Consensus 2017

Belgian Scientific Study Group of Travel Medicine

29/9/2017

Program

- YF : update
- Malaria map
- Updates zika
- measles
- Polio
- Some practical issues
- Rabies PEP

Yellow fever

- **Amendment to International Health Regulations (2005), Annex 7 (yellow fever):**

"as of 11 July 2016, for both existing or new certificates, revaccination or a booster dose of yellow fever vaccine cannot be required of international travellers as a condition of entry into a State Party, regardless of the date their international certificate of vaccination was initially issued."

- No new certificate is needed
- “Countries and health care providers continue to be free to make requirements on vaccination, revaccination or boosters for their own populations, or patients, respectively.”

→No WHO guidelines about

  – suboptimal protection in certain subpopulations
  – boosterinjections

→ each country issues its own guidelines

IHR
Background of decision of life-long protection after single YF dose

- Strategic Advisory group of Experts in Immunisation (SAGE) group
- 10 studies on long-term immune response:

Publisher: Taylor & Francis

Journal: *Expert Review of Vaccines*

DOI: 10.1080/14760584.2016.1198259

Questions regarding the safety and duration of immunity following live yellow fever vaccination

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Questions regarding the safety and duration of immunity following live yellow fever vaccination

Ian J. Amanna[2], Mark K. Slifka*[1]

- Stratification endemic/ non endemic
  - Endemic 97,6% remains seropos
  - Non endemic: 83,6%
  - -→ almost 1/5 or 1/6 loose measurable antibodies in non endemic setting
- Protection?
  - Role of memory T cells unclear and certainly not proven: it is not sure if memory T cells can protect against YF in case of neg NT
  - cutoff for PRNT: breaktrough infections in PRNT of 10 and 20
  - In children seroconversion only 84,8%-88%-and lower if combined with MMR
- Underreporting of breakthrough YF cases

Vaccine failures?

- WHO:12
- CDC:18+5 within 10d after vaccination

Demographic profile of sylvatic yellow fever in Brazil from 1973 to 2008

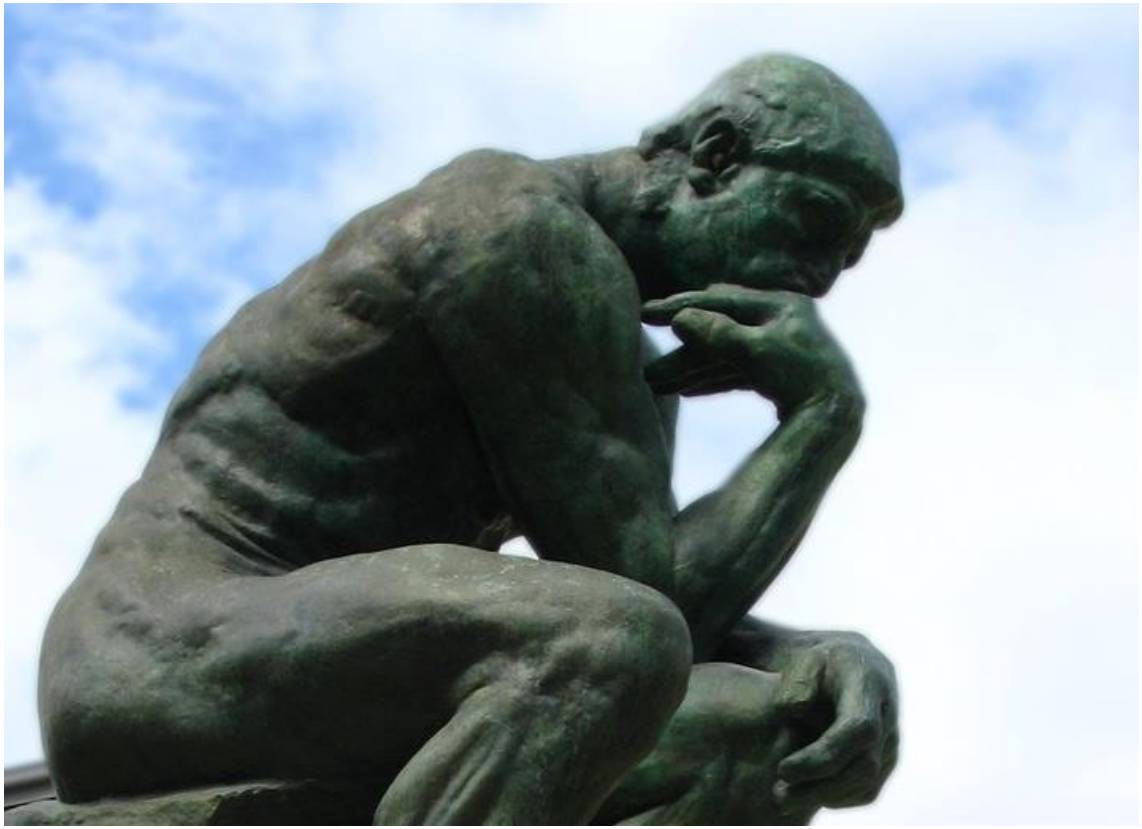
Fernando Portela Câmara ✉, Luiz Max de Carvalho, Ana Luisa Bacellar Gomes

Trans R Soc Trop Med Hyg (2013) 107 (5): 324-327.
DOI: https://doi.org/10.1093/trstmh/trt014
Published: 26 February 2013 **Article history**

459/ 831 (55%) cases of yellow fever in Brazil had a history of YFV-17D vaccination.

Of the individuals who contracted yellow fever:

- 3% had been vaccinated <10 years before disease onset
- whereas 52% had been vaccinated >10 years previously.



WHO guidelines-IHR <---> questions-new evidence

How have other countries solved this question?

YF: CDC-Yellow book 2018

(update Jan 2017)

additional doses of yellow fever vaccine are recommended for the following groups of travelers:

- **pregnant** : 1 additional dose
- **hematopoietic stem cell transplant after receiving a dose of yellow fever vaccine:** they should be revaccinated before their next travel that puts them at risk for yellow fever as long as they are sufficiently immunocompetent to be safely vaccinated.
- **HIV**: boost every 10y

https://wwwnc.cdc.gov/travel/yellowbook/2016/infectious-diseases-related-to-travel/yellow-fever

BOX. Recommendations for use of yellow fever vaccine booster doses*

•A single primary dose of yellow fever vaccine provides long-lasting protection and is adequate for most travelers [Category A].

•Additional doses of yellow fever vaccine are recommended for certain travelers:

- Women who were pregnant (regardless of trimester) when they received their initial dose of yellow fever vaccine should receive 1 additional dose of yellow fever vaccine before their next travel that puts them at risk for yellow fever virus infection [Category A];
- Persons who received a hematopoietic stem cell transplant after receiving a dose of yellow fever vaccine and who are sufficiently immunocompetent to be safely vaccinated should be revaccinated before their next travel that puts them at risk for yellow fever virus infection [Category A];
- Persons who were infected with human immunodeficiency virus when they received their last dose of yellow fever vaccine should receive a dose every 10 years if they continue to be at risk for yellow fever virus infection [Category A].

•A booster dose may be given to travelers who received their last dose of yellow fever vaccine at least 10 years previously and who will be in a higher-risk setting based on season, location, activities, and duration of their travel [Category B]. This would include travelers who plan to spend a prolonged period in endemic areas or those traveling to highly endemic areas such as rural West Africa during peak transmission season or an area with an ongoing outbreak.

•Laboratory workers who routinely handle wild-type yellow fever virus should have yellow fever virus–specific neutralizing antibody titers measured at least every 10 years to determine if they should receive additional doses of the vaccine. For laboratory workers who are unable to have neutralizing antibody titers measured, yellow fever vaccine should be given every 10 years as long as they remain at risk [Category A].

https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6423a5.htm, consulted 19-9-2017

Nederlandse richtlijnen (LCR-2017)

- Revaccination 1x:
  - pregnancy
  - Interval < 4 weeks between other life vaccine
  - Hematopoetic stemceltransplantation after YF vaccination
  - Interferon
- Revaccination every 10y:
  - HIV
  - Laboratoryworker handling YF
  - ~~Travellers to outbreaks countries~~

Yellow fever: Nathnac update March 2017

"A single dose correctly administered confers immunity in 95 to 100% of recipients. Data suggests that with some exceptions, **most vaccine recipients will maintain protective antibody titers for potentially several decades, or possibly life-long**, following vaccination (WHO Strategic Advisory Group of Experts (SAGE), 2013).

- **Reinforcing immunisation**

The WHO Strategic Advisory Group of Experts (SAGE) on Immunization state that (based on currently available data, a single dose of yellow fever vaccine appears to confer life-long protective immunity against yellow fever disease. Therefore, with some exceptions, a booster dose of yellow fever vaccine is not needed to maintain immunity WHO Strategic Advisory Group of Experts (SAGE), 2013). "

Reinforcing immunisation :

- <2y
- pregnancy
- HIV
- when immune suppressed
- before undergoing a bone marrow transplant

In certain situations where there is concern about a traveller's risk of exposure to yellow fever (e.g. working/living for an extended period in a high risk setting) a booster dose of YF vaccine can be considered – expert advice can be sought from NaTHNaC (www.NaTHNaC.org) or Health Protection Scotland (www.Travax.nhs.uk)

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/606642/green_book_chapter_35.pdf

YF Recommandation Français:

En ce qui concerne les voyageurs :

- **<2 ans** : une seconde dose est recommandée à partir de l'âge de 6 ans
- **grossesse, les personnes vivant avec le VIH et les personnes immunodéprimées vaccinées**: une seconde dose est recommandée 10 ans plus tard ;
- pour les personnes dont la vaccination contre la fièvre jaune date de plus de 10 ans, une seconde dose est recommandée en cas d'épidémie signalée dans le pays visité.

http://www.adhys.org/uploads/medias/actualites/documents/256-beh_recommandations-voyageurs-2017_-1.pdf

Indication for yellow fever vaccination (Swiss ECTM)

XX = First YF vaccination and **single** booster after 10 years in case of YF re-exposure

X = One YF vaccination, a booster can be discussed with the traveller to avoid forced vaccination when entering the country

(x) = YF vaccination generally not recommended, according to WHO a YF vaccination might be considered for travellers with prolonged travel

Country with risk of YF transmission*	Entry requirements by country with regard to YF vaccination#				When to give IRH amendment
	None	obl	T1	T2	
+	xx	xx	xx	xx	After second YF vaccination
(+)	(x)	x	x	x	After first YF vaccination with mentioning the visiting country
-	-	x	x	x	After first YF vaccination with mentioning the visiting country

***Risk of YF transmission according to WHO**

+ = YF endemic country, **(+)** = country with low risk of YF transmission, **-** = country with no risk of YF transmission
(for a detailed description by country, please consult „Reisemedizinische Tabellen", BAG)

#Entry requirements by country with regard to YF vaccination according to IATA/ TIM

obl = YF vaccination required („obligatorisch") when entering the country
T1 = YF vaccination required if entering within 6 days from YF endemic country (not airport transit)
T2 = YF vaccination required if entering within 6 days from YF endemic country (including airport transit)
->For entry requirements, in general countries with + and (+) are considered to be YF endemic

Olivia Veit TropNet meeting 25-3-2017

Belgian YF guideline -2016

The vaccination certificate is valid for 1 year and a single booster is required before the next trip (when any situation described below has passed) for:

– Children younger than 9 months

– Pregnant women

– An interval of less than 28 days between the administration of the yellow fever vaccine and another live vaccine (for example, measles)

Testing for neutralising antibodies in the blood or repeat vaccination after 10 years is necessary for:

- People with reduced immunity

– Due to HIV (irrespective of the CD4 count)

– Due to medication (as is the case for the treatment of arthritis, high dose cortisone, etc.)

