



Scientific Research Monitoring on COVID-19

22 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:

13. Children have mild symptoms compared with adults. **Further studies of this population is needed.**
14. 80% of infected patients have mild symptoms and 1.2% may present without symptoms.



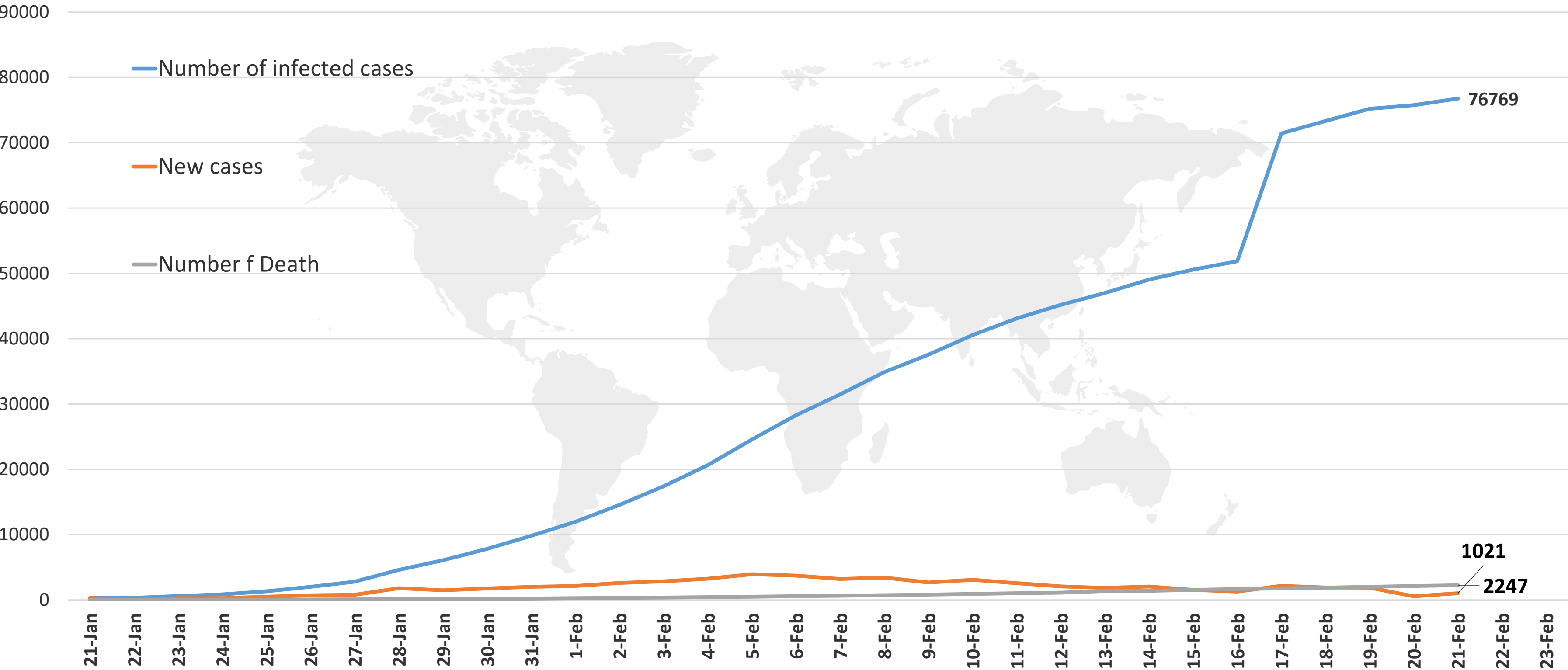
NEW UPDATES FROM TODAY'S REPORT:

- **Epidemiology section:** The WHO recommend that raw meat and milk should be avoided.



