



Scientific Research Monitoring on COVID-19

28 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 .



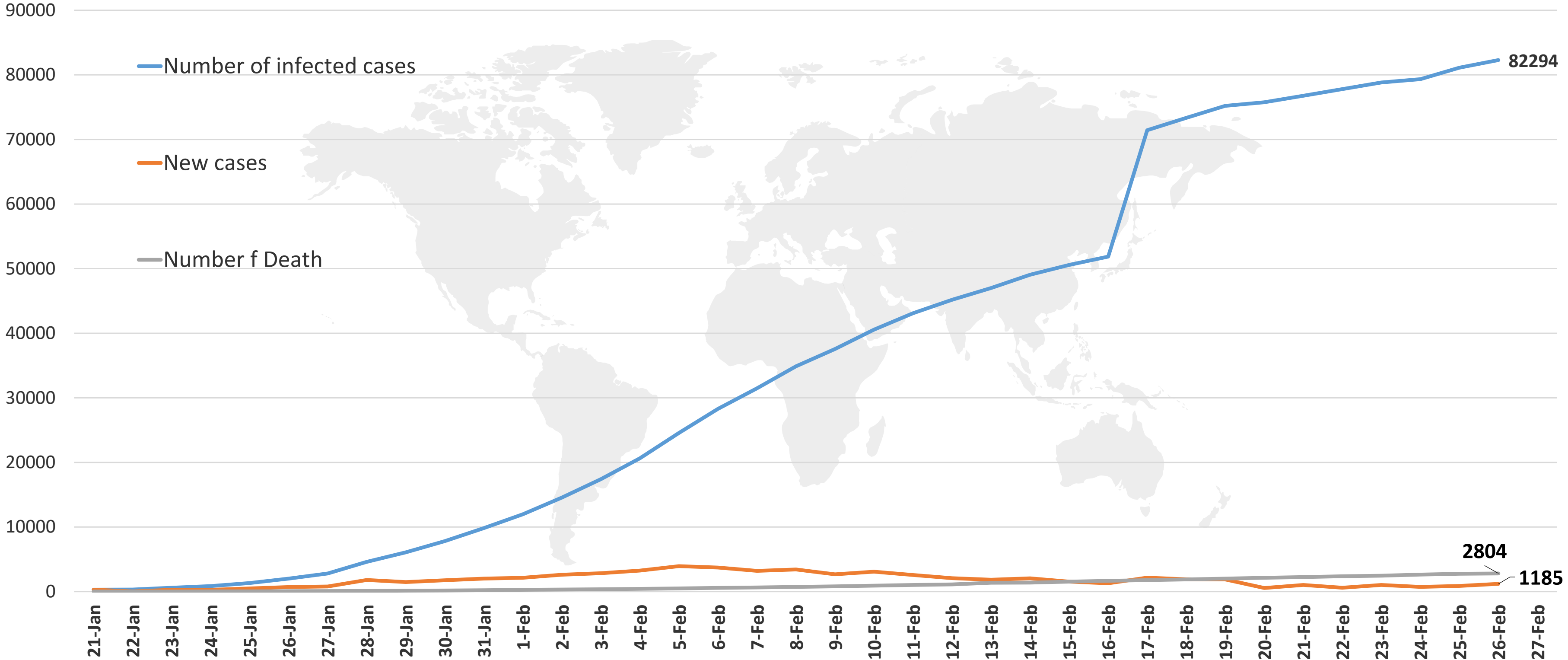
NEW UPDATES FROM TODAY'S REPORT:

- **Epidemiology section:** 9 new more countries reporting COVID19 cases. WHO is focusing on enhancing the diagnostic capacity.
- **Diagnosis section: RT-LAMP** potential detecting method could be used for monitoring of exposed individuals or potentially aid with screening efforts in the field and potential ports of entry.



EPIDEMIOLOGY:

Figure 1: Total number of infected, new, and death cases (January 24st to February 27th , 2020)



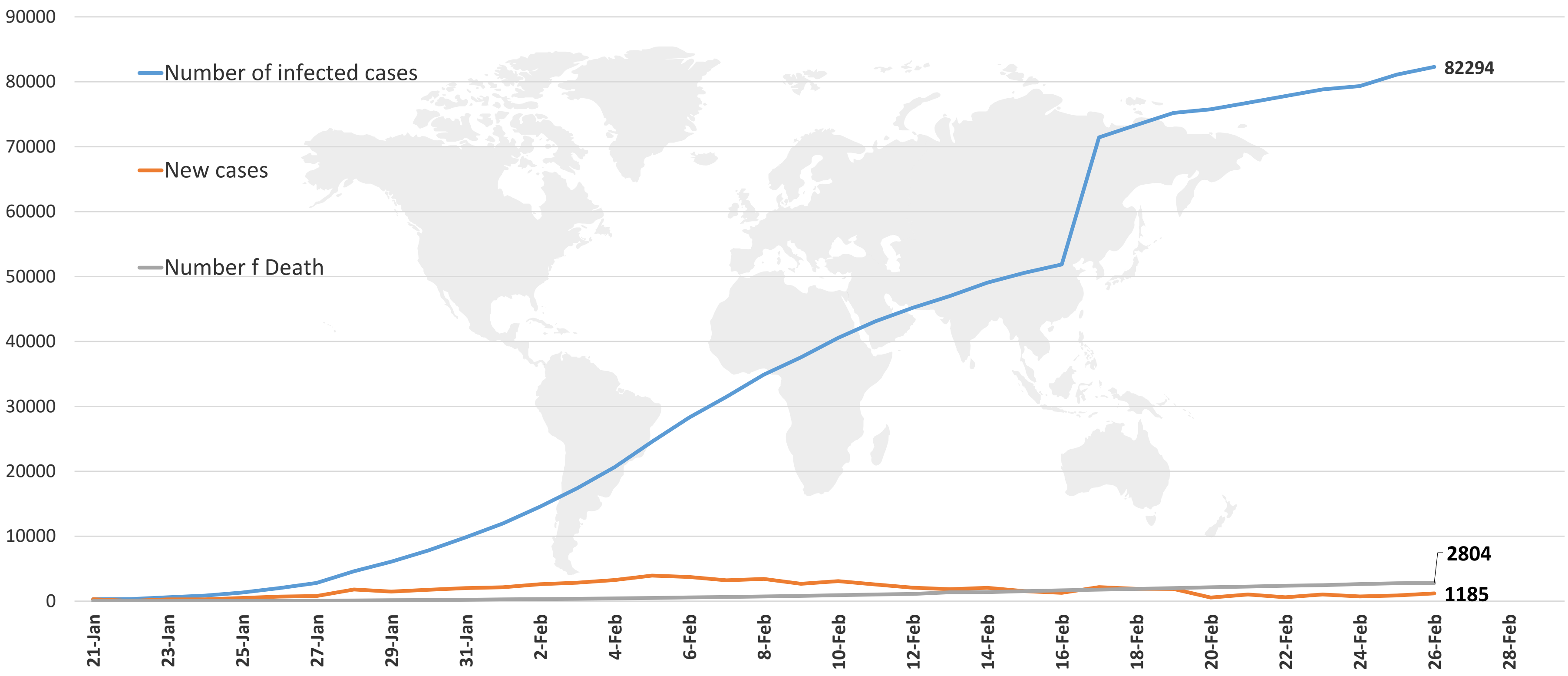
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)



