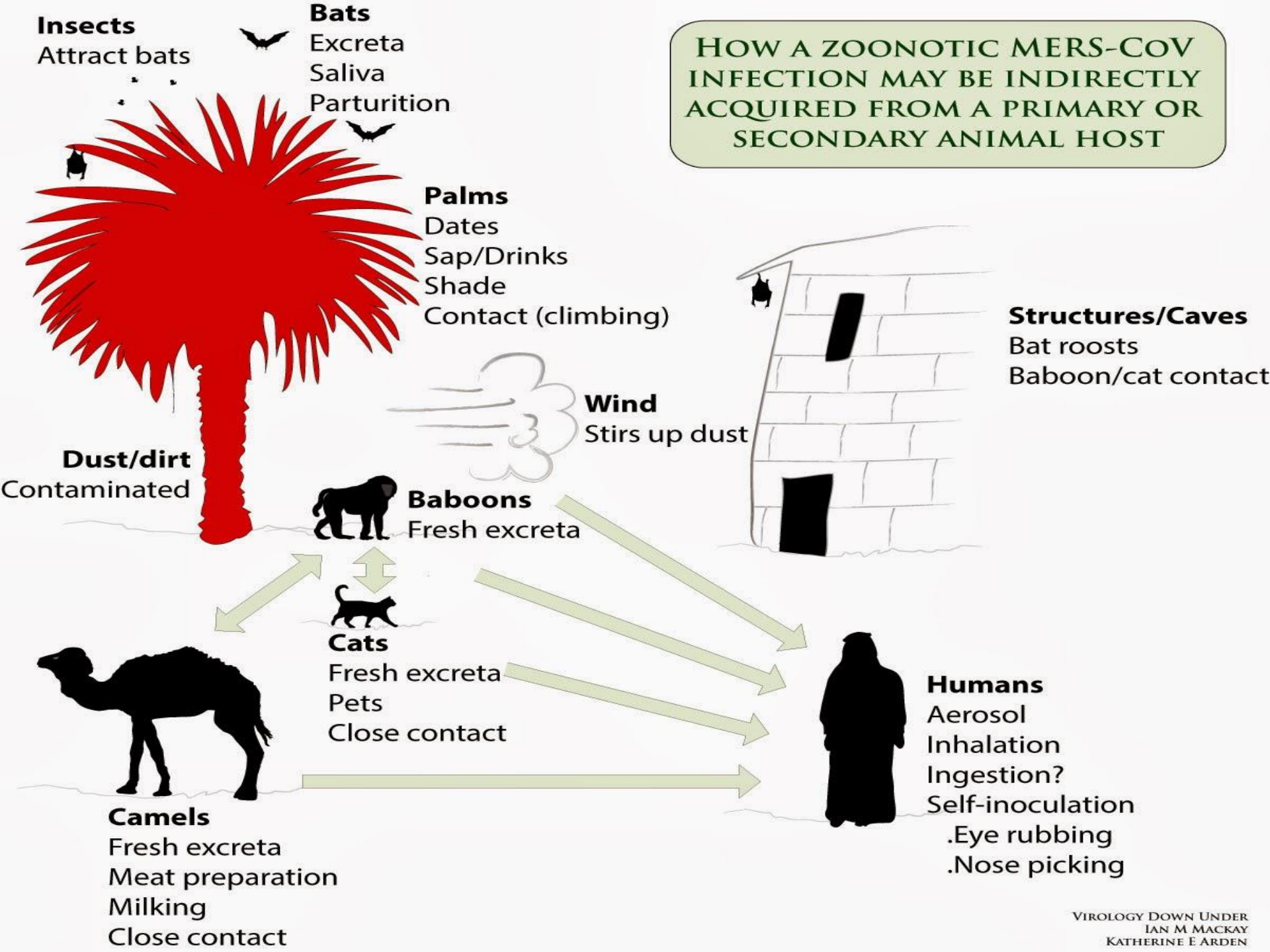
Day 12

Loss of
consciousness,
seizures,
massive internal
bleeding, death



**“Middle East Respiratory
Syndrome – Corona Virus “
(MERS-CoV)**

HOW A ZOONOTIC MERS-COV INFECTION MAY BE INDIRECTLY ACQUIRED FROM A PRIMARY OR SECONDARY ANIMAL HOST



Definisi Kasus Dalam investigasi (suspek)

- a. Seseorang dengan Infeksi Saluran Pernapasan Akut (ISPA) dengan tiga keadaan di bawah ini:
- Demam ($\geq 38^{\circ}$ C) atau ada riwayat demam,
 - Batuk,
 - Pneumonia berdasarkan gejala klinis atau gambaran radiologis yang membutuhkan perawatan di rumah sakit. Perlu waspada pada pasien dengan gangguan system kekebalan tubuh (*immunocompromised*) karena gejala dan tanda tidak jelas.

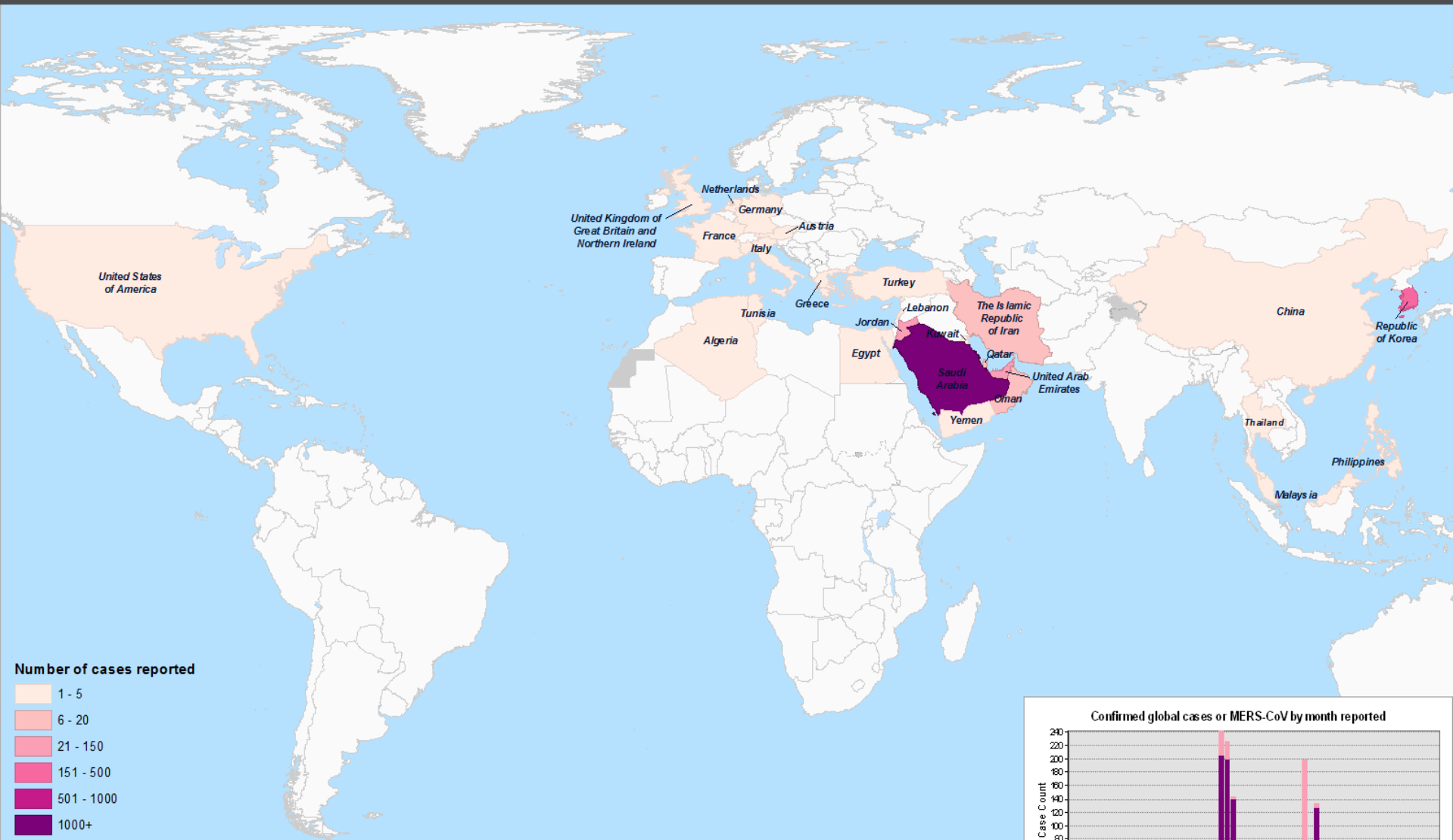
DAN

salah satu kriteria berikut :

- 1) Seseorang yang memiliki riwayat perjalanan ke Timur Tengah (negara terjangkit) dalam waktu 14 hari sebelum sakit kecuali ditemukan etiologi/penyebab penyakit lain.
- 2) Adanya petugas kesehatan yang sakit dengan gejala sama setelah merawat pasien ISPA berat (*SARI / Severe Acute Respiratory Infection*), terutama pasien yang memerlukan perawatan intensif, tanpa memperhatikan tempat tinggal atau riwayat bepergian, kecuali ditemukan etiologi/penyebab penyakit lain.
- 3) Adanya kluster pneumonia (gejala penyakit yang sama) dalam periode 14 hari, tanpa memperhatikan tempat tinggal atau riwayat bepergian, kecuali ditemukan etiologi/penyebab penyakit lain.
- 4) Adanya perburukan perjalanan klinis yang mendadak meskipun dengan pengobatan yang tepat, tanpa memperhatikan tempat tinggal atau riwayat bepergian, kecuali ditemukan etiologi/penyebab penyakit lain.

- b. Seseorang dengan Infeksi Saluran Pernapasan Akut (ISPA) ringan sampai berat yang memiliki riwayat kontak erat dengan kasus konfirmasi atau kasus probable infeksi MERS-CoV dalam waktu 14 hari sebelum sakit
-

CONFIRMED GLOBAL CASES OF MERS-COV 2012 - 2017



Number of cases reported

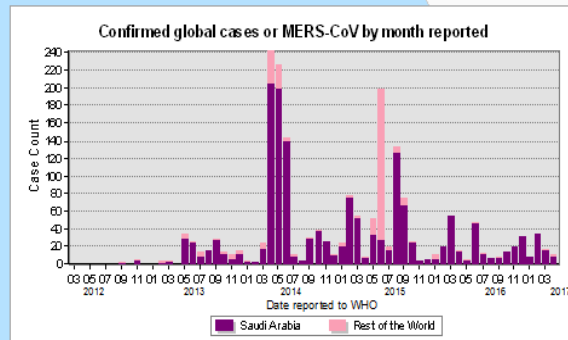
- 1 - 5
- 6 - 20
- 21 - 150
- 151 - 500
- 501 - 1000
- 1000+

Disputed Areas

- Disputed Areas
- Disputed Borders

1952 kasus, 693 kematian, 27 negara

Total number of reported cases: 1952



Map Scale (A3): 1:1,109,175,783
 1 cm = 11,092 km
 Coordinate System: GCS WGS 1984
 Datum: WGS 1984
 Units: Degree

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Data Source: World Health Organization
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 Map date: 28/04/2017



MERS-CoV case reported on 18 April 2017 *

Please note, data corresponds to Disease Outbreak News as published on 27 April 2017.

* Data subject to change due to ongoing investigations. Fields related to the final status of the case are updated as information is available.

NA = Not available

Case no.	Date of notification to WHO (yyyy/mm/dd)	Reporting country	City of residence	Age	Sex	Health care worker	Comorbidities	Exposure to camels	Camel milk consumption	Exposure to MERS-CoV cases	Date of symptoms onset (yyyy/mm/dd)	Date of first hospitalization (yyyy/mm/dd)	Date of case
1	2017-04-18	Qatar	Doha	25	M	No	No	Yes	NA	NA	2017-04-11	NA	2017-04-18

MERS-CoV cases reported between 18 March and 20 April 2017 *

Please note, data corresponds to Disease Outbreak News as published on 27 April 2017.

* Data subject to change due to ongoing investigations. Fields related to the final status of the case are updated as information is available.

