



Scientific Research Monitoring on COVID-19

23 February 2020

Reported by: *(Public Health Research Section)*

WHAT WE KNOW SO FAR



1. The virus have been sequenced and found to be similar to MERS-CoV and SARS-CoV. Research revealed the virus originated in a bat reservoir.
2. New designation for the disease and the virus: **COVID-19** and **SARS-COV2** .
3. Transmission from human to human has been confirmed. Incubation period ranges from 3–7 days and can reach up to 14 days. Transmission during the incubation period not yet confirmed (further studies are required).
4. Suggested human-to-human transmission occurs through droplets, contact and fomites, similar to Severe Acute Respiratory Syndrome (SARS).
5. Efforts currently in developing therapies for this virus focus on previously known medications and vaccination for MERS-CoV and SARS-CoV.
6. Most studies mention multiple antiviral medications are involved but treatment outcomes have yet to be published. One study in the US reported recovery after 1 day of treatment with Remdesivir.
Trial on animals have shown multiple drug candidates to be effective. Trials in human are ongoing.



WHAT WE KNOW SO FAR

6. WHO forum held 11-12 Feb 2020 to mobilize research on COVID19 vaccinations and therapies.
7. WHO issued a response budget for three month starting from February 2020.
8. Human coronavirus remains on inanimate surfaces such as metal or glass for up to 9 days, but can be efficiently inactivated by disinfection, suggesting that effects on SARS-CoV2 could be similar.
9. Pregnant women infected with SARS-COV2 may experience symptoms similar to those of non-pregnant adults. No evidence suggests transmission from mother to newborn if infected late in pregnancy. No evidence of transmission through breast milk.
10. Isolation is the best measure to control transmission. The epidemic is expected to peak in early March 2020.
11. Transmission of SARS occurs most often when a patient develops sever symptoms, which make it easier to contain an outbreak. But with COVID-19/ SARS-CoV2, a patient can present with mild symptoms and still have the potential to spread the disease.



WHAT WE KNOW SO FAR:

12. Children have mild symptoms compared with adults. **Further studies of this population is needed.**
13. 80% of infected patients have mild symptoms and 1.2% may present without symptoms.



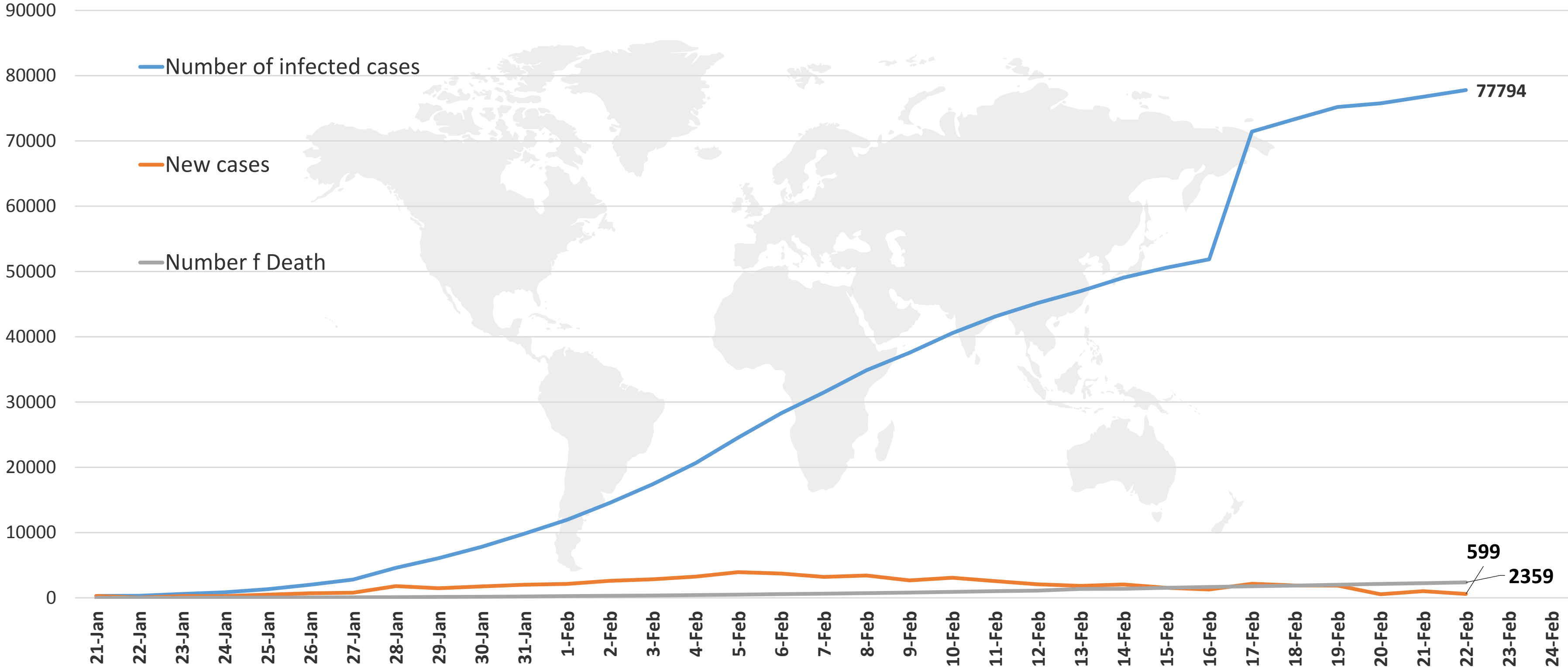
NEW UPDATES FROM TODAY'S REPORT:

- **Epidemiology section:** The WHO Director-General briefed about the current situation and concerns in regards to COVID19.
- **Public health response section:** assessment of African countries preparedness and capacity in response to COVID19. Using WHO scores to asses capacity of countries important to UAE.