EPIDEMIOLOGY:

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



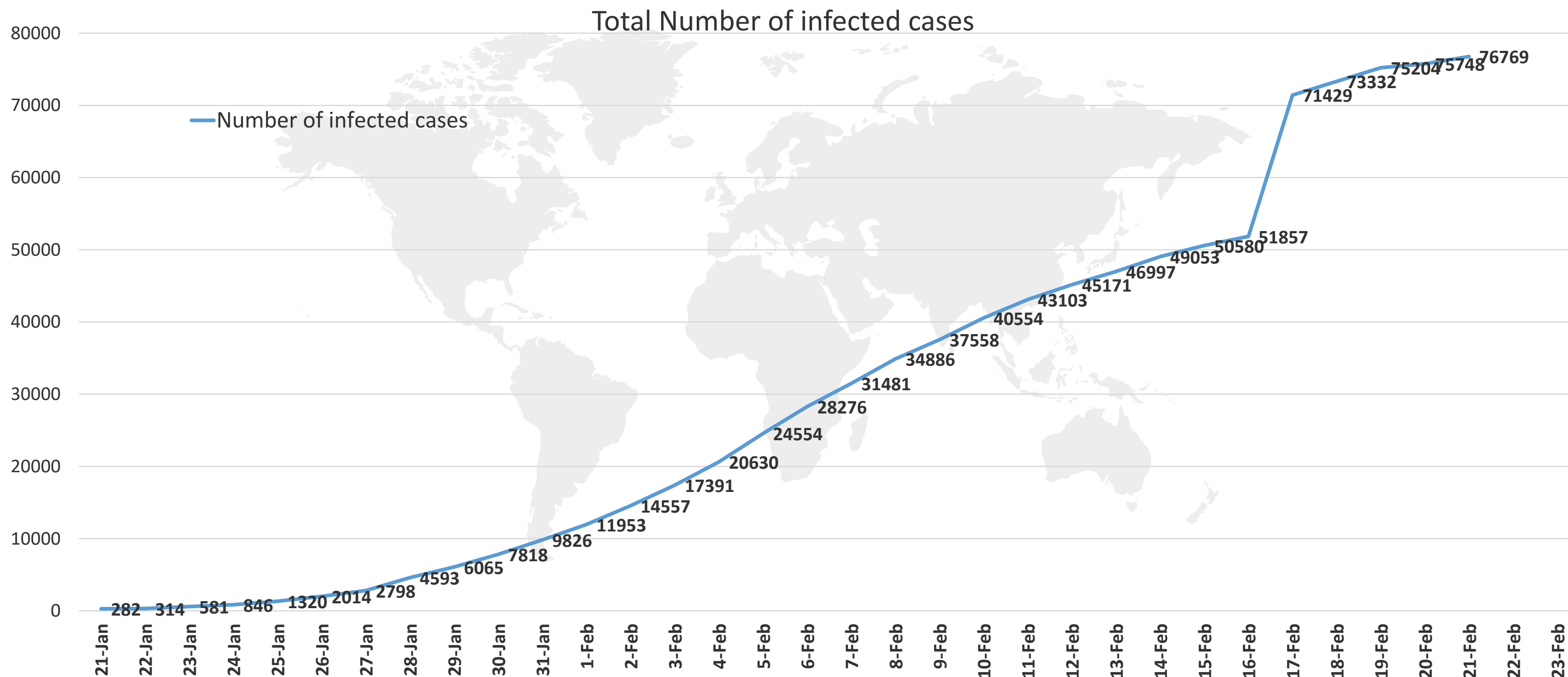
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