EPIDEMIOLOGY:

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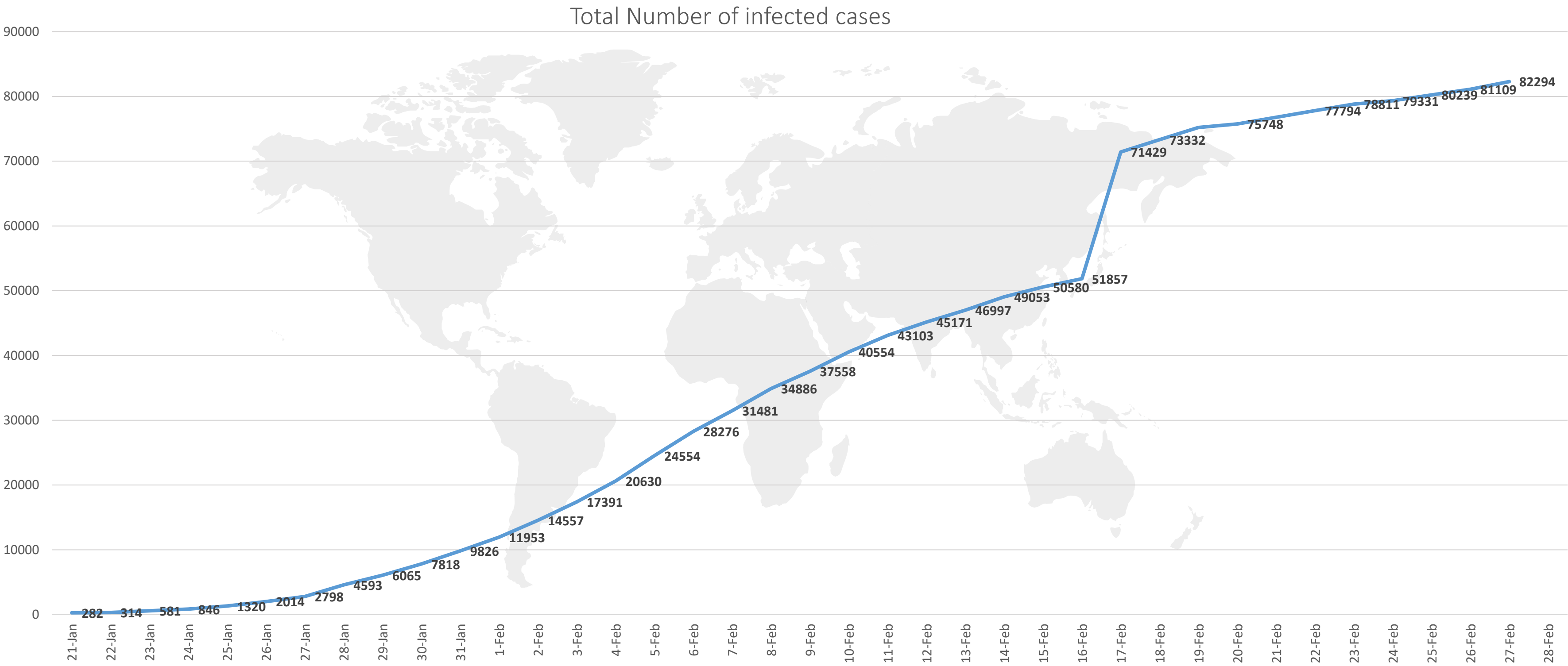
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 2: Number of infected cases (January 22st to February 27th, 2020)



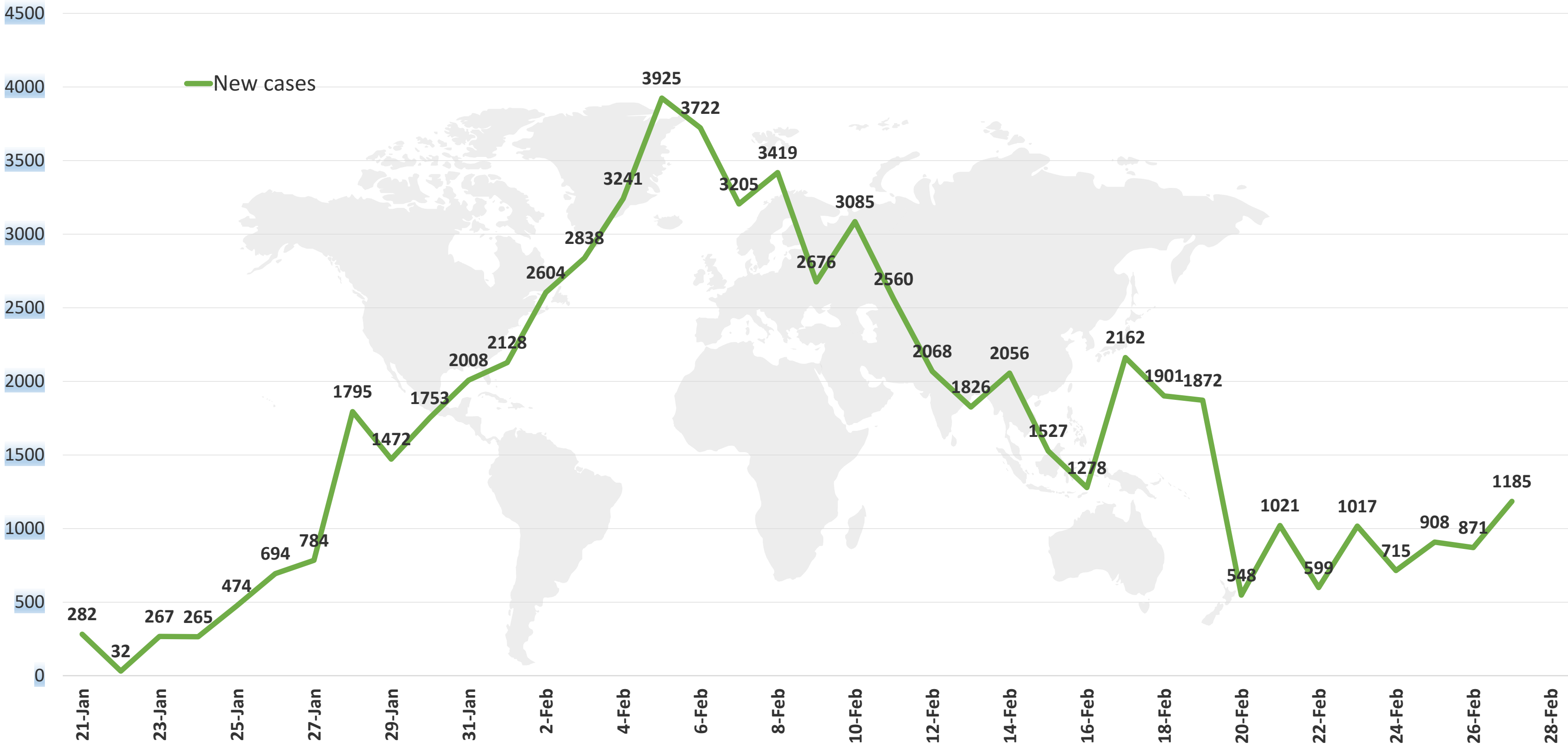
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 3: Number of new cases (January 21st to February 27th , 2020)