EPIDEMIOLOGY:

Figure 1: Total number of infected, new, and death cases (January 21st to February 22th, 2020)



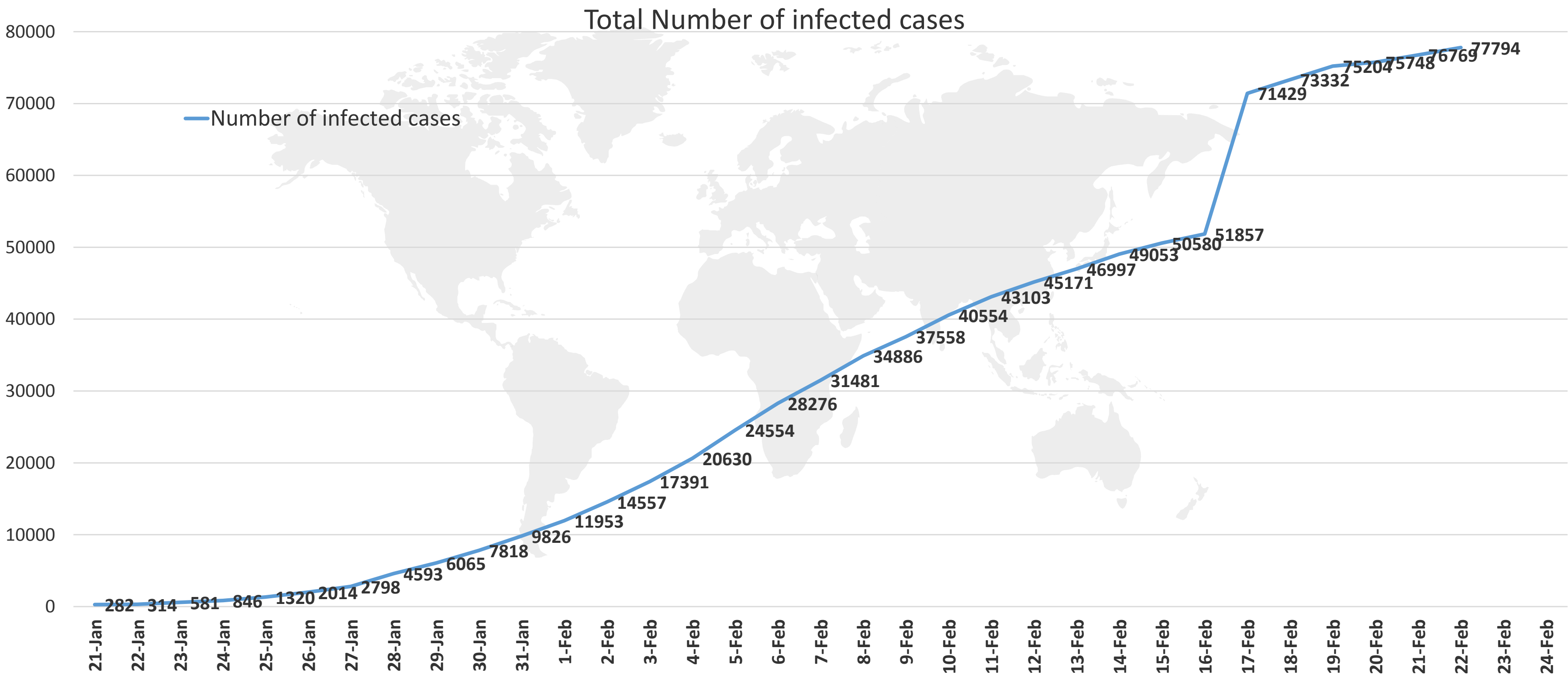
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



EPIDEMIOLOGY:

Figure 2: Number of infected cases (January 21st to February 22th, 2020)



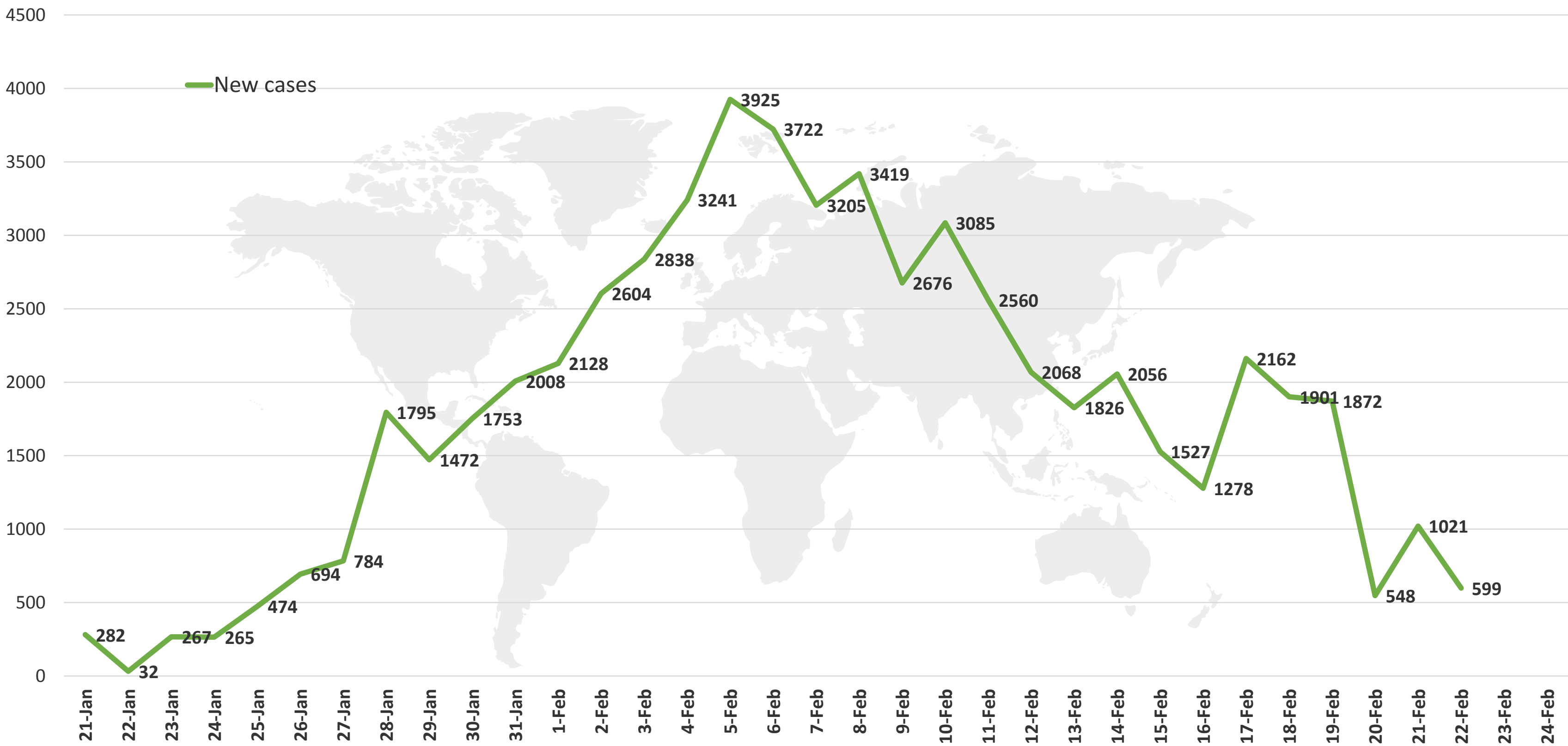
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](http://www.who.int)