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



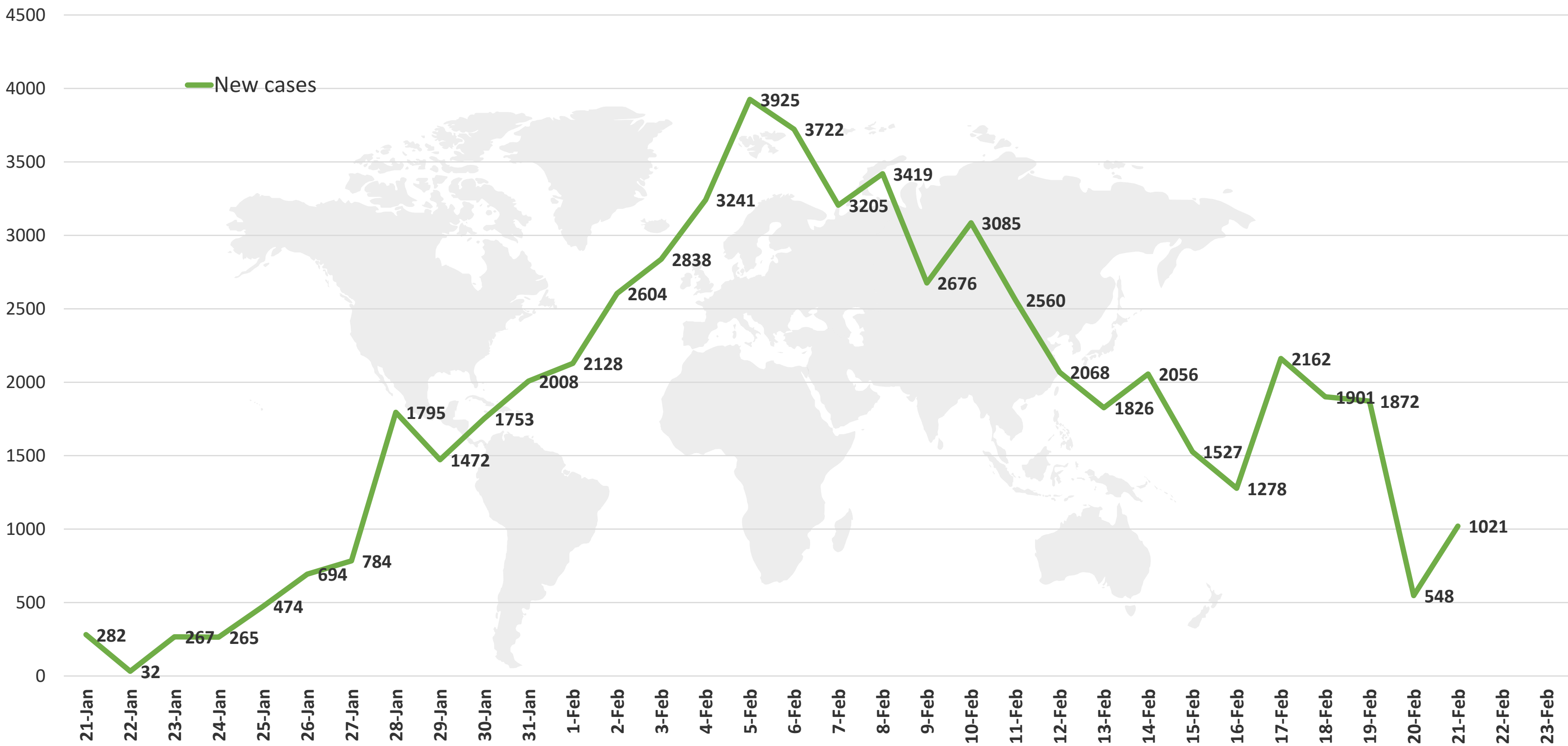
Line graph published by Abu Dhabi Public Health Center 2020.

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EPIDEMIOLOGY:

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



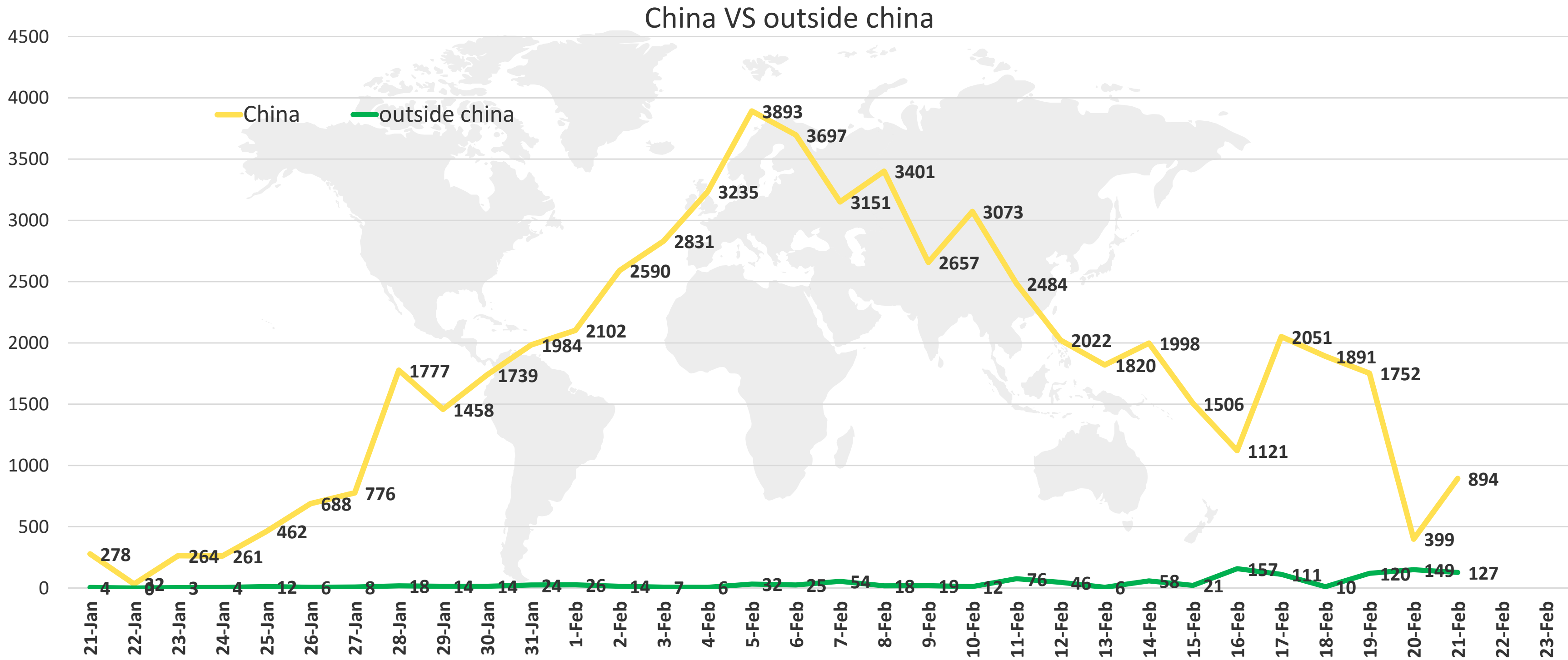
Line graph published by Abu Dhabi Public Health Center 2020.

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)



