



# Scientific Research Monitoring on COVID-19

29 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.
14. People with mild disease, recovery time is about two weeks, while people with severe or critical disease recover within 3 to 6 weeks .



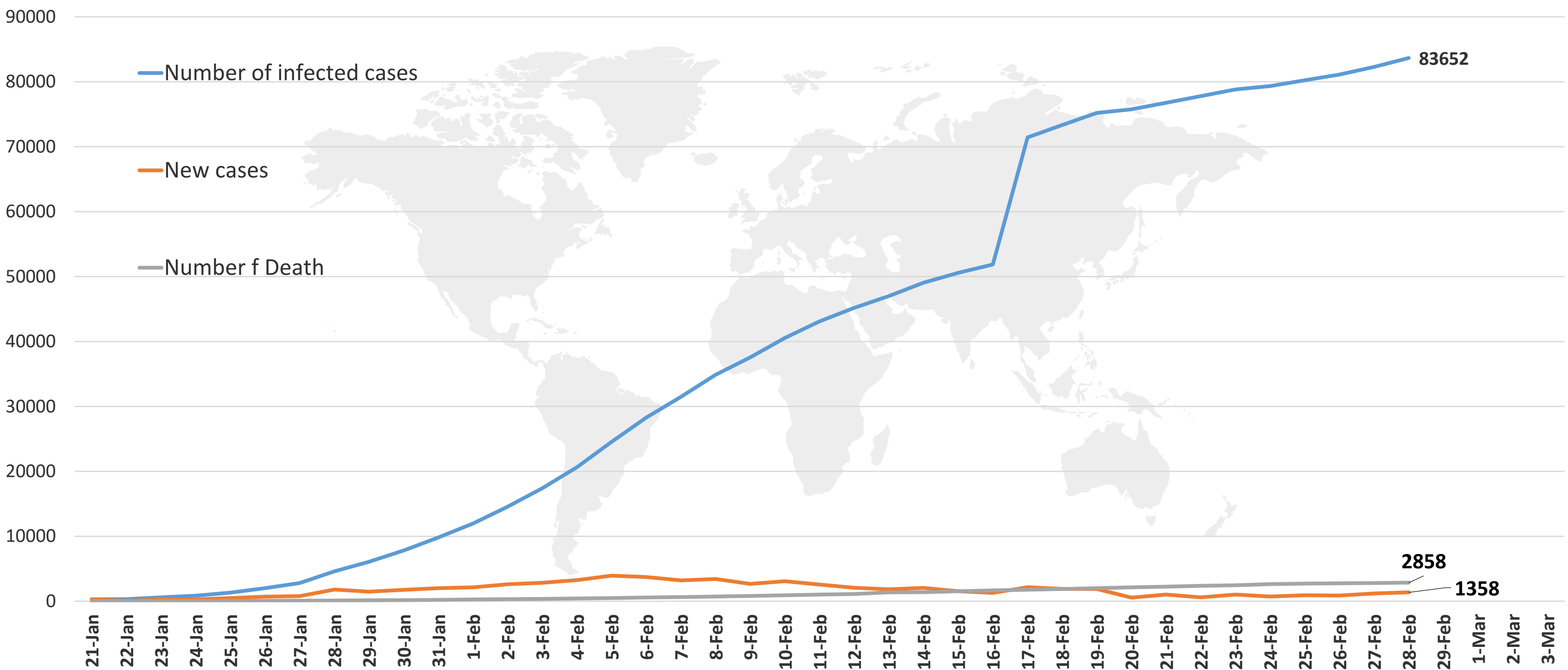
## NEW UPDATES FROM TODAY'S REPORT:

- **Public health response section:** high income city have a high mortality and low cure rate in china compared to low income cities



# EPIDEMIOLOGY:

### Figure 1: Total number of infected, new, and death cases (January 24<sup>st</sup> to February 28<sup>th</sup>, 2020)



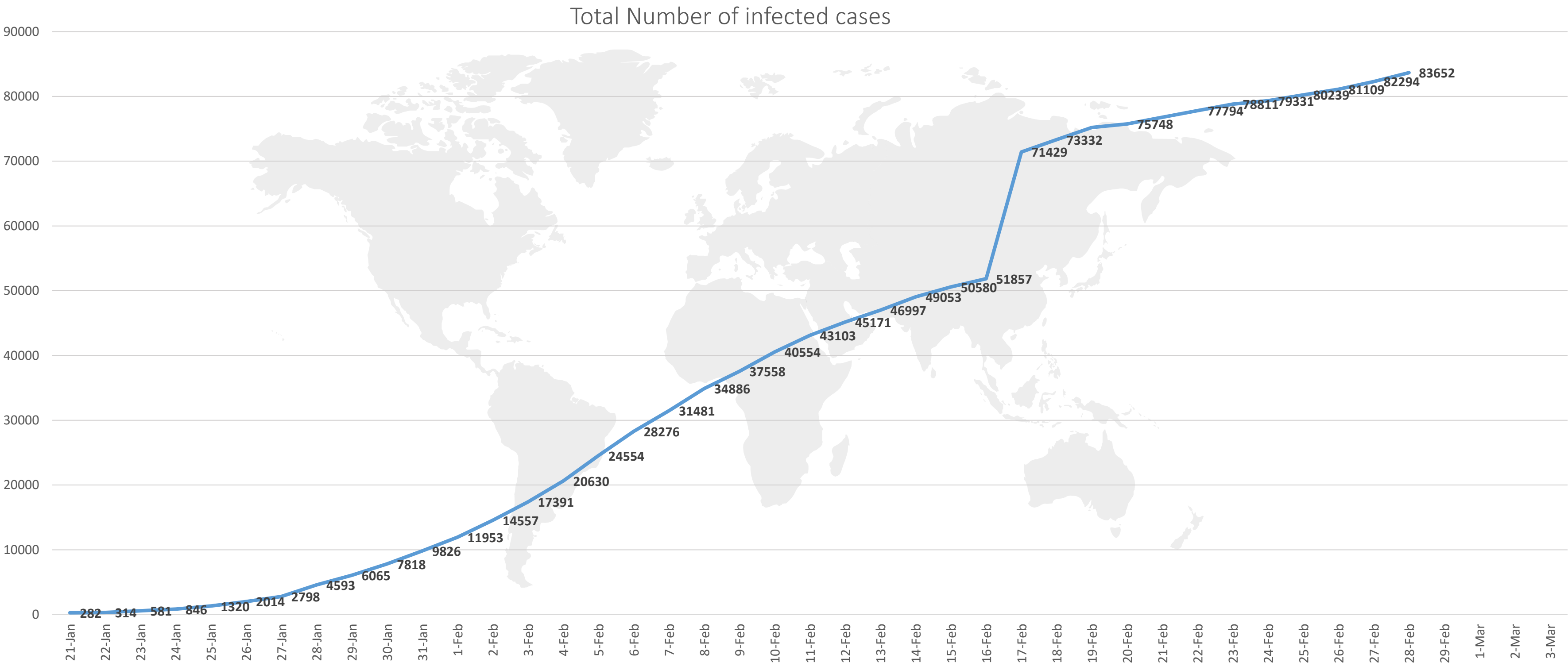
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