NA = Not available

Case no.	Date of notification to WHO (yyyy/mm/dd)	Reporting country	City of residence	Age	Sex	Health care worker	Comorbidities	Exposure to camels	Camel milk consumption	Exposure to MERS-CoV cases	Date of symptoms onset (yyyy/mm/dd)	Date of first hospitalization (yyyy/mm/dd)	Date of case
1	2017-04-20	Saudi Arabia	Riyadh	86	M	No	Yes	NA	NA	NA	2017-04-16	2017-04-19	2017-04-20
2	2017-04-19	Saudi Arabia	Wadi Aldwaser	55	M	No	Yes	NA	NA	NA	2017-04-11	2017-04-18	2017-04-19
3	2017-04-14	Saudi Arabia	Taif	86	M	No	Yes	Yes	Yes	NA	2017-04-10	2017-04-13	2017-04-14
4	2017-04-14	Saudi Arabia	Turbah	61	F	No	Yes	NA	NA	NA	2017-04-08	2017-04-12	2017-04-14
5	2017-04-11	Saudi Arabia	Taif	60	M	No	Yes	Yes	Yes	NA	2017-04-01	2017-04-09	2017-04-11
6	2017-04-11	Saudi Arabia	Riyadh	72	M	No	Yes	NA	NA	NA	2017-04-03	2017-04-08	2017-04-11
7	2017-04-06	Saudi Arabia	Riyadh	62	M	No	Yes	Yes	NA	NA	2017-03-26	2017-04-04	2017-04-06
8	2017-04-02	Saudi Arabia	Dammam	31	M	No	No	No	No	Yes [†]	NA	NA	2017-04-02
9	2017-04-01	Saudi Arabia	Dammam	58	M	No	Yes	NA	NA	NA	2017-03-27	2017-03-30	2017-04-01
10	2017-03-30	Saudi Arabia	Beqiq	63	M	No	Yes	Yes	Yes	NA	2017-03-28	2017-03-29	2017-03-30
11	2017-03-27	Saudi Arabia	Alkharj	54	M	No	Yes	Yes	Yes	NA	2017-03-23	2017-03-26	2017-03-27
12	2017-03-22	Saudi Arabia	Hafer Albatin	40	M	No	No	No	No	Yes [†]	NA	NA	2017-03-22
13	2017-03-18	Saudi Arabia	Hafer Albatin	20	M	No	No	Yes	Yes	NA	2017-03-09	2017-03-15	2017-03-18

[†]Case was detected through contact tracing of a previous MERS-CoV case.

MERS-CoV cases reported between 9 April and 11 April 2017 *

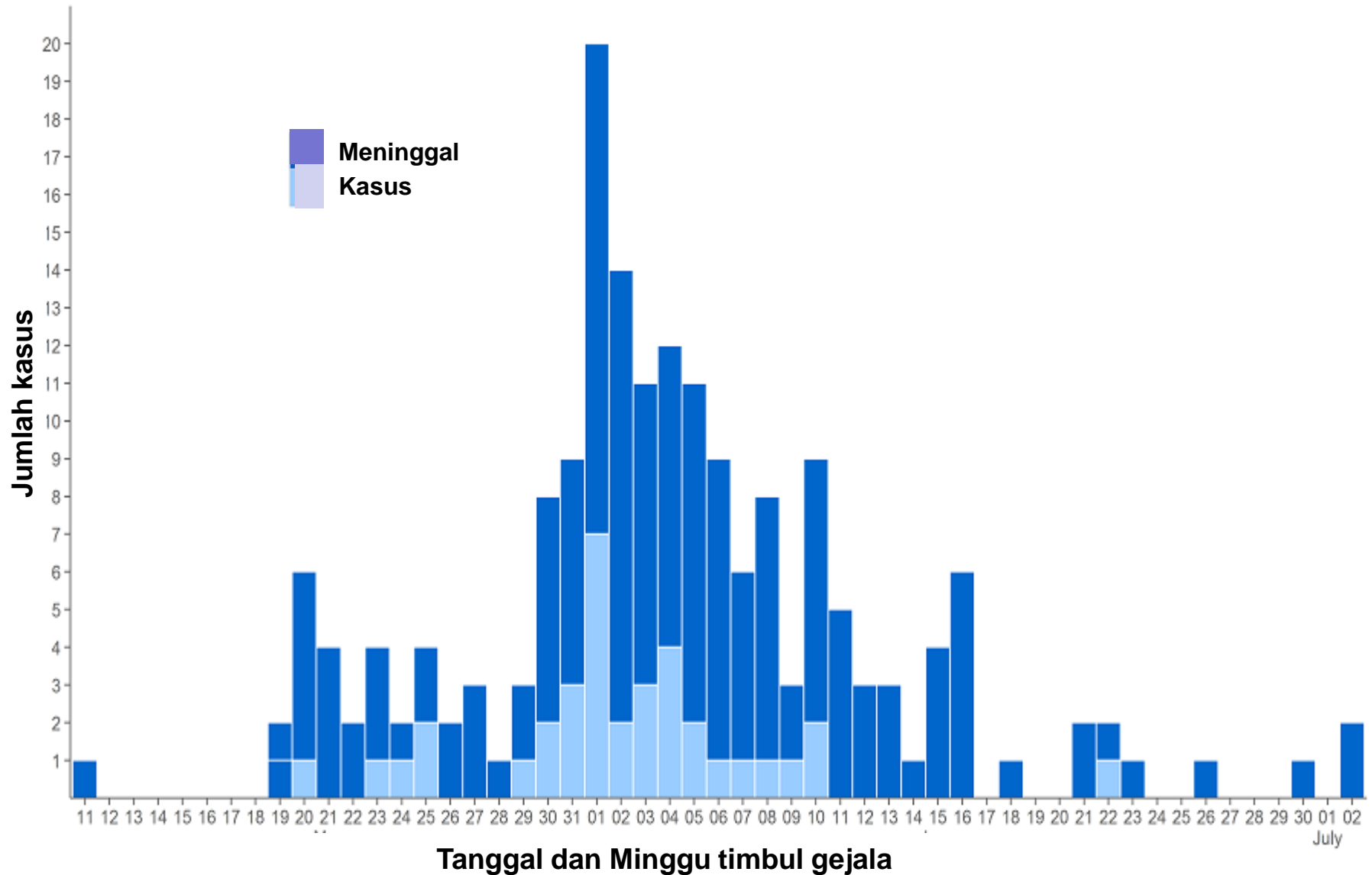
Please note, data corresponds to Disease Outbreak News as published on 24 April 2017.

* Data subject to change due to ongoing investigations. Fields related to the final status of the case are updated as information is available.

NA = Not available

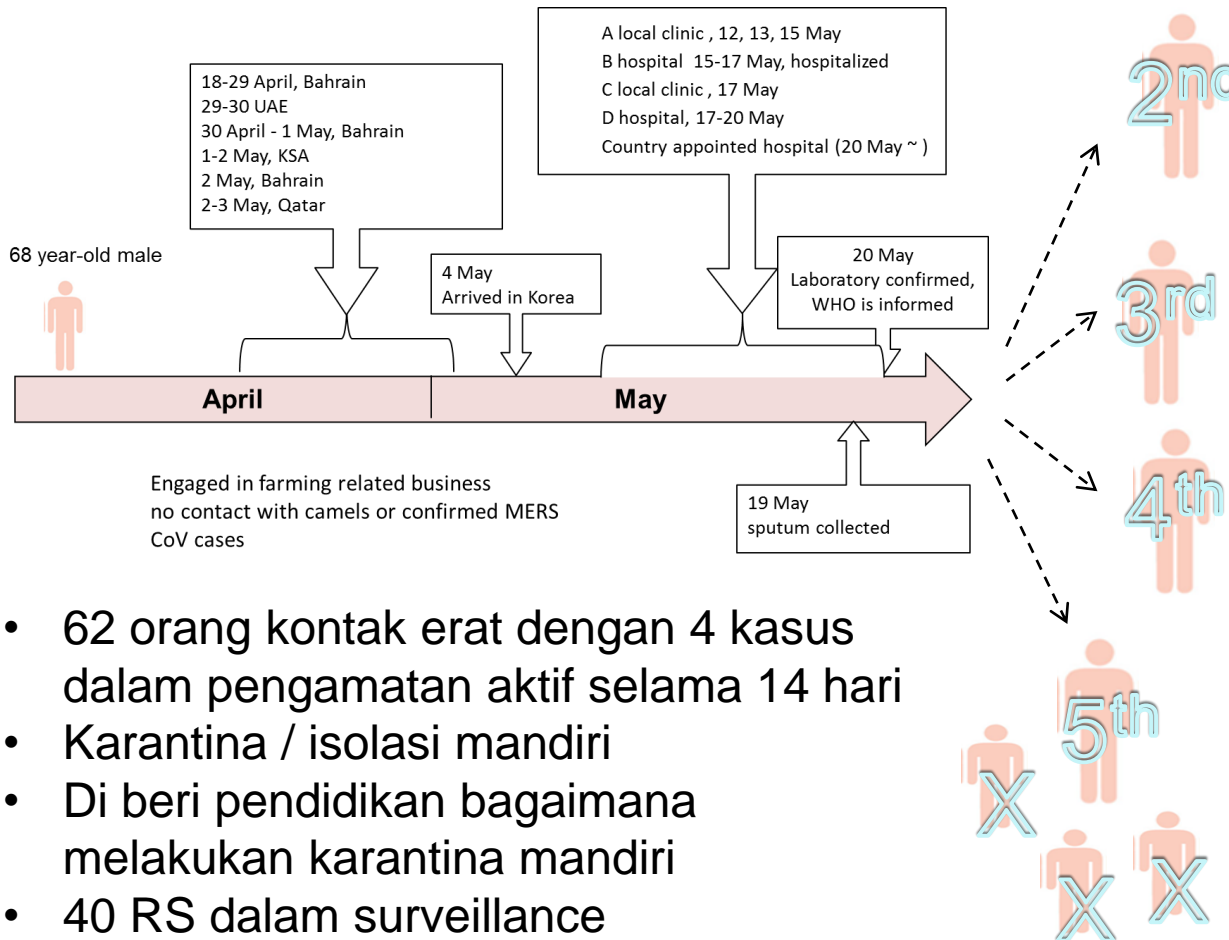
Case no.	Date of notification to WHO (yyyy/mm/dd)	Reporting country	City of residence	Age	Sex	Health care worker	Comorbidities	Exposure to camels	Camel milk consumption	Exposure to MERS-CoV cases	Date of symptoms onset (yyyy/mm/dd)	Date of first hospitalization (yyyy/mm/dd)	Date of case
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Kurva epidemiologi kasus MERS-CoV di Korsel dan China, antara 11 Mei – 17 Juli 2015 (n= 186)



Please note that the underlying data is subject to change as the investigations around cases are ongoing. Onset date estimated if not available. Source: WHO

MERS-CoV di Korsel, May 2015



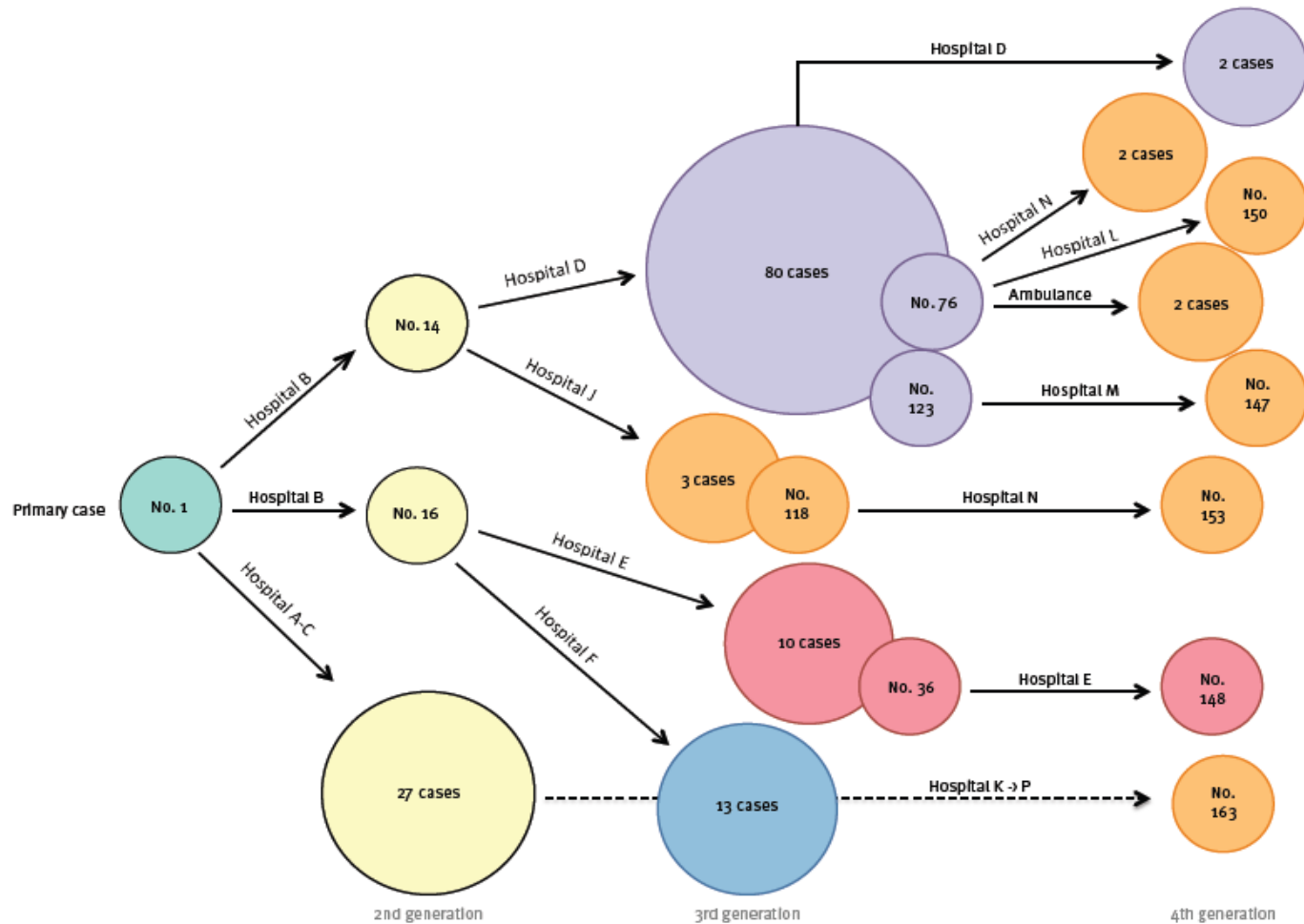
Wanita 63 th, istri ks indeks,
tdk ada riwayat perj
Onset: 8 Mei
Tidak ada comorbidities