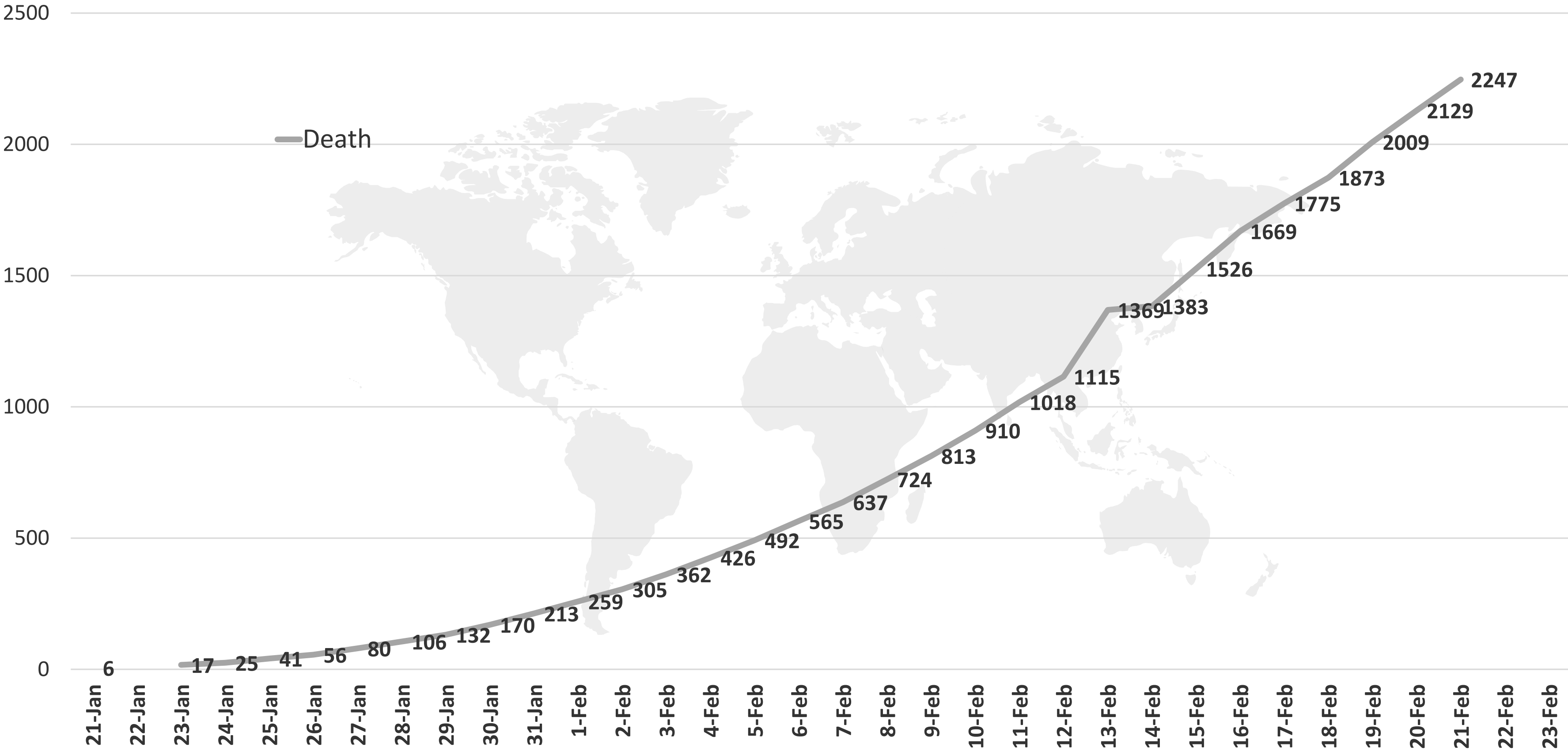
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