– Persons who received a vaccination against yellow fever before they had a bone marrow transplantation (in this case revaccination is usually indicated, except in case of contra indication)

- People with an increased risk

– Laboratory employees who work with wild yellow fever virus

– People going to work in an area with outbreak of yellow fever

Update Belgian YF guideline-2017

- **In certain temporary conditions, a single booster is recommended** *(before the next exposure-when any of the situations described below has passed-certificate is valid 1y)*
  - Pregnancy
  - Age < 24 months
  - interval of less than 28 days between the administration of the YF vaccine and another live vaccine (eg. measles)
- **In some people, there is concern about immune response,** and booster vaccination or testing of neutralising antibodies is recommended:
  - **People with reduced immunity**
    - Due to HIV (irrespective of the CD4 count, *booster/testing is recommended after 10y)*
    - Due to medication and others (*booster/testing is recommended after 10y)*
    - Persons who received a vaccination against yellow fever before they had a bone marrow transplantation *(revaccination is indicated, if no CI)*
- In case of **high risk of exposure to yellow fever**, a single booster (or testing of neutralising antibodies) should be considered after 10 y *(eg labo workers handling wild type yellow fever, staying for extended period in endemic region or travelling to high risk region such as rural Western Africa or an epidemic region)*

A huge grey zone….

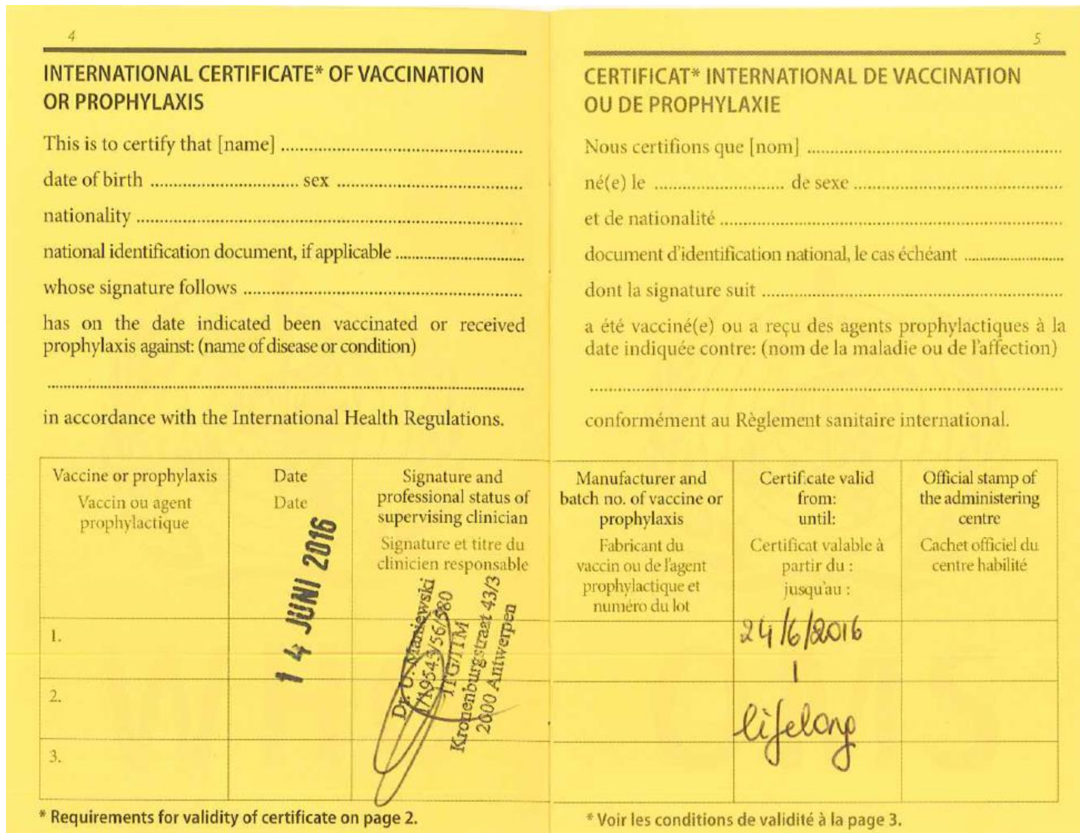
But in reality, many experts have low treshold to give booster (1x) if ongoing risk of exposure to YF

- immunocompetent 1x (after 10y -*but this is also debated as some have decreasing NT in the first few years after vaccination)*
- Immunocompromised 1x or more

Administration

- Remains the same

In general:



4

INTERNATIONAL CERTIFICATE* OF VACCINATION OR PROPHYLAXIS

This is to certify that [name] ....

date of birth .... sex ....

nationality ....

national identification document, if applicable ....

whose signature follows ....

has on the date indicated been vaccinated or received prophylaxis against: (name of disease or condition)

....

in accordance with the International Health Regulations.

5

CERTIFICAT* INTERNATIONAL DE VACCINATION OU DE PROPHYLAXIE

Nous certifions que [nom] ....

né(e) le .... de sexe ....

et de nationalité ....

document d'identification national, le cas échéant ....

dont la signature suit ....

a été vacciné(e) ou a reçu des agents prophylactiques à la date indiquée contre: (nom de la maladie ou de l'affection)

....

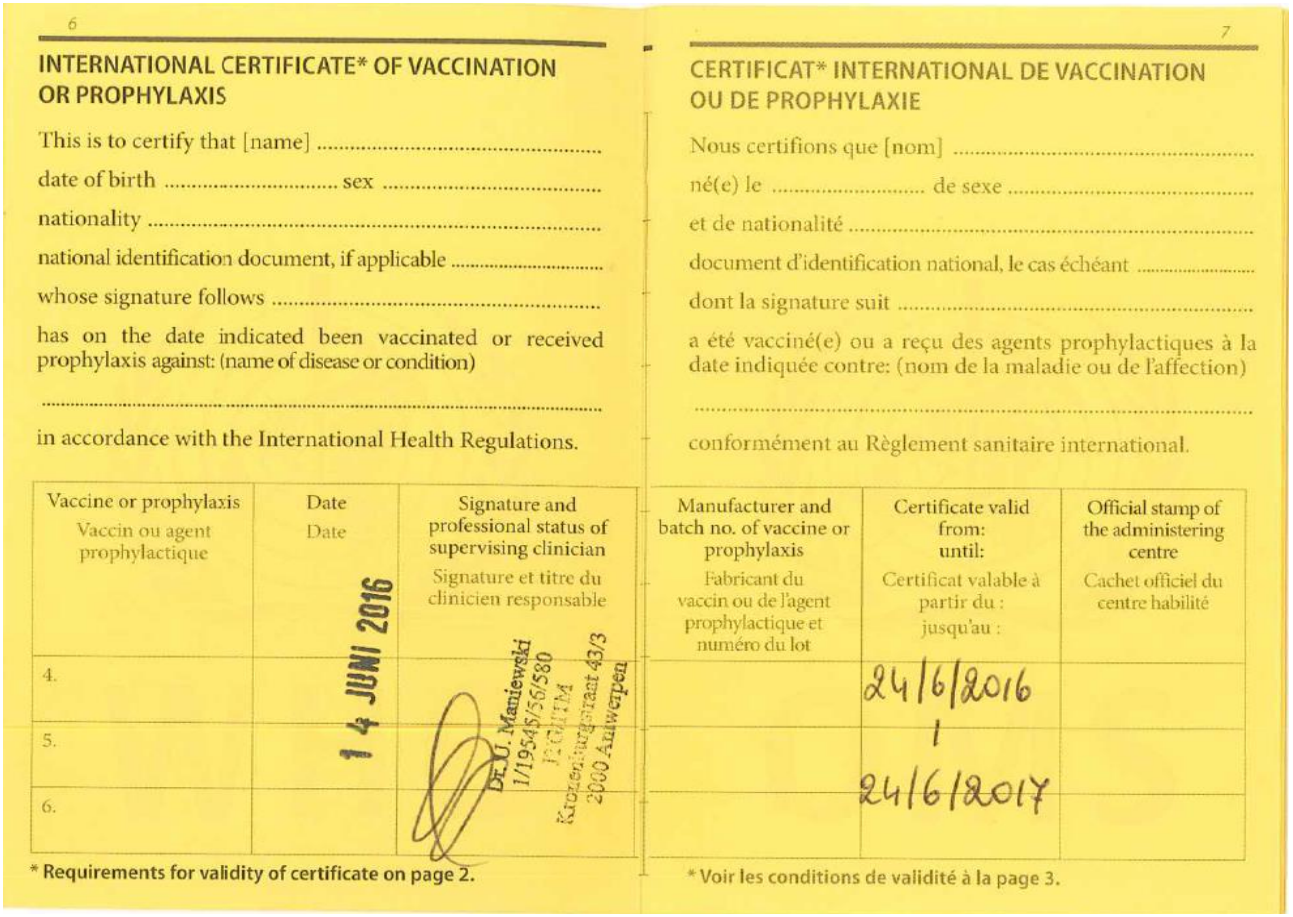
conformément au Règlement sanitaire international.

Vaccine or prophylaxis Vaccin ou agent prophylactique	Date Date	Signature and professional status of supervising clinician Signature et titre du clinicien responsable	Manufacturer and batch no. of vaccine or prophylaxis Fabricant du vaccin ou de l'agent prophylactique et numéro du lot	Certificate valid from: until: Certificat valable à partir du : jusqu'au :	Official stamp of the administering centre Cachet officiel du centre habilité
1.	14 JUNI 2016	Dr. U. Maniewski ITG/ITM Kronenburgstraat 43/3 2000 Antwerpen		24/6/2016 | lifelong	
2.					
3.					

