

The 4 th International Infectious Diseases Forum
December 21, 2018 at NCGM

“Preparedness for Imported Infectious Diseases”

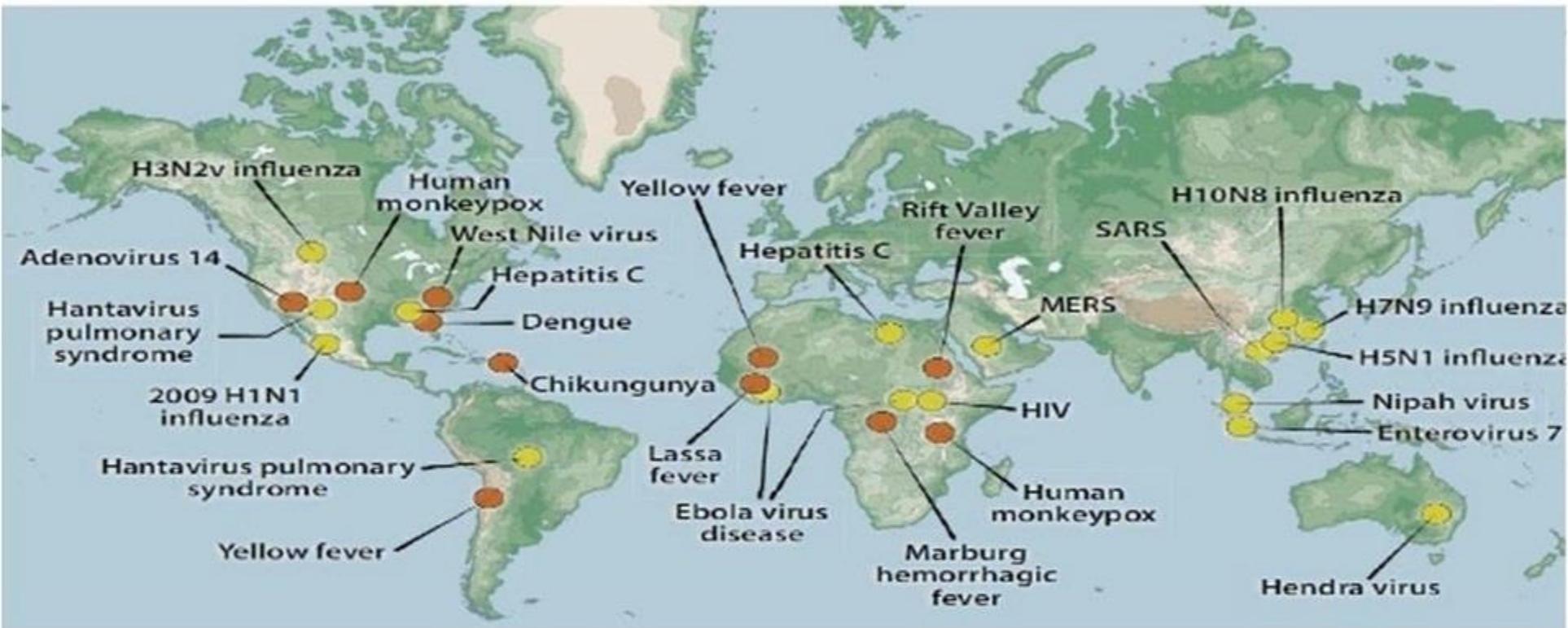
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Emerging/reemerging infectious diseases

- Emerging/reemerging infectious diseases (EIDs) are broadly defined as infectious diseases which newly emerged, or those which have been in existence, but reemerge increasingly more frequently and spread regionally.
- 335 newly emerging cases were detected between 1940 and 2004. Outbreak frequency was the highest in 1980 's because of the international HIV epidemic. **60 percent of EID events were zoonosis, of which 71.8 percent were originated from wildlife** (Jones KE, et al. Nature 451: 990–4,2008) .
- Emerging infectious diseases impose a heavy burden on the world economy and public health.