EPIDEMIOLOGY:

Figure 3: Number of new cases (January 21st to February 22th , 2020)



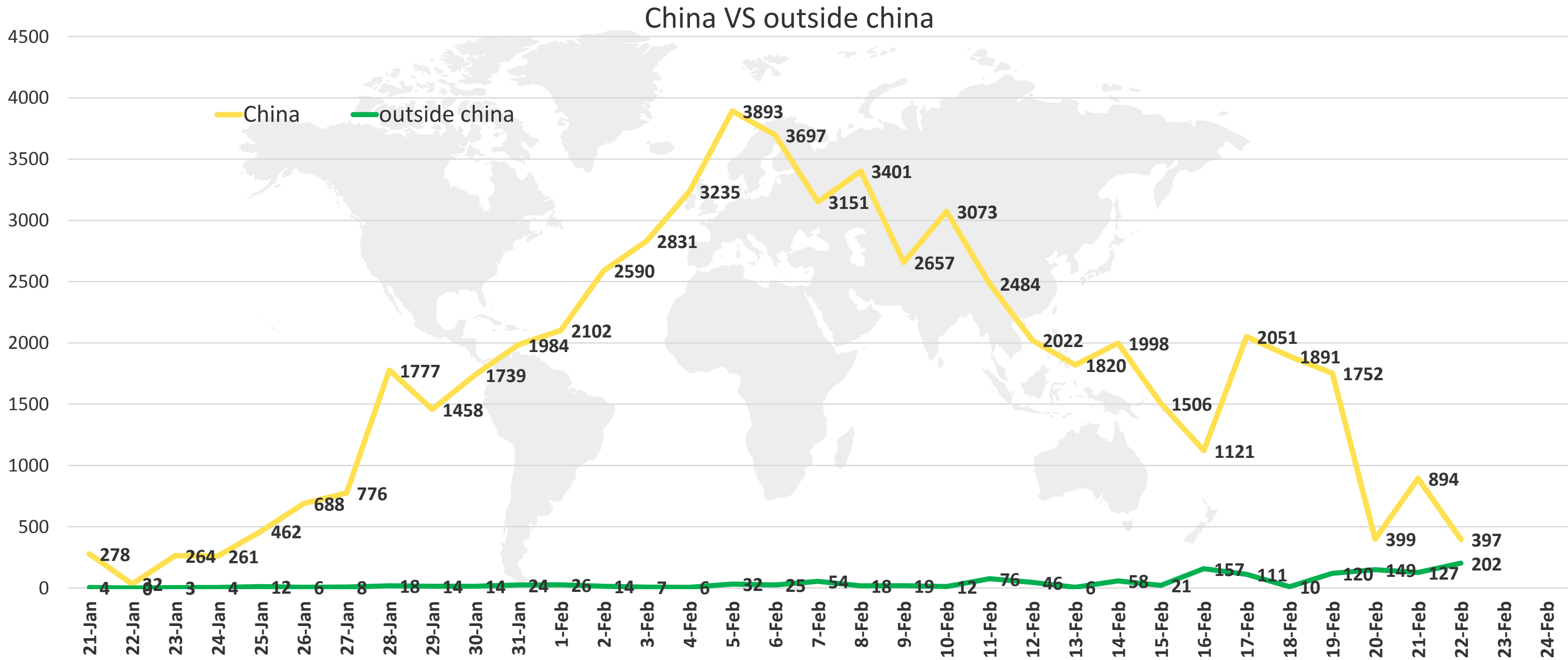
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](http://www.who.int)



EPIDEMIOLOGY:

Figure 4: Number of new cases in China versus outside China (January 21st to February 22th , 2020)



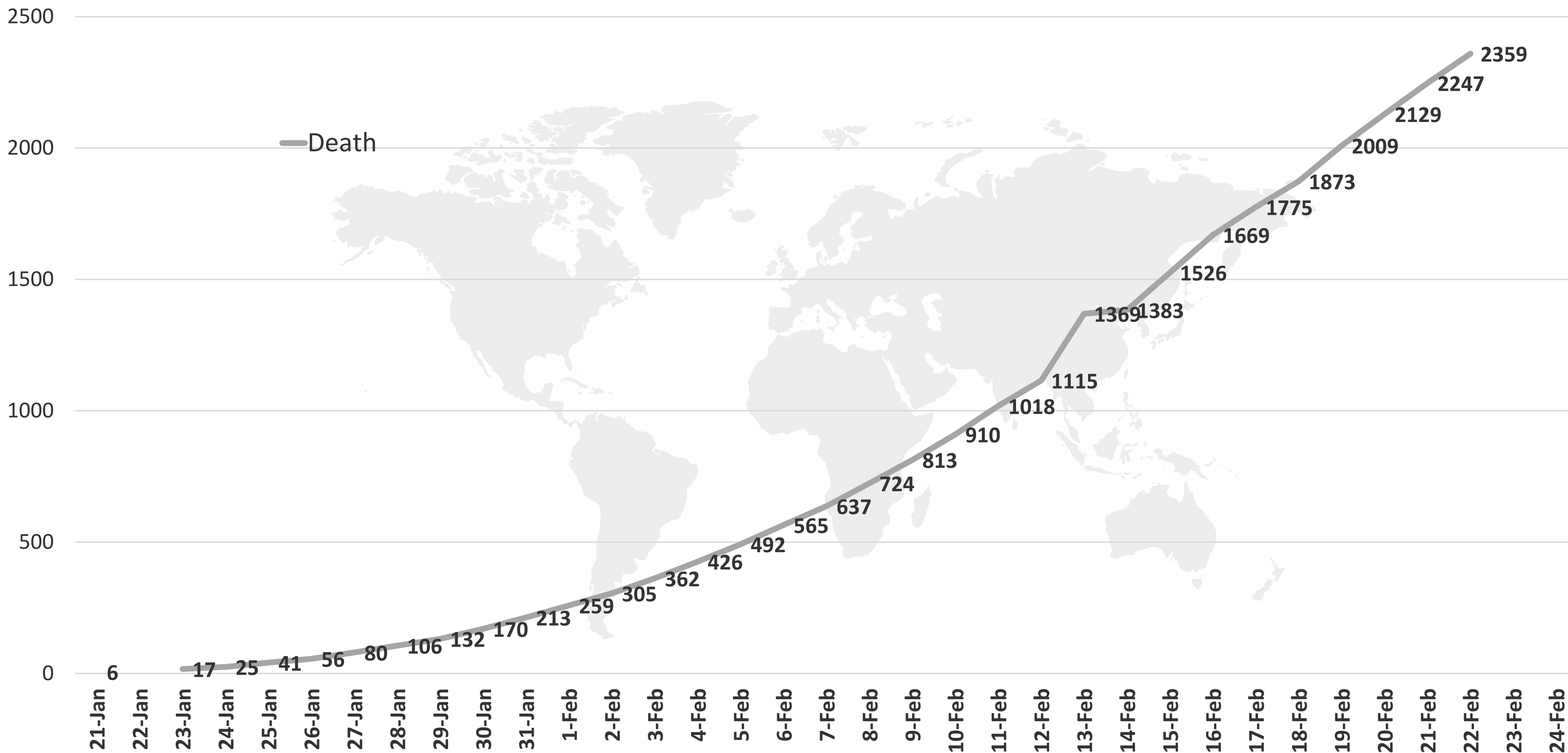
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](http://www.who.int)