* Requirements for validity of certificate on page 2.

* Voir les conditions de validité à la page 3.

In “special conditions” (eg pregnant-young child-Y measles <4w



6

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4.	14 JUNI 2016	Dr. U. Maniewski 1/19548/56/580 Kruisenlaangraat 43/3 2060 Antwerpen		24/6/2016	
5.				/	
6.				24/6/2017	

* Requirements for validity of certificate on page 2.

7

CERTIFICAT* INTERNATIONAL DE VACCINATION OU DE PROPHYLAXIE

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né(e) le ..... de sexe .....

et de nationalité .....

document d'identification national, le cas échéant .....

dont la signature suit .....

a été vacciné(e) ou a reçu des agents prophylactiques à la date indiquée contre: (nom de la maladie ou de l'affection)

.....

conformément au Règlement sanitaire international.

* Voir les conditions de validité à la page 3.

In immunocompromised-labo also in “high risk”?

4

INTERNATIONAL CERTIFICATE* OF VACCINATION OR PROPHYLAXIS

This is to certify that [name] .....

date of birth ..... sex .....

nationality .....

national identification document, if applicable .....

whose signature follows .....

has on the date indicated been vaccinated or received prophylaxis against: (name of disease or condition)

.....

in accordance with the International Health Regulations.

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CERTIFICAT* INTERNATIONAL DE VACCINATION OU DE PROPHYLAXIE

Nous certifions que [nom] .....

né(e) le ..... de sexe .....

et de nationalité .....

document d'identification national, le cas échéant .....

dont la signature suit .....

a été vacciné(e) ou a reçu des agents prophylactiques à la date indiquée contre: (nom de la maladie ou de l'affection)

.....

conformément au Règlement sanitaire international.

Vaccine or prophylaxis Vaccin ou agent prophylactique	Date Date	Signature and professional status of supervising clinician Signature et titre du clinicien responsable	Manufacturer and batch no. of vaccine or prophylaxis Fabricant du vaccin ou de l'agent prophylactique et numéro de lot	Certificate valid from: until: Certificat valable à partir du : jusqu'au :	Official stamp of the administering centre Cachet officiel du centre de vaccination/prophylaxie
1. YELLOW FEVER FIEVRE JAUNE	17 DEC. 2015		YELLOW FEVER STAMARIL LOT N°	27/12/2015	ROYAUME DE BELGIQUE INST TROPICAL ANTWERP SANIPORT
2.				27/12/2025	
3.					

* Requirements for validity of certificate on page 2.

* Voir les conditions de validité à la page 3.

Some examples

- VFR going to Guinée for 4 weeks
- Was vaccinated in 2014, while pregnant
- Revaccinate?

- Child 2y,
- VFR, to Nigeria for 1 month
- was vaccinated against YF at the age of 10m

- Healthy businessman
- Travels +/- every 6 weeks to Central Africa
- Staying 5 days in Kinshasa
- Had YF vaccine 11y ago

- Expat
- Traveling to RDC-Equateur
- Had YF vaccine in 1990 and in 2002
- Revaccinate?

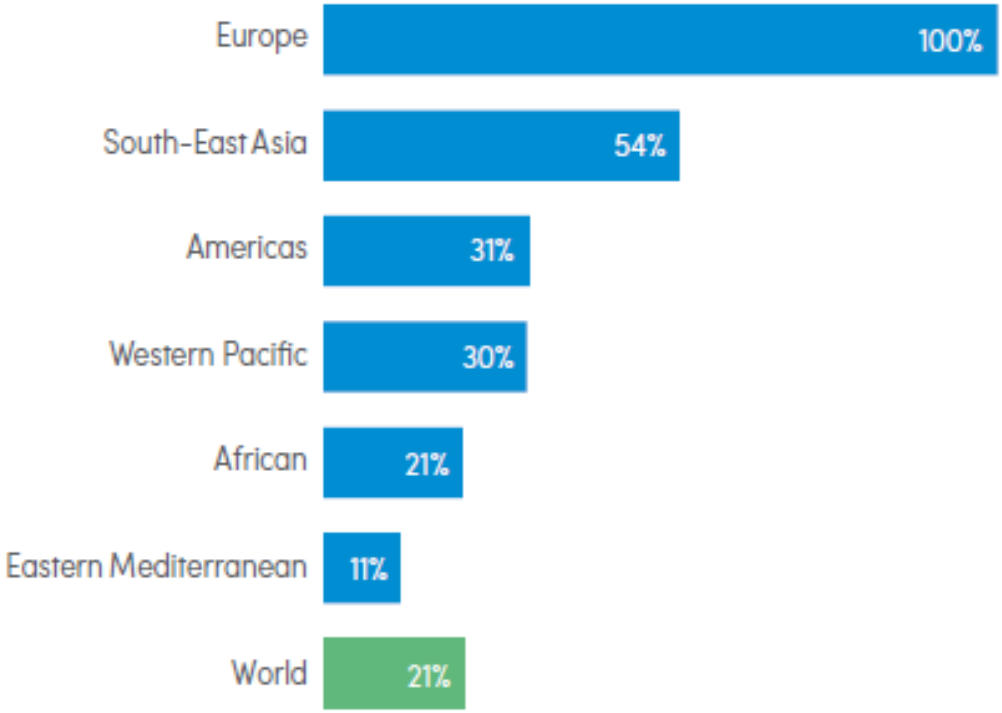
- VFR going to Cameroon
- HIV diagnosed in 1999, CD4 450/µl, VL undetectable
- Was vaccinated against YF in 1995 and in 2005

- Scientific researcher
- Will spend 2 months in Amazones-Brazil
- YF vaccine in 2005

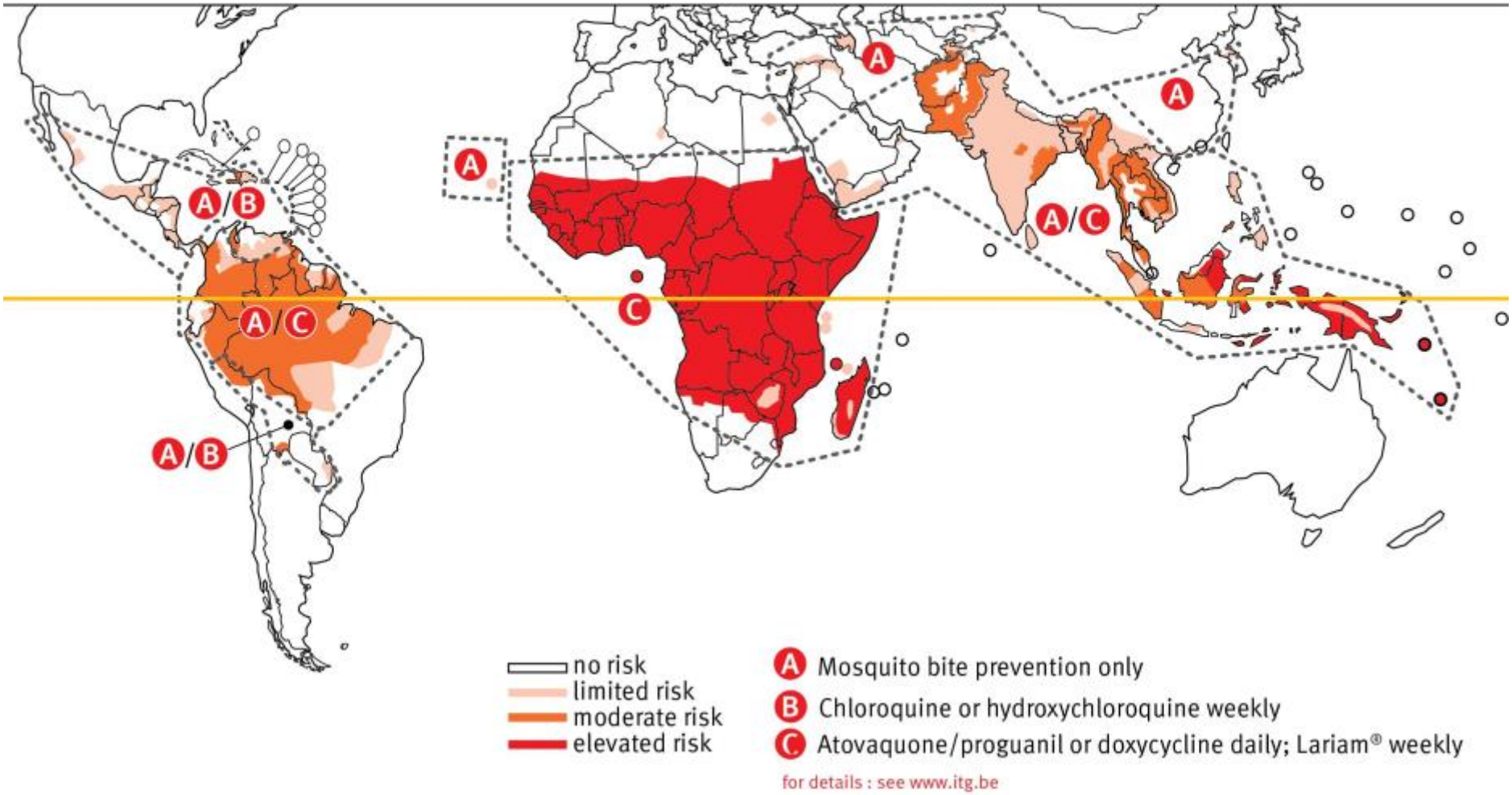
- Traveler, wil spend 6 months in South America
- Had YF vaccine in 2005


Keep
Yourself
SAFE from
MALARIA
Visit your doctor 4-6 weeks before travel
• Prevent mosquito bites, especially at night.
• Take your antimalarial pills exactly as prescribed.
• If you get sick during or after your travel,
it could be malaria: see a doctor immediately.
More info on www.itg.be
With the support of the
Flemish Agency for Care and Health
Vlaams Agentschap
Zorg & Gezondheid