Emerging viral infectious diseases in the world



 **Emerging infectious diseases**

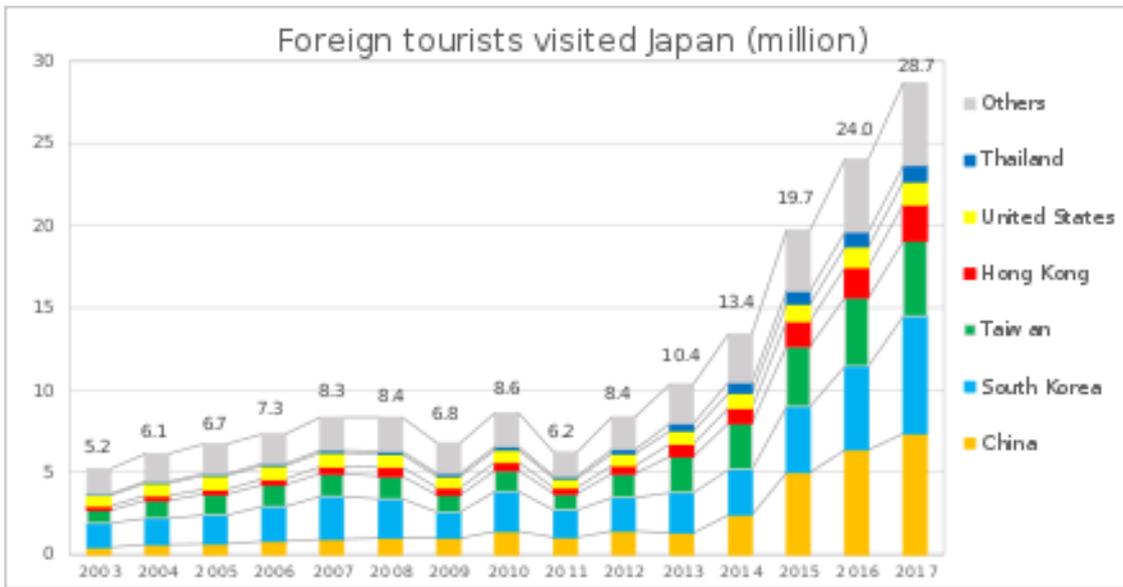
 **Reemerging infectious diseases**

Changes accelerating the spread of infectious diseases

- Traveling by aero plane
- International trade
- Urbanization
- Growing population
- Climate change
- Ecosystem change
- Evolution of pathogenic microorganism

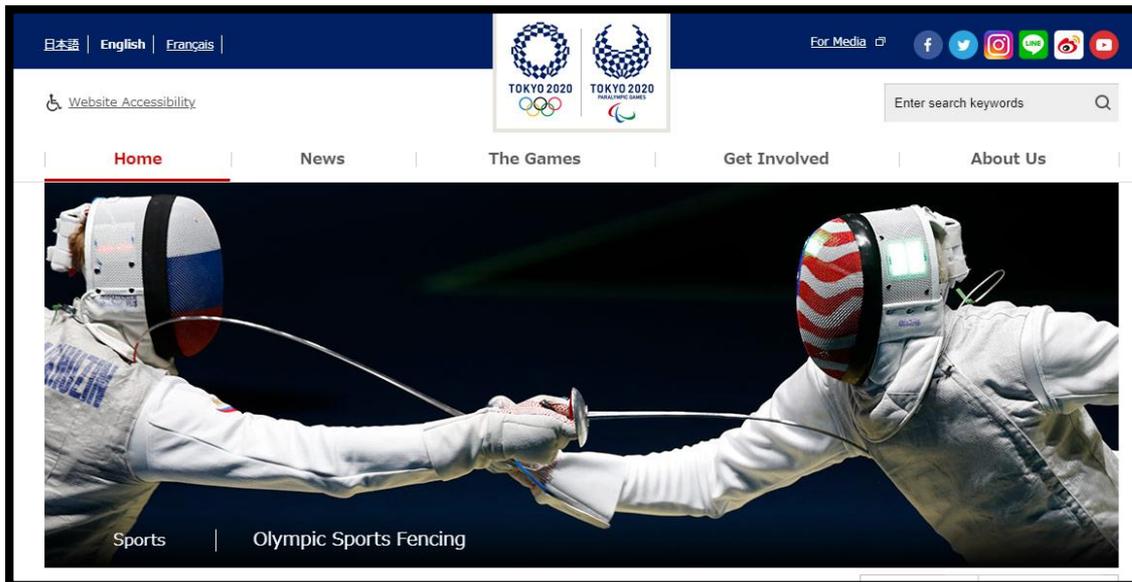
Advancement in containment of diseases

- Genome sequences to detect emerging viruses
- World communication network
- Rapid diagnosis
- New vaccine technologies and treatment designs



Tourism in Japan, Wikipedia

- Continued increase in globalization of travel
- Increased threat posed by importation of infectious diseases

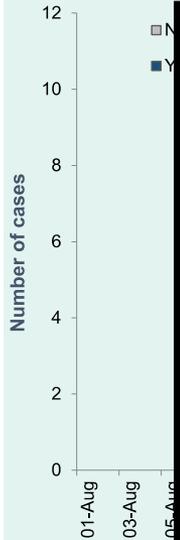


<https://tokyo2020.org/en/>

Threat of Importations

Reported number of locally acquired laboratory-confirmed dengue cases in Japan by date of onset and suspected location of transmission, 1 August to 17 September 2014 ($n = 128^*$)