# EPIDEMIOLOGY:

## Figure 2: Number of infected cases (January 22<sup>st</sup> to February 28<sup>th</sup>, 2020)



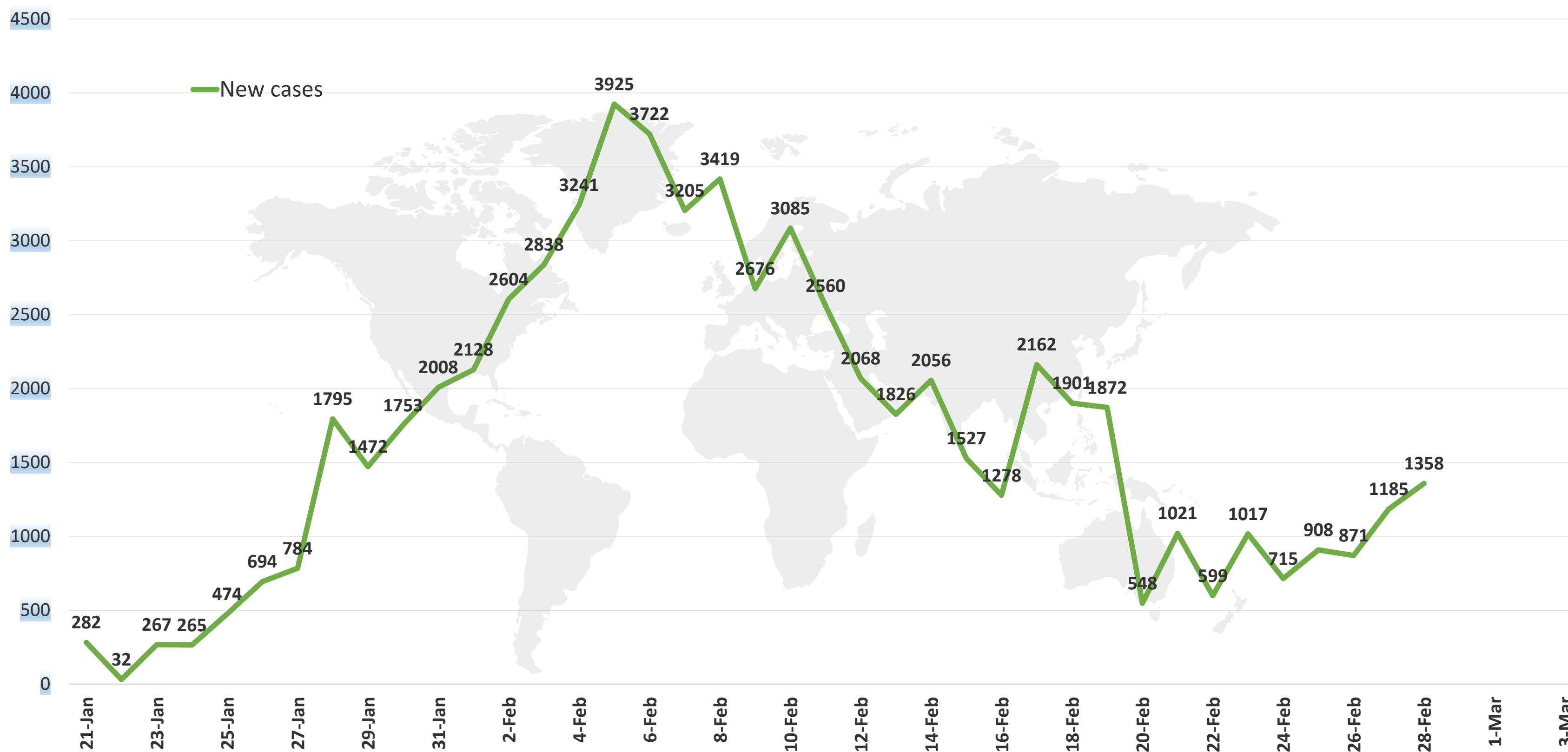
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



# EPIDEMIOLOGY:

**Figure 3: Number of new cases (January 21<sup>st</sup> to February 28<sup>th</sup>, 2020)**



Line graph published by Abu Dhabi Public Health Center 2020.

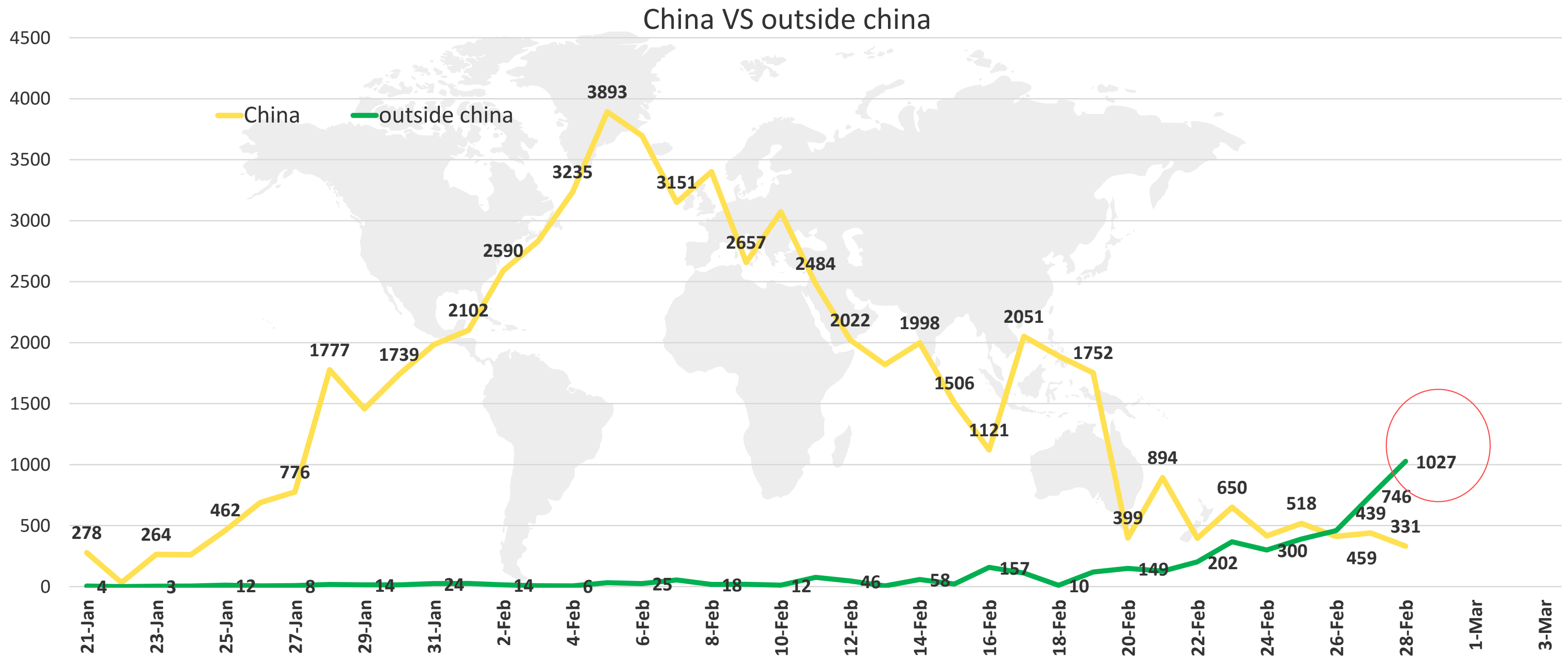
Data resources: [WHO](https://www.who.int/)





# EPIDEMIOLOGY:

**Figure 4: Number of new cases in China versus outside China (January 22<sup>st</sup> to February 28<sup>th</sup> , 2020)**