Pria 76 th, seruang dengan ks indeks 4 jam pd 16 Mei
Onset: 20 Mei

Wnt 46 th, putri ks ke 3
Merawat ks 3, 16-20 Mei
Dibawah pengawasan 21 Mei
Onset: 25 Mei

Pria 50 th Klinik C: **Positive**
Wnt 46 th Klinik A : Negative
Pria 34 th RS E : Negative
Wnt 31 th RS D: Negative

- 62 orang kontak erat dengan 4 kasus dalam pengamatan aktif selama 14 hari
- Karantina / isolasi mandiri
- Di beri pendidikan bagaimana melakukan karantina mandiri
- 40 RS dalam surveillence



Source: B J Cowling^{1,2}, M Park^{1,2}, V J Fang¹, P Wu¹, G M Leung¹, J T Wu (joewu@hku.hk)¹, Preliminary epidemiological assessment of MERS-Co outbreak in South Korea, May to June 2015, Eurosurveillance.org

Basis KLB MERS-CoV di KORSEL: “RUMAH SAKIT”

- Lebih dari 60 fasilitas pelayanan kesehatan menemukan pasien
- Transmisi Nosokomial tercatat terjadi di 6 RS

Perbandingan demografi dengan kasus – kasus MERS-CoV Korsel - Global

KARAKTERISTIK	KOREA (15 Juni)	GLOBAL (15 uni)
JUMLAH KASUS	150	1196
MEDIAN UMUR	56 Thn (16 Thn – 87 Thn)	51 Thn (9 Bln – 99 Thn)
PROPORSI PRIA	60%	66%
CFR*	10,0% (15/150)	37,5% (448/1196)
HUBUNGAN DENGAN FASILITAS KESEHATAN	99,3% (149/150)	-
JUMLAH PETUGAS KESEHATAN SAKIT	9,3% (14/150)	-

* Beberapa kasus masih dalam perawatan di RS

Sumber: Notifikasi IHR dan WHO Summary Update 3 Juni 2015

KARAKTERISTIK OUTCOME KASUS

Karakteristik	Kasus Meninggal (n= 14)	Kasus Hidup (n= 136)
Median Umur	72,5 Thn (57 – 83)	55 Thn (16 – 87)
Jenis kelamin (% Pria)	64,3%	59,6%
Tanggal Onset	20 Mei – 6 Juni 2015	11 Mei – 13 Juni 2015
Median, onset - Meninggal	7 hari (1 – 15 hr)	-
% Kasus dengan komorbiditas	92,9% (13/14)	27,9 (38/136)
% Kasus dengan kondisi sakit saluran napas sebelumnya	61,5% (8 /13)	31,6 (12/38)

Rangkuman hasil Assessment 7 Juli 2015

- MERS-CoV, VIRUS ZOONOTIK :
 - MENGINFEKSI POPULASI MELALUI BERBAGAI PELUANG PAJANAN: LANGSUNG MAUPUN TIDAK LANGSUNG.
 - ANTIBODI MERS-CoV TERSEBAR LUAS PADA POPULASI UNTA DI TIMUR TENGAH DAN AFRIKA → VIRUS MERS-CoV TELAH BERSIRKULASI BERTAHUN – TAHUN
 - PREVALENSI ANTIBODI MERS-CoV PADA POPULASI YANG KONTAK ERAT DAN BERKALA DENGAN UNTA **LEBIH TINGGI** DIBANDING POPULASI UMUM → BERISIKO LEBIH TINGGI
- PENULARAN ANTAR MANUSIA :
 - BELUM TERBUKTI ADA PENULARAN BERKESINAMBUNGAN DI MASY.
 - TERBATAS PADA ANGGOTA KELUARGA
 - SEBAGIAN BESAR ---- TERJADI DI SARANA KESEHATAN DAN TIMBUL BERULANG DI ARAB SAUDI DALAM JUMLAH KASUS YANG LEBIH KECIL

Rangkuman hasil Assessment 7 Juli 2015

- BEBERAPA FAKTOR YANG BERKONTRIBUSI PADA PENYEBARAN AWAL DARI VIRUS DI KORSEL:
 - MUNCULNYA MERS-CoV **TIDAK DIDUGA DAN TIDAK BIASA** BAGI KEBANYAKAN DOKTER DI PELAYANAN.
 - **PPI DI RS TIDAK OPTIMAL**
 - **KEPADATAN DI “IGD” DAN BANGSAL** SECARA BERMAKNA BERKONTRIBUSI PADA TIMBULNYA INFEKSI NOSOKOMIAL.
 - KEBIASAAN Mencari pengobatan di beberapa sarana kesehatan (**SHOPPING DOCTOR**) dan
 - KEBIASAAN keluarga dan teman, menemani atau mengunjungi pasien dapat berkontribusi dalam penyebaran infeksi sekunder di antara kontak.

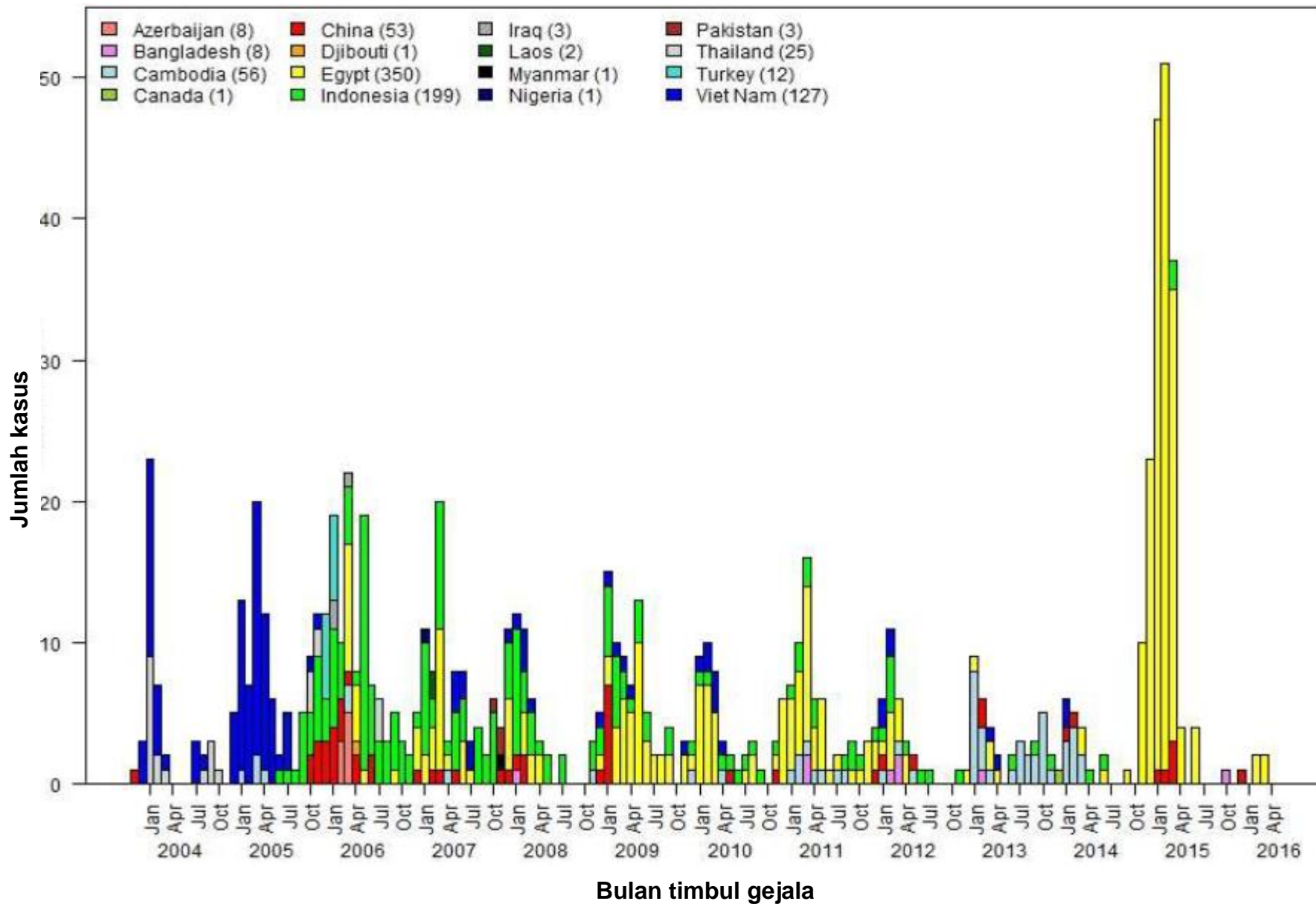
Flu Burung pada manusia:
Influenza A (H5N1), A (H7N9) dan
A (H5N6)

Avian Influenza A(H5N1),

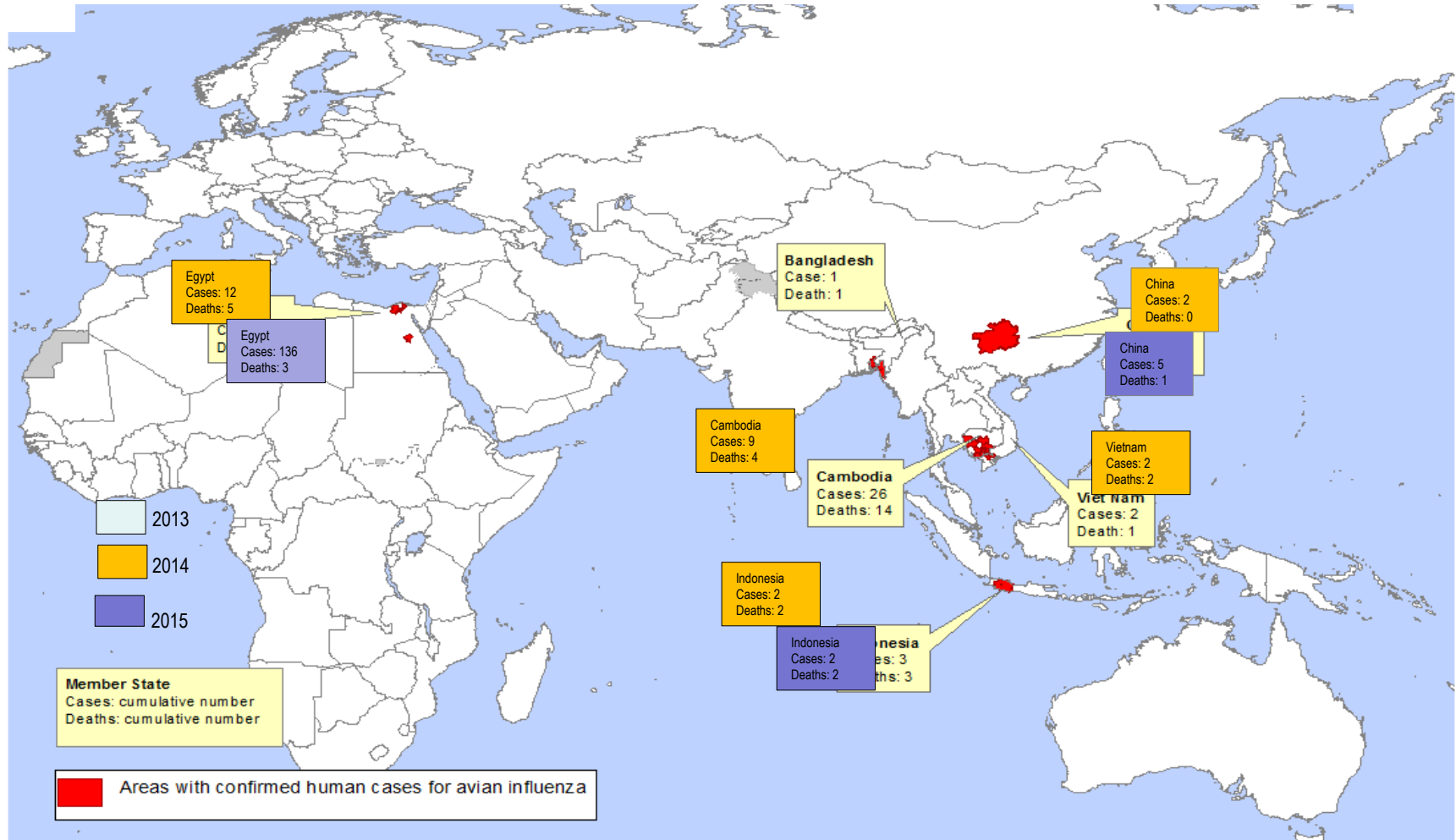
Kasus – kasus kumulatif H5N1 manusia menurut negara per 25 Feb 2016