2014



Report of first case

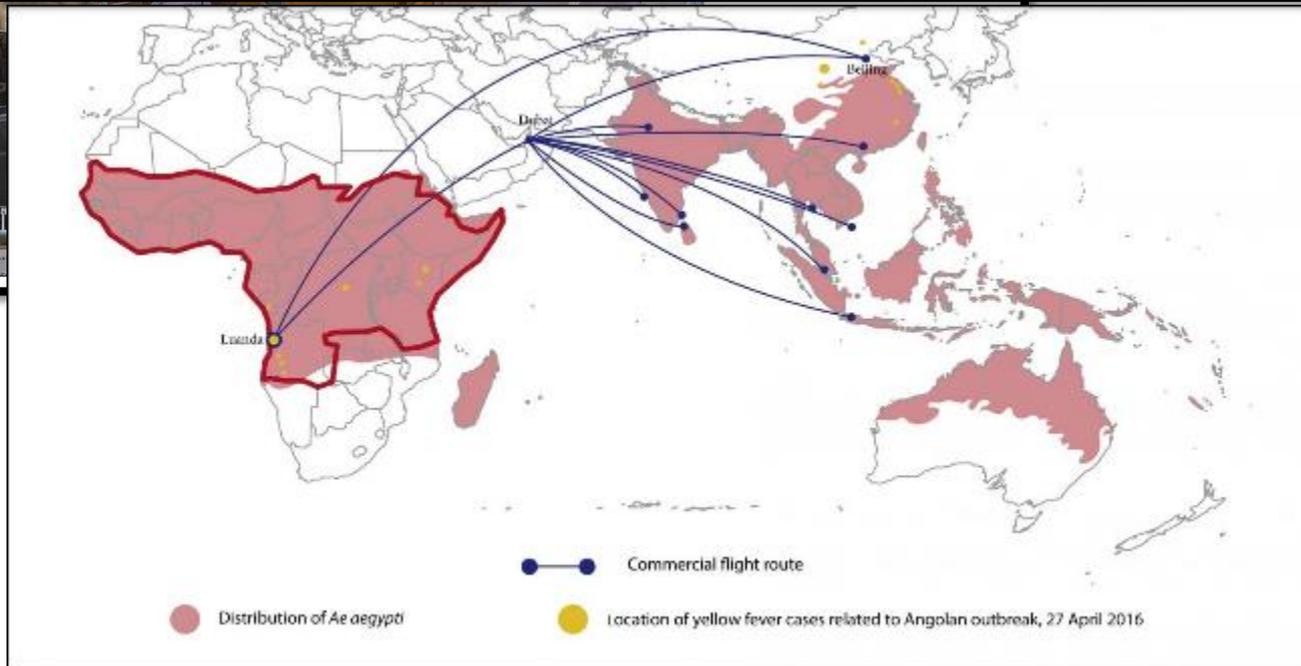
South Korea grapples to contain MERS as 1,369 in quarantine

By Madison Park, CNN
Updated 1050 GMT (1850 HKT) June 4, 2015

2015

Yellow fever epidemic threatens to spread from Angola to China

May 23, 2016, Elsevier



2016

This situation poses unique threats

- Increased travel and trade
 - **Increased likelihood of importing ID** from overseas, including unusual/emerging IDs (e.g. Yellow Fever, MERS, Zika, Cholera...)
 - **Increased likelihood of further transmission** following importation (e.g. Measles, Dengue, MERS...)
- Decline in domestic IDs
 - Accumulation of susceptible, **non-immune individuals** in the population (e.g. Hepatitis A)
 - **Clinicians becoming increasingly unfamiliar** with IDs common in the past and having difficulty in diagnosis (e.g. Measles)

Occasionally sensational, but many routine IDs...

- Recent importations of high-profile EIDs (e.g. **MERS**, Yellow Fever, Zika)
 - Rare events, and prepared with specific SOPs, mechanisms for response
- **Many other IDs routinely imported**, and in much larger numbers → high public health burden
 - May require **aggressive public health interventions** that are costly (e.g. **contact-tracing for measles**)
 - May result in severe clinical outcomes that require intensive, costly **medical care** (e.g. treatment for malaria)
 - Knowing these “**usually**” imported IDs will be important for differential diagnosis and reducing false alarms.