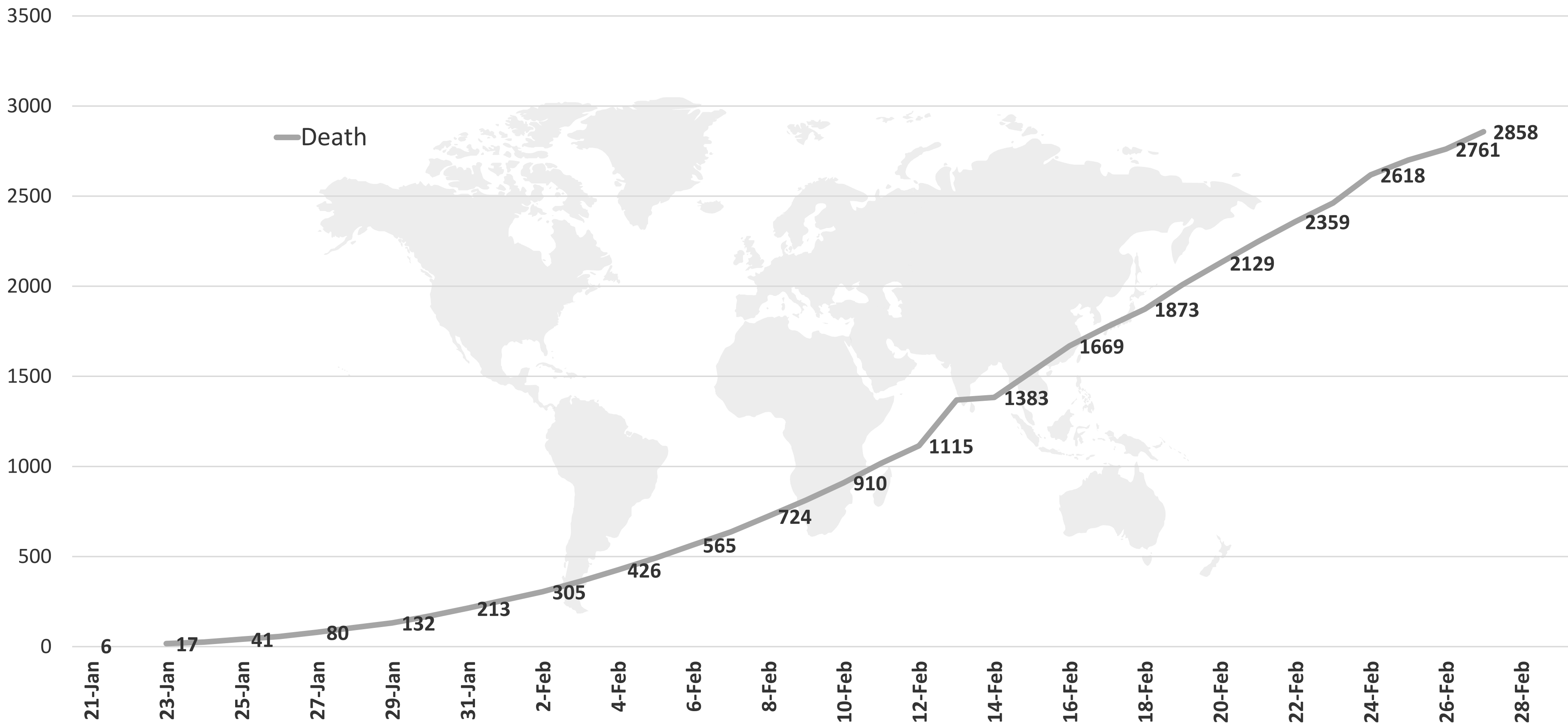
Line graph published by Abu Dhabi Public Health Center 2020.

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



# EPIDEMIOLOGY:

**Figure 5: Number of total deaths (January 21<sup>st</sup> to February 28<sup>th</sup>, 2020)**



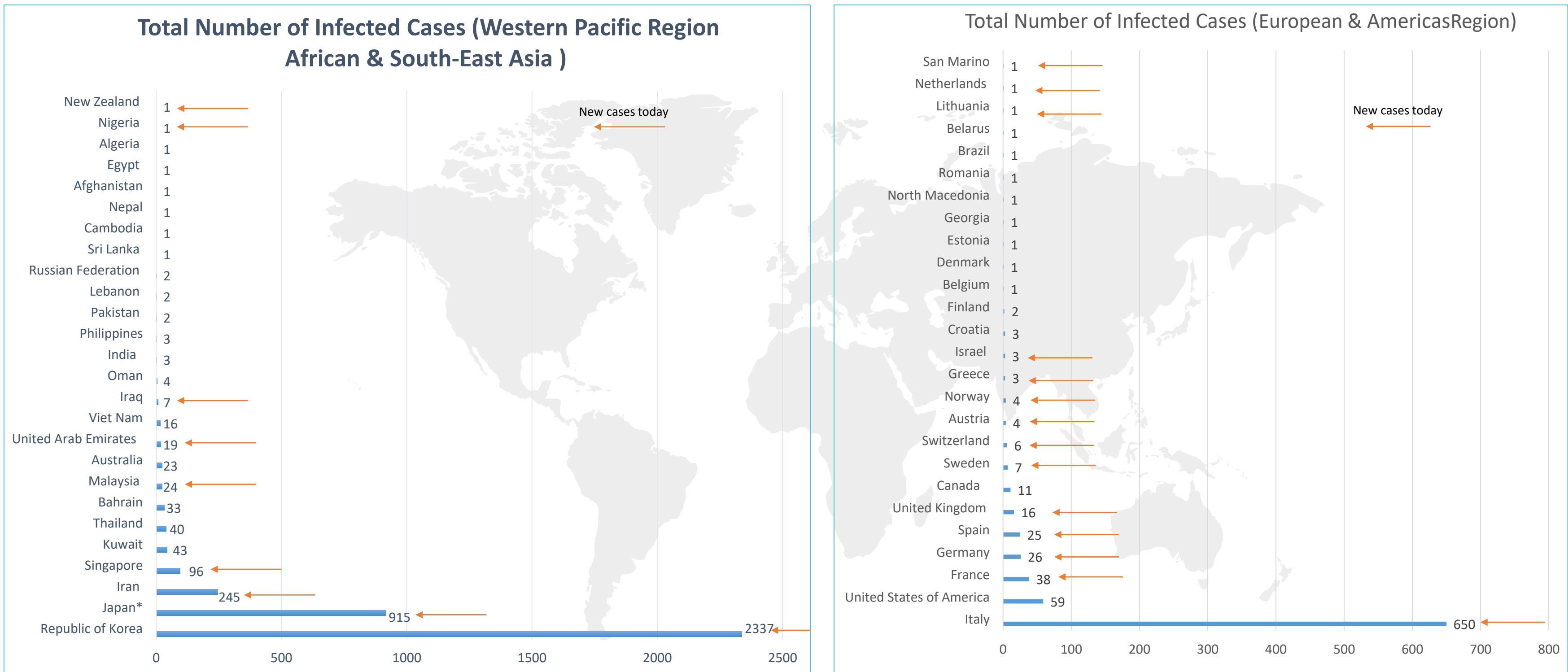
Line graph published by Abu Dhabi Public Health Center 2020.