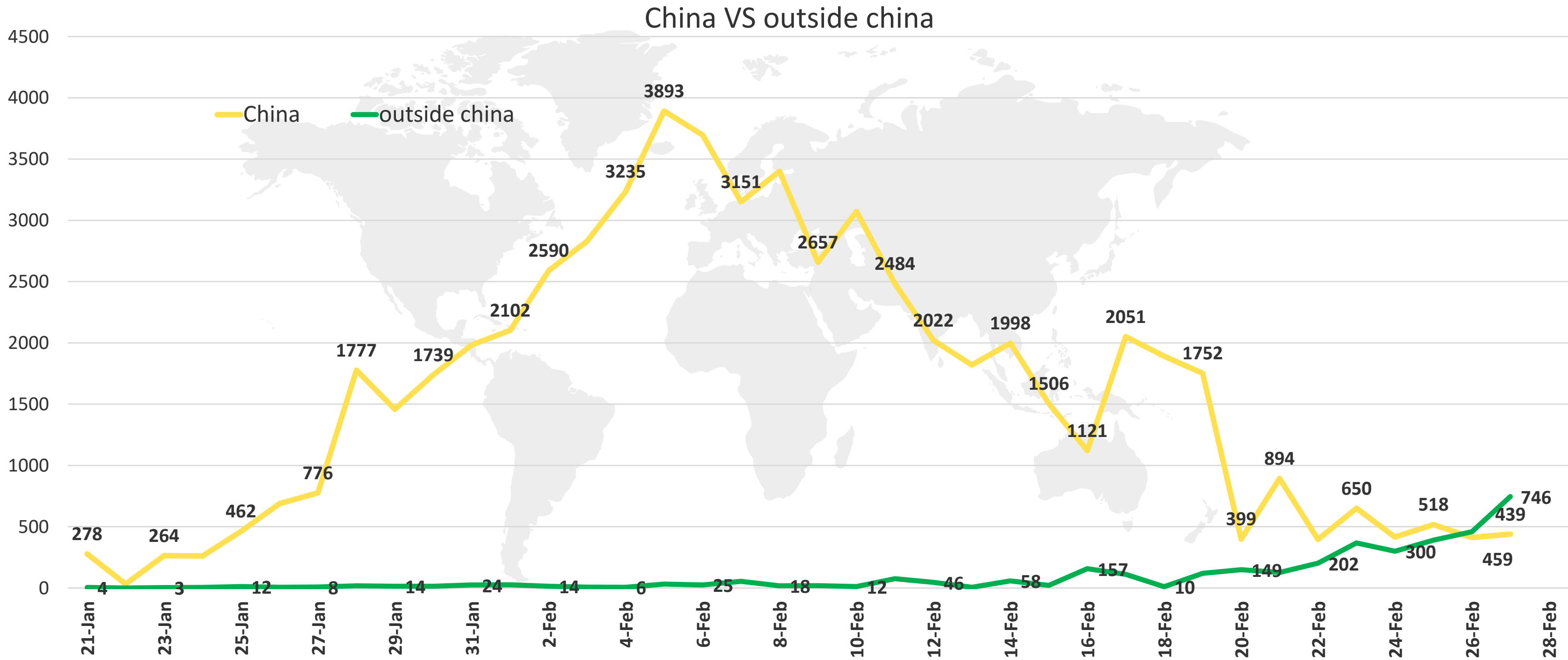
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 4: Number of new cases in China versus outside China (January 22st to February 27th , 2020)