Preparedness against importation of infectious diseases

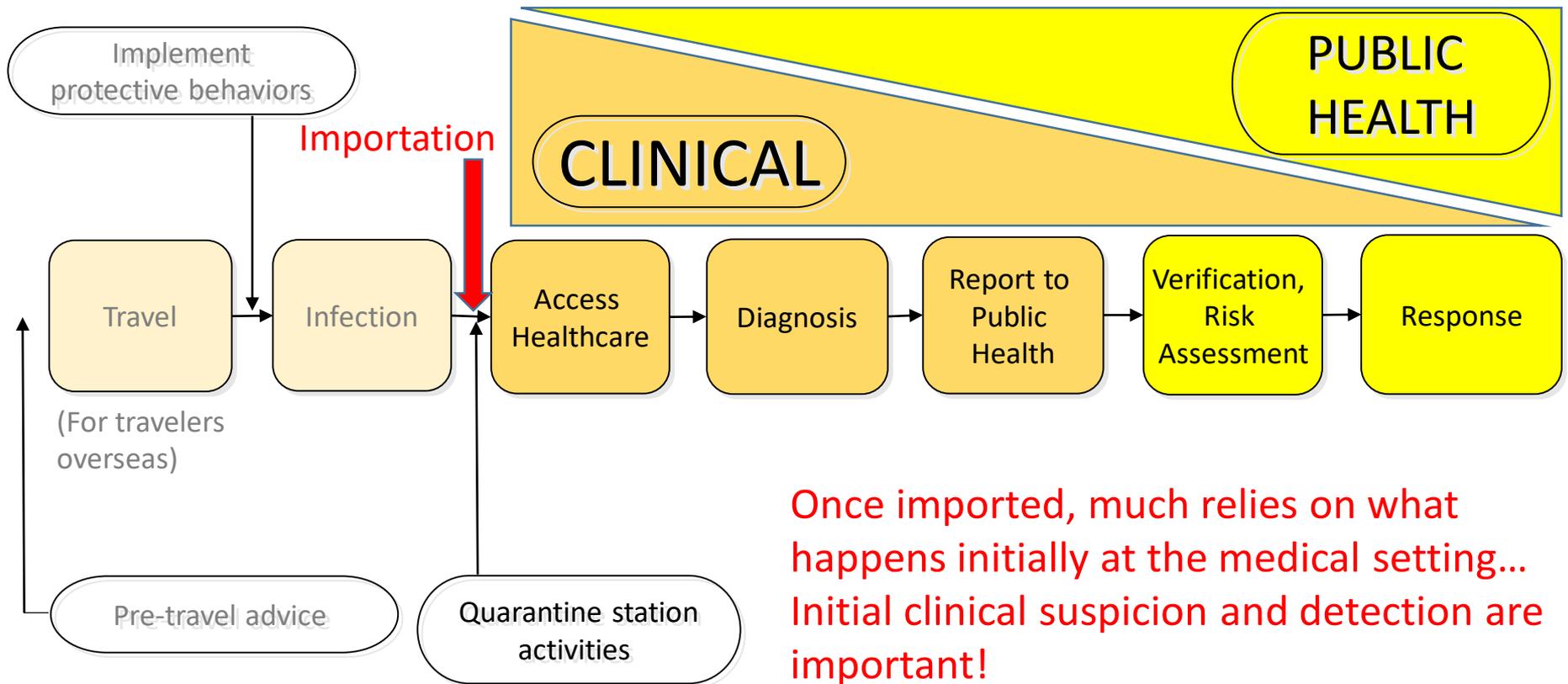
Several points of intervention, but once imported...

- **Clinical insight and rapid detection** are key
 - Clinical suspicion, differential diagnostic capacity
- Once detected, then can initiate response
 - Appropriate clinical management and treatment
 - Field investigations, contact tracing, possible Q&I...
 - Syndromic approach (initiating response mechanisms at suspect/probable stage)
 - Enhanced reporting (e.g. daily)

Clinical

Public
Health

Preparedness against importation of infectious diseases

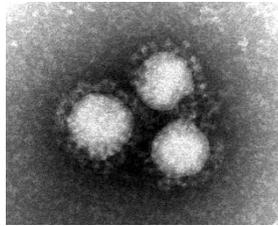
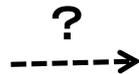