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



# EPIDEMIOLOGY:

**Figure 6: Total number of cases outside China per country (January 21<sup>st</sup> to February 28<sup>th</sup>, 2020)**



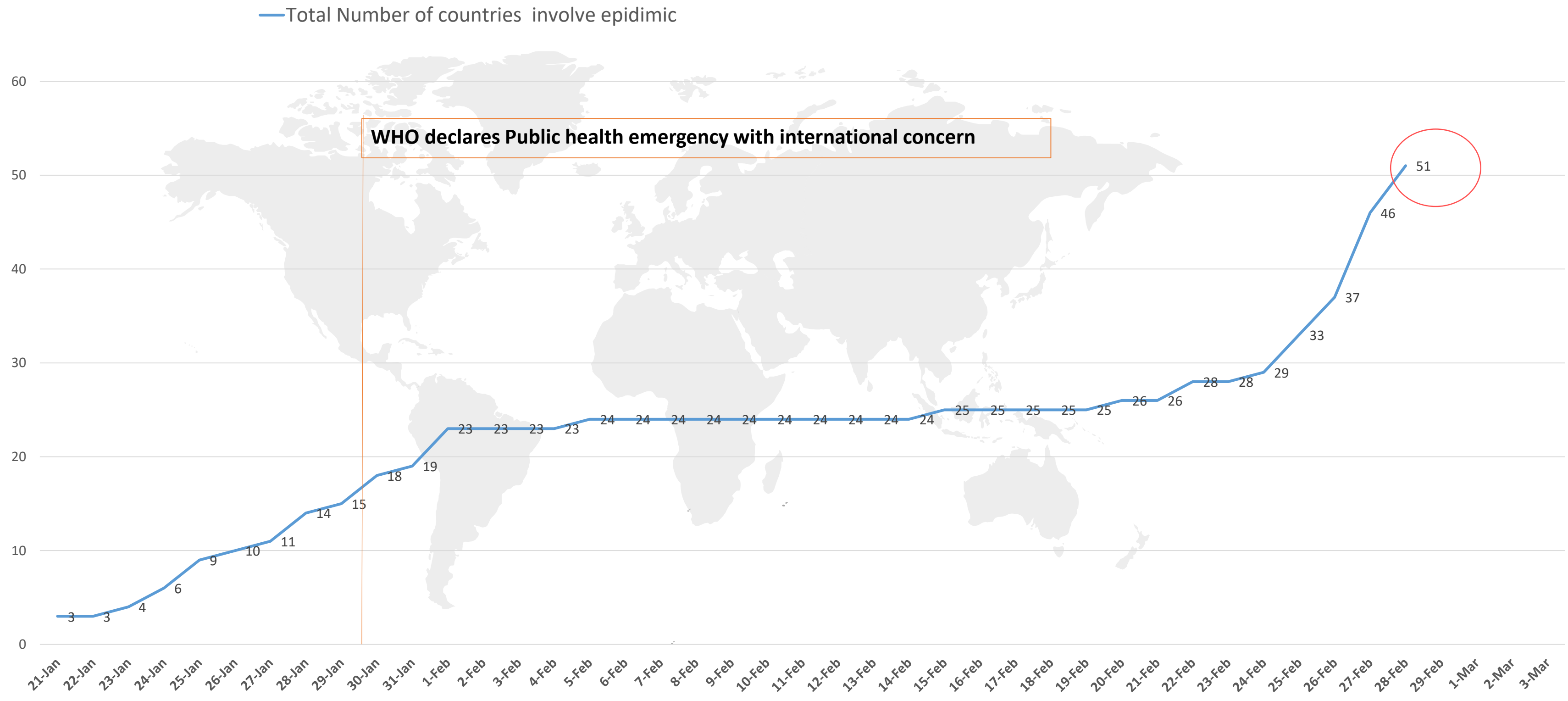
Line graph published by Abu Dhabi Public Health Center 2020.

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



# EPIDEMIOLOGY:

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



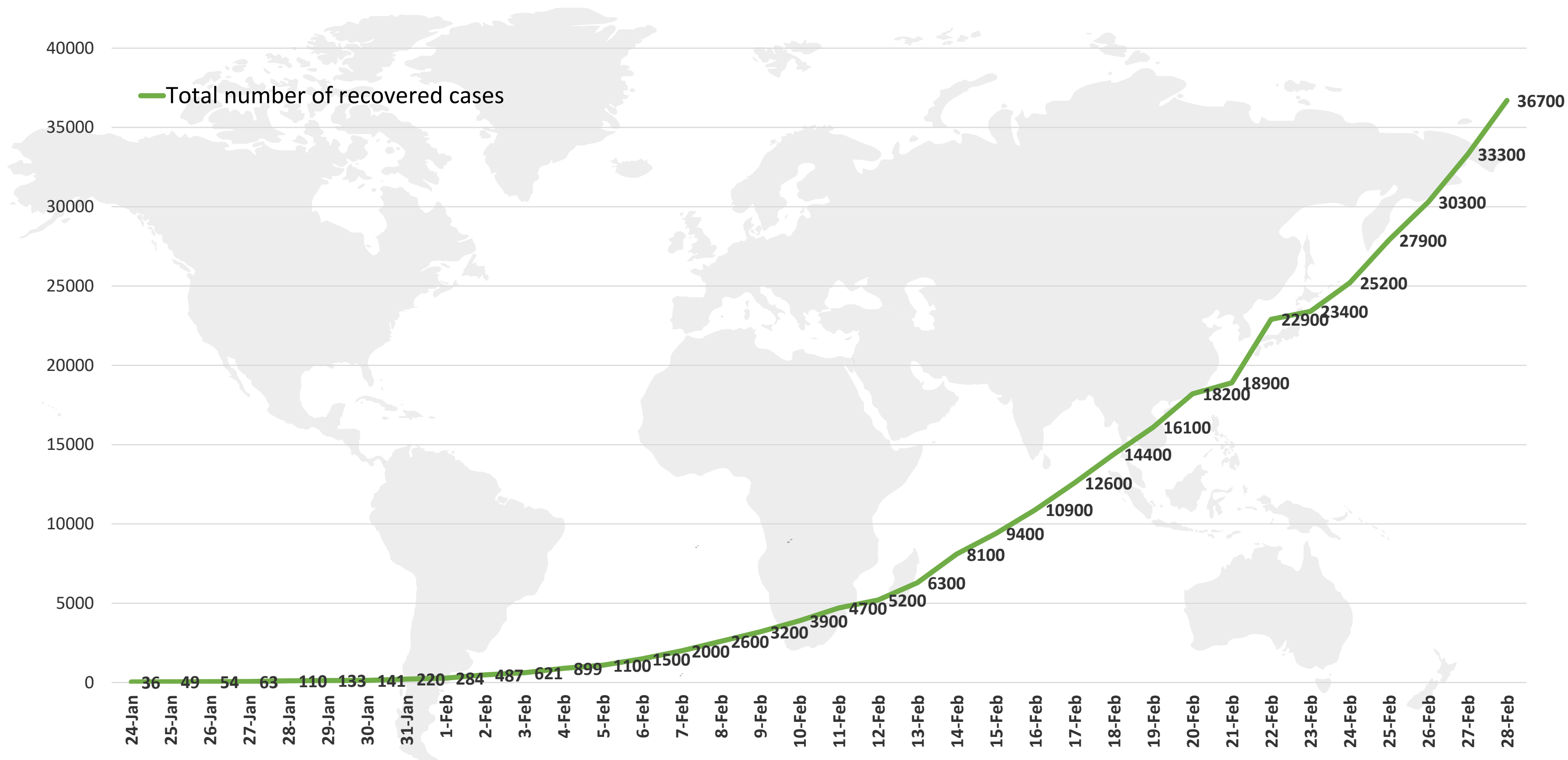
Line graph published by Abu Dhabi Public Health Center 2020.