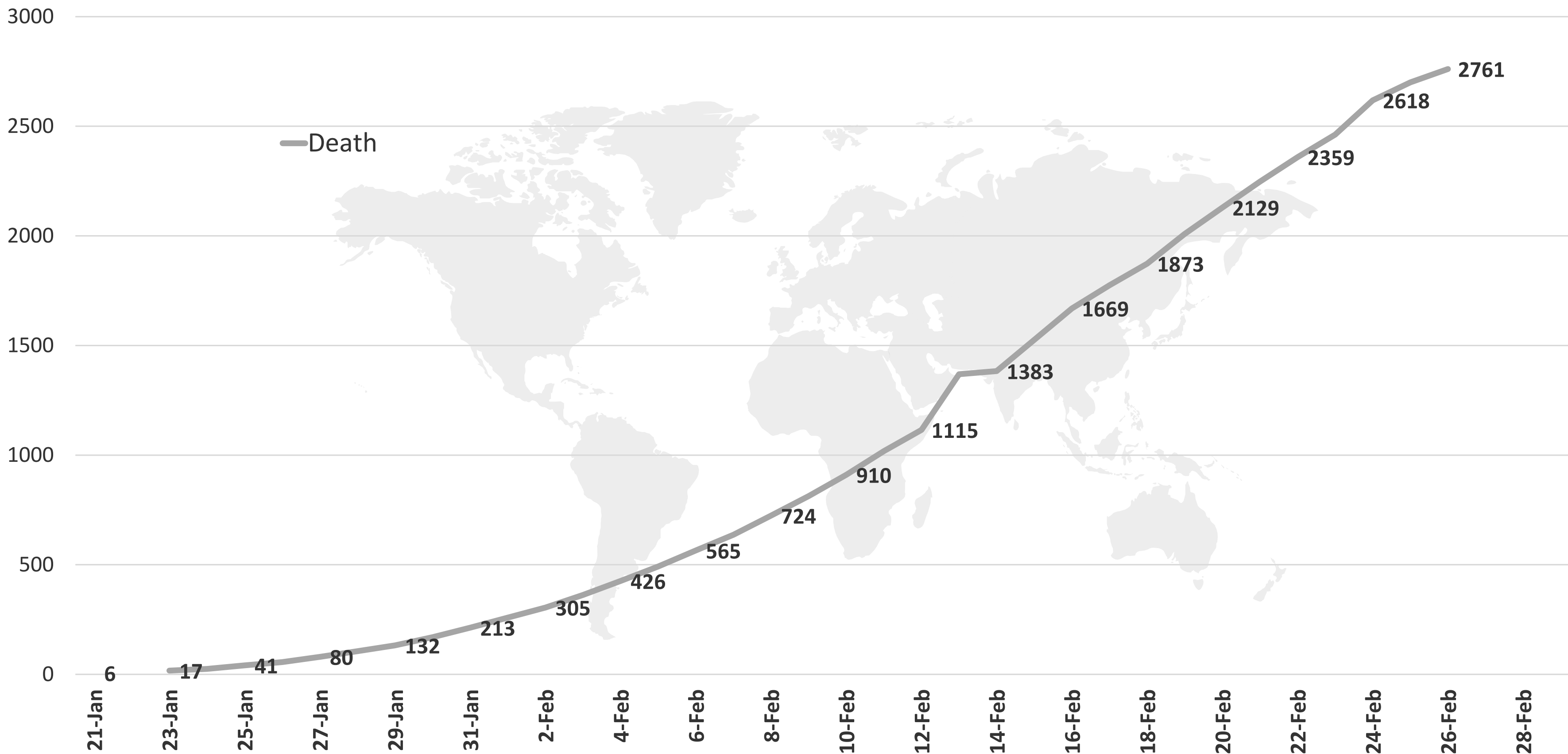
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 5: Number of total deaths (January 21st to February 27th , 2020)



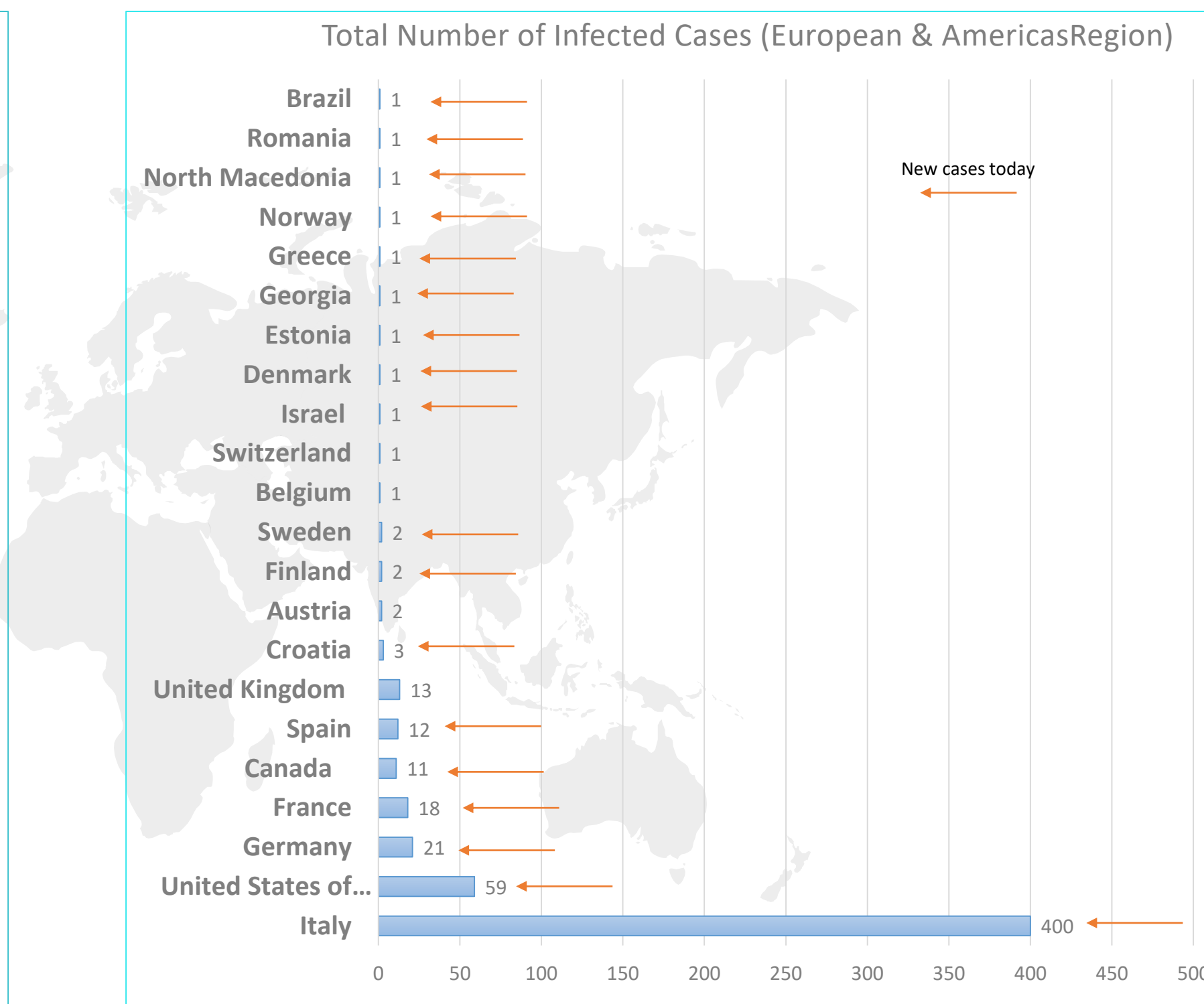
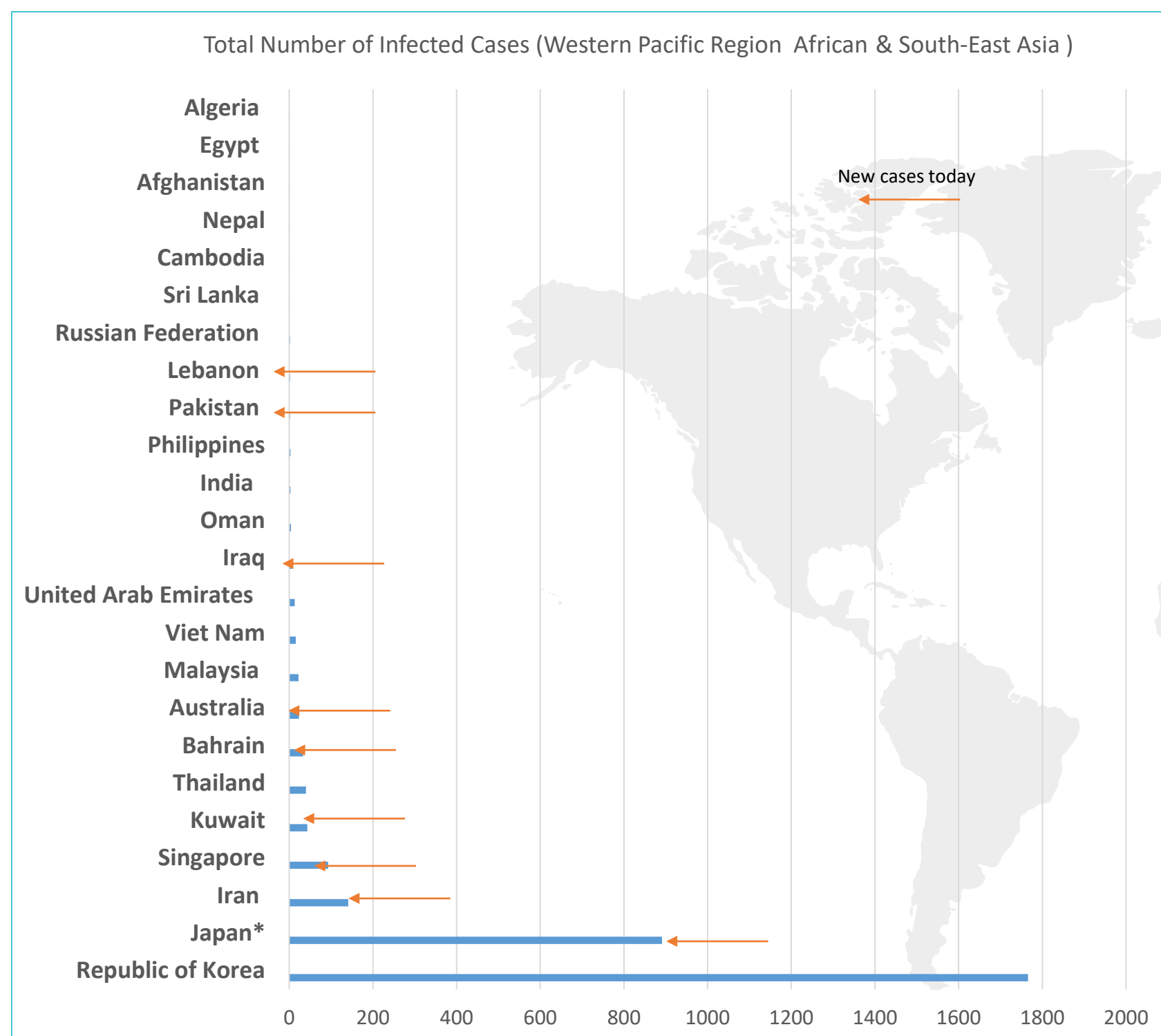
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 6: Total number of cases outside China per country (January 21st to February 27th , 2020)