Transmission and pathology of MERS CoV

MERS has been classified as a Category 2 infection since January 2015



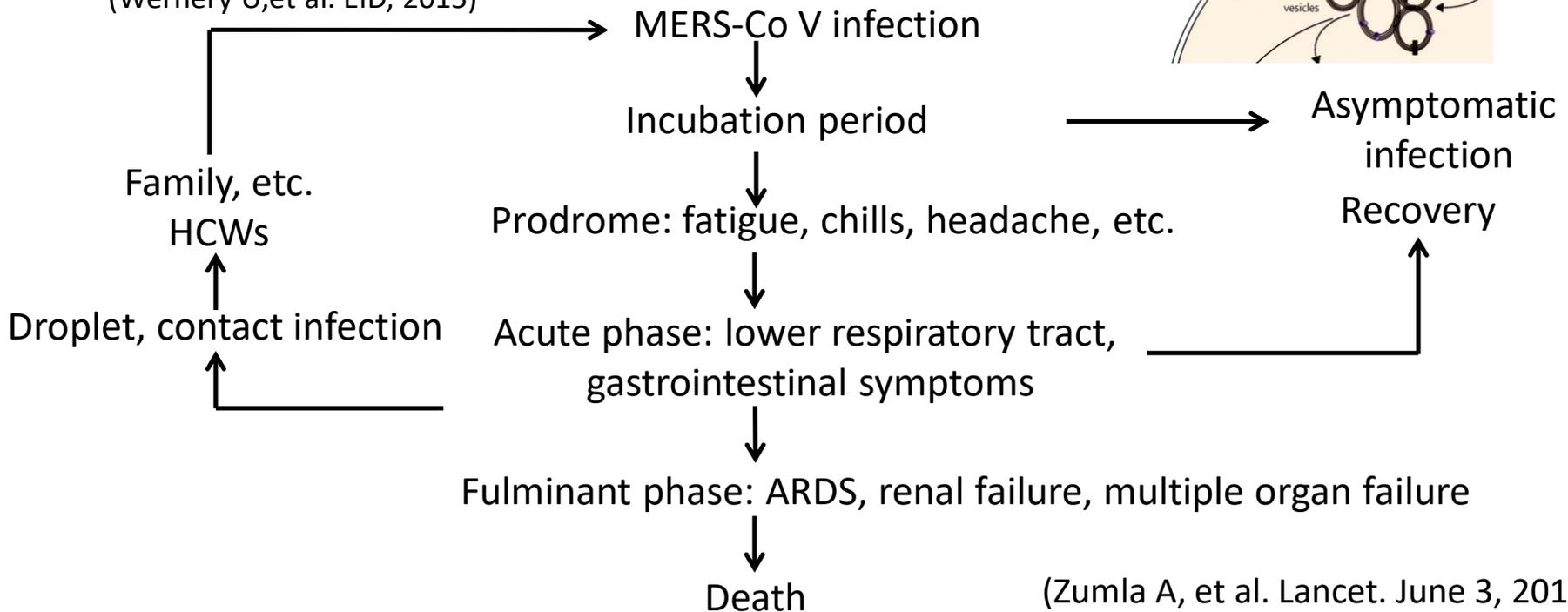
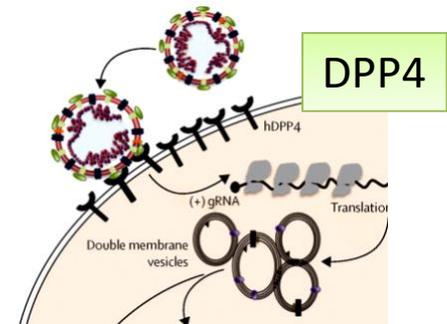
31% of dromedaries under age 1 carry the virus (Wernery U, et al. EID, 2015)



Excrement, i.e. nasal discharge, saliva, feces

Transmission to humans

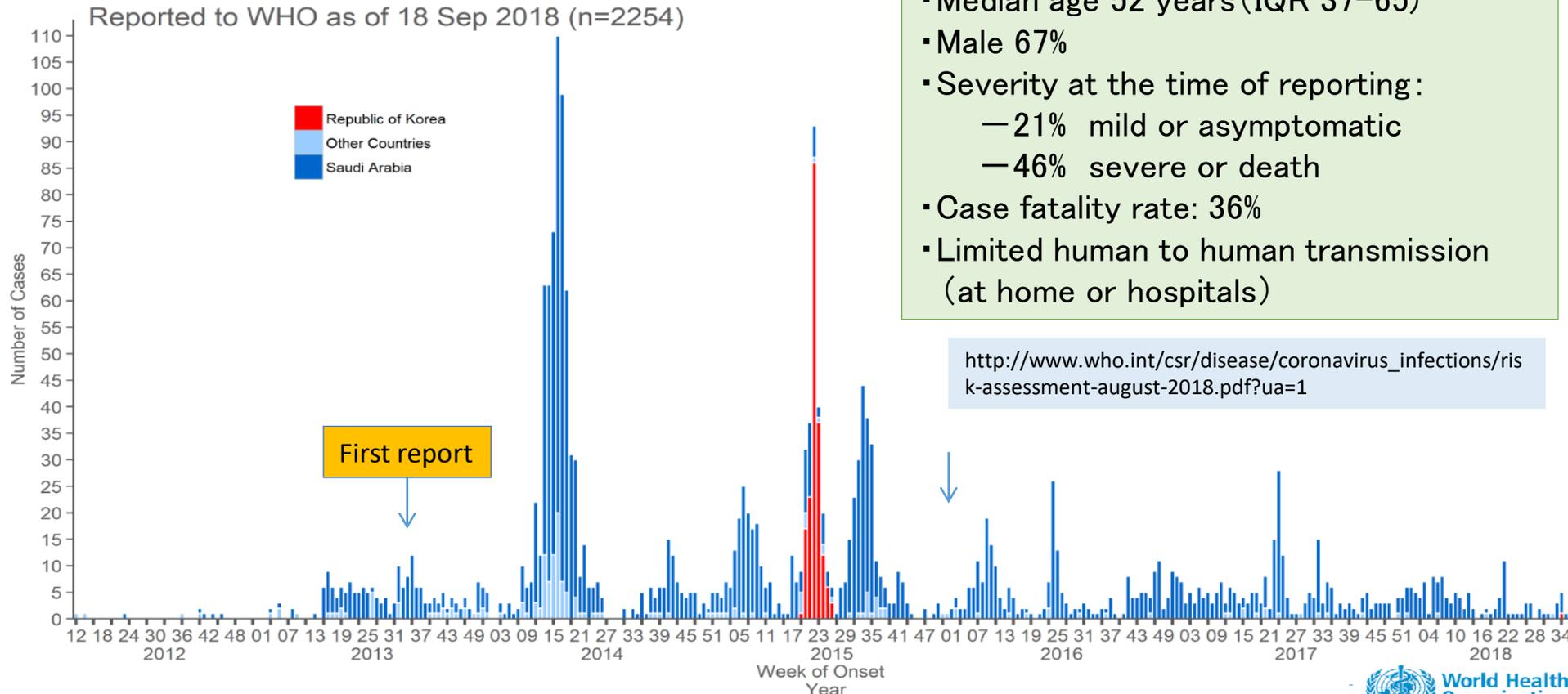
Splash, contact, food, mucosal invasion?