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



# EPIDEMIOLOGY:

**Figure 9: Total recovered cases of COVID-19. (January 24<sup>st</sup> to February 28<sup>th</sup>, 2020)**



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [John Hopkins University](https://www.jhu.edu/)

Retrieved at 19:30

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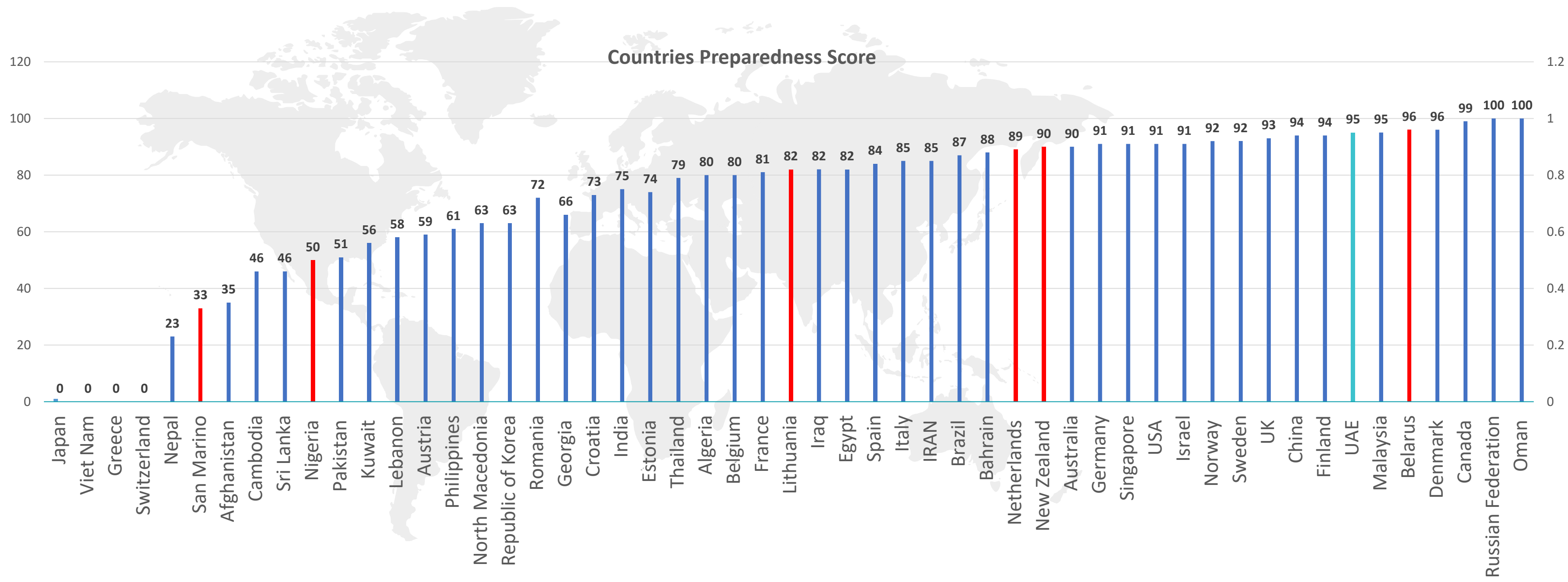
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# EPIDEMIOLOGY:

## Figure 9 : Capacities of countries reporting COVID19 cases

Figure 9A: Countries' preparedness score in responding to Public health risks and acute events. Published in 2018



Line graph published by Abu Dhabi Public Health Center 2020.

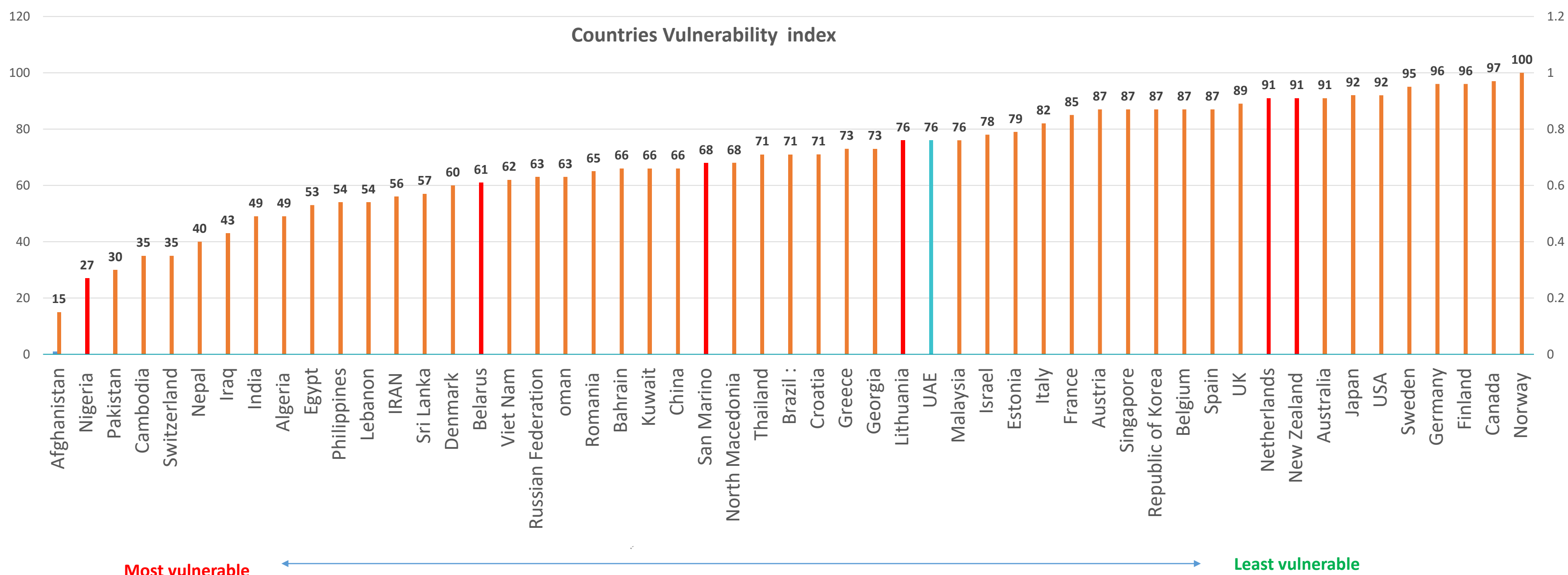
Data resources : [SPAR score](#) , [IDVI score](#)



# EPIDEMIOLOGY:

## Figure 9 : Capacities of countries reporting COVID19 cases

Figure 9B: Countries' vulnerability index to spread infectious disease. Published in 2016



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources : [SPAR score](#) , [IDVI score](#)

# EPIDEMIOLOGY:

## WHO report 28/2/2020 important points (1/2)

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- Five new Member States (Belarus, Lithuania, Netherlands, New Zealand, and Nigeria) reported cases of COVID-19 in the past 24 hours.
- The WHO-China Joint Mission, which was conducted from 16 through 24 February, has published its findings.  
*(Summary will be posted in ADPHC report by Sunday.)*
- WHO has updated the guidance on [Global Surveillance for human infection with coronavirus disease \(COVID-19\)](#). This document includes **revised surveillance case definitions** for COVID-19. It is also accompanied by a revised **Case Reporting Form**, line listing template, and data dictionary.
- As of **27 February**, there are 36 117 (26 403 in Hubei and 15 826 in Wuhan) cases who have **recovered** from COVID-19 in China.