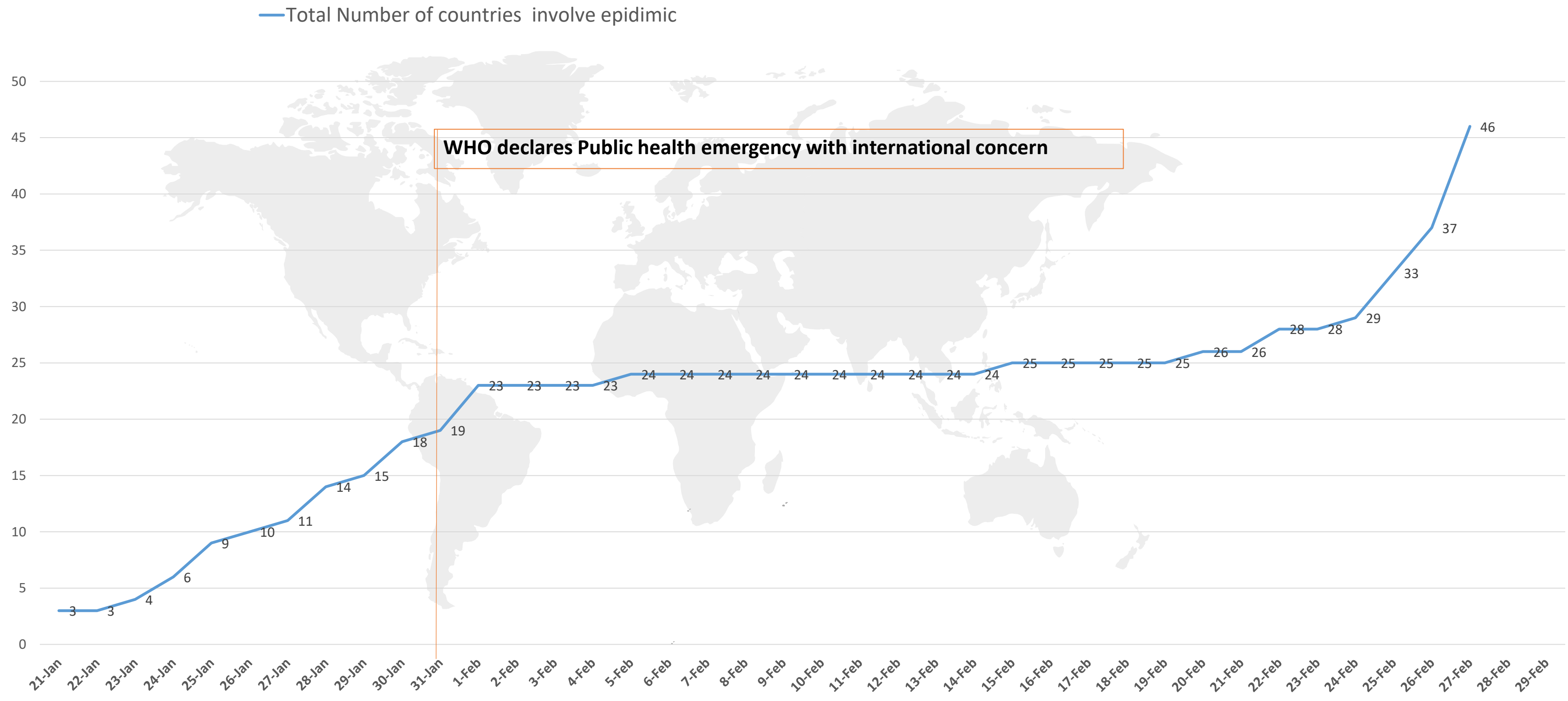
Line graph published by Abu Dhabi Public Health Center 2020.