No	Country	2003 - 2009		2010		2011		2012		2013		2014		2015		2016		Total	
		Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death	Case	Death
1	Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	0	0			8	5
2	Bangladesh	1	0	0	0	2	0	3	0	1	1	0	0	1	0			8	1
3	Cambodia	9	7	1	1	8	8	3	3	26	14	9	4	0	0			56	37
4	Canada	0	0	0	0	0	0	0	0	1	1	0	0	0	0			1	1
5	China	38	25	2	1	1	1	2	1	2	2	2	0	6	1			53	31
6	Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	0	0			1	0
7	Egypt	90	27	29	13	39	15	11	5	4	3	37	14	136	39	4	0	350	116
8	Indonesia	162	134	9	7	12	10	9	9	3	3	2	2	2	2			199	167
9	Iraq	3	2	0	0	0	0	0	0	0	0	0	0	0	0			3	2
10	Lao People's Democratic Republic	2	2	0	0	0	0	0	0	0	0	0	0	0	0			2	2
11	Myanmar	1	0	0	0	0	0	0	0	0	0	0	0	0	0			1	0
12	Nigeria	1	1	0	0	0	0	0	0	0	0	0	0	0	0			1	1
13	Pakistan	3	1	0	0	0	0	0	0	0	0	0	0	0	0			3	1
14	Thailand	25	17	0	0	0	0	0	0	0	0	0	0	0	0			25	17
15	Turkey	12	4	0	0	0	0	0	0	0	0	0	0	0	0			12	4
16	Vietnam	112	57	7	2	0	0	4	2	2	1	2	2	0	0			127	64
T O T A L		468	282	48	24	62	34	32	20	39	25	52	22	145	42	4	0	850	449

Jumlah kasus konfirmasi H5N1 pada manusia menurut bulan timbul gejala, per 25 February 2016



Peta distribusi kasus avian influenza (H5N1) pada manusia, 2013 – sampai – sekarang

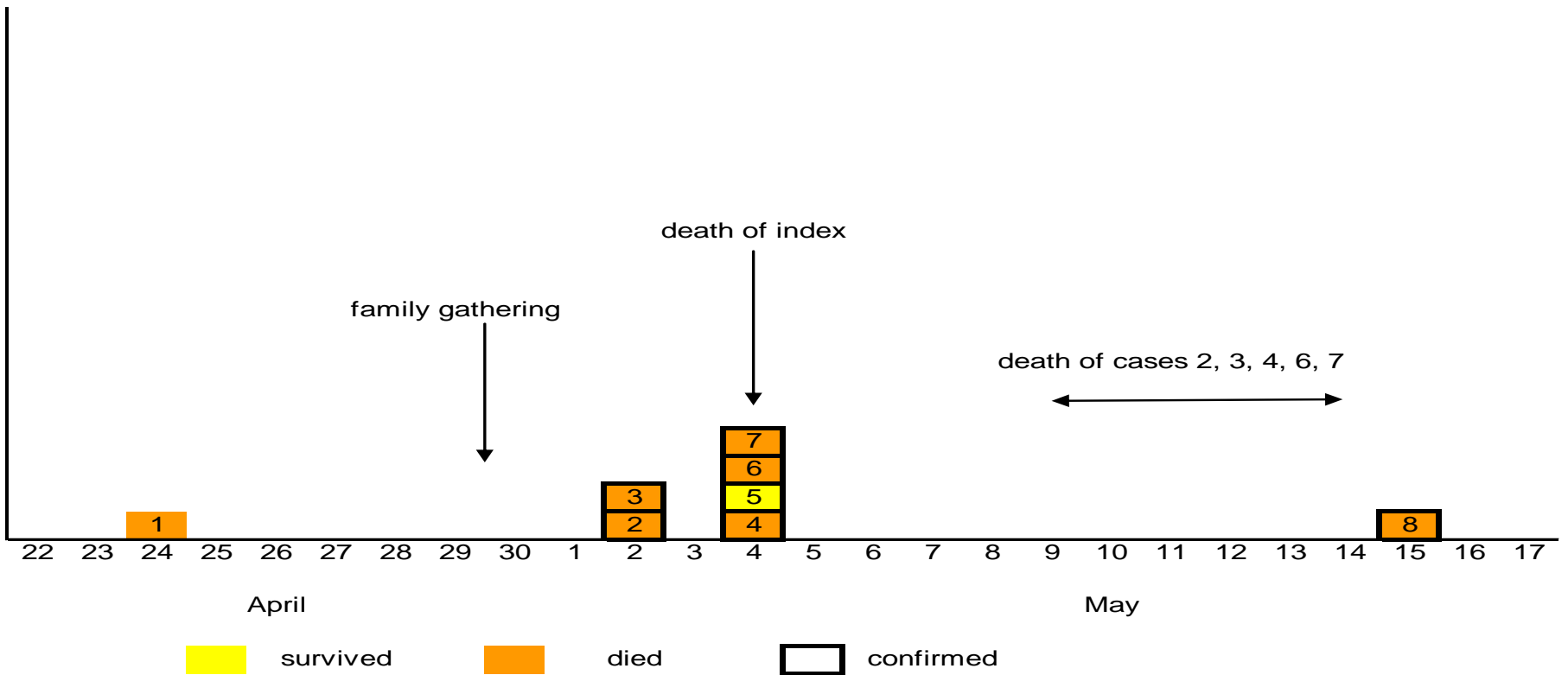


*All dates refer to onset of illness
Data as of 10 December 2013
Source: WHO/GIP

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KARO CLUSTER, Kurva Epidemik



Parameter epidemiologi: perbandingan antar negara dan periode waktu (Wekly Epidemiological Record, No.28, 2015, 349 – 364)

	Kasus - kasus periode onset Jan 2014 - April 2015 di Global	Kasus - kasus periode onset Jan 2014 - April 2015 di Mesir	Kasus - kasus periode onset 2003 - 2013 di Global	Kasus - kasus periode onset 2003 - 2013 di Mesir	Kasus - kasus periode onset 2003 - 2013 di Negara lain
Jumlah Kasus	191	169	649	173	476
Median umur (thn)	22 (1 - 77)	25 (1 - 77)	18 (0 - 81)	15 (1 - 75)	19 (0 - 81)
Pria : Wanita	1 : 1.3	1 : 1.5	1 : 1.2	1 : 1.4	1 : 1.1
Case Fatality Rate	62/191 (32%)	51/169 (30%)	385/649 (60%)	63/173 (36%)	322/476 (68%)
% ase dirawat di RS	187/191 (76%)	168/169 (99%)	558/649 (86%)	167/173 (97%)	391/476 (82%)
Median waktu dari Onset -RS (hari)	4 (0 - 20)	4 (0 - 20)	4 (0 - 22)	2 (0 - 13)	5 (0 - 22)

Influenza A(H7N9)

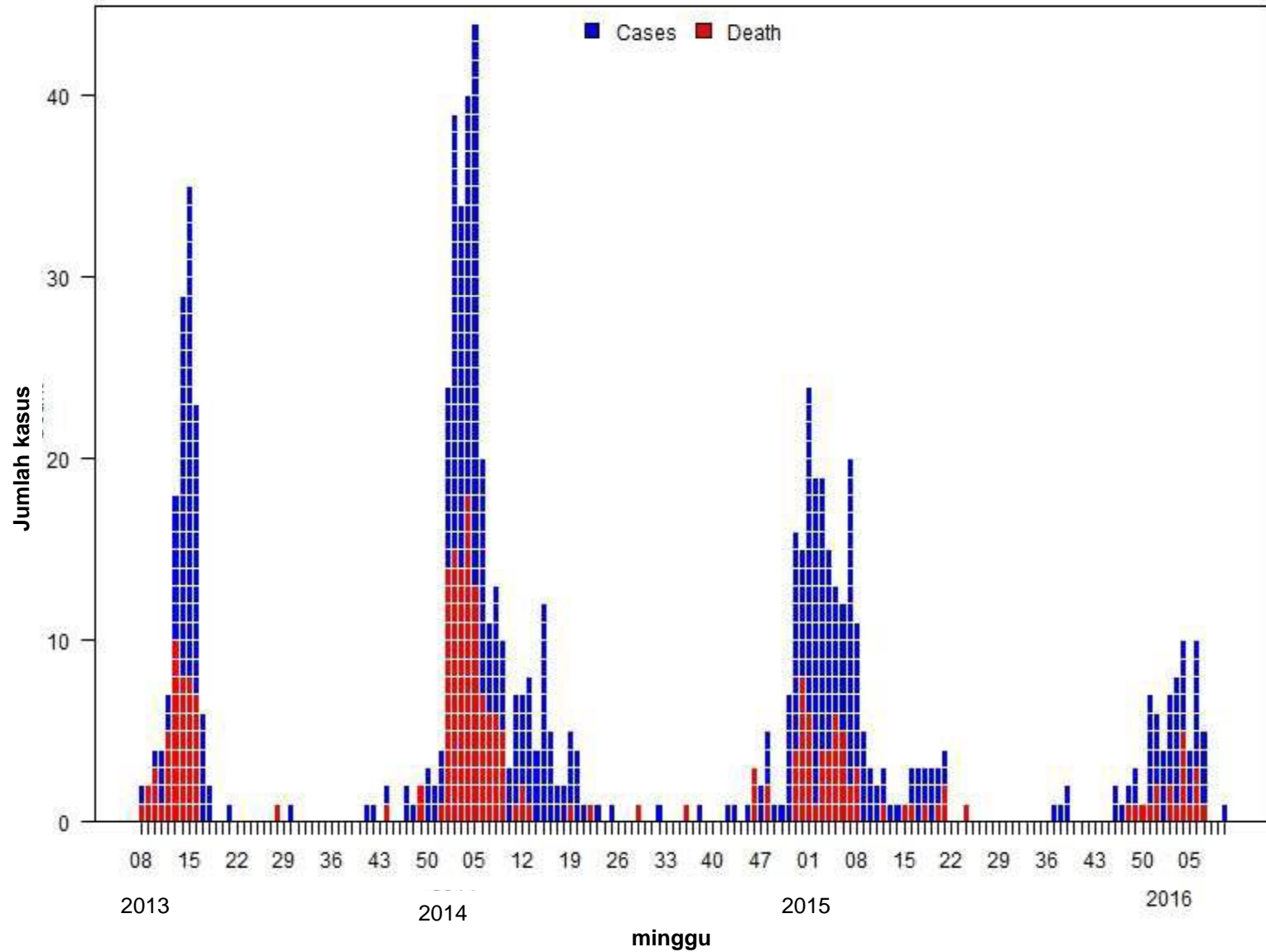
- Per 4 April 2016 : 752 kasus konfirmasi dengan 295 kematian
- Per 2 April 2016 (Mg.14) ** : 758 kasus konfirmasi
- Exposure:
 - Daratan China
 - 89% kasus mempunyai riwayat pajanan dengan unggas hidup atau pasar unggas hidup, dan lingkungan terkontaminasi** .
 - Transmisi virus dari unggas atau lingkungan ke manusia: tidak mudah terjadi.
 - Terdapat 17 kluster keluarga tapi transmisi manusia – manusia tidak mudah terjadi dan tidak berkelanjutan.
- Studi serologis: 6 – 14% pekerja unggas mempunyai anti-A(H7N9) tapi masyarakat umum tidak.