\*majority of these measures are related to denial of entry of travelers originating from China or from countries reporting on-going transmission of COVID-19, quarantine requirements for foreigners, self-isolation of returning nationals, and visa restrictions.

Most of these countries are lacking of capacity for diagnostic and response, small island states context



# EPIDEMIOLOGY:

WHO report 28/2/2020 important point (2/2)

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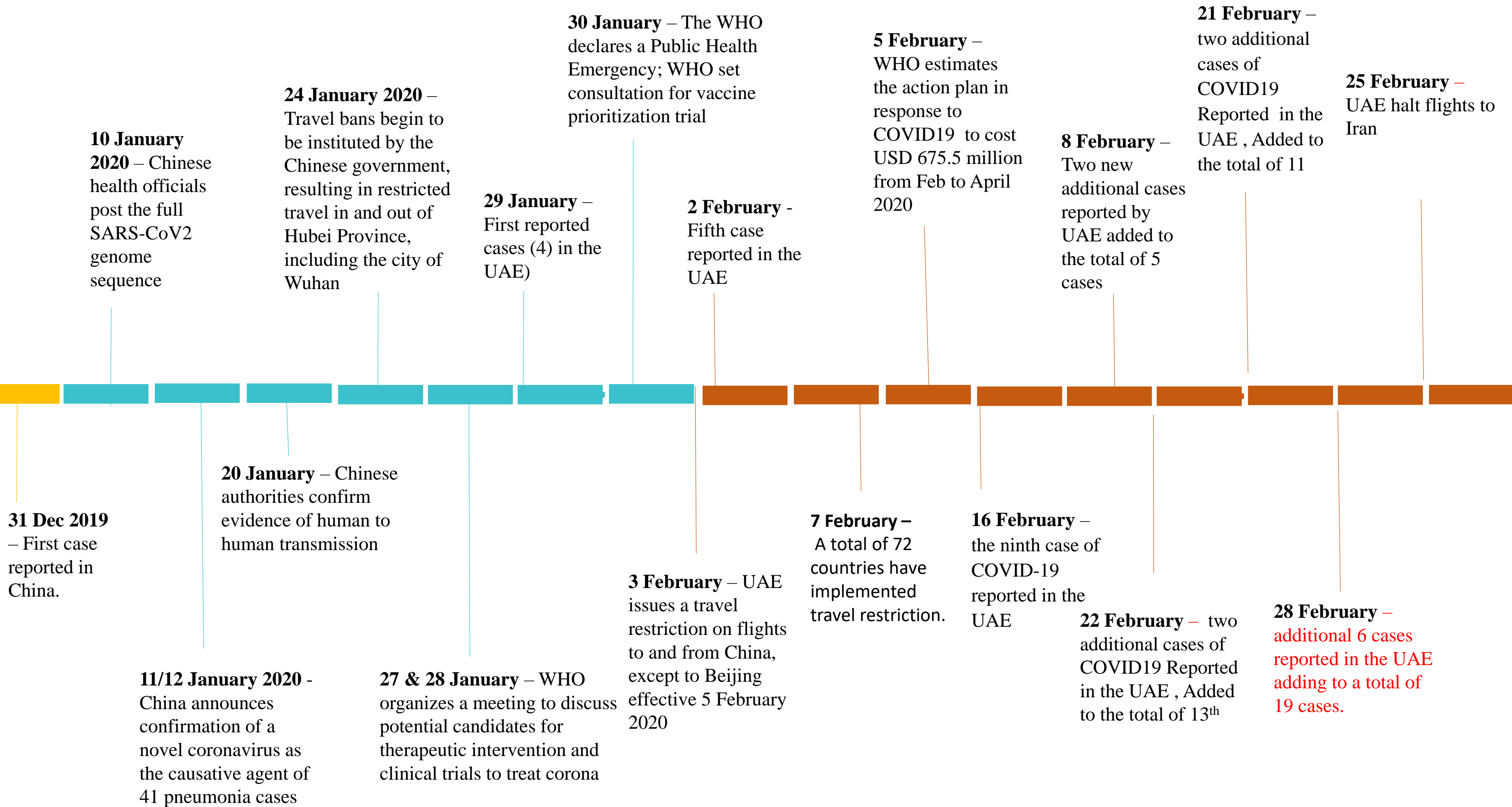
•Under the International Health Regulations (2005), States Parties implementing **additional health measures** that **significantly interfere with international traffic** shall notify WHO of the public health rationale of those measures within 48 hours of their implementation. As of 27 February, **41 States Parties are officially reporting additional** health measures. More information can be found in the Subject in Focus.

- Majority of these measures are related to **denial of entry of** travelers originating from **China** or from countries reporting on-going transmission of COVID-19, **quarantine** requirements for foreigners, **self-isolation** of returning nationals, and **visa restrictions**.
- Most **Preliminary analysis of countries reporting cases** of these countries **are lacking of capacity for diagnostic and response, small island** states context
- that have imposed restrictive measures suggest that such measures may have **delayed the importation** of new cases, **but did not prevent the importation** of the disease.

# TIMELINE

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# PUBLIC HEALTH RESPONSE

*New update (1/2)*

**Article 1:** Epidemic characteristics of 2019-nCoV in China, Jan 23, 2020-Feb 11, 2020

**Published: 25 February 2020**

**Summery finding:** study period China from Jan 23, to Feb 11, 2020. cases number is more than 40,000.

Cure ratio (%) in East China is highest with 18% and lowest with 8.66% in Central China.

Cure ratio (%) in high-income areas is 9.908% whereas in low-income areas is 14.8%

Mortality (%) in high-area is 2.537% whereas in low-income area is 1.39%.

interpretation according to the author:

- Hubei Province is the initial area with the most confirmed, suspected cases.

- the suspected cases and potential infected cases in the high-income area such as Hubei Province likely to do business or sightseeing to another high-income area such as Beijing or Shanghai.

**The cure rate** in low-income area is higher than the high-income area may be **due to the most patients** were **mild symptom**. (*the interpretation needs more in depth investigation and the findings still need further studies*)

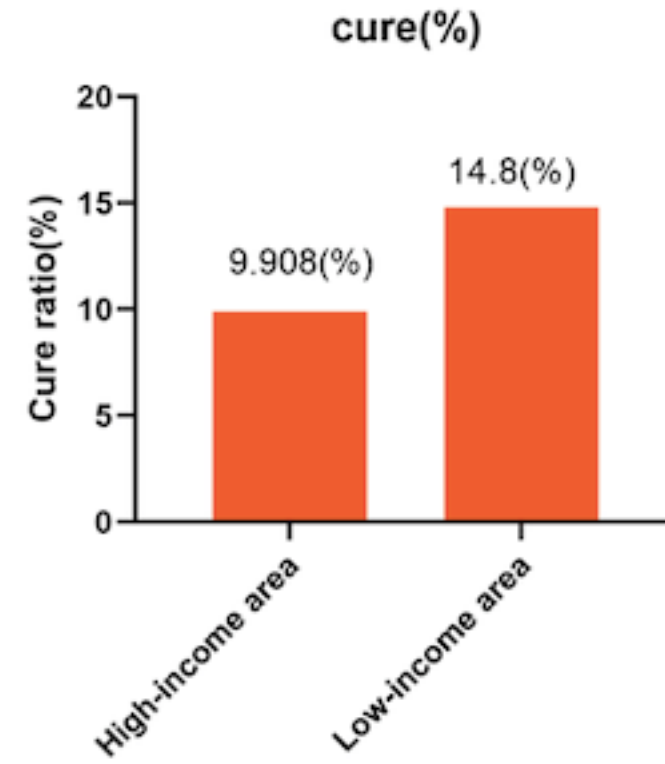
*Note the article is still preliminary and under peer review, These papers should not be used for clinical decision making or reporting of research to a lay audience*