EPIDEMIOLOGY:

Figure 5: Number of total deaths (January 21st to February 22, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.

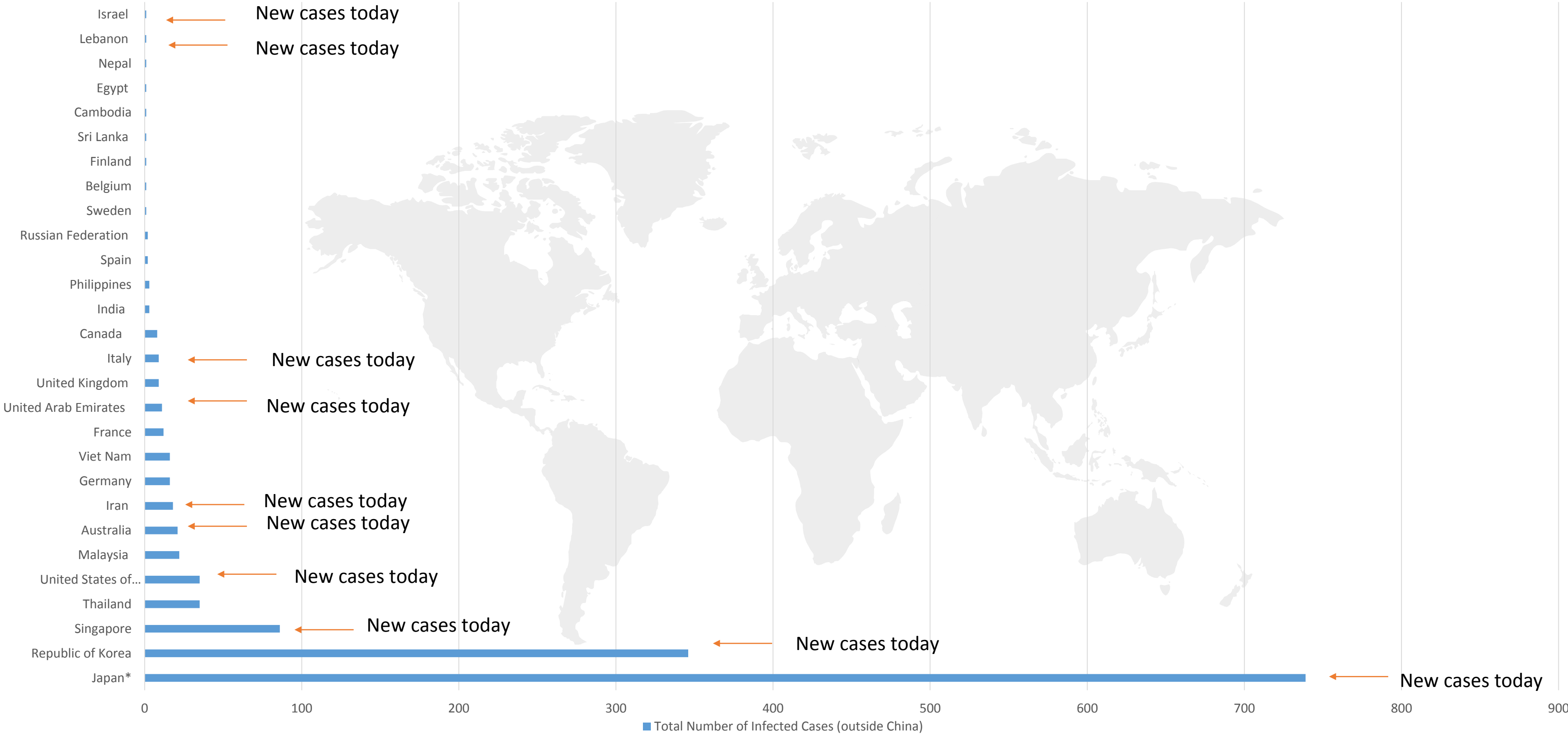
Data resources: [WHO](http://www.who.int)



EPIDEMIOLOGY:

Figure 6: Total number of cases outside China per country (January 21st to February 22th, 2020)

Total Number of Infected Cases (outside China)