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.

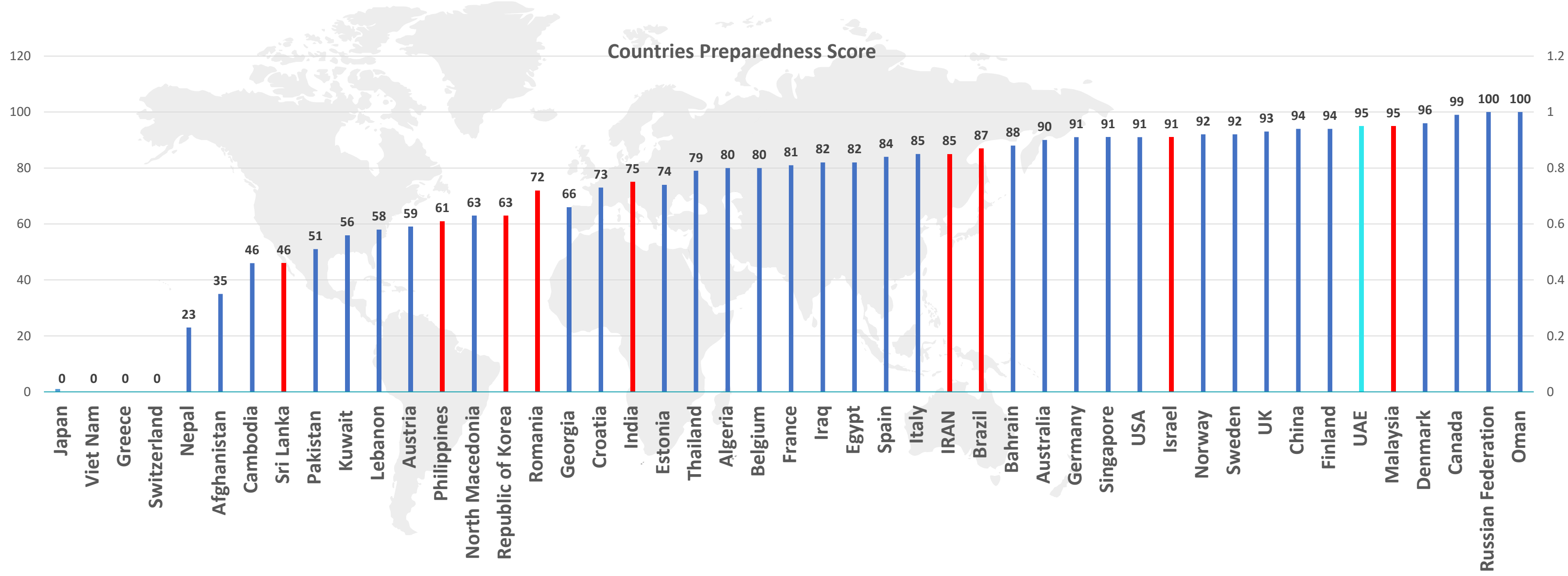
Data resources: [WHO](#)



EPIDEMIOLOGY:

Figure 9 : Capacities of countries reporting COVID19 cases

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



Line graph published by Abu Dhabi Public Health Center 2020.

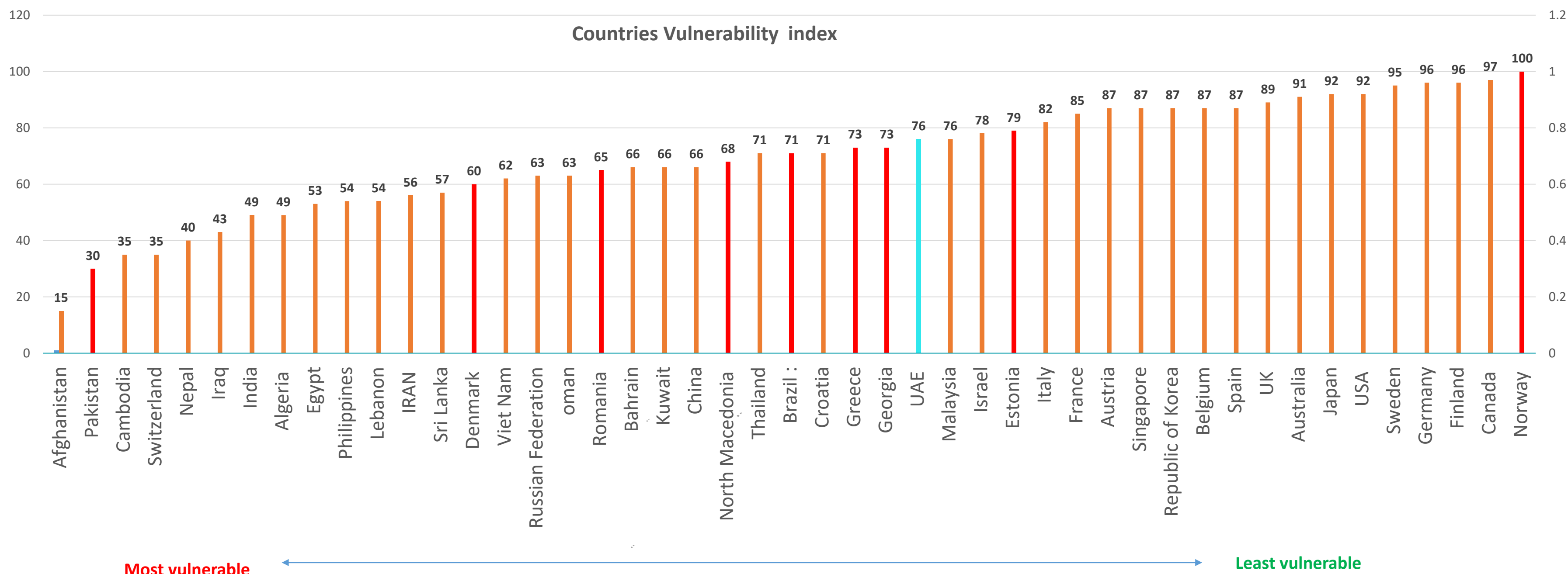
Data resources : [SPAR score](#) , [IDVI score](#)



EPIDEMIOLOGY:

Figure 9 : Capacities of countries reporting COVID19 cases

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



Most vulnerable

Least vulnerable

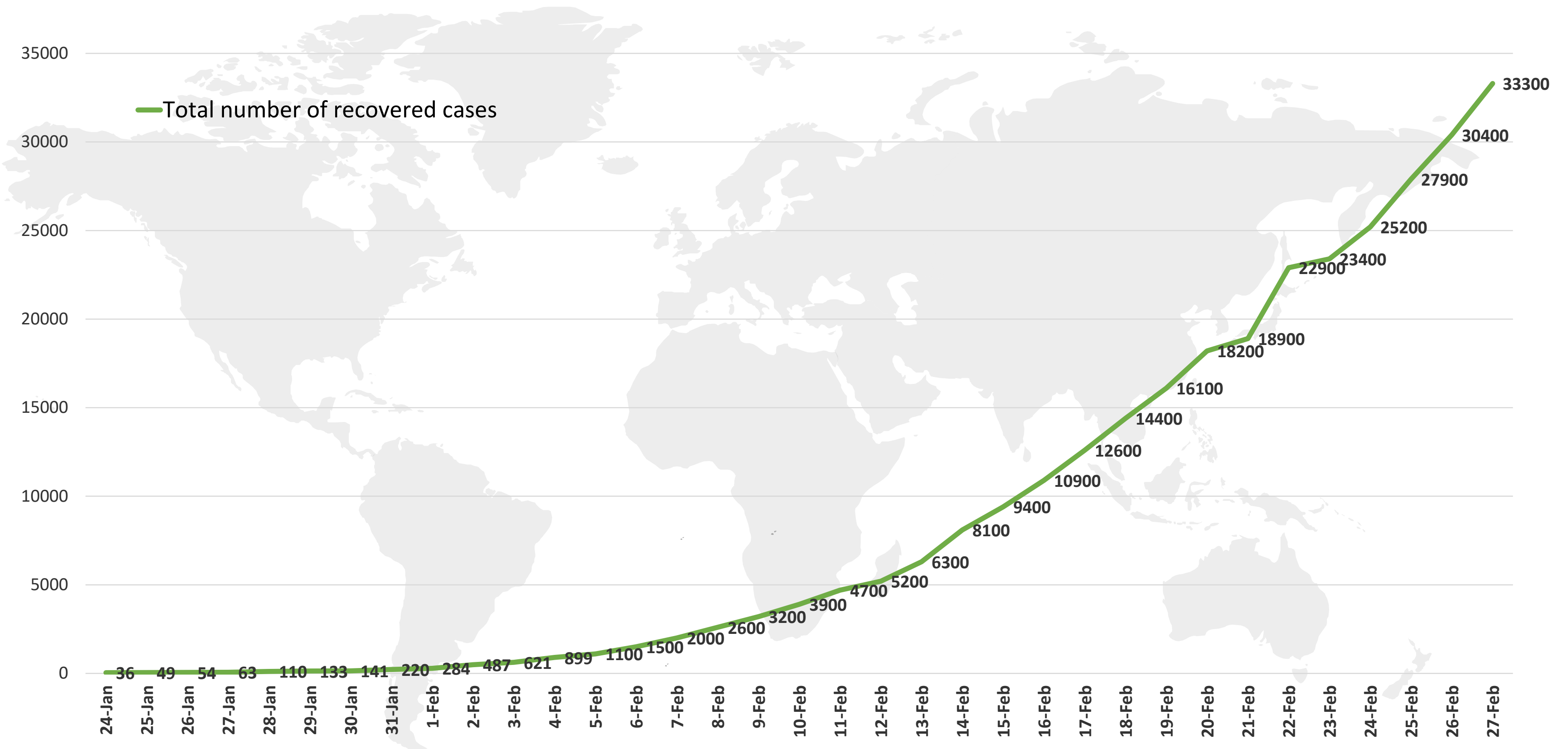
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

Figure 9: Total recovered cases of COVID-19. (January 24th to February 27th, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.

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

Retrieved at 19:30

EPIDEMIOLOGY:

WHO report 27/2/2020 important points (1/2)

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- **Nine new Member States (Brazil, Denmark, Estonia, Georgia, Greece, Norway, Pakistan, Romania, and North Macedonia)** reported cases of COVID-19 in the past 24 hours.
- WHO and the World Tourism Organization released a joint statement regarding responsibility and coordination on tourism and COVID-19.
- **UNWTO and WHO stand ready to work closely with all those communities and countries** affected by the current health emergency, to build for a better and more resilient future.
- **Travel restrictions** going **beyond** these may **cause unnecessary interference** with international **traffic**, including **negative repercussions** on the tourism sector..
- WHO is **utilizing an international network of expert laboratories** to provide support in the detection of the COVID-19 virus globally.

EPIDEMIOLOGY:

WHO report 27/2/2020 important point (2/2)