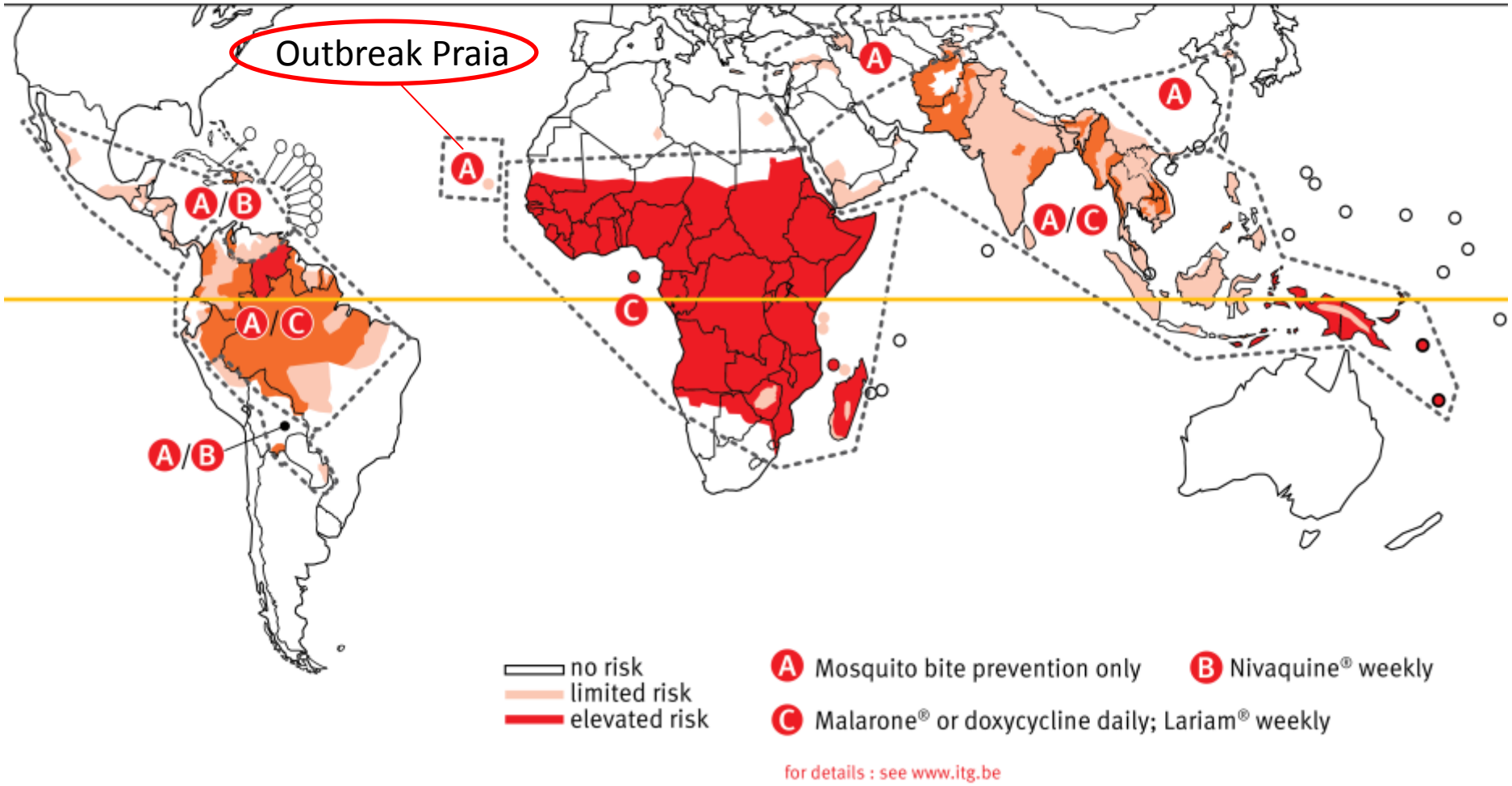
Figure 6.6 Reduction in malaria case incidence rate by WHO region, 2010–2015. No indigenous cases were recorded in the WHO European Region in 2015. Source: WHO estimates



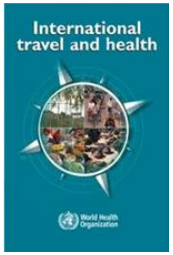
Malaria 2016 (source WHO 2010, World Malaria Report 2015)



Malaria 2017 (source WHO 2010, World Malaria Report 2016)

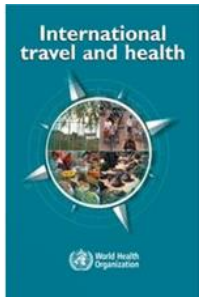


WHO



- SBET (+ anti mosquito measurements):
  - In professionals who spend many times, short periods in risk areas *(eg flight attendants)*
  - For tourist staying longer time (> 1w) in certain low risk but remote areas

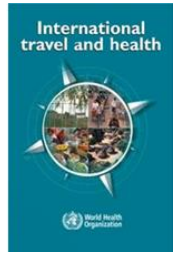
Travellers should realize that self-treatment is a first-aid measure and that they should still seek medical advice as soon as possible.



- “The drug options for SBET are in principle the same as the options for treatment of uncomplicated malaria. The choice will depend on the type of malaria in the area visited and the chemoprophylaxis regimen taken.
- Artemether–lumefantrine has been registered (in Switzerland and the United Kingdom) for use as SBET for travellers.”

WHO

Which treatment can be given as SBET?



- atovaquone-proguanil (25€)
- (artemether–lumefantrine=Riamet (38 €)
- (dihydroartemisinin–piperaquine= Eurartesim (52 €)

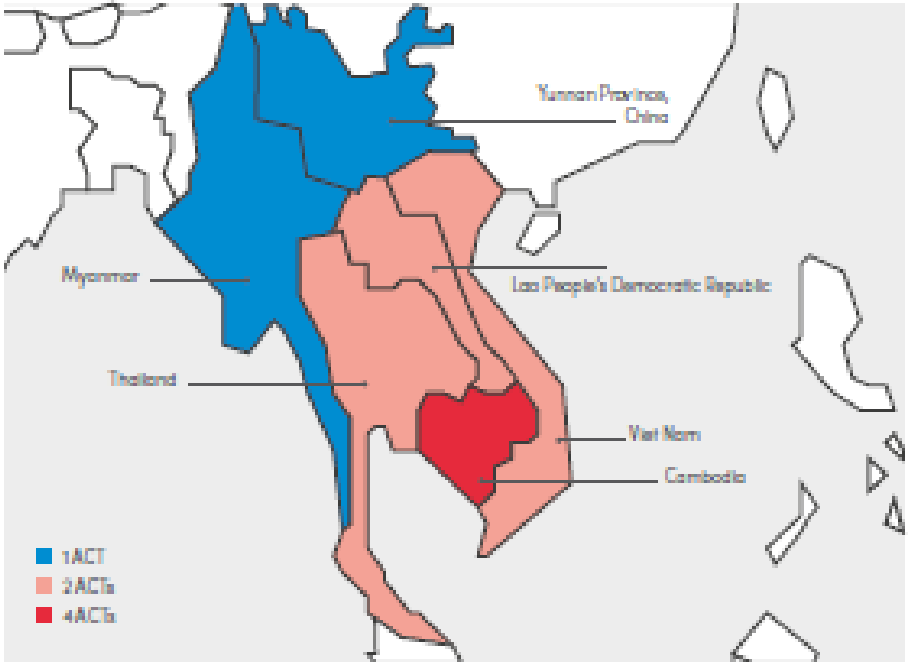
ACT: CAVE:

- ECG before administration

-more expensive

-increasing resistence in some Asian countries)

Figure 4.8 Distribution of malarial multidrug resistance, 2016. Source: WHO database



ACT, artemisinin-based combination therapy

World Health Organization

Spread of a single multidrug resistant malaria parasite lineage (*PfPailin*) to Vietnam, Lancet 10/2017

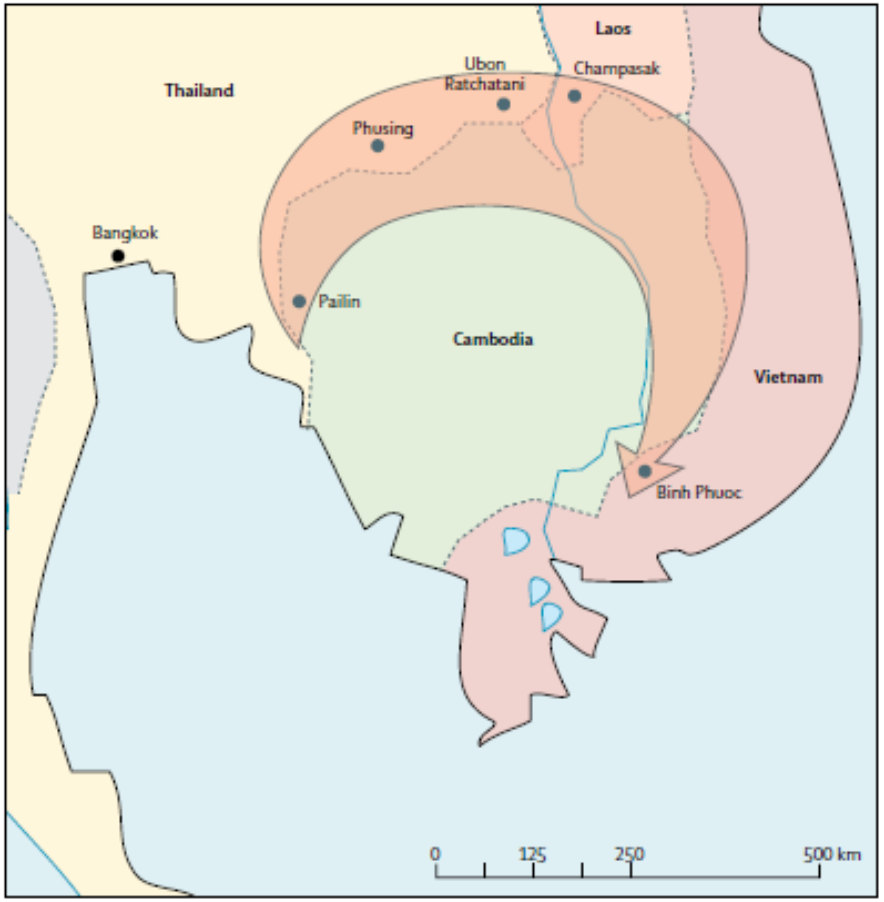
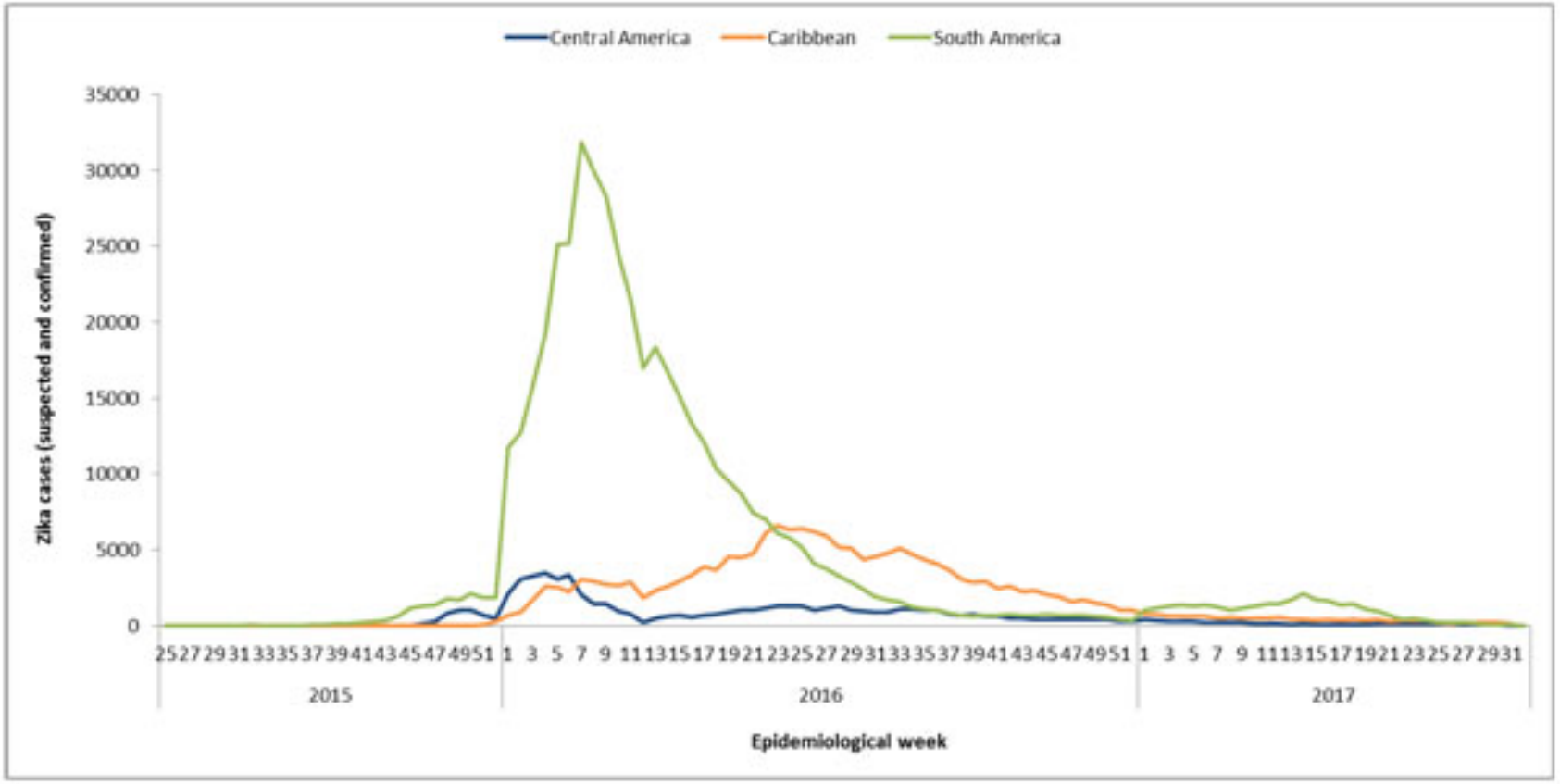