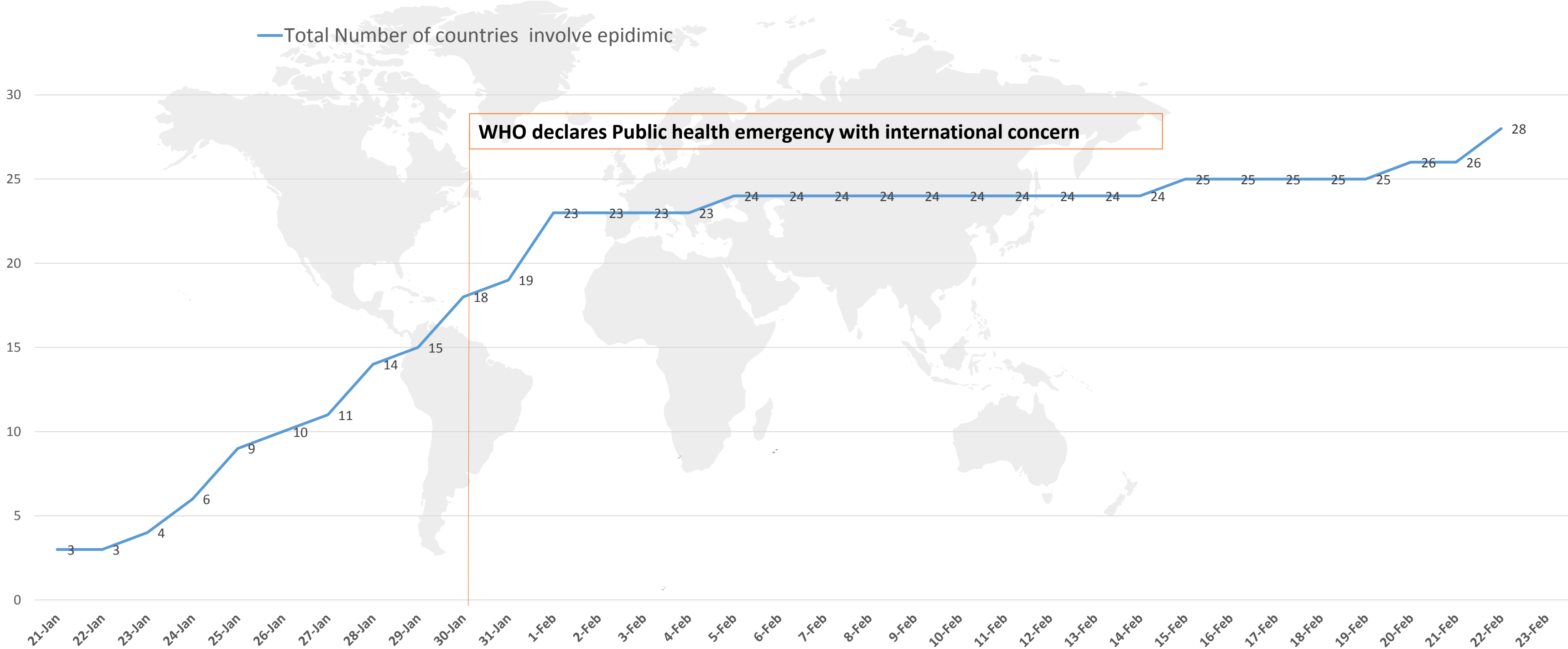
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](http://www.who.int)



EPIDEMIOLOGY:

Figure 7: Total number of countries reporting cases of COVID-19 outside China over time



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](https://www.who.int)

EPIDEMIOLOGY:

WHO report 22 /2/2020 important points

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



- Two new countries (**Lebanon and Israel**) reported cases of COVID-19 in the past 24 hours.
- The role of environmental contamination in the transmission of COVID-19 is not yet clear. WHO have developed various protocols to control transmission in the community , household, hospitalized patient , health care worker , and for environmental surfaces
- The WHO Director-General briefed the emergency ministerial meeting on COVID-19 organized by the African Union and the Africa Centers for Disease Control and Prevention.

EPIDEMIOLOGY:

WHO report 22 /2/2020 important points

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



The WHO Director-General briefed the emergency ministerial meeting on COVID-19 organized by the African Union and the Africa Centers for Disease Control and Prevention”

❑ Concerns:

- the number of cases with no clear epidemiological link, such as travel history to China or contact with a confirmed case.
- increase in cases in **the Islamic Republic of Iran**, where there are **now 18 cases and four deaths** in just the past two days. (testing kits was sent to Iran),
- What has been reported from South Korea and Italy yesterday.
- **20% of patients have severe or critical disease.** These patients require **intensive care and supply** of this services is lacking in many **African countries.**
- **The potential for COVID-19 to spread in countries with weaker health systems.**
- **WHO has identified 13 priority countries** in Africa because of their direct links to **China or their high volume** of travel with China.
- WHO is Sending PEE to Africa , training more than 11,000 healthcare worker in online courses.
- **Agreed to activate the United Nations Crisis Management Team**, led by Dr Mike Ryan, to **enable WHO to focus on the health response** while **other agencies bring their expertise to bear on the social, economic and developmental implications of the outbreak.**
- Invitation to attend the Marrakech meeting **on diplomacy and health security** in March, which will be very important and part of what we are doing now. (Of course, it was planned long ago, but very relevant considering what’s happening now.)



EPIDEMIOLOGY:

Figure 6: Comparison of three viruses

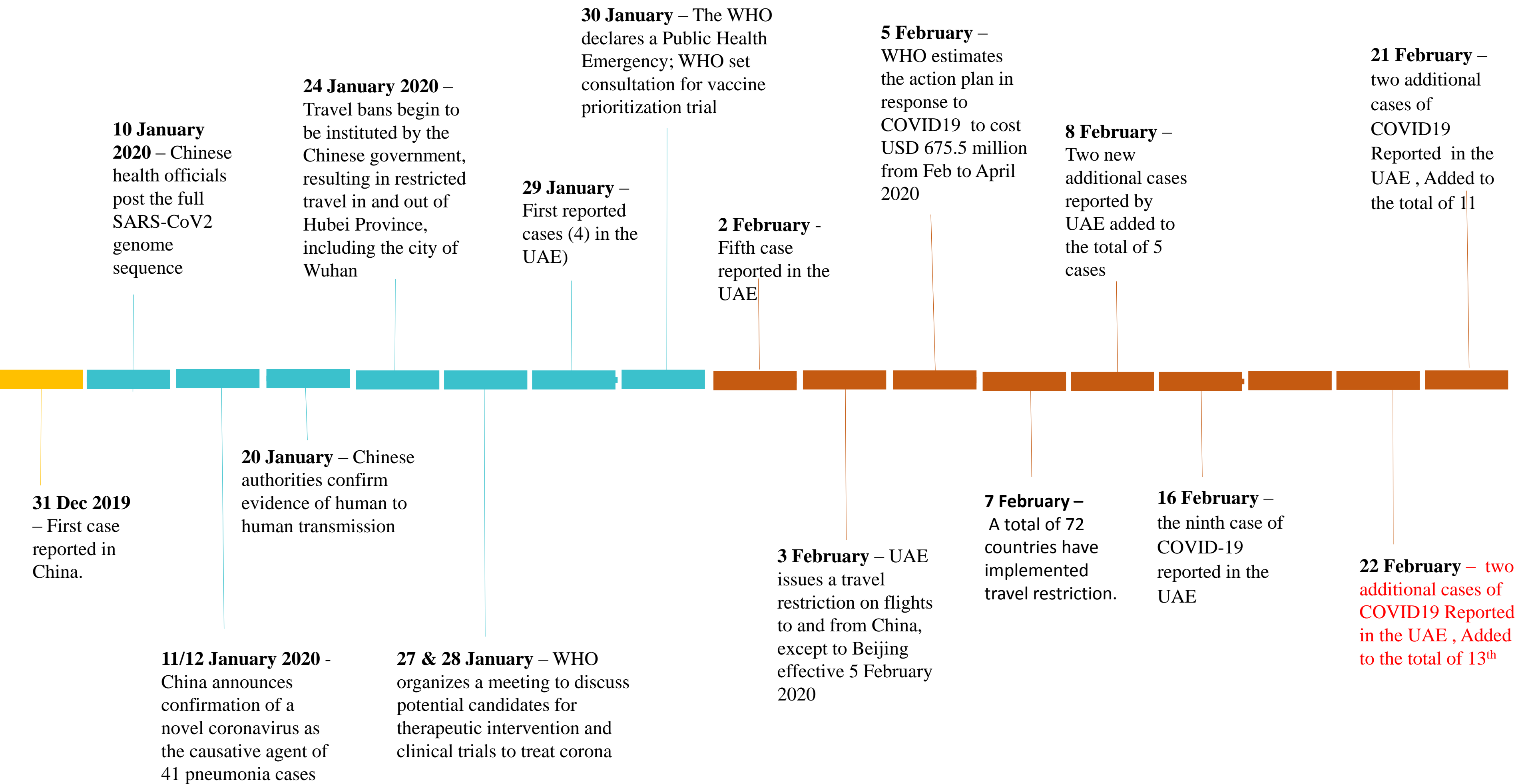
Virus	SARS COV2	SARS-COV	MERS-COV
Date of epidemic	2019	2002	2012
Countries	25	37	27
Infected cases	77794	8000	2494
Death cases	2359	800	858
Mortality	2.3%* ³	10%	> 35 %

- Data until February 22, 2020
- *Fatality rate (preliminary).

TIMELINE

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة





PUBLIC HEALTH RESPONSE

Article 1: Preparedness and vulnerability of African countries against importations of COVID-19: a modelling study

Published: 19 February 2020

Summery finding: the article asses the preparedness of the African countries using the following factors:

- 1- **Risk of importation per country:** which means: data on the volume of air travel departing from airports in the infected provinces in China and directed to Africa.
- 2- Country's **capacity** to detect and respond to cases with two indicators:
 - **Preparedness**, using the WHO International Health Regulations Monitoring and Evaluation Framework
 - **Vulnerability**, using the Infectious Disease Vulnerability Index.

Results Countries with the **highest importation risk** (ie, Egypt, Algeria, and South Africa) have **moderate to high capacity to respond to outbreaks**. Countries at **moderate risk** (ie, Nigeria, Ethiopia, Sudan, Angola, Tanzania, Ghana, and Kenya) have **variable capacity and high vulnerability**.

Conclusion:

- Onward transmission potentially occurring in countries with weaker health systems is a major public health concern.
- Not all connections between Africa and China have been cut—the main transporters continue to fly between the two (eg, Ethiopian Airlines, the largest carrier in Africa, operating almost half of the flights from Africa to China,²¹ together with all Chinese airline companies, and others).