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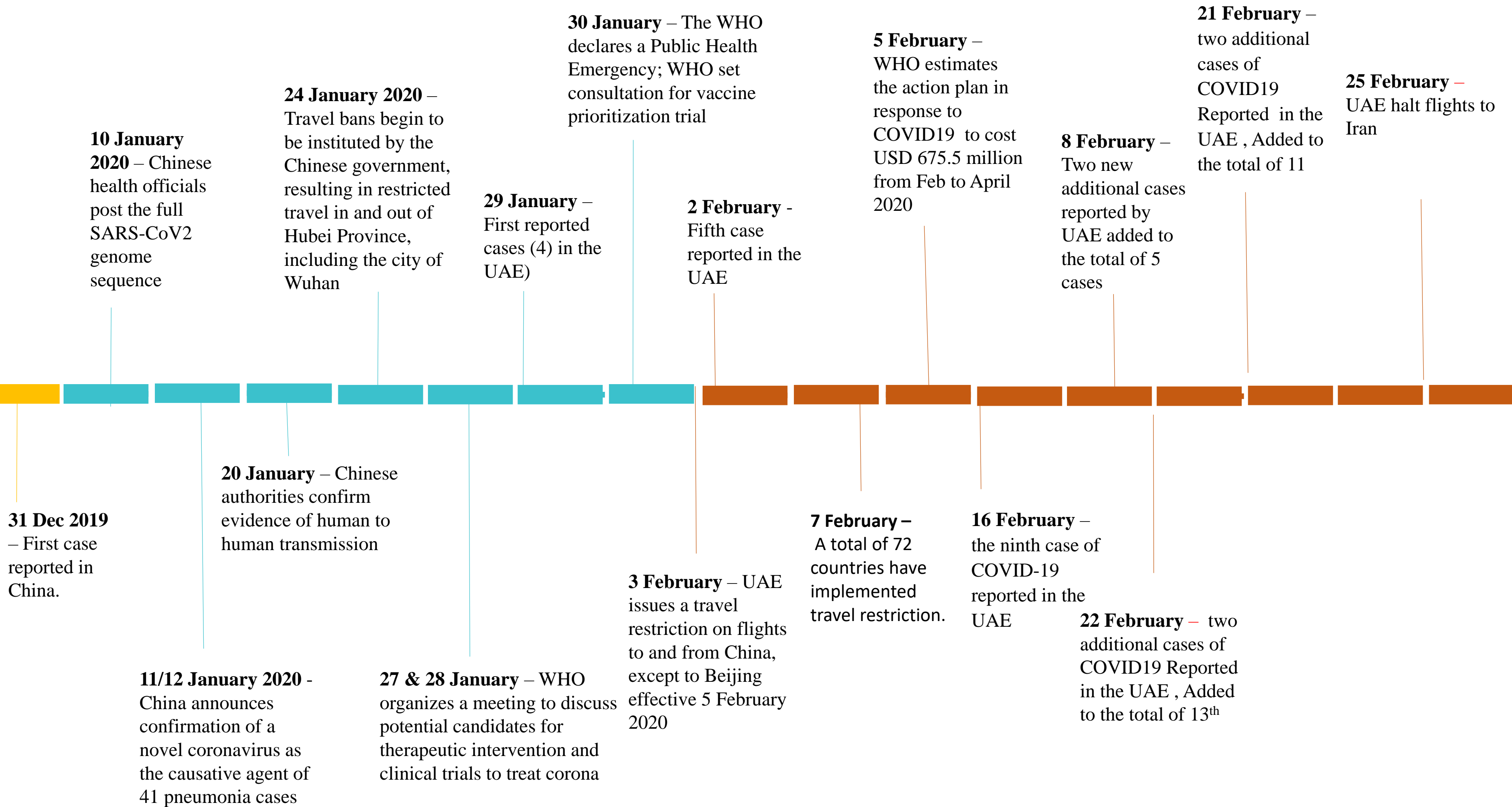
- WHO have published two guidelines one on **detection** of the virus and the second on the **biosafety** in laboratories. WHO is currently working on developing guidance **for the international shipment of specimens**
- An urgent need to rapidly scale up diagnostic capacity to **detect** and **confirm** cases of COVID-19. WHO has taken a three-pronged approach to enhance global diagnostic capacity for the COVID-19 virus:
 - 1) Developing a WHO network of **15 COVID-19 reference laboratories**
 - 2) **Strengthening national capacity** for detection of the COVID-19 virus.
 - 3) Ensuring **ongoing test availability**. WHO has procured a **commercial assay** (manufactured under ISO:13485) with strong performance data and shipped to over **150 laboratories** globally

As reports of asymptomatic cases increase, the need for reliable serology testing is becoming more urgent. There are a number of groups working on this and developments are being monitored.

TIMELINE

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CLINICAL FEATURES AND TRANSMISSION



NO UPDATE

Article 1: Presumed Asymptomatic Carrier

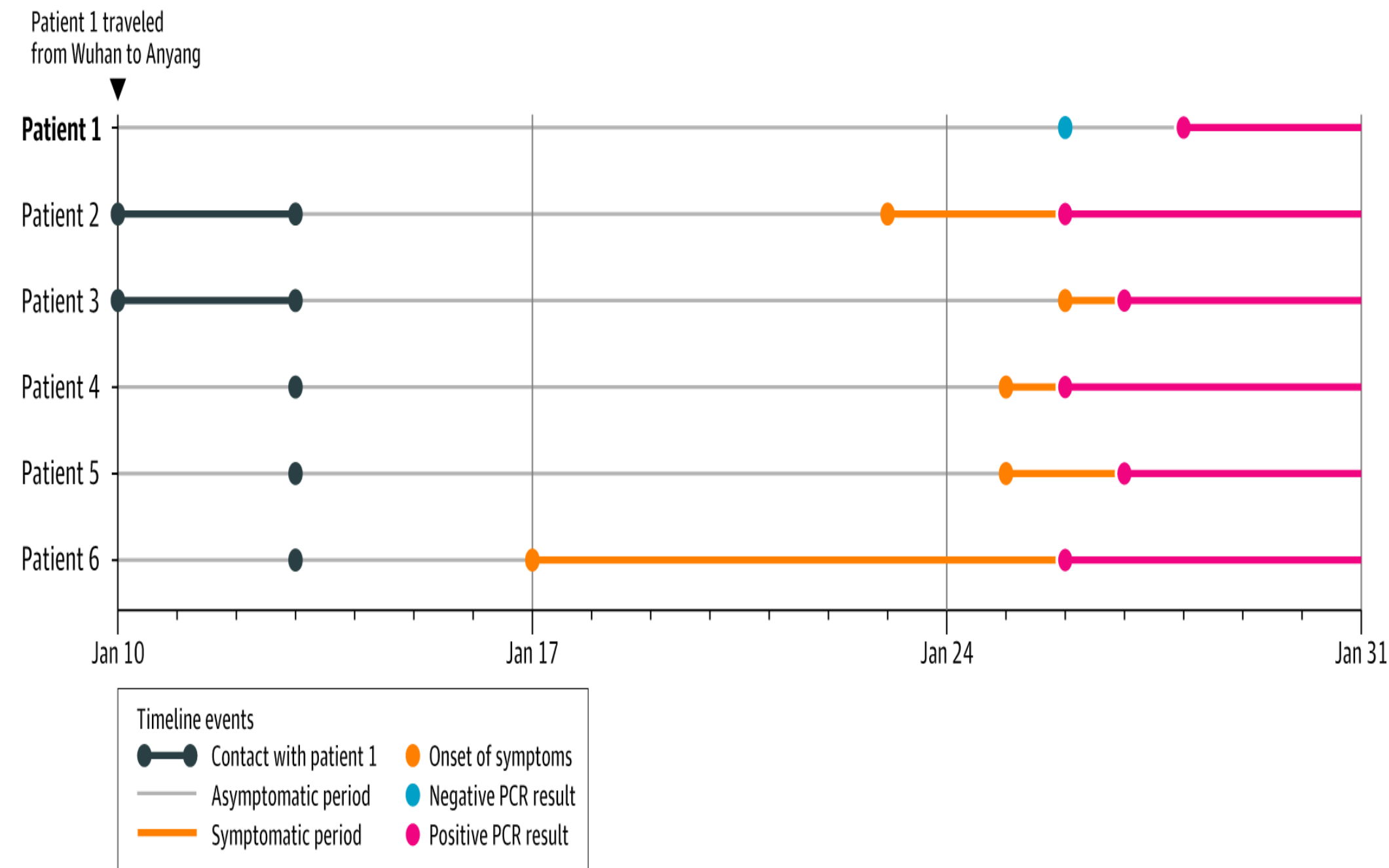
Transmission of COVID-19

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 28th Jan it become positive. Patient continues to have no symptoms and in in 5th and 8th 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: **NEW 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



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



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

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>