Sumber:

[*Influenza at the Human-Animal Interface, monthly risk assessment summary](#), 24 April 2016

** http://chp.gov.hk/files/pdf/2016_avian_influenza_report_vol12_wk14.pdf

Influenza A(H7N9)



Sumber:

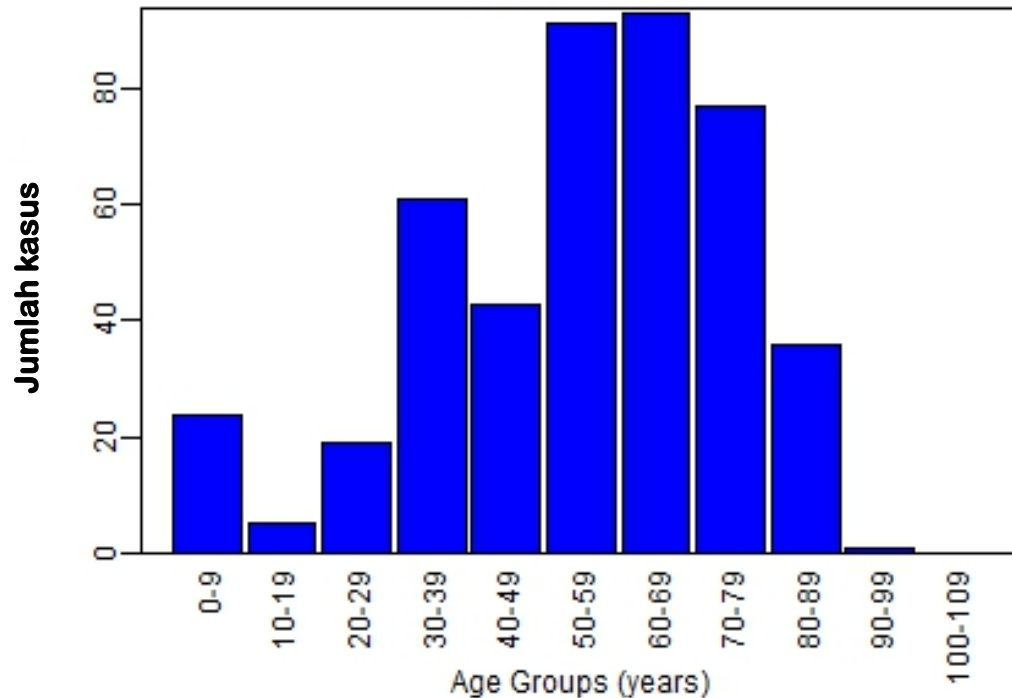
[*Influenza at the Human-Animal Interface, monthly risk assessment summary](#), 4 April 2016

Distribusi umur

Gelombang 1 sp Juni 2013, n=133 ; Gelombang 2, n = 318

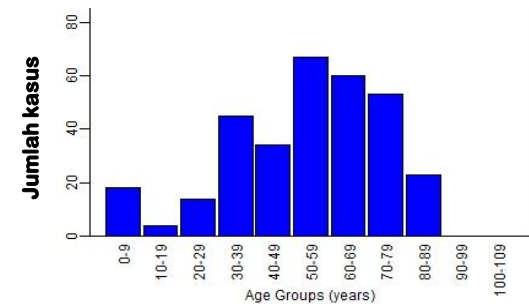
Semua (n=451)

kasus-kasus konfirmasi H7N9 pada manusia
Distribusi Kel. Umur
pada kedua gelombang



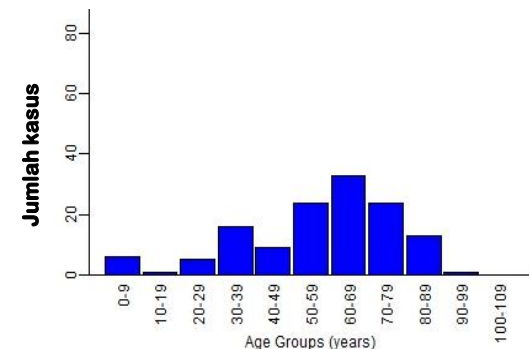
Gel.2 (n=318)

kasus-kasus konfirmasi H7N9 pada manusia
Distribusi Kel. Umur
gelombang 2



Gel.1 (n=133)

kasus-kasus konfirmasi H7N9 pada manusia
Distribusi Kel. Umur
gelombang 1

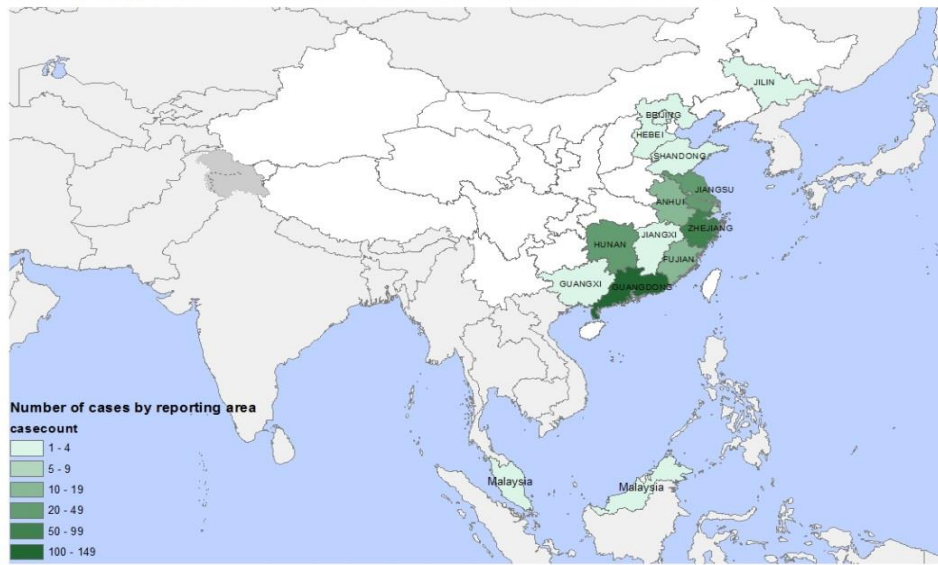


Median umur: 58 tahun (n = 28 kasus mulai 21 Des 2015 – 25 Jan 2016).

http://www.who.int/influenza/human_animal_interface/Influenza_Summary_IRA_HA_interface_25_02_2016.pdf?ua=1

Daerah terjangkit selama gelombang 1 & 2

Areas reporting confirmed human cases for influenza A(H7N9) to WHO from 2013-06-01 *

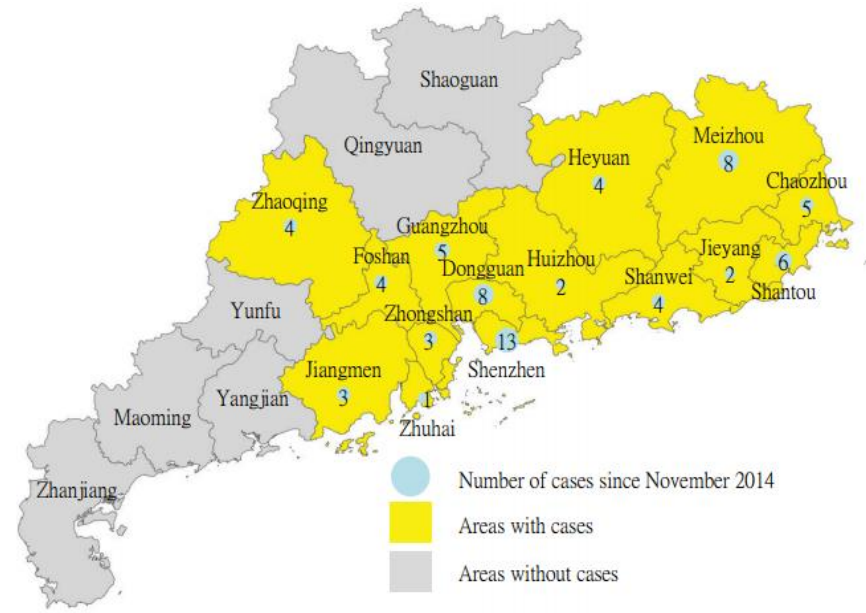


*All dates refer to onset of illness
Data as of 14/07/2014
Source: WHO

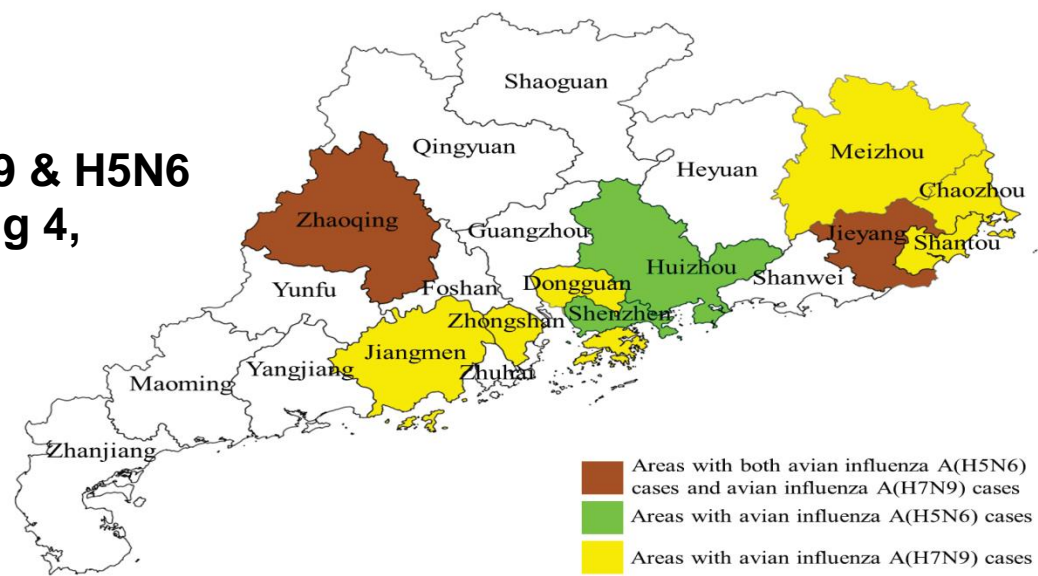
The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its borders or its jurisdiction. It is cited and entered here on the basis of information received by WHO from the reporting area.



Daerah terjangkit selama gelombang 3,



Daerah terjangkit H7M9 & H5N6 selama gelombang 4,



Influenza A (H5N6)

- Januari 2014 – 2 April 2016: ditemukan 10 kasus pada manusia (2 kasus meninggal) di China
- Kasus timbul pada waktu adanya KLB pada unggas
- Riwayat terpajan dengan unggas
- Virus ditemukan diseluruh China sejak 2013 dan Laos (2014), Vietnam (2014 & 2015)

Influenza A (H9N2)

- 4 kasus manusia dilaporkan dari daratan China: Propinsi Anhui, Hunan dan Sichuan.
- 2 kasus dilaporkan dari Bangladesh.



ZIKA

VIRUS

PENDAHULUAN

- Virus Zika pertama kali diisolasi di Uganda tahun 1947 pada rhesus monyet dari “hutan Zika”.
- Kasus manusia pertama kali dilaporkan pada 1952 di Uganda dan Tanzania. Virus hanya menyebabkan infeksi sporadis pada manusia di Afrika dan Asia.
- In 2007, dilaporkan KLB di Mikronesia (Yap), pertama kali deteksi virus Zika diluar Afrika dan Asia. Belum diketahui menyebabkan penyakit yang berat sampai adanya KLB di Polinesia-Perancis pada 2013–2014, dimana dilaporkan adanya komplikasi neurologis dan auto imun seperti Guillain-Barre syndrome (GBS) dalam konteks adanya ko-sirkulasi arbovirosis (chikungunya dan dengue).
- Sejak itu telah menyebar ke Polynesia-Perancis, New Kaledonia, Kepulauan Cook, Pulau di timur Chile (Chile - Februari 2014), dan berlanjut ke Brazil (Mei 2015) dan Kolombia (Oktober 2015).
- Sejak November 2015, WHO/PAHO telah menerima laporan kasus – kasus infeksi virus Zika dari Suriname, El Salvador, Guatemala, Paraguay, Mexico, Venezuela, Panama, Cape Verde, dan Honduras.
- 1 Feb 2016: Dirjen WHO menetapkan kluster Microcephaly dan kelainan neurologis (GBS) yang diduga disebabkan oleh infeksi virus Zika sebagai KKM MD/PHEIC.

Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

194
 7



Discovered in Uganda 1947

Human cases and / or mosquito carriage have been reported in:

Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. Asia - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. The Pacific Region - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). Americas: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

Data Sources: IHR National Focal Points to PAHO-WHO CHA IR ARD and through the Ministry of Health websites, 2014-2016; ECDC, 2016. Report Production: PAHO-WHO AD CHA IR ARD

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

194
8



Expansion other countries in Africa 1947-1948

Human cases and / or mosquito carriage have been reported in:

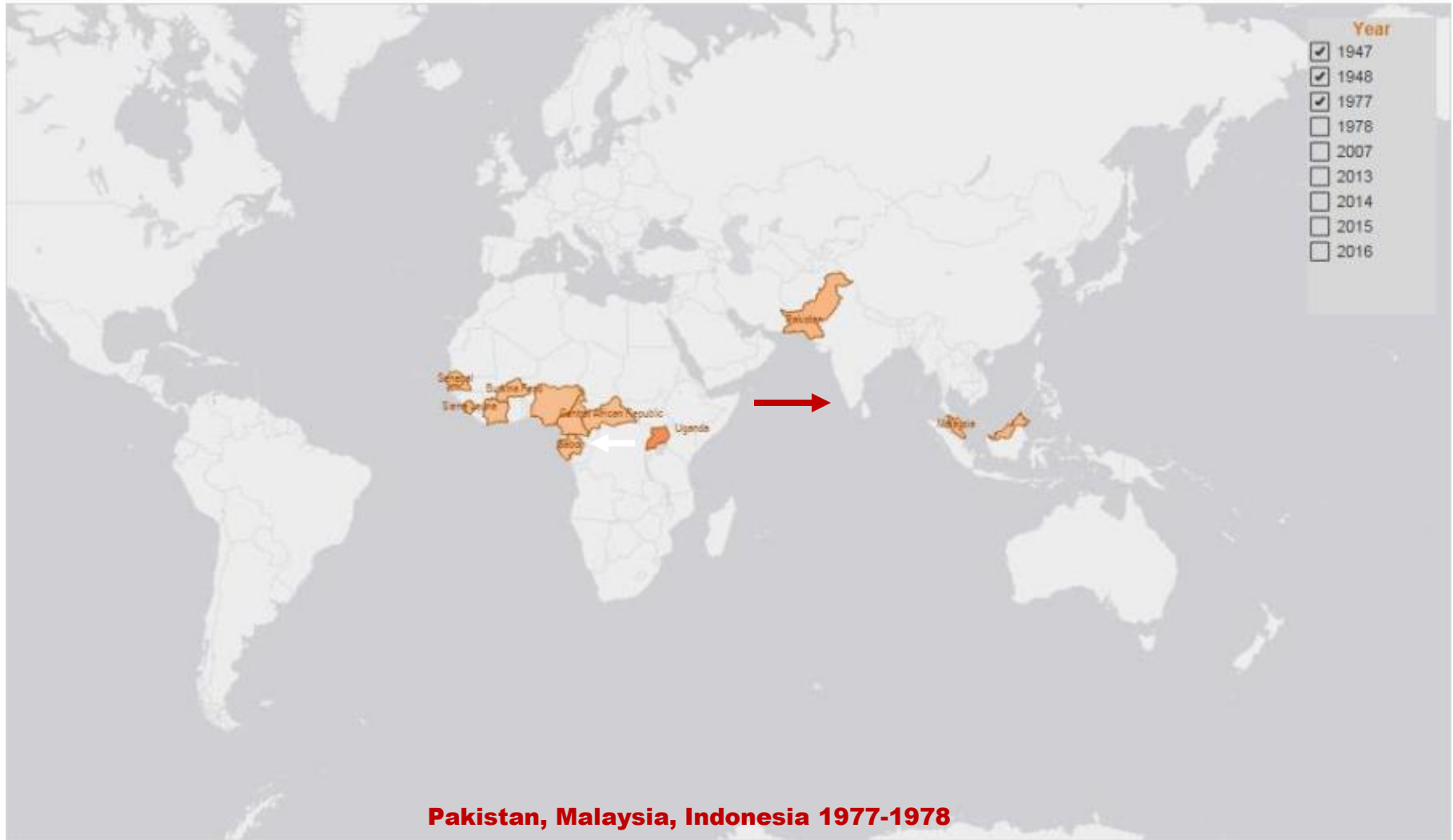
Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

Data Sources: IHR National Focal Points to PAHO-WHO CHA IR ARO and through the Ministry of Health websites, 2014-2016; ECDC, 2016. Report Production: PAHO-WHO AD CHA IR ARO

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

197
7



Human cases and / or mosquito carriage have been reported in:

Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

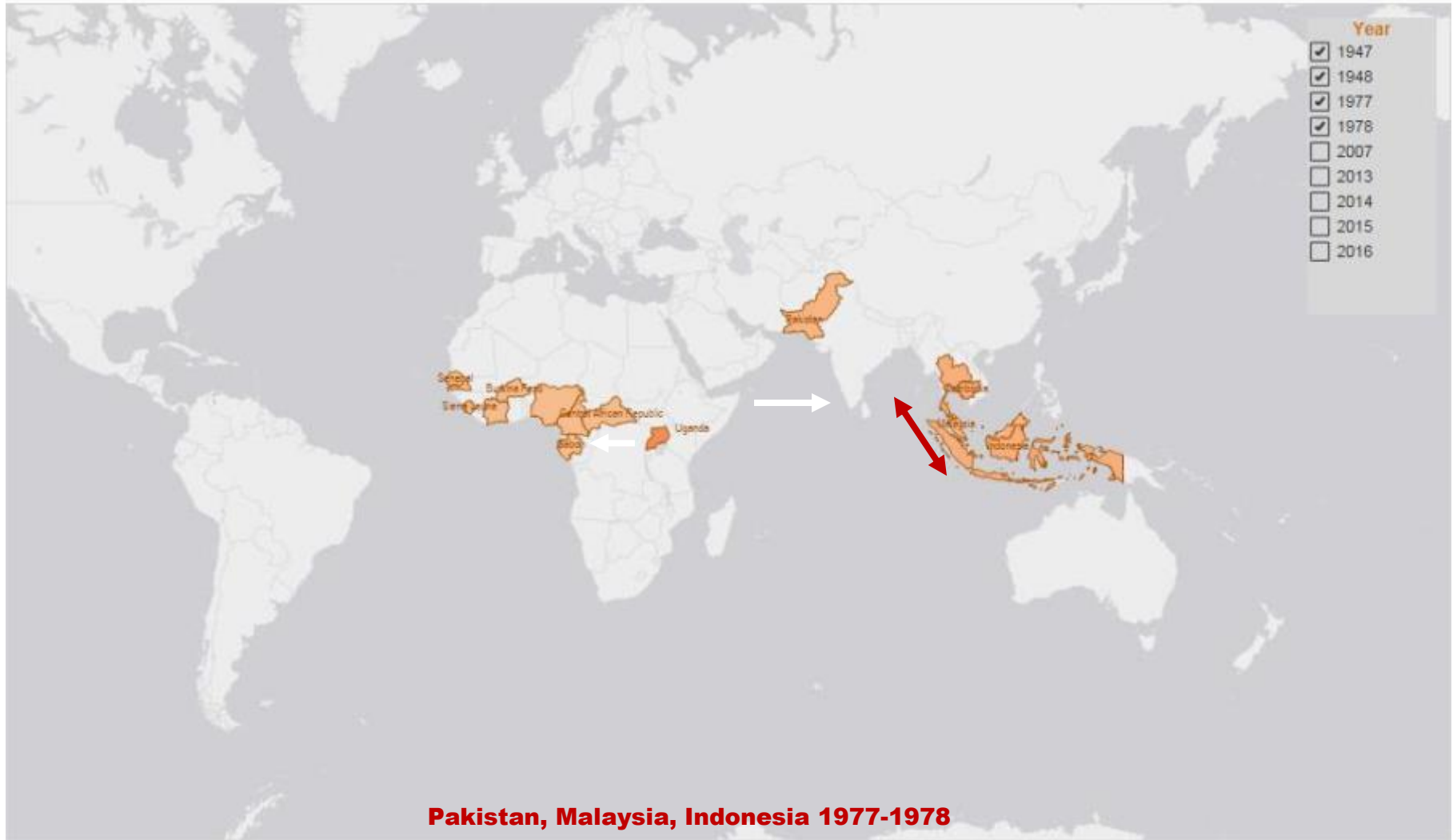
Data Sources: IHR National Focal Points to PAHO-WHO CHA IR ARD and through the Ministry of Health websites, 2014-2016; ECDC, 2016. Report Production: PAHO-WHO AD CHA IR ARD

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

197

8



Human cases and / or mosquito carriage have been reported in:

Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

2007



Human cases and / or mosquito carriage have been reported in:

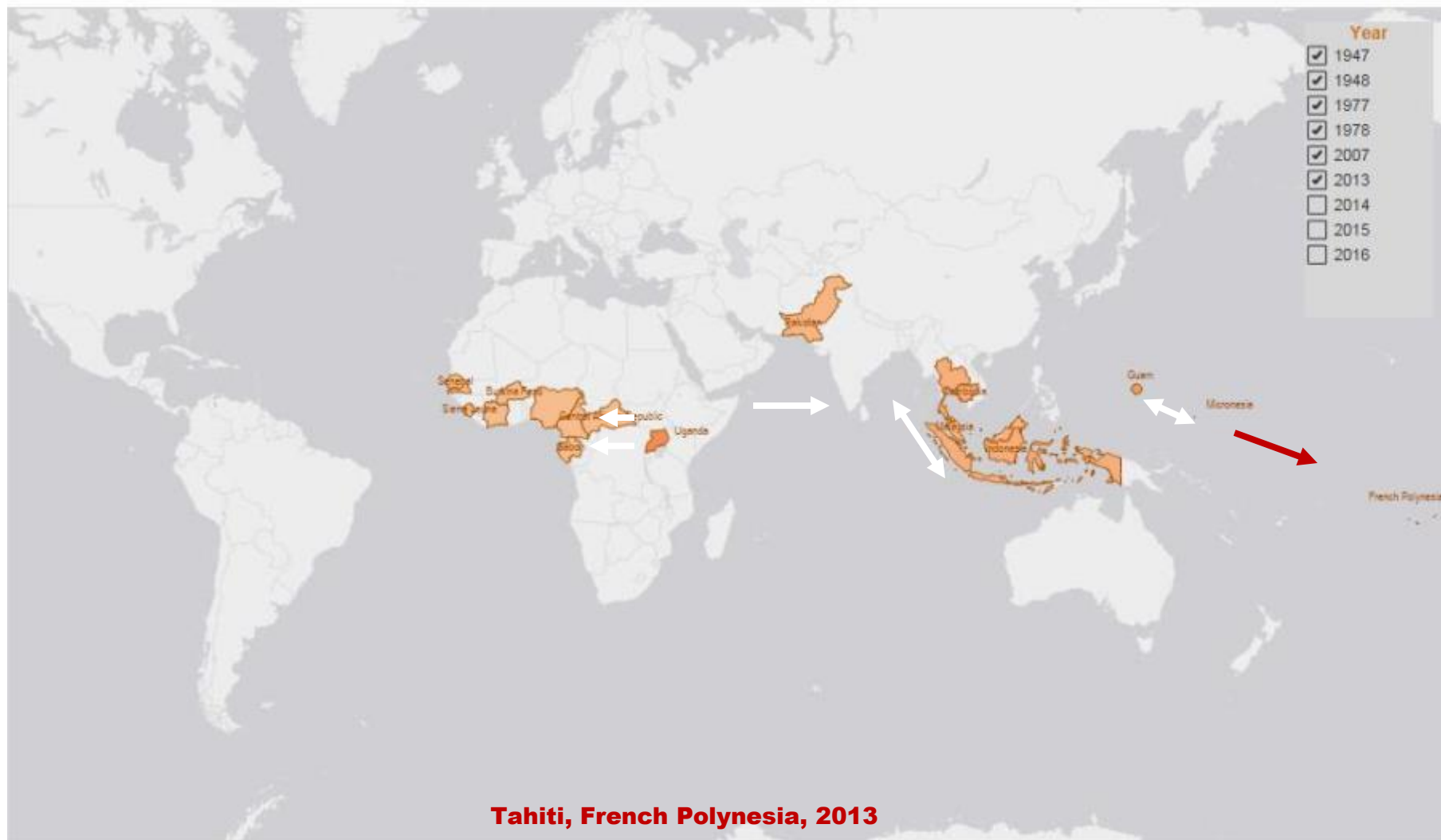
Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

2013



Human cases and / or mosquito carriage have been reported in:

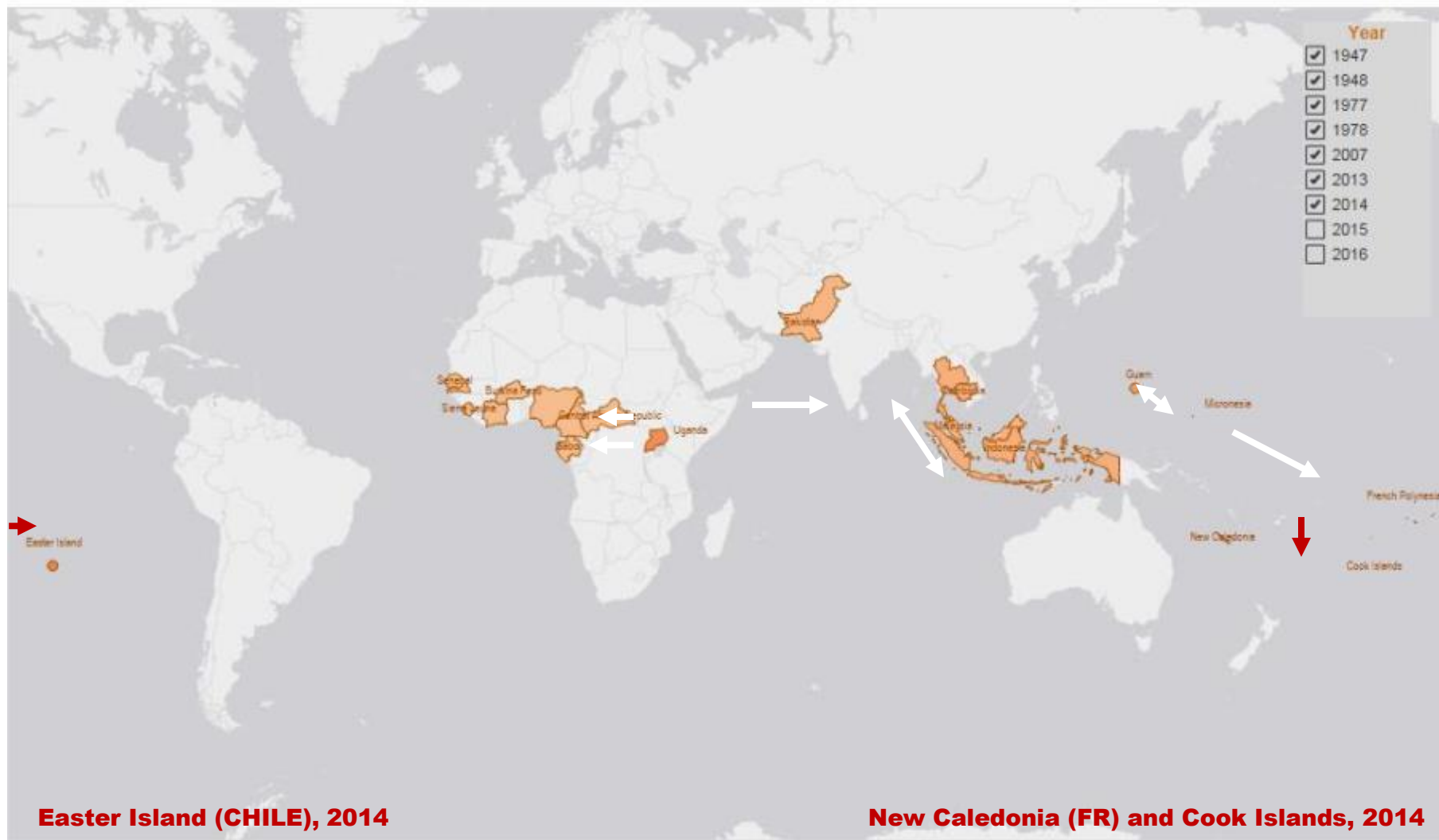
Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia, Easter Island (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