Link: <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930411-6>



PUBLIC HEALTH RESPONSE

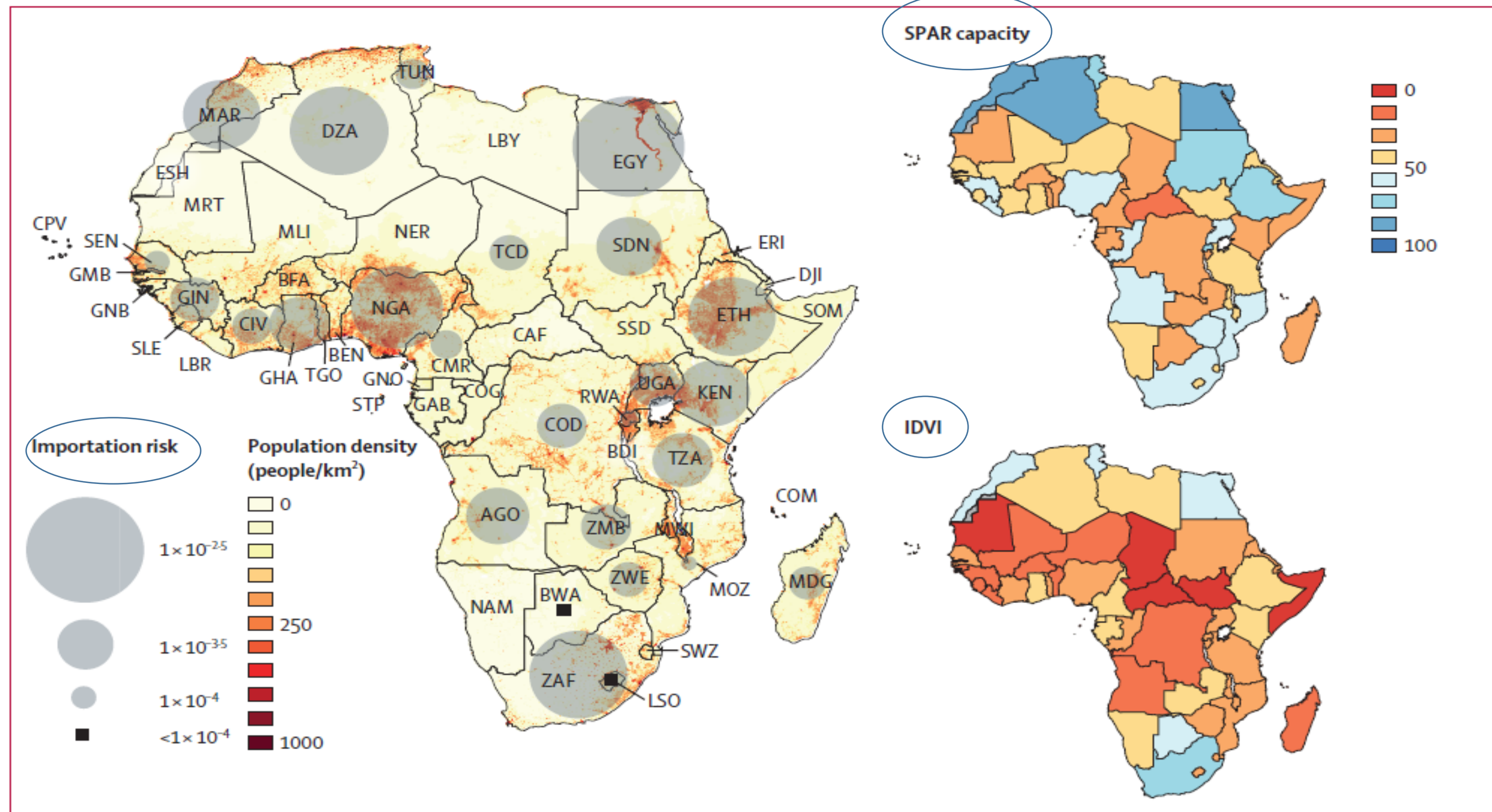


Figure 2: Global distribution of importation risk over human population density, distribution of the SPAR capacity, and IDVI






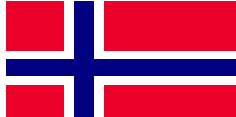
Both SPAR and IDVI indicators range from zero to 100, with increasing levels of capacity and decreasing vulnerability, respectively






Link: <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2930411-6>



PUBLIC HEALTH RESPONSE

Reflection of previous articles :

Score	IRAN 	Egypt 	Lebanon 	USA 	UK 	NORWAY 
SPAR* 2018	85	82	58	91	93	92
IDVI** 2016	56 Rank (96)	53	54	92 Rank (188)	89 Rank (181)	100 Rank (195)

Score	UAE	Ethiopia 	South Africa 	KSA 	Qatar 	China 
SPAR	95		66	69	87	94
IDVI	76 Rank (161)	38 (rank 47)	69 Rank (141)	73 Rank (153)	78 Rank (165)	66 Rank (129)

*Link : <https://extranet.who.int/e-spar>

**link : https://www.rand.org/content/dam/rand/pubs/research_reports/RR1600/RR1605/RAND_RR1605.pdf



CLINICAL FEATURES AND TRANSMISSION *NO UPDATE*

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



Articles in special population: (children)

Article 1: Title: First case of severe childhood novel coronavirus pneumonia in China

Published: after 7 February 2020*

Summery finding: 13-month-old male presenting with diarrhea and progressed to respiratory symptoms, shock and kidney failure. No positive contact. Two negative PCRs; third was positive. Treatment failed with Tamiflu but improved with continuous blood purification (dialysis). Sever symptoms may be attributable to a congenital abnormality in the kidney which was not diagnosed. Previously.

Link: <http://rs.yiigle.com/yufabiao/1180144.htm>

Article 2: Title: A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster

Published: 24 January 2020.

Summery finding: 10-year-old male with positive contact. Without symptoms. Lung imaging found to be positive and PCR was positive.

Link: <https://www.cdc.gov/coronavirus/2019-ncov/downloads/Chan-study-of-a-family-cluster-Lancet-1-20-2020.pdf>

Article 3 : Title: Facing a major outbreak of new coronavirus infections in 2019: reflections from pediatricians

Published: 6 February 2020. *

Summery finding: reported 38 confirmed cases of children. Cough was the main manifestation, some children showed weakness, myalgia, nausea, vomiting, or diarrhea. Among them, 1.5-month-old infant only had frequent vomiting.

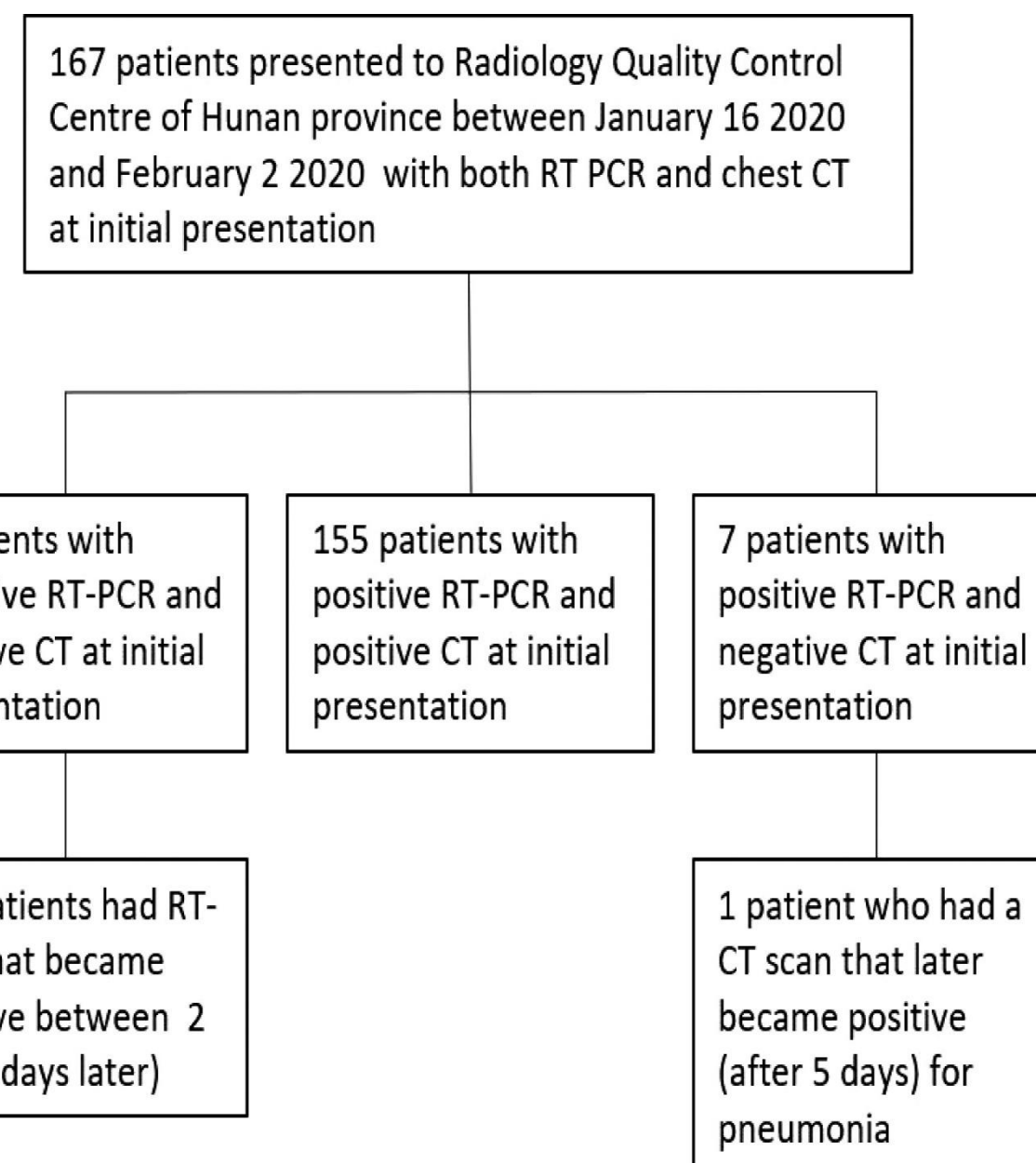
link : <http://www.365heart.com/show/143317.shtml>