Figure*: Transnational spread of multidrug resistant *PfPailin
The artemisinin resistant *Plasmodium falciparum* C580Y lineage (*PfPailin*) was detected first in Pailin, Western Cambodia, in 2008.[2] It later acquired piperaquine resistance and spread east. 8 years later it has now reached the south of Vietnam encompassing all four countries of the Eastern Greater Mekong subregion.

Zika

Ricardo Moraes/Reuters

Figure 4. Distribution of suspected and confirmed Zika cases by EW and sub-region. Region of the Americas, 2015 – 2017 (as of EW 32).[14]



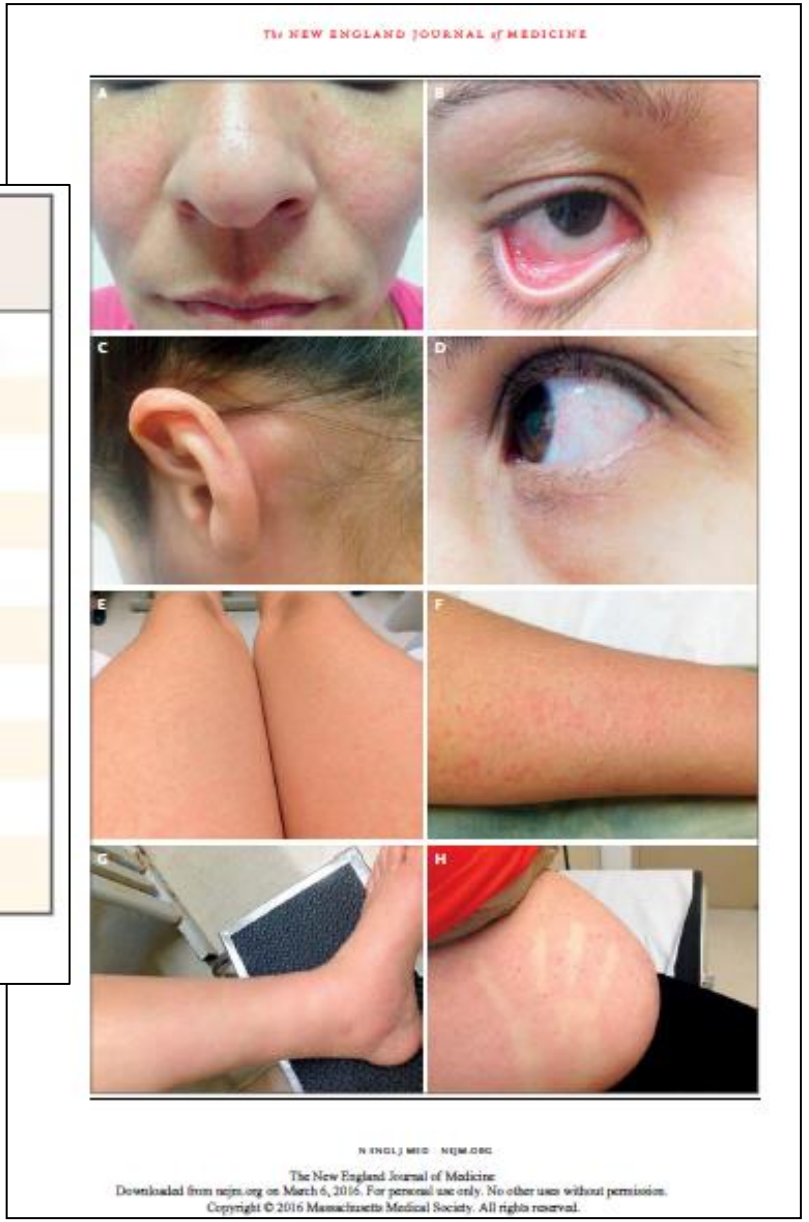
Source: Data provided by countries and territories of the Americas and reproduced by PAHO/WHO

Symptoms

Table 1. Clinical Characteristics of 31 Patients with Confirmed Zika Virus Disease on Yap Island during the Period from April through July 2007.

Sign or Symptom	No. of Patients (%)
Macular or papular rash	28 (90)
Fever*	20 (65)
Arthritis or arthralgia	20 (65)
Nonpurulent conjunctivitis	17 (55)
Myalgia	15 (48)
Headache	14 (45)
Retro-orbital pain	12 (39)
Edema	6 (19)
Vomiting	3 (10)

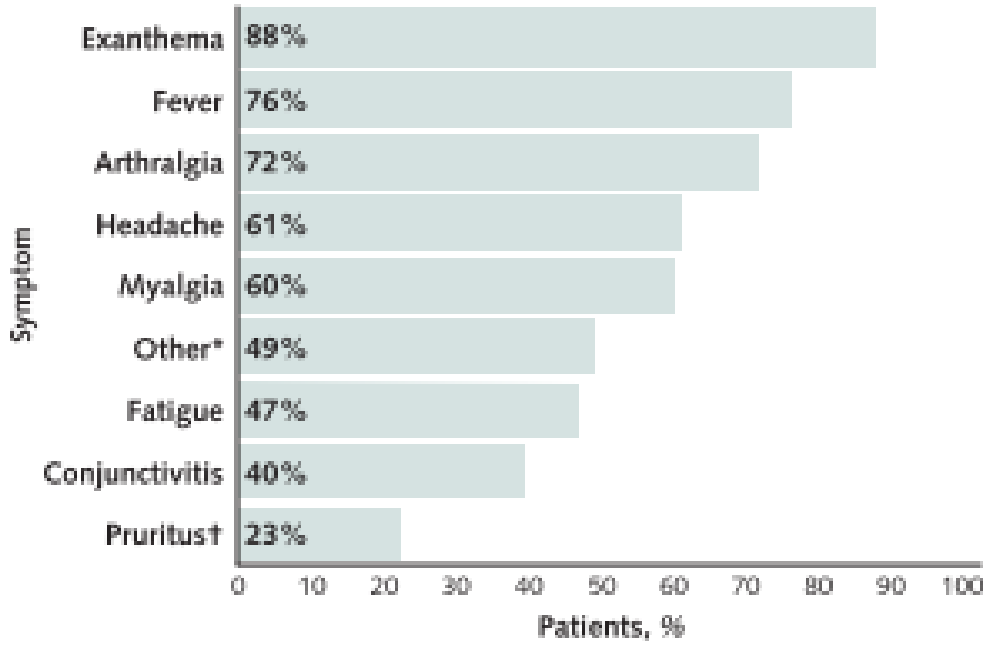
* Cases of measured and subjective fever are included.



Duffy MR et al. Zika virus outbreak on Yap Island, Federated States of Micronesia. NEJM 2009; 360: 2536-43.

In travelers different clinical presentation

Figure 2. Clinical symptoms and signs among 93 patients diagnosed with Zika virus disease acquired in the Americas.