(Zumla A, et al. Lancet. June 3, 2015)

Monthly number of confirmed MERS cases (As of September 18, 2018)

- Reported from 27 countries
- More than 80% were from Saudi Arabia
- Median age 52 years (IQR 37–65)
- Male 67%
- Severity at the time of reporting:
 - 21% mild or asymptomatic
 - 46% severe or death
- Case fatality rate: 36%
- Limited human to human transmission
(at home or hospitals)



http://www.who.int/csr/disease/coronavirus_infections/risk-assessment-august-2018.pdf?ua=1

<http://www.who.int/emergencies/mers-cov/epi-18-september-2018.png?ua=1>

When a suspected MERS case is reported

Definition for Suspected MERS case (July 7, 2017)

Definition for MERS case

Suspected case:

- Symptom A + Exposure 1 or 2
- Symptom B + Exposure 3 or 4
 - Symptom
 - A. Fever $\geq 38^{\circ}\text{C}$ + Acute respiratory syndrome (ARDS) + pneumonia/ARDS
 - B. Fever+ Acute respiratory syndrome (mild case)
 - Exposure
 1. Contact with a confirmed case or dromedary in endemic countries **
 2. Travel to endemic countries**
 3. Close contact (Physical examination or medical care, direct exposure to body fluid) with confirmed case or suspect MERS case
 4. Visit medical institutes in endemic countries **

Early detection and isolation of the case are key!!

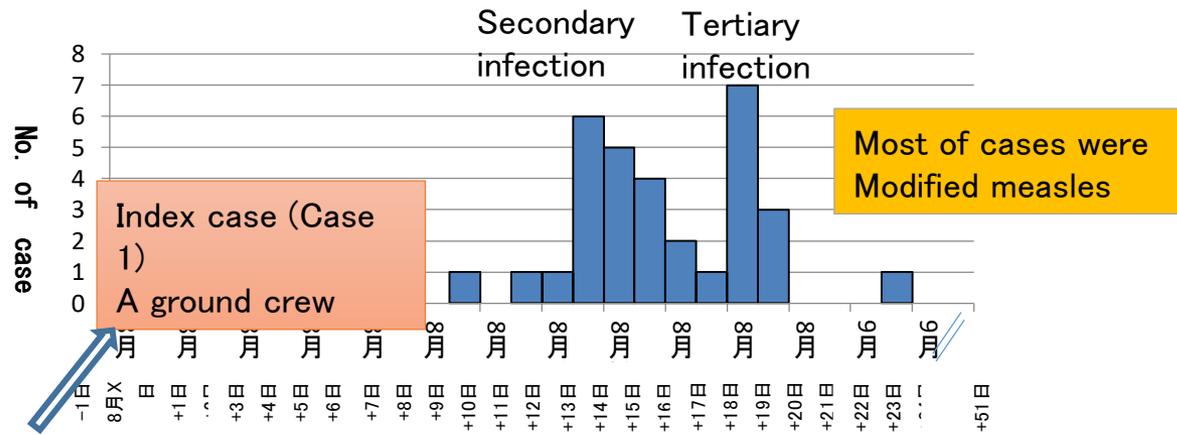
Confirmed case:

Case with laboratory confirmation by PCR testing for both upE and ORF1a

Epi curve of measles cases in KIX: Aug to Sep, 2016 (n=33)

All of 29 cases were infected with genotype H1

Median age: 25 years of age
 Female: 25 (76%)
 Of 33 cases, 30 were employee of the A office



Working at the A office   

Onset day

(IASR 38:48-49,2017)

- The initial cluster reminds us that an international airport is a potential hotspot for measles.
- Most of cases were modified measles, and clinical diagnosis of these cases was difficult without any information of the recent detection of measles cases in the region.