2014



Human cases and / or mosquito carriage have been reported in:

Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia. **Easter Island (Chile)**. **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

2015



Brazil, May 2015

Human cases and / or mosquito carriage have been reported in:

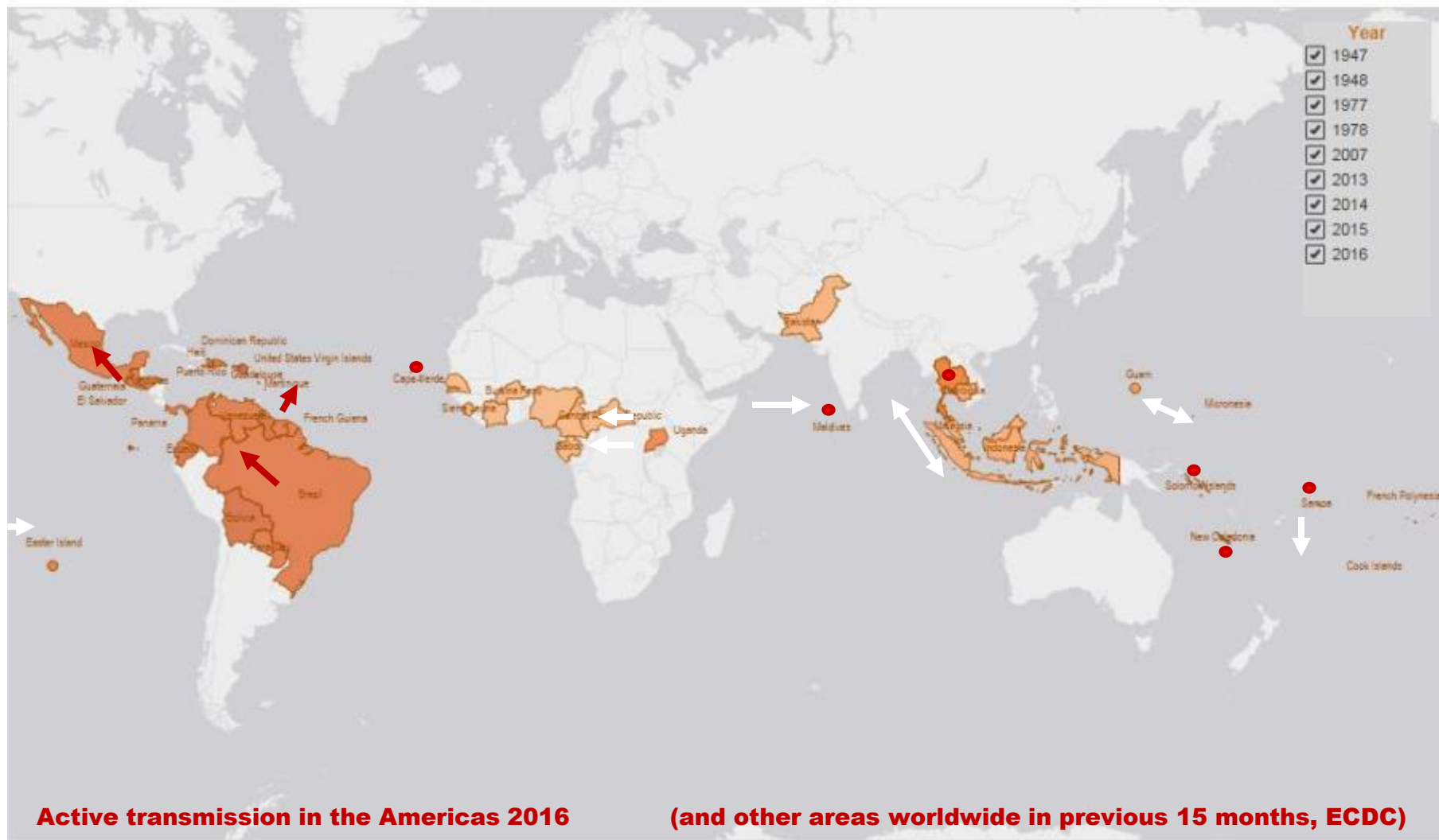
Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia. **Easter Island** (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

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Historical Transmission of Zika Virus (human cases and/ or mosquito carriage reports)

2016



Human cases and / or mosquito carriage have been reported in:

Africa - Burkina Faso, Cameroon, Central African Republic, Gabon, Ivory Coast, Nigeria, Senegal, Sierra Leone and Uganda. **Asia** - Cambodia, Indonesia, Malaysia, Pakistan and Thailand. **The Pacific Region** - Cook Islands, French Polynesia, Guam, Micronesia and New Caledonia. **Easter Island** (Chile). **Americas**: Brazil, Barbados, Bolivia, Colombia, Dominican Republic, Guadeloupe, Guatemala, Guyana, French Guiana, Haiti, Honduras, Ecuador, El Salvador, Martinique, Mexico, Panama, Paraguay, Puerto Rico, Saint Martin, Suriname, US Virgin Islands, Venezuela

Data Sources: IHR National Focal Points to PAHO-WHO CHA IR ARD and through the Ministry of Health websites, 2014-2016; ECDC, 2016. Report Production: PAHO-WHO AD CHA IR ARD

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Karakteristik Infeksi Virus Zika (1)

- **Gejala klinis**

- Masa inkubasi infeksi virus Zika: beberapa hari.
- Gejala – gejala mirip serupa dengan dengue, seperti demam, ruam kulit, conjunctivitis, sakit kepala, muscle and joint pain, malaise.
- Gejala biasanya ringan dan sembuh dalam 2-7 hari.

- **Transmisi**

Melalui gigitan nyamuk *Aedes sp* yang terinfeksi, terutama *Aedes aegypti* di wilayah tropis.

- **Diagnosis**

Melalui PCR (polymerase chain reaction) dan isolasi virus dari sampel darah.

- **Pengobatan:**

Tidak ada pengobatan spesifik untuk infeksi virus Zika, gejala – gejala cukup diobati dengan:

- Obat – obat antipiretik dan analgetik yang umum.
- Banyak istirahat dan minum air.
- **Saat ini tidak tersedia vaksin**

Karakteristik Infeksi Virus Zika (2)

- **Komplikasi potensial**

Sindrom neurologis dan cacat kongenital diamati selama kejadian KLB namun hubungan sebab – akibat nya belum diketahui tetapi ada dugaan kuat.

- **Pencegahan dan pengendalian**

Nyamuk dan tempat – tempat perindukannya merupakan faktor risiko yang signifikan untuk infeksi virus Zika. Pencegahan dan pengendalian mengandalkan pada:

- Pengurangan populasi nyamuk melalui source reduction (memusnahkan dan memodifikasi tempat – tempat perindukan nyamuk):
 - ✓ Mengosongkan, membersihkan dan menutup kontainer – kontainer yang dapat menampung air seperti ember, pot – pot bunga dan ban – ban bekas sehingga tidak dapat digunakan untuk perkembang biakan nyamuk.
 - ✓ Menggunakan insektisida semprot / larvasida saat KLB.
- Mengurangi kontak antara nyamuk dan orang dengan menggunakan:
 - ✓ Repellent;
 - ✓ Memakai baju yang menutupi sebanyak mungkin bagian tubuh
 - ✓ Pembatas fisik seperti tirai, menutup pintu dan jendela, serta tidur menggunakan kelambu.

- **Potensi penyebaran?**

Virus Zika berpotensi menyebar secara internasional oleh nyamuk yang terinfeksi, yang secara tidak sengaja/kebetulan terbawa alat – alat angkut sehingga menyebabkan penyebaran geografis yang luas dari vektor nyamuk.

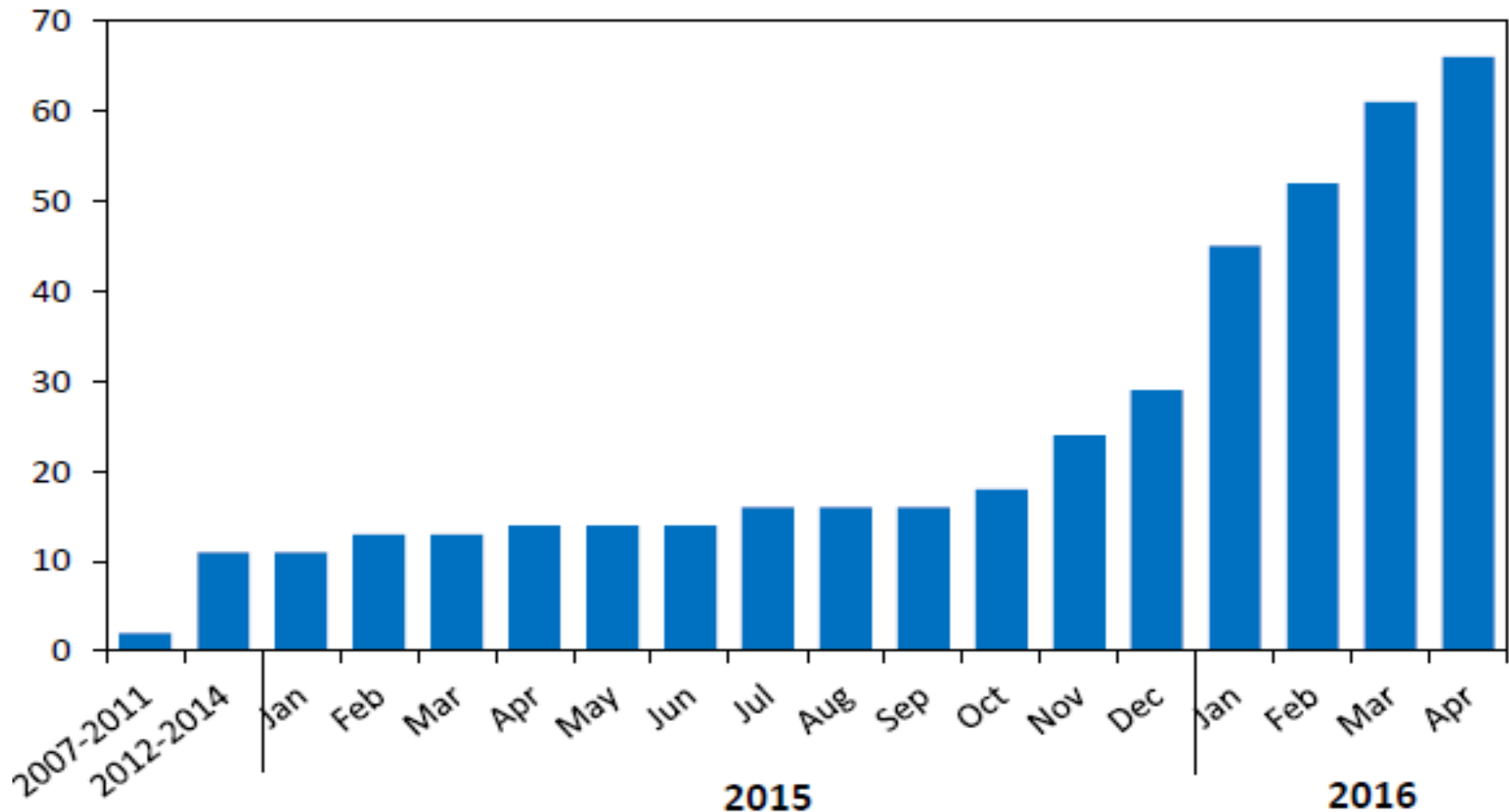
Situasi Epidemiologi (Sitrep 21 April 2016)