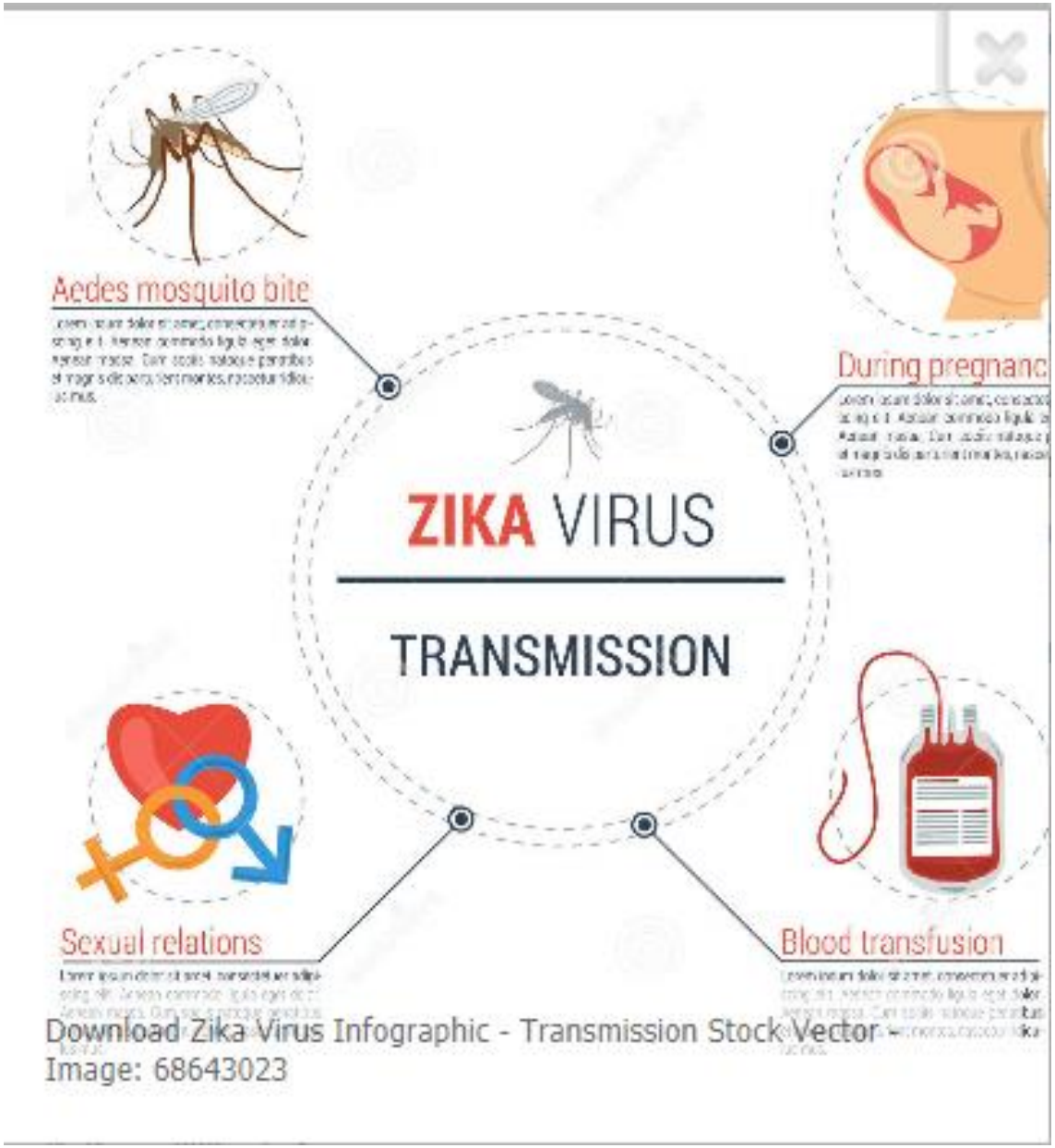
Annals of Internal Medicine ORIGINAL RESEARCH

Travel-Associated Zika Virus Disease Acquired in the Americas Through February 2016

A GeoSentinel Analysis

Davidson H. Hamer, MD; Kira A. Barbre, MPH; Lin H. Chen, MD; Martin P. Grobusch, MD, PhD; Patricia Schlagenhauf, PhD; Abraham Goorhuis, MD, PhD; Perry J.J. van Genderen, MD, PhD; Israel Molina, MD, PhD; Hilmir Asgeirsson, MD, PhD; Phyllis E. Kozarsky, MD; Eric Caumes, MD; Stefan H. Hagmann, MD, MSc; Frank P. Mockenhaupt, MD; Gilles Eperon, MD; Elizabeth D. Barnett, MD; Emmanuel Bottieau, MD, PhD; Andrea K. Boggild, MSc, MD; Philippe Gautret, MD, PhD; Noreen A. Hynes, MD, MPH; Susan Kuhn, MD; R. Ryan Lash, MA; Karin Leder, MBBS, MPH, PhD; Michael Libman, MD; Denis J.M. Malvy, MD, PhD; Cecilia Perret, MD; Camilla Rothe, MD; Eli Schwartz, MD; Annelies Wilder-Smith, MD, PhD, MIH; Martin S. Cetron, MD; and Douglas H. Esposito, MD, MPH; for the GeoSentinel Surveillance Network*

Zika virus transmission



Association with Guillain Barré (and other neurological complications)

Neurologic Complications Associated With the Zika Virus in Brazilian Adults

Ivan Rocha Ferreira da Silva, MD, PhD[1,2]; Jennifer A. Frontera, MD[3]; Ana Maria Bispo de Filippis, PhD[4]; et al

» Author Affiliations

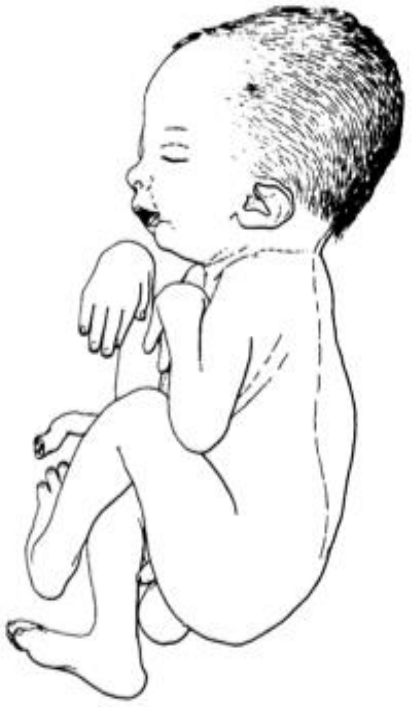
JAMA Neurol. Published online August 14, 2017. doi:10.1001/jamaneurol.2017.1703

Guillain-Barré Syndrome outbreak associated with Zika virus infection in French Polynesia: a case-control study

Van-Mai Cao-Lormeau, Alexandre Blake*, Sandrine Mons, Stéphane Lastère, Claudine Roche, Jessica Vanhomwegen, Timothée Dub, Laure Baudouin, Anita Teissier, Philippe Larre, Anne-Laure Vial, Christophe Decam, Valérie Choumet, Susan K Halstead, Hugh J Willison, Lucile Musset Jean-Claude Manuguerra, Philippe Despres, Emmanuel Fournier, Henri-Pierre Mallet, Didier Musso, Arnaud Fontanet*, Jean Neil*, Frédéric Ghawché**

Zika associated congenital syndrome

- Microcephaly
- Intracranial calcifications
- Brain anomalies
- Eye defects
- Hearing loss
- Redundant scalp skin
- Arthrogryposis



Questions?

- How high is the risk of congenital disorders?
  - Extremely Variable
  - Microcephaly: 2-3% of all zika+ pregnancies

Only during first trimester?

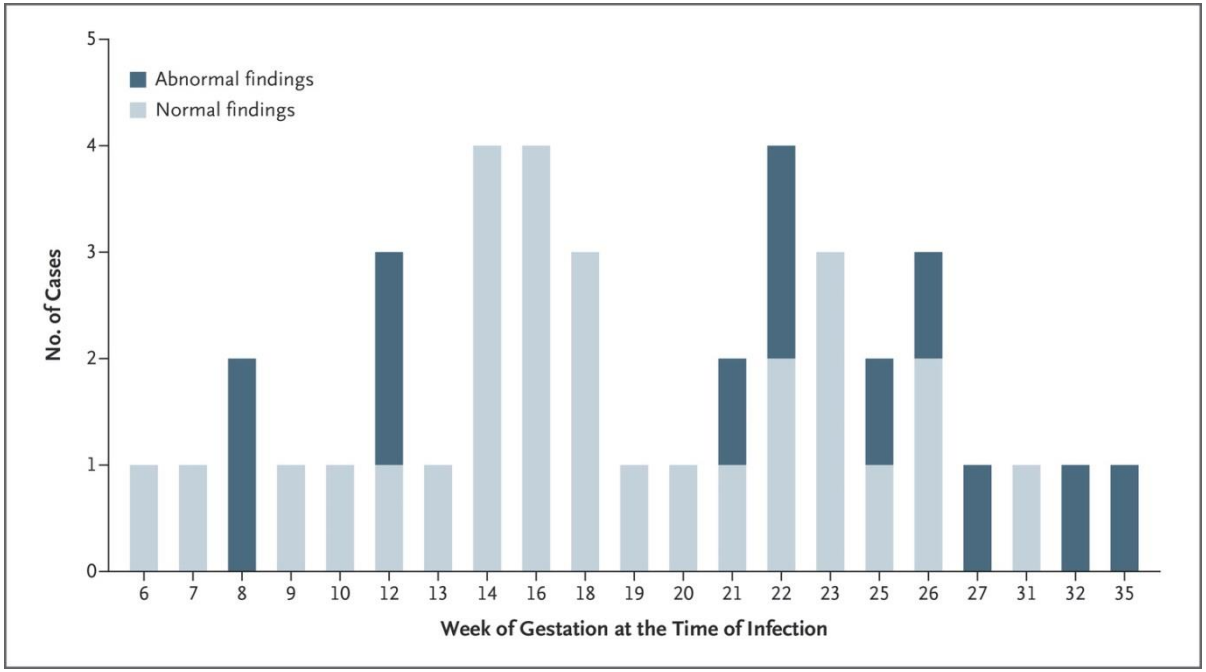
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Zika Virus Infection in Pregnant Women in Rio de Janeiro — Preliminary Report

Patrícia Brasil, M.D., Jose P. Pereira, Jr., M.D., Claudia Raja Gabaglia, M.D.,
Luana Damasceno, M.S., Mayumi Wakimoto, Ph.D.,
Rita M. Ribeiro Nogueira, M.D., Patrícia Carvalho de Sequeira, Ph.D.,

- 88 women with zika
- 42 echo
- 12 abnl echo



Are zika associated congenital disorders only seen in the Americas?

Since end 2014: 3689 confirmed cases in Americas

Fetal Zika Virus Infection in Vietnam

SEPTEMBER 5, 2017 · RESEARCH ARTICLE

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AUTHORS

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Leisha Nolen

ABSTRACT

As of 13 July 2016, 13 countries have reported fetal Zika virus (ZIKV) infection. Here we report a case of fetal ZIKV infection that resulted from an infection originating in Vietnam.