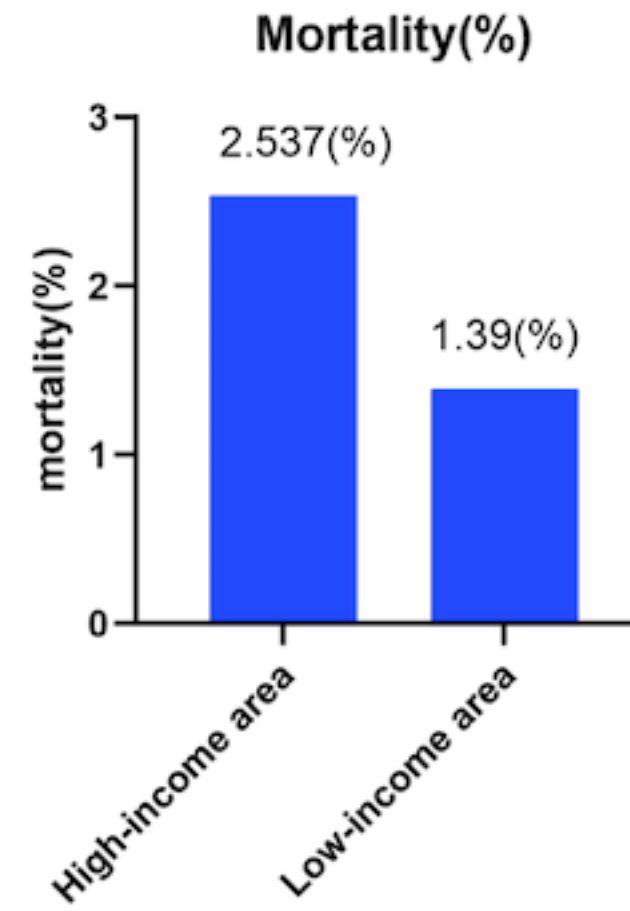
# PUBLIC HEALTH RESPONSE

*New update (2/2)*

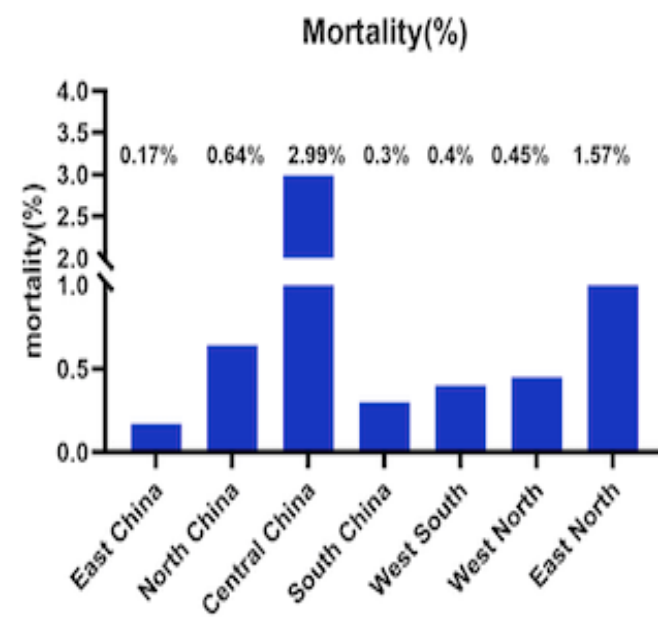
**C**



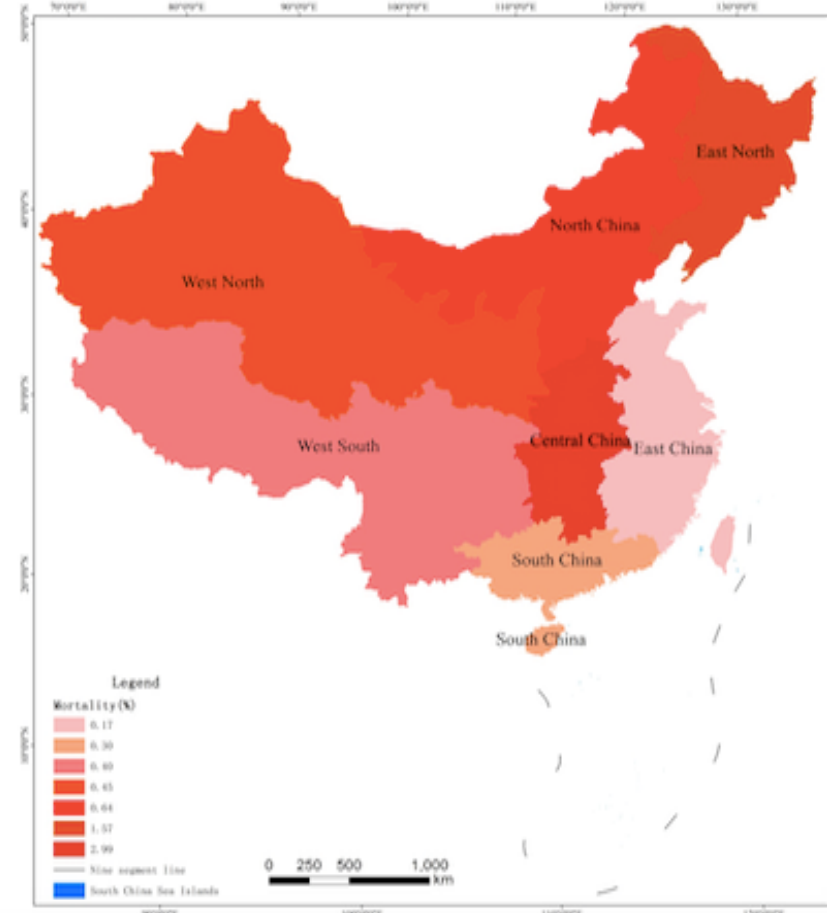
**D**



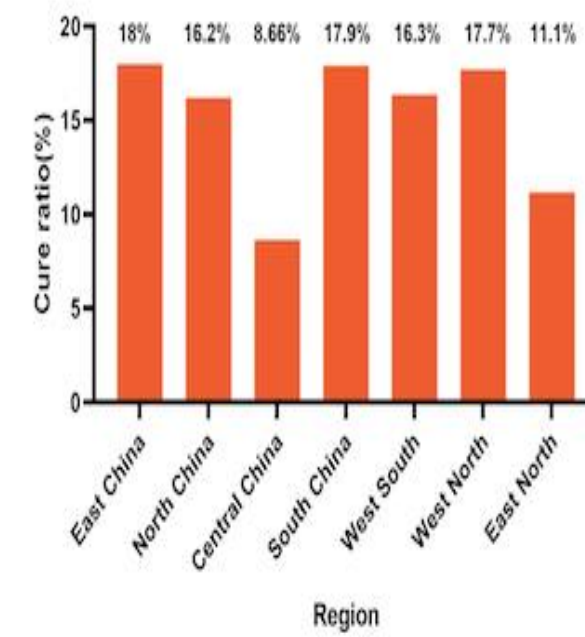
**C**



**C**



**A**



**B**



Mortality

Cure rate



# CLINICAL FEATURES AND TRANSMISSION

**NO UPDATE**

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## Article 1: Presumed Asymptomatic Carrier