Insiden virus Zika: 1 Jan 2007 – 20 April 2016: 66 negara dan teritori melaporkan ada transmisi virus Zika, seperti tabel berikut:

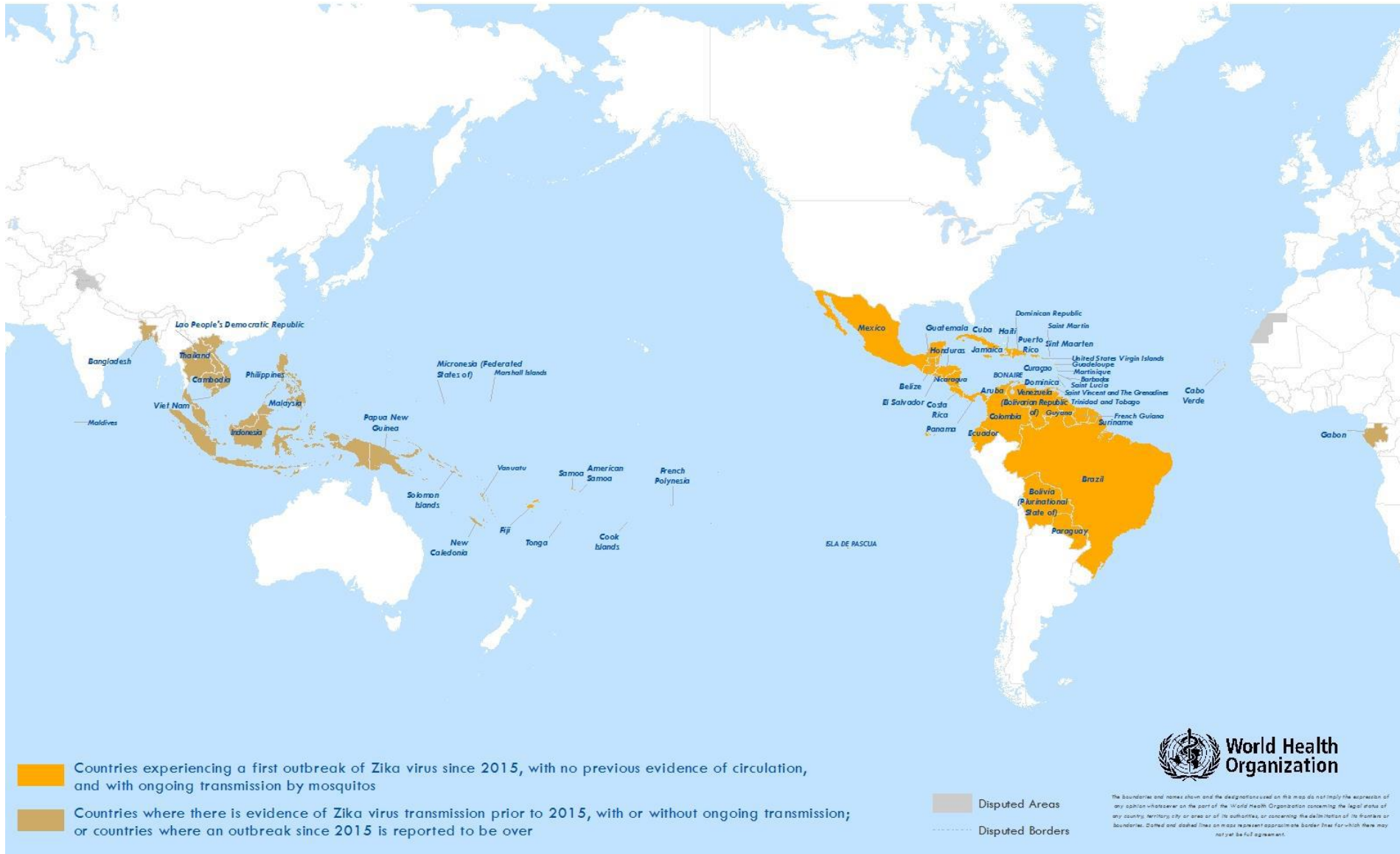
Klasifikasi	Regional WHO	Negara / Teritori / Daerah
Negara - negara yang mengalami KLB virus Zika untuk pertama kali, dengan tanpa bukti sirkulasi virus sebelumnya dan dengan penularan/transmisi oleh nyamuk (42)	AFRO (1)	Cabo Verde
	AMRO / PAHO (33)	Aruba*, Barbados, Brazil, Bolivia (Plurinational State of), BONAIRE – Netherlands*, Colombia, Costa Rica, Cuba, Curaçao*, Dominica*, Dominican Republic, Ecuador, El Salvador, French Guiana, Guadeloupe, Guatemala, Guyana*, Haiti, Honduras, Jamaica, Martinique, Mexico, Nicaragua, Panama, Paraguay, Puerto Rico, Saint Martin, Saint Vincent and the Grenadines*, Sint Maarten*, Suriname, Trinidad & Tobago*, United States Virgin Islands, Venezuela (Bolivarian Republic of)
	SEARO (1)	Maldives*
	WPRO (5)	American Samoa, Fiji*, Marshall Islands*, Samoa, Tonga,
Negara - negara dimana terdapat bukti sirkulasi virus Zika pada masa lalu, dengan atau tanpa berlangsungnya penularan / transmisi (17)	AFRO (1)	Gabon
	SEARO (3)	Bangladesh, Indonesia, Thailand
	WPRO (12)	Cambodia, Cook Islands, French Polynesia, Lao People's Democratic Republic, Malaysia, Micronesia (Federated States of), New Caledonia, Papua New Guinea, Philippines, Solomon, Vanuatu, Vietnam.
	PAHO (1)	Isle De Pasqua _ CHILI.
Negara - negara dengan bukti penularan / transmisi virus Zika dari orang ke orang selain transmisi oleh nyamuk. (8)	AMRO / PAHO (4)	Argentina, Peru, Chile, United States of America,
	EURO (3)	France, Italy, Portugal
	WPRO (1)	New Zealand

Situasi Epidemiologi (lanjutan)

Jumlah kumulatif negara – negara yang melaporkan transmisi virus Zika: dalam tahun, 2007 – 2014 dan menurut bulan 1 Jan – 13 April 2016.



Negara – negara, teritorial yang melaporkan virus Zika, 2007 – 2016



Insiden Microcephaly

Negara, teritorial melaporkan kasus – kasus microcephaly yang berpotensi ada hubungan dengan Infeksi Virus Zika

Negara pelapor	Jumlah kasus microcephaly yang menunjukkan infeksi kongenital atau berpotensi berhubungan dengan Infeksi virus Zika	Lokasi tempat infeksi
Brazil	1168	Brazil
Cabo verde	2	Cabo verde
Colombia	7	Colombia
Polinesia Perancis	8	Polinesia
Martinique	3	Martinique
Panama	3	Panama
Slovenia	1	Brazil
USA	2	Brazil

Insiden Guillian Barre Syndrome

Klasifikasi	Negara / Teritorial/ daerah
Insiden kasus GBS dilaporkan meningkat, dengan setidaknya 1 kasus GBS dengan konfirmasi infeksi virus Zika	Brazil, Colombia, Dominican Republic, El Salvador*, French Polynesia, Honduras, Suriname, Venezuela (Bolivarian Republic of)
Insiden kasus GBS dilaporkan tidak meningkat, dengan setidaknya 1 kasus GBS dengan konfirmasi infeksi virus Zika	French Guiana, Haiti*, Martinique, Panama, Puerto Rico

Bukti penularan terkini

- Penularan Sexual virus Zika virus telah di ketahui terjadi pada 6 kasus dan ditemukannya virus Zika di semen pada 1 kasus hematospermia (<http://who.int/mediacentre/factsheets/zika/en/>)
- Telah ditemukan adanya Virus Zika dalam darah donor didaerah – daerah terjangkit. Telah dilaporkan 2 kasus penularan virus Zika yang mungkin melalui transfusi darah. (<http://who.int/features/qa/zika-safe-blood/en/>)
- Observasi, Studi Cohort dan Case – Control: Konsensus ilmiah bahwa Virus Zika sebagai penyebab GBS, Microcephaly dan gangguan neurologis lain. (Situation Report – WHO, 31 Maret 2016).

RESPON

- Dibutuhkan respon global dalam memonitor dan menilai kemungkinan penyebaran lebih lanjut virus Zika lintas wilayah . Respon diberikan untuk membantu negara – negara dalam
 - komunikasi risiko virus Zika dan
 - kemungkinan asosiasi dengan mikrosefalus dan gangguan neurologis lain,
 - membangun kapasitas pencegahan, pengendalian dan respon KLB,
 - memberikan dukungan dan perhatian pada mereka yang menderita komplikasi serius,
 - membangun konsensus atas bukti – bukti ilmiah, dan
 - mendorong serta menuntun negara – negara untuk melakukan studi guna mengurangi kesenjangan pengetahuan .
- Karena alasan ilmiah dan risiko yang belum dipahami dengan baik, maka respon glogal perlu dikoordinasikan dan sumberdayanya dilengkapi dengan rapid investigations dan mitigasi dampak dari penyakit virus Zika terutama komplikasi neurologis atau autoimun dan lainnya.
- WHO telah mengaktifkan struktur manajemen insiden diseluruh organisasi untuk membantu respons global.

Goal and strategic objectives

Gol : Secara keseluruhan gol / tujuan strategi adalah mengurangi risiko pajanan terhadap infeksi virus Zika dan intensitas transmisi didaerah terjangkit, sambil membangun langkah – langkah penanggulangan konsekuensi infeksi serta langkah pengendalian baru.

Strategi respons global

➤ SURVEILLANCE

- Meningkatkan surveilans terhadap *Aedes* mosquitoes, penyakit virus Zika, sindroma neurologis, dan cacat kongenital.

➤ RESPONSE

- Mengikutsertakan masyarakat dalam mengkomunikasikan risiko – risiko yang berhubungan dengan penyakit infeksi Vika dan mempromosikan perilaku hidup sehat, mengurangi kecemasan, stigma, menghilangkan rumordan mispersepsi kultural.
- Meningkatkan upaya – upaya pengendalian penyebaran nyamuk *Aedes* dan menyediakan peningkatan akses kepada langkah – langkah perlindungan personal .
- Memberi petunjuk dan pelayanan bagi wanita hamil dan mereka yang berencana untuk hamil dan keluarga – keluarga dengan anak yang terserang mikrosefalus , cacat kongenital dan sindrom neurologis.

➤ RISET

- Fast-track the investigation of the etiology of microcephaly, neurologic syndromes and possible association with consequences of Zika virus infection; research and development of new products (e.g. rapid diagnostics, vaccines, therapeutics)

REKOMENDASI SETELAH PERTEMUAN KOMITE EMERGENSI

- **Mengurangi populasi nyamuk yang mentransfer virus Zika.**
Nyamuk *Aedes* yang menyebarkan virus Zika juga menyebarkan virus dengue, chikungunya, dan Yellow Fever. Program – program pengendalian nyamuk, termasuk penggunaan larvasida (insektisida pembunuh nyamuk pada stadium larva) untuk mengobati tempat – tempat penampungan air yang tidak dapat di tangani dengan cara – cara lain (membersihkan, menguras, menutup) .
- **Perlindungan Personal dan rumahtangga.** WHO merekomendasikan orang untuk melindungi dirinya dari gigitan nyamuk melalui:
 - Menggunakan repellent;
 - Memakai pakaian (preferably light-coloured) yang menutupi sebanyak mungkin bagian tubuh.
 - Menggunakan pembatas fisik seperti screens, menutup pintu dan jendela.
 - Tidur didalam kelambu, terutama pada siang hari, ketika nyamuk *Aedes* paling aktif ; and
 - Mengosongkan atau menutup kontainer – kontainer yang dipakai menampung air seperti ember, pot bunga, ban – ban bekas sehingga nyamuk tidak dapat menggunakannya untuk berkembang biak.
- **Wanita – wanita hamil dan berencana hamil.** Wanita – wanita hamil yang merasa mungkin telah terpajan virus Zika dapat berkonsultasi dengan dokternya untuk melakukan monitor ketat kehamilannya.
- **Rekomendasi perjalanan.** Komite menemukan tidak ada dasar untuk membenarkan larangan melakukan perjalanan atau perdagangan. Namun demikian pelaku perjalanan yang akan bepergian ke daerah – daerah dimana ditemukan kasus virus Zika didesak untuk melindungi diri mereka dari gigitan nyamuk. Wanita – wanita hamil yang berpikiran akan melakukan perjalanan ke daerah terjangkit diminta berkonsultasi ke dokter nya sebelum melakukan perjalanan dan setelah kembali. Mereka juga harus melakukan langkah – langkah perorangan dan rumah tangga dalam mencegah gigitan nyamuk.

SEKIAN
DAN
TERIMA KASIH