ZIKV related congenital syndrome; other factors?

Emerging Problems in Infectious Diseases

Zika virus infection, associated microcephaly, and low yellow fever vaccination coverage in Brazil: is there any causal link?

Luciano Pamplona de Góes Cavalcanti[1], Pedro Luiz Tauil[5], Carlos Henrique Alencar[1], Wanderson Oliveira[2], Mauro Martins Teixeira[3], Jorg Heukelbach[1,4]

New data back early hypothesis for infectious microcephaly

New findings stimulate Brazilian researchers to pose alternative hypotheses. Marcia Triunfol investigates.

For the **Brazilian health authorities' week 25 epidemiological report** see http://combateaedes.saude.gov.br/images/pdf/informe_microcefalia_epidemiologico_32.pdf

For the **report on bovine viral diarrhoea virus** see *BioRxiv*org 2016; published July 15. DOI:10.1101/062596

For the **European Medicines Agency guidelines on vaccines suspected of bovine viral diarrhoea virus contamination** see http://www.ema.europa.eu/docs/en_GB/document_library/Scientific_guideline/2015/01/WC500181639.pdf

For the **European Medicines Agency guidelines on the use of bovine serum in the**

According to Brazilian health authorities, as of June 25, 2016, (epidemiological week 25) 1630 cases of microcephaly of infectious aetiology have been confirmed in the country. The northeast is still the region with the highest number of cases (1417) not only in the country but also in the world. Although the Zika epidemic has hit virtually the entire continent, no other country has seen the high incidence of congenital abnormalities associated with Zika virus found in Brazil. Why Brazil, and more specifically the northeast region, has this unique and alarmingly high incidence of Zika-related microcephaly whereas other countries have not detected similar some other agent has a role in the development of microcephaly in Brazil. Melo, who has been at the forefront of the Zika crisis and has been caring for pregnant women infected by Zika virus and later their babies (who in many cases are born with a myriad of different abnormalities), says that "microcephaly is just one of the abnormalities we have seen". Melo reports that besides microcephaly, her group has noticed a high incidence of babies born with

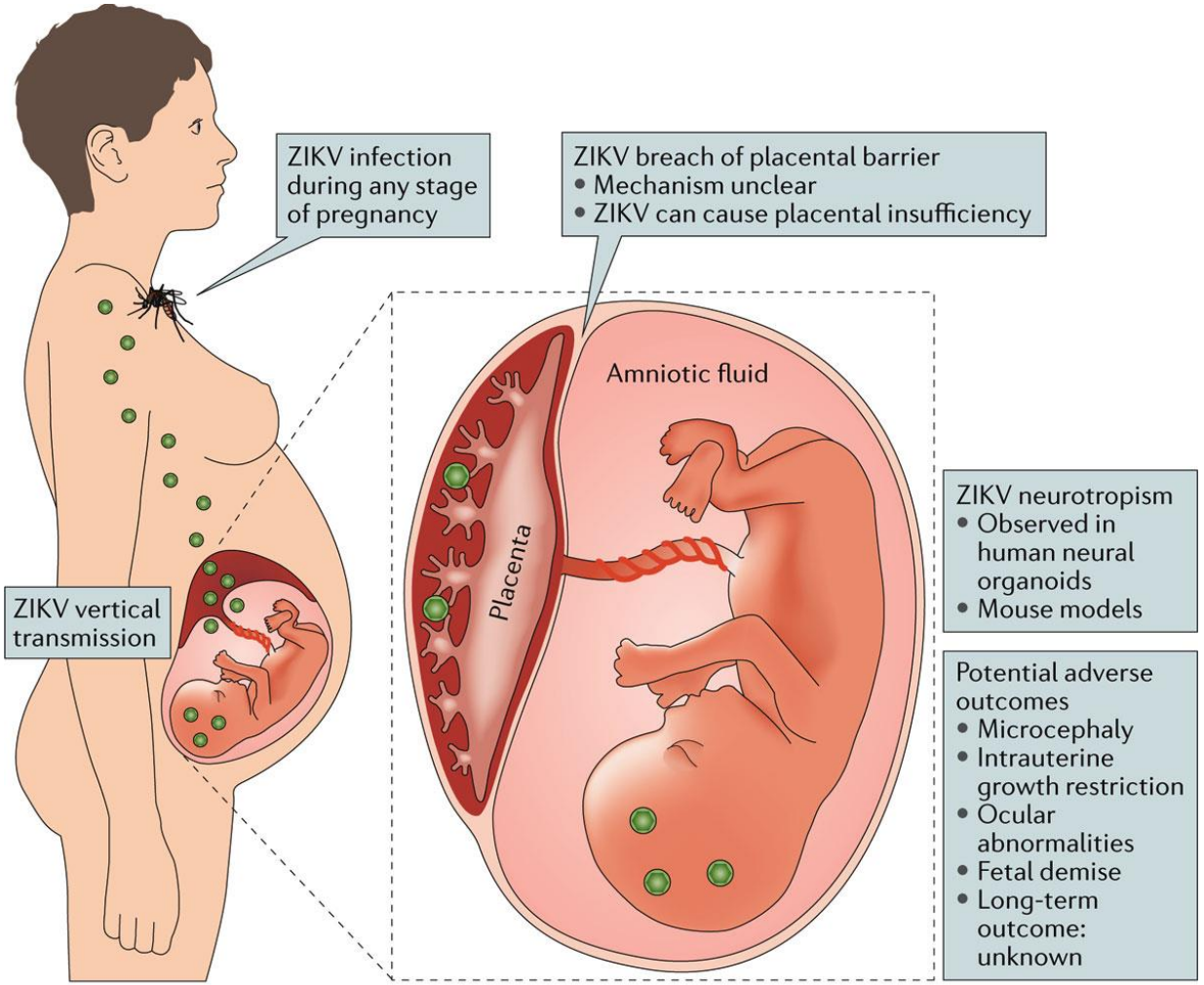
"there is something really weird going on here; what we have seen cannot be attributed to Zika [virus] alone."

BVDV is a member of the pestivirus genus of the family Flaviviridae, the same as Zika virus, which substantially burdens the livestock industry. Various manifestations are associated with infected animals, including gastroenteric, respiratory, and haemorrhagic diseases, but some might show no changes other than seroconversion. Animals are most vulnerable to BVDV infection during pregnancy. BVDV congenital infection is associated with several birth defects depending on the pregnancy stage in which infection occurs, including fetal mummification, abortion, fetal reabsorption, ocular lesions, and alterations in the thymus, bones

BVDV bovine-like viral diarrhoea virus (pestivirus, Flavivirus)
Birth defects in animals are identical to the birth defects in humans attributed to zika

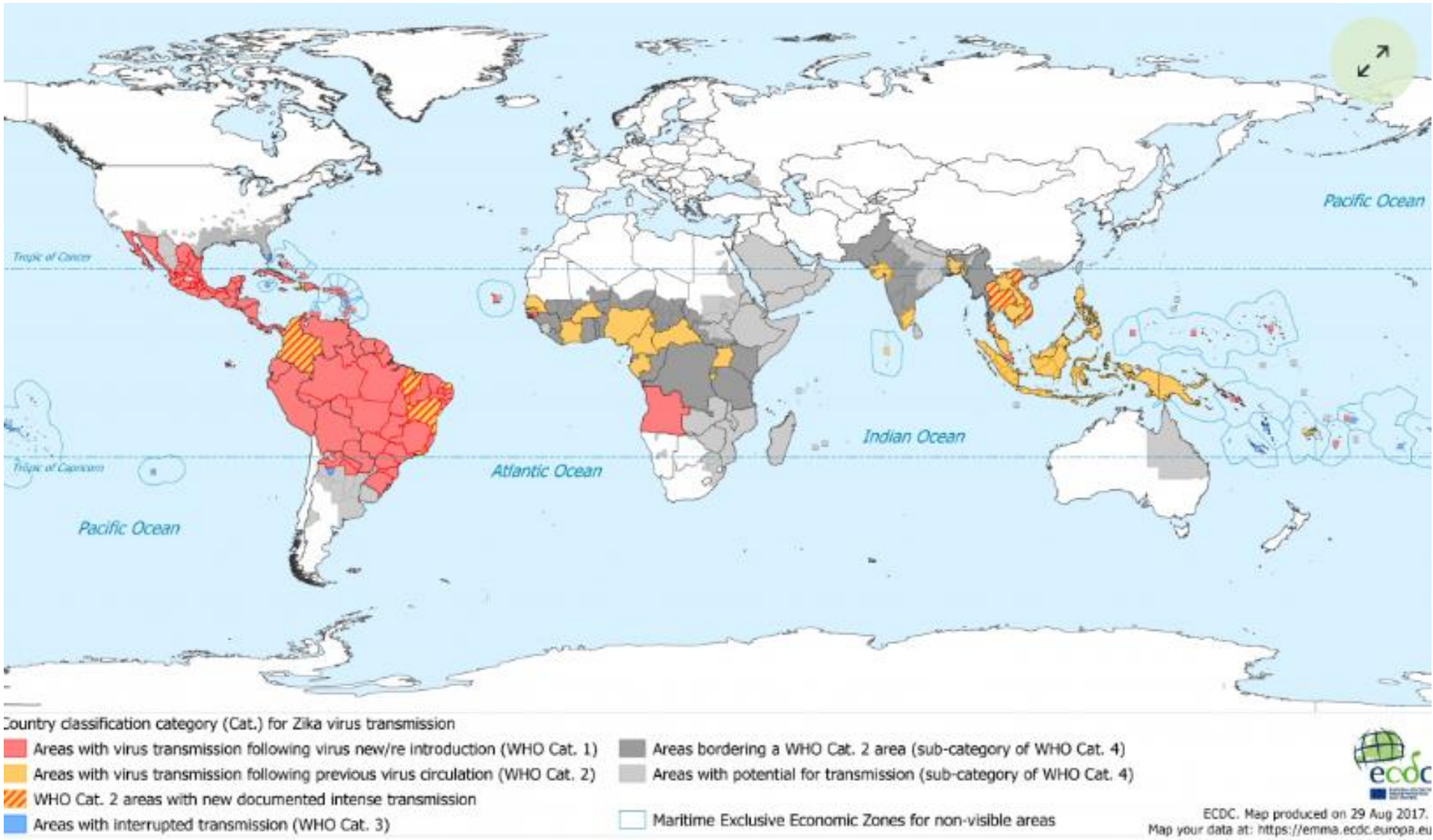
Marcia Triunfol, Lancet, Vol. 16, September 2016

What to advice to pregnant travelers-couples who wish to get pregnant?