** Articles were translated from Chinese language.*



DIAGNOSIS: *NO UPDATE*

- **Article 1: Title: 2019-nCoV Pneumonia: Relationship to negative RT-PCR testing.**
- **Published: 12 February 2020***
- **Summery finding:** Two radiologists with 10 years of experience interpreted the CT scans.
 - 5 patients initially **tested positive by CT** and **negative by RT-PCR** but after consecutive testing with RT-PCR became positive.
 - 7 patients tested **negative by CT** but **positive by RT-PCR**.
 - The **five cases** who were **negative by RT-PCR** and **positive by CT** at initial are discussed.
 - All cases were had either h/o visiting Wahun or contact with positive cases.
 - All had symptom (some had mild symptoms).
 - After isolation for presumed 2019-nCoV pneumonia, all patients were eventually confirmed with 2019-nCoV infection by **repeated swab tests**.
 - **Conclusion from the study:**
A combination of repeated swab tests and CT scanning may be helpful for individuals at **high clinical suspicion of nCoV infection** but who test **negative in RT-PCR screening**



Link : <https://pubs.rsna.org/doi/10.1148/radiol.2020200343>



TREATMENT:

NO UPDATE

Title: Therapeutic options for the 2019 novel coronavirus (2019-nCoV)

Published 10 Feb 2020 , updated 19 Feb 2020

Links: <https://www.nature.com/articles/d41573-020-00016-0>

1-Ribavirin is approved for treating Hepatitis C Virus and respiratory syncytial virus (RSV), but its side effects such as anaemia may be severe at high doses.

2-Remdesivir an **approved HIV medication**. has been tested in a clinical trial for Ebola. Clinical trial on COVID19 2019 ([NCT04252664](#) and [NCT04257656](#)), with **estimated completion dates in April 2020**. Also **galidesivir** may have potential against 2019-nCoV.

3-Favipiravir approved for influenza treatment. Patients with 2019-nCoV are being recruited in randomized trials to evaluate the efficacy of favipiravir plus interferon- α ([ChiCTR2000029600](#))

4-Pegylated interferon alfa-2a and -2b, approved for the treatment of **HBV and HCV**, could be used for the treatment of COVID19 , **multiple adverse effects** associated with these drugs. Their evaluation should be closely monitored and dose reduction or discontinuation of therapy may be required.

5- Chloroquine (Antimalarial drug) , is being evaluated in an open-label trial , further information : ([ChiCTR2000029609](#)).

There are more than 50 drugs being testing for the treatment COVID19.



TREATMENT:

NO UPDATE

Latest article on February 18, 2020

The WHO developed COVID19 therapeutic trial synopsis (for Multicenter clinical trial studies on investigational therapeutic agent for COVID19). ***NEW***

[https://www.who.int/blueprint/priority-diseases/key-action/COVID-19 Treatment Trial Design Master Protocol synopsis Final 18022020.pdf?ua=1](https://www.who.int/blueprint/priority-diseases/key-action/COVID-19_Treatment_Trial_Design_Master_Protocol_synopsis_Final_18022020.pdf?ua=1)

Current trial: (Source: WHO, January 20, 2020)

- SAG members noted that a **randomized controlled trial was initiated in Wuhan** to assess the effect of **lopinavir/ritonavir with IFN-β1b**, and that trial material from the MIRACLE trial — which aimed to assess the same treatment for **MERS-CoV in Saudi Arabia** — was shared to support the initiation of the trial.

<https://apps.who.int/iris/bitstream/handle/10665/330692/WHO-HEO-RDBlueprintnCoV-2020.2-eng.pdf?sequence=1&isAllowed=y&ua=1>

- **Potential candidates for therapeutic treatment released 24 January 2020**

<https://www.who.int/blueprint/priority-diseases/key-action/overview-ncov-therapeutics.pdf?ua=1>



VACCINATION: *NO UPDATE*

Latest article on February 18, 2020

- The WHO released **COVID-19 Phase IIb/III Vaccine Trial Synopsis**. *NEW*
- <https://www.who.int/blueprint/priority-diseases/key-action/COVID-19-vaccine-trial-synopsis.pdf?ua=1>
- Updated draft design for therapeutic trial published in **27 January 2020. Promote the use of information on MERS-COV and SARS-Cov to develop a vaccine**
- <https://apps.who.int/iris/bitstream/handle/10665/330695/WHO-HEO-RDBlueprintnCoV-2020.5-eng.pdf?sequence=1&isAllowed=y&ua=1>
- **List of suggested vaccines:**
- <https://www.who.int/blueprint/priority-diseases/key-action/list-of-candidate-vaccines-developed-against-ncov.pdf>