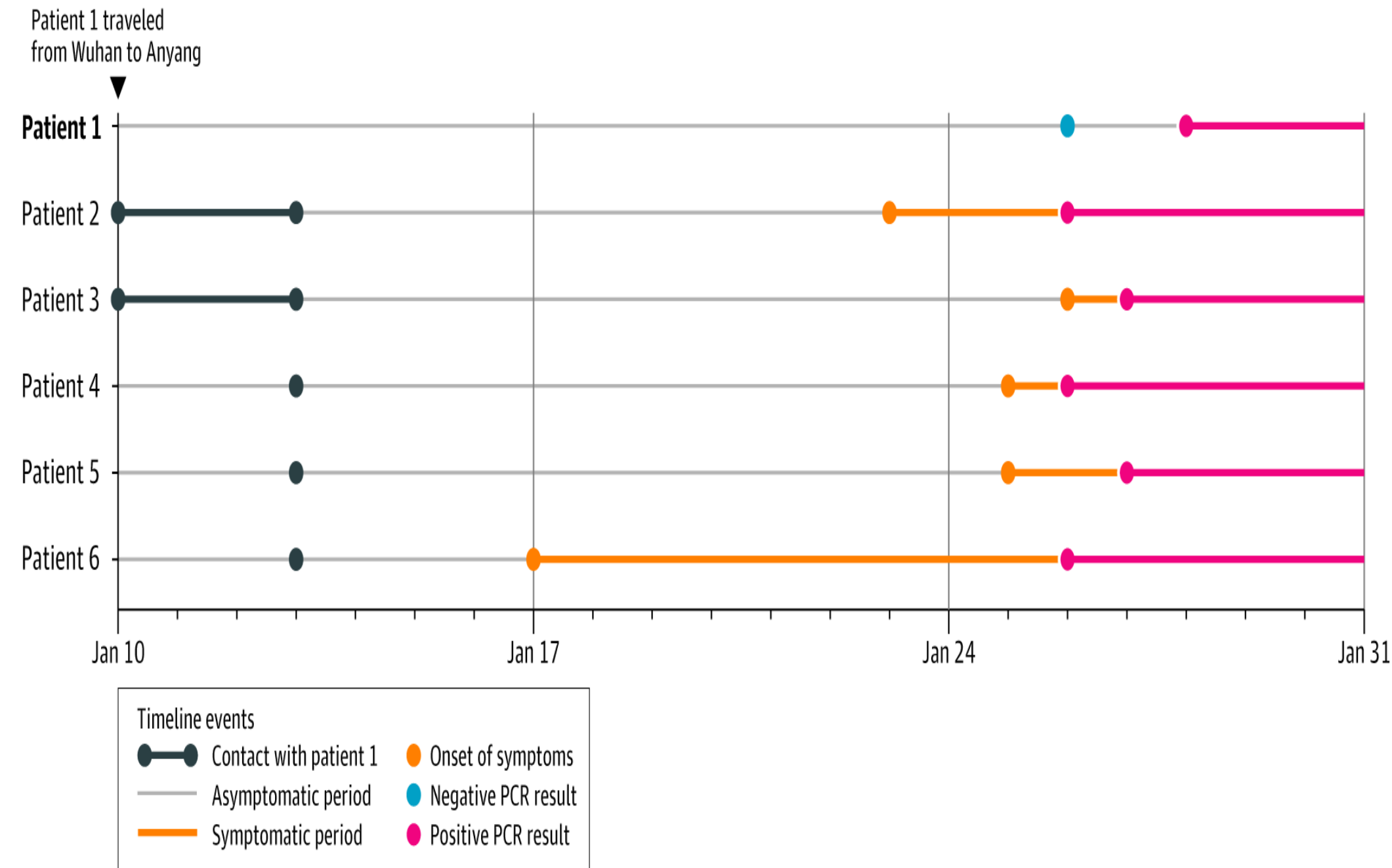
### Transmission of COVID-19

Published: 21 February 2020

**Summery finding:** Presumed asymptomatic patient came from Wahun in 10th Jan . Infected 5 other patients in another city ( no h/o of positive sick contact) . Repeated tests for the asymptomatic patient were negative until 28<sup>th</sup> Jan it become positive. Patient continues to have no symptoms and in in 5<sup>th</sup> and 8<sup>th</sup> of February PCR swab was negative.

**Incubation period was 19 days.**

Laboratory and CT chest x ray **were negative** for the asymptomatic patient.



<https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa077/5739751>



## DIAGNOSIS: **NO UPDATE**

**Article** : Rapid Detection of Novel Coronavirus (COVID19) by Reverse Transcription-Loop-Mediated Isothermal Amplification

- **Published:** posted 19 February 2020
- **Summery finding:** this study used synthesized nucleotide of COVID19 genes and samples of health patients. The study to test a new testing method called RT-LAMP to diagnose COVID19.
- Quantitative reverse transcription PCR (qRT-PCR) is currently the standard for COVID-19 detection; however, Reverse Transcription Loop-Mediated Isothermal Amplification (RT- LAMP) may allow for faster and cheaper field based testing at point-of-risk. (30 mintues ) does not require standards lab or experienced staff to collect. This method was used to detect Zika virus
- They test different samples from healthy human , other coronaviruses and different COVID19 nucleotides. The samples were taken from urine , serum , oropharynx and oropharyngeal swab.
- The test proof to be specific and sensitive.
- The study weakness mentioned in the article :
  - First, COVID-19 is Biosafety level 3 their laboratory was unable to work directly with the virus or with infected samples, therefore, they were able only to synthesize the nucleotide.
  - The sample size was small.

*Note the article is still preliminary and under peer review, These papers should not be used for clinical decision making or reporting of research to a lay audience*

Link : [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3539654&download=yes](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3539654&download=yes)



# TREATMENT: *NO UPDATE*

**Title:** Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies

**Published:** 19 February 2020

## Summery:

- **Multiple clinical trial was conducted in more than 10 hospitals** to test the efficacy of chloroquine in treatment of COVID19 in Wuhan, Jingzhou, Guangzhou, Beijing, Shanghai, Chongqing, and Ningbo.
- The results so far for **more than 100 patients** have demonstrated that chloroquine phosphate is superior to the control treatment in inhibiting the **exacerbation of pneumonia**, improving **lung imaging findings**, promoting a **virus- negative conversion**, and **shortening the disease course** according to the news briefing.
- Severe adverse reactions to chloroquine phosphate were **not** noted.
- The drug is recommended **for inclusion in the next version of the Guidelines for the Prevention, Diagnosis, and Treatment of Pneumonia Caused by COVID-19** issued by the National Health Commission of the People's Republic of China.
- Chloroquine is a cheap and safe drug that has been used for more than 70 years to treat malaria.

**Links:** [https://www.jstage.jst.go.jp/article/bst/advpub/0/advpub\\_2020.01047/pdf/-char/en](https://www.jstage.jst.go.jp/article/bst/advpub/0/advpub_2020.01047/pdf/-char/en)



# 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).

[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**.
- <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>