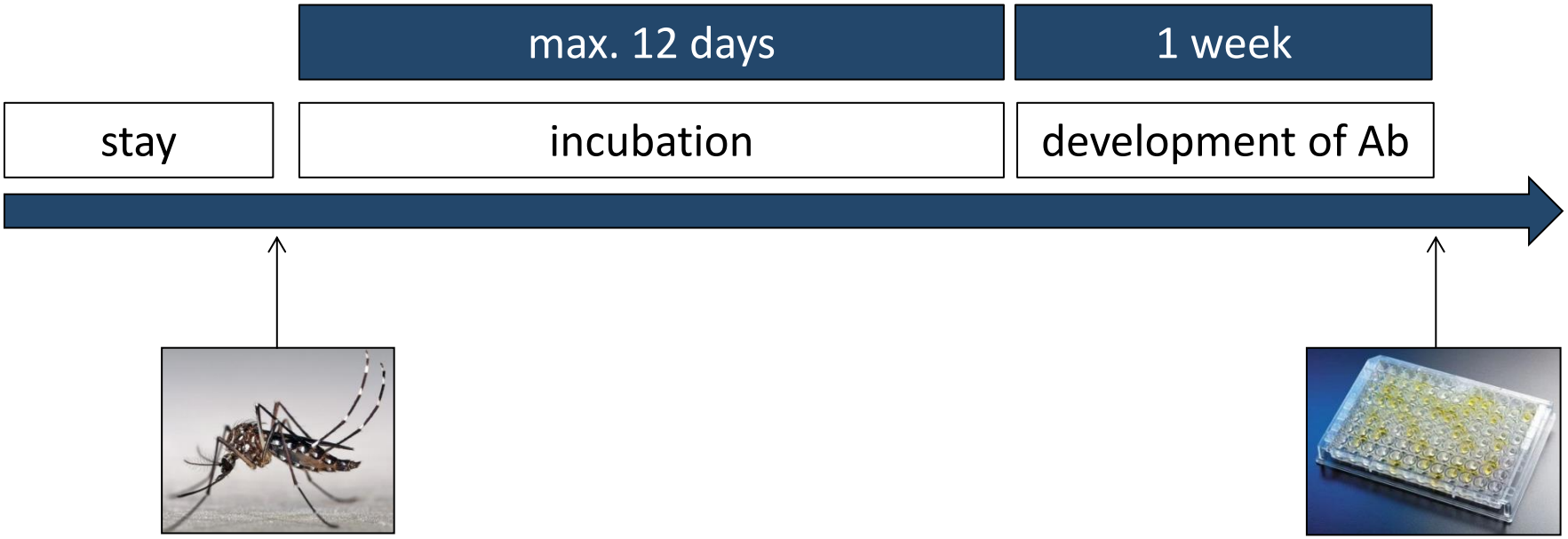
Nature Reviews | Microbiology

ECDC guidelines



Laboratory diagnosis

Symptomatic	PCR+ serology	Pregnancy/wish (partner) repeat serology if neg.
Asymptomatic	Serology 3 w after return	



States infected with WPV1, cVDPV1 cVDPV3, with potential risk of international spread

Afghanistan

Nigeria

Pakistan

When staying > 4 weeks-→ Proof of Polio vaccination obliged < 12 months and > 4 weeks before return

States infected with cVDPV2, with potential risk of international spread

Democratic Republic of the Congo

Nigeria

Pakistan

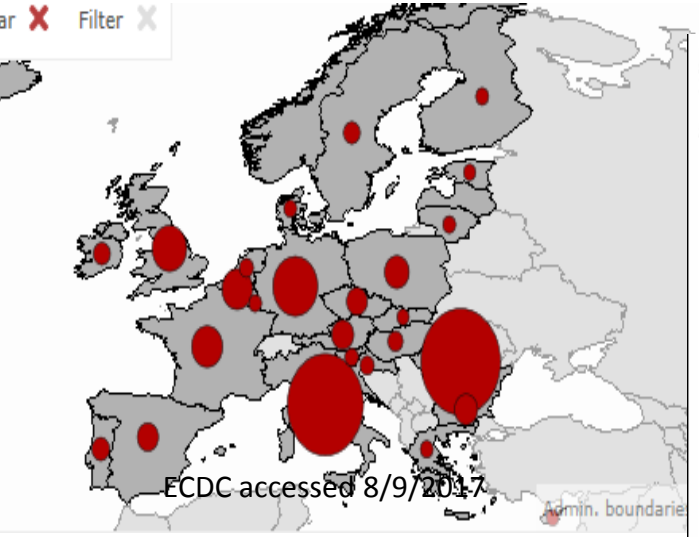
Syrian Arab Republic

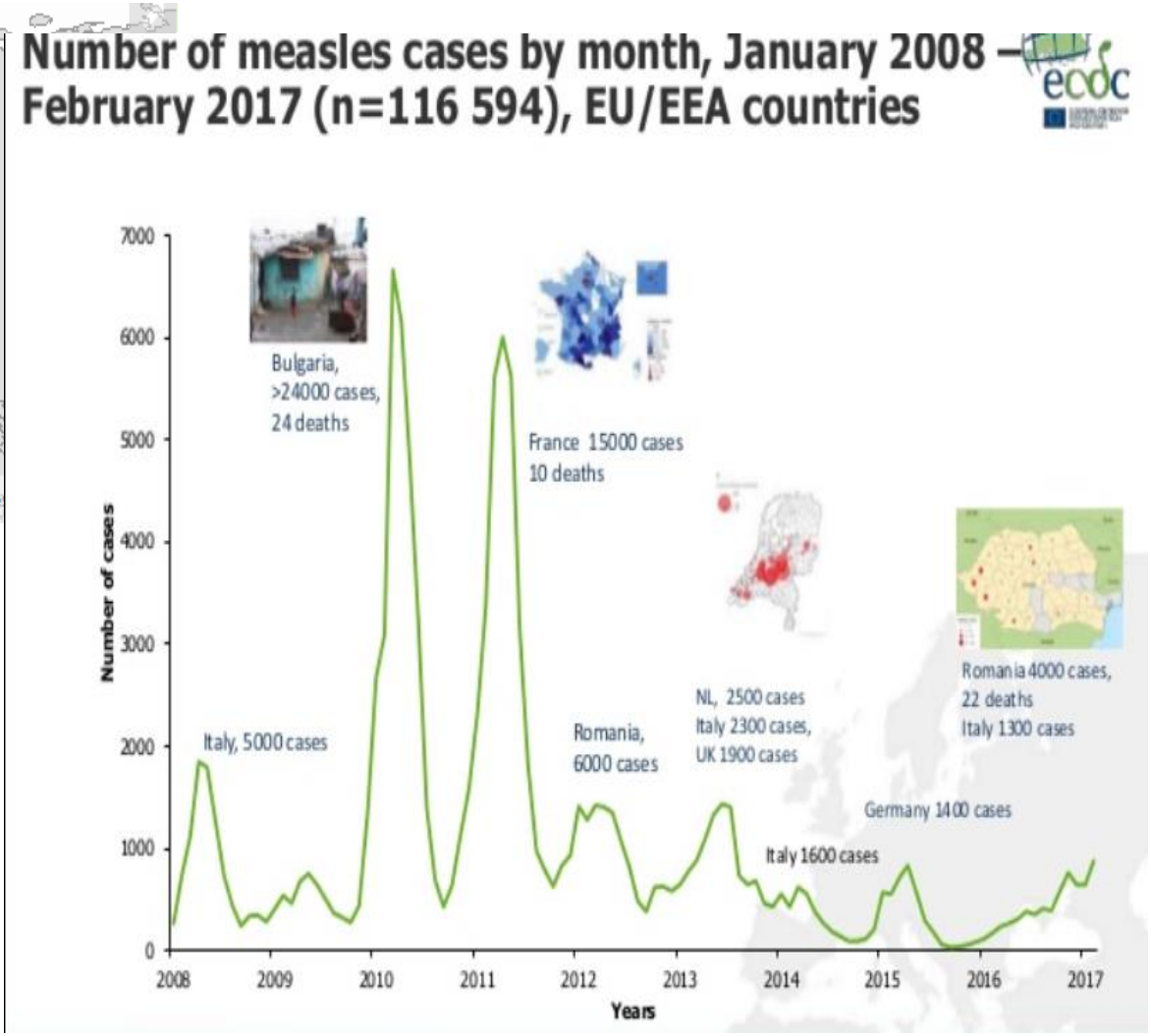
Every year, unvaccinated people get **measles** while abroad and bring it to the United States.

Stay safe & healthy when traveling this summer.

www.cdc.gov/features/measlesinternationaltravel/

Measles outbreak Europe





Measles outbreak

- Romania: 6968 cases in 2017- 33 death
- 4328 cases in Italy
- Germany: 860 cases
- Belgium: 288 cases, 37 health care workers

- But also in Nigeria, CAR, RDC, Uganda

→ Check MMR status!

+ consider vaccinating between 6m-12m in young children

Eurosurveillance, Volume 22, Issue 17, 27 April 2017

Rapid communication

ONGOING MEASLES OUTBREAK IN WALLONIA, BELGIUM, DECEMBER 2016 TO MARCH 2017: CHARACTERISTICS AND CHALLENGES

T Grammens [1], C Schirvel [2], S Leenen [2], N Shodu [2], V Hutse [3], E Mendes da Costa [1], M Sabbe [1]

+ Author affiliations

Hoge Gezondheidsraad

VACCINATIE VAN IMMUNOGECOMPROMITTEERDE EN CHRONISCH ZIEKE KINDEREN EN VOLWASSENEN

HGR NR. 8561

Conseil Supérieur de la Santé

VACCINATION D'ENFANTS ET D'ADULTES IMMUNODÉFICIENTS ET MALADES CHRONIQUES

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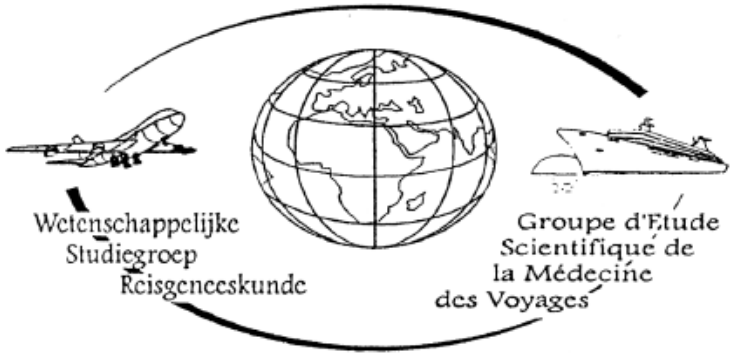

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