Information from routine surveillance

- Substantial number of acute-onset IDs imported into Japan
 - Many from **Asia** during the **summer**, but **depends on ID**
 - Coincides with period during **Tokyo Olympic and Paralympic Games**, and also expect many visitors to come from Asia
- NIID initiated enhanced information dissemination of IDs with high importation burden
 - For clinicians and subnational level public health, but public can also view

Risk assessment for 2020 Olympic and Paralympic Games: Guidance for the Local Governments (October 2017)

		Increase importation	Threat of transmission	Fear of large outbreak and high severity	Remarks
Vaccine-preventable diseases: VPD	Measles	○	○	○	Burden of contact tracing
	Rubella	○	○		
	Invasive Meningococcal Disease		○	○	Burden for the events among participants
	Influenza	○	○		
	Pertussis	○	○		
Emerging and Reemerging Infectious Diseases	MERS	○	○	○	Burden of contact tracing and risk communication
	Dengue, Chikungunya/ Zika virus infection	○			Burden of anti-mosquito counter measure
Food Borne Diseases*	EHEC		○	○	
	Shigellosis	○	○		
	Hepatitis A	○	○		
	Hepatitis E	○	○		
	Norovirus infection	○	○		
Others	Tuberculosis	○	○		
	Syphilis	○	○		
	HIV/AIDS	○	○		

日本語 ENGLISH

お知らせ

- 採用情報
- 調達情報
- 情報公開
- 公開講座・研修
- その他

感染症情報

- 疾患名で探す
- 感染症や病名で探す
- 子数検索機能
- 災害と感染症

研究・検査・疫学管理

- 研究情報
- 検定検査情報
- レファレンス
- 抗生物質耐薬品の交付
- 感染症検体パネルの交付
- こころ研究部
- 画像・映像アーカイブ
- 感染症年報
- 国際協力

サーベイランス

- 感染症発生動向調査週報 (DWR)
- 感染症発生動向調査年報 (ASR)
- 感染症流行予測調査 (EIS/FPD)
- 院内感染 (JNIS)
- 実地疫学専門実習生コース (FETP-J)

刊行・マニュアル・基準

日本の輸入感染症例の動向について

Trends in Notification of Imported Cases among Select Notifiable Infectious Diseases in Japan

国立感染症研究所 感染症疫学センター
更新日:2018年5月18日

■本サイトの目的

感染症発生動向調査により収集されている日本の輸入感染症例のデータを、速報者のリスク評価のために、適時に還元することがこのサイトの目的です。ただし、速報の情報還元と共有を目的としているため、数値についてはシステムからデータを取り出し9時点の情報であり更新される可能性があります。

尚、渡航国別の輸入感染症報告数は、速報先の感染症の流行の程度や、渡航者数等により死者を伴います。渡航者数の変動の影響を考慮する場合は、渡航国別の日本人渡航者数(日本政府観光局(JNTO)、http://www.info.go.jp/top/reference/tourism_data/visitor_benics/index.html)等の情報源を参照)を分母代替データとして、ご利用ください。

世界の感染症流行状況については、厚生労働省情報所FORTH(<http://www.forth.go.jp/>)、外務省・海外安全ホームページ(<http://www.aren.mofa.go.jp/>)、WHOのウェブサイト(<http://www.emoinf/en/>)等において取りまとめられていますので、さらにも合わせて参照してください。

本サイトにおいては、急性の発症経緯で、例年一定数以上の報告があり、報告例の中で輸入例の割合が比較的高い、以下の15疾患につき取り上げました。尚、流行曲線は最大月別報告数が9例以上の場合のみ作成し、直近12か月(2017年1月~2017年12月)における推定感染地として多い上位4か国とその他の国を積み上げました。情報については、半年に一回更新する予定です。

- アメーバ赤痢 Amebiasis
- E型肝炎 Hepatitis E
- A型肝炎 Hepatitis A
- クリプトスポリジウム症 Cryptosporidiosis
- 細菌性赤痢 Shigellosis
- ジアルジア症 Giardiasis
- ジカウイルス感染症 Zika virus infection
- チクングニア熱 Chikungunya fever
- 熱チフス Typhoid fever
- デング熱 Dengue fever
- パラチフス Paratyphoid fever
- 麻疹 Rubella
- 麻疹 Measles
- マラリア Malaria
- レプトスピラ症 Leptospirosis

尚、デング熱については、以下のページで定期的に入国例の動向が更新されますのでご確認ください。

デング熱: <https://www.niid.go.jp/niid/ja/dengue-imported.html>

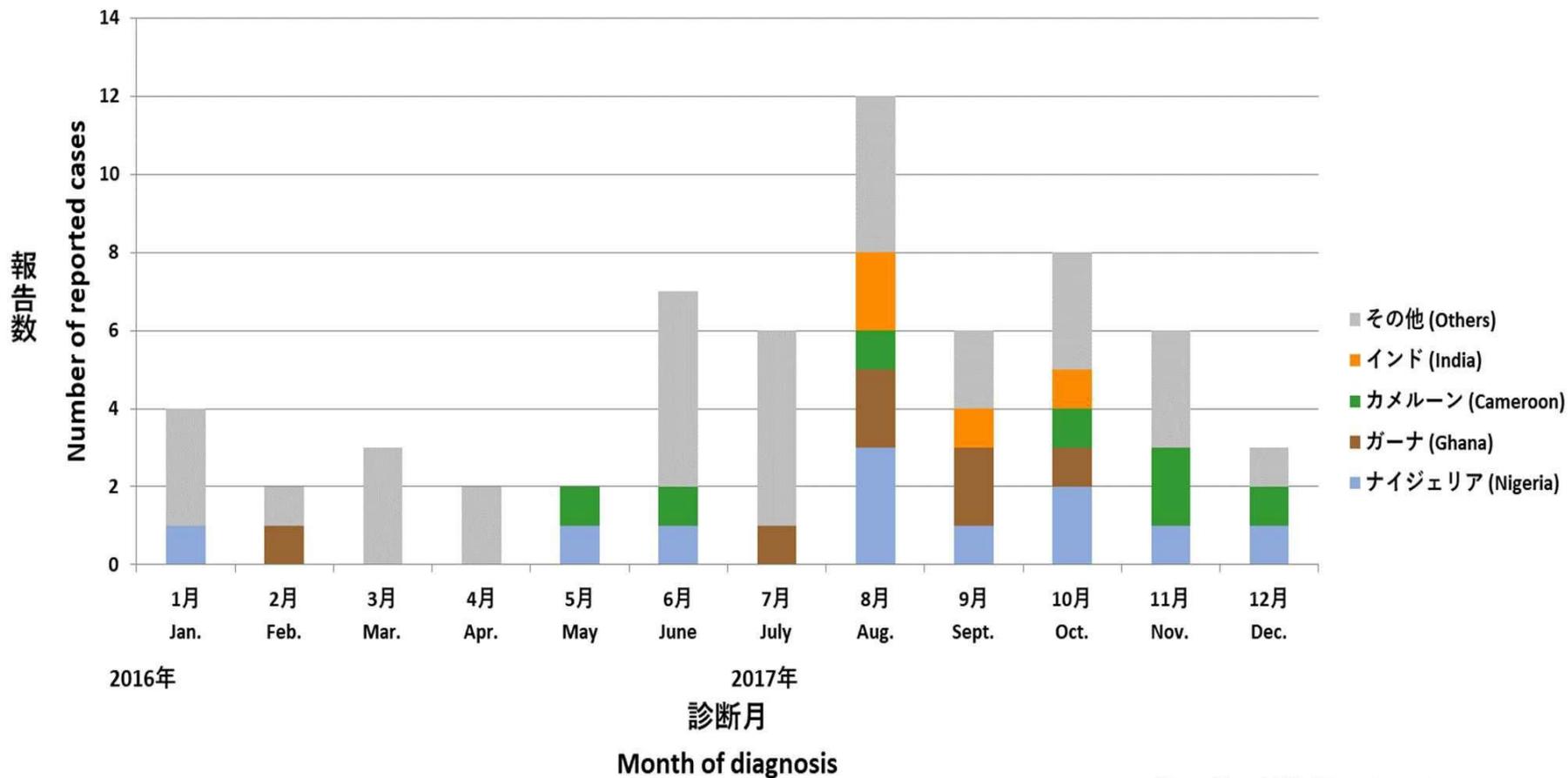
2018年5月18日 [日本の輸入感染症例の動向について](#)

”one-stop shop” public website for all IDs with high importation burden

- Aggregated, descriptive summaries (tables, figures) in standardized format
- Yearly and monthly notification trends by disease and country/area of suspected infection source

■輸入マラリア症例の診断月および推定感染地域別の流行曲線, 2017年1月-2017年12月

Number of reported imported malaria cases by month and country visited, Japan, January 2017-December 2017



2018年03月29日時点(as of March 29, 2018)

Enhanced information dissemination, specific to imported IDs

- Knowing the “**usual suspects**” will play important part in better preparing against imported IDs.
 - E.g. what to suspect first, differential diagnosis, what to prepare against seasonally...
- With upcoming **Tokyo Olympic and Paralympic Games**, acute increase in imported IDs expected (>20 million visitors expected).
- Using **routine surveillance** data, we can begin to raise awareness and prepare response capacities in advance, both for **routine preparedness** and for the **Tokyo Olympic and Paralympic Games**...
 - This simple approach is generalizable for use in any country

“Surveillance can be defined as 'ongoing systematic collection, collation, analysis and interpretation of data and the **dissemination of information to those who need to know** in order that action may be taken' – **Information for Action.**” - World Health Organization

→ Preparedness for imported ID's will require a multi-pronged approach, and **enhancing information-sharing is an important component.**

Acknowledgements

Chiaki Kawakami, Yuzo Arima, and

Kazuhiko Kanou, Munehisa Fukusumi, Tamano Matsui, Tomimasa Sunagawa, All the medical staff who report IDs in a timely manner and local government staff, including PHCs and PH institutes, who contribute to surveillance activities.



<https://openflights.org/data.html>