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



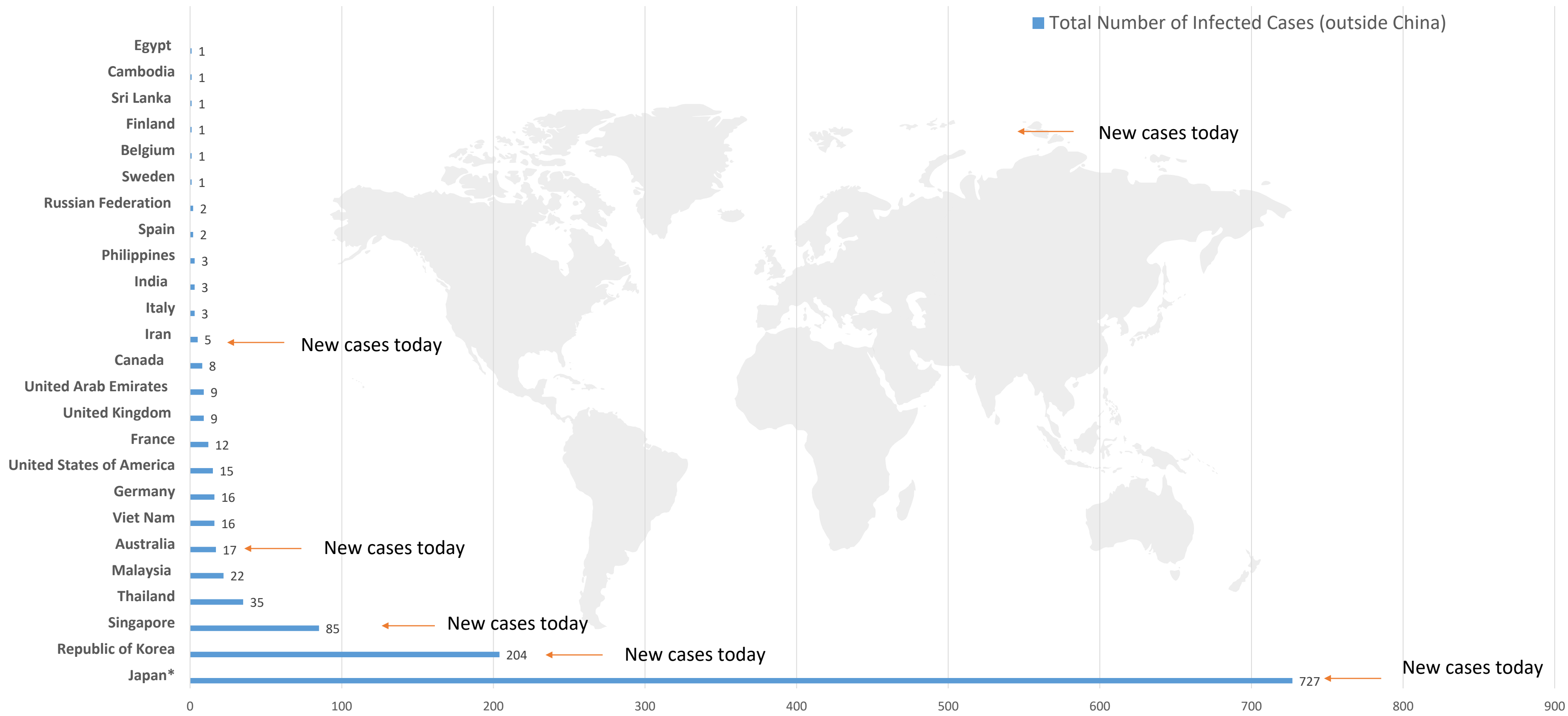
Line graph published by Abu Dhabi Public Health Center 2020.

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



EPIDEMIOLOGY:

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



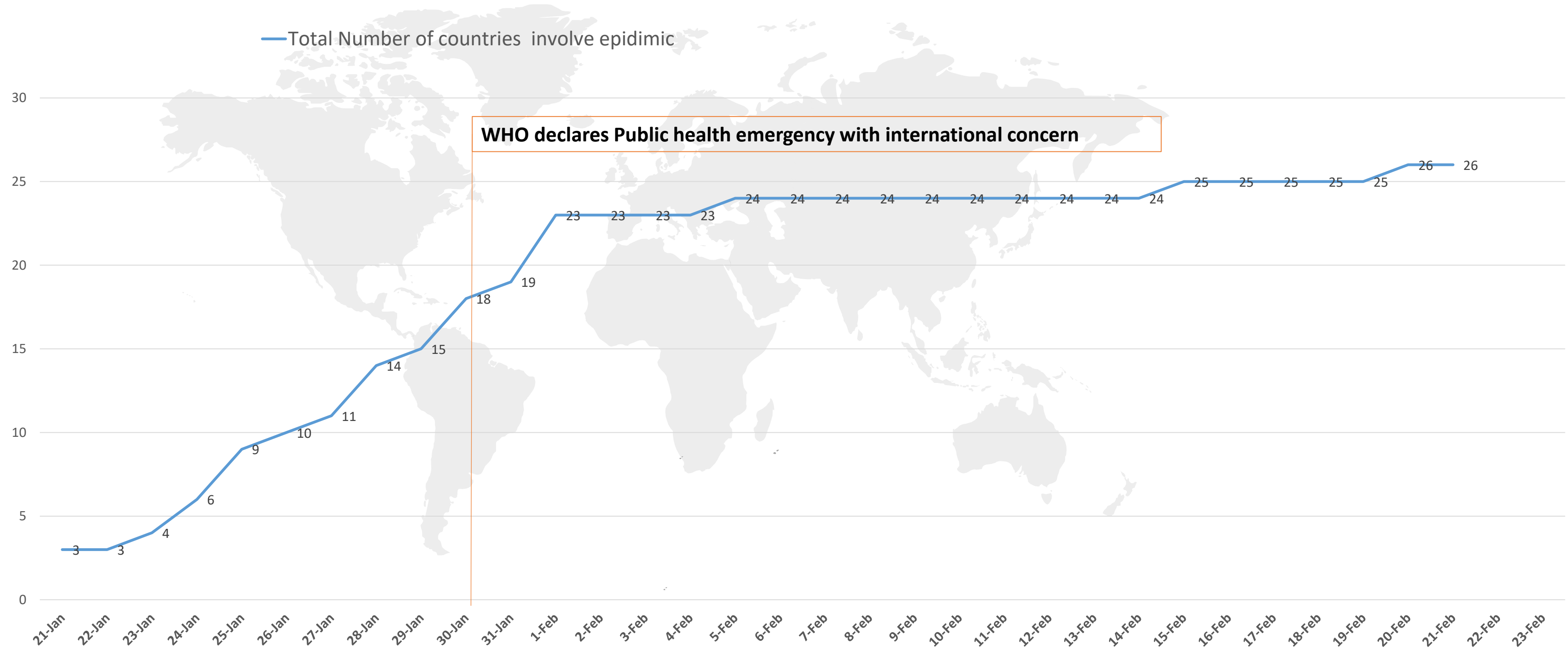
Line graph published by Abu Dhabi Public Health Center 2020.

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:

WHO report 21 /2/2020 important points



- No new countries reported cases of COVID-19 in the past 24 hours.
- The national food safety authorities are **seeking more information** on the potential for **persistence of SARS-CoV-2**, which causes COVID-19, on foods traded internationally as well as the **potential role of food in the transmission of the virus**. Currently, there are **investigations** conducted to evaluate the **viability and survival time of SARS-CoV-2**. As a general rule, the **consumption of raw or undercooked animal / milk products should be avoided**.
- Studies conducted on SARS-CoV and MERS-CoV indicate that these viruses can **persist on different surfaces for up to a few days**.
 - At refrigeration temperature (4°C), **MERS-CoV** can remain viable for **up to 72 hours**.
 - coronaviruses are **thermolabile**, which means that **they are susceptible to normal cooking temperatures (70°C)**. Therefore, as a general rule, **the consumption of raw or undercooked animal products should be avoided**.
 - **MERS-CoV and SARS-CoV are susceptible for most of disinfectants and there is no indication so far that SARS-CoV-2 behaves differently**.



EPIDEMIOLOGY:

Figure 6: Comparison of three viruses

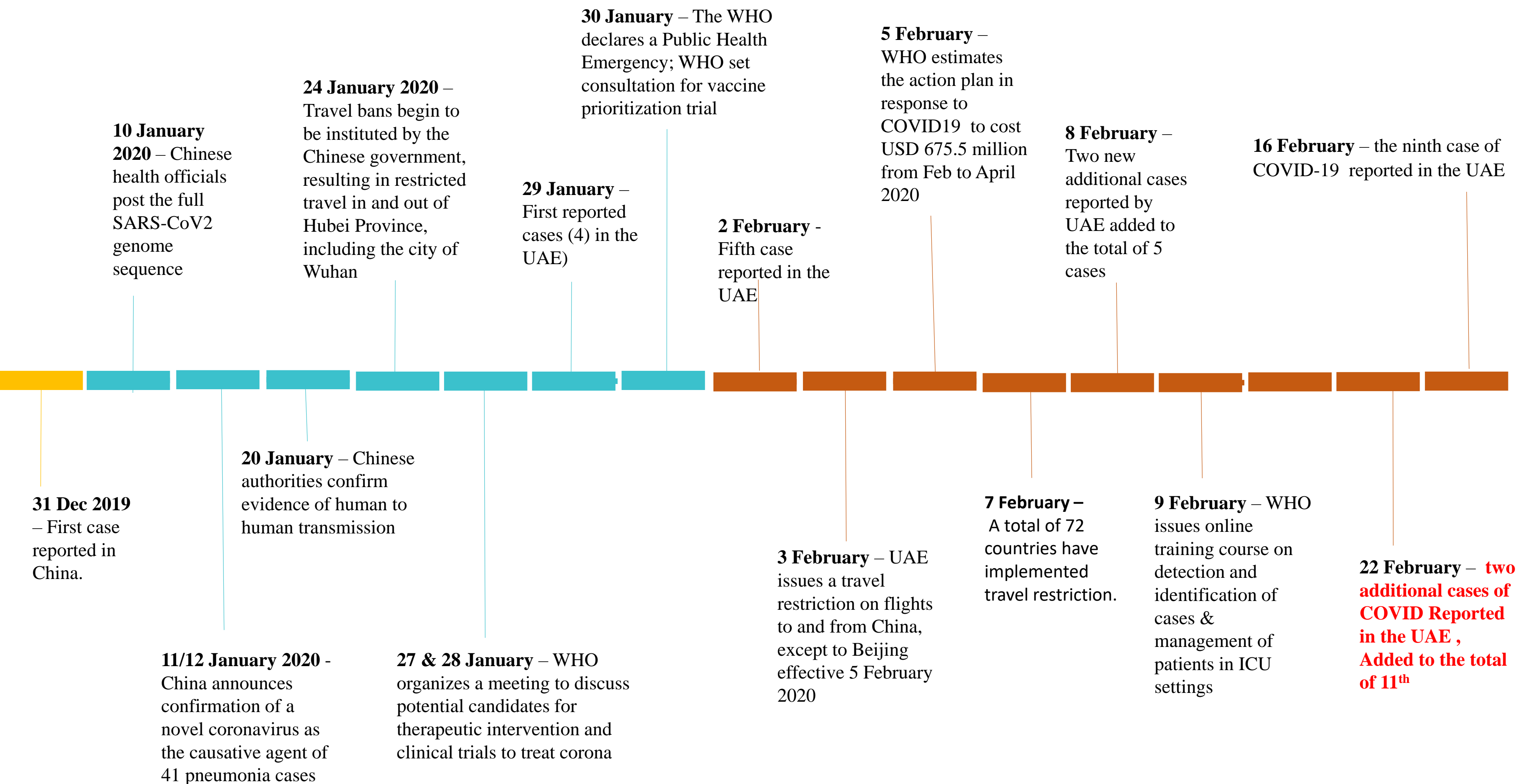
Virus	SARS COV2	SARS-COV	MERS-COV
Date of epidemic	2019	2002	2012
Countries	25	37	27
Infected cases	76769	8000	2494
Death cases	2247	800	858
Mortality	2.3%* ³	10%	> 35 %

- Data until February 21, 2020
- *Fatality rate (preliminary).

TIMELINE

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PUBLIC HEALTH RESPONSE **NO UPDATE**

Article 1: Title: Economic Impacts of Wuhan 2019-nCoV on China and the World.

Published: 12 February 2020

Summery finding: without urgent global actions to curtail the Wuhan 2019-nCoV within the shortest possible time, China is expected to lose up to \$62 billion in the first quarter of the year, while the world is likely to lose over \$280 billion within the same period.

Link: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30374-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30374-3/fulltext)

Article 2: Title: An updated estimation of the risk of transmission of the novel coronavirus (2019-nCov).

Published: 11th February 2020.

Summery finding: The author findings suggest that **the best measure to control the disease is persistent and strict self-isolation.**

Link: <http://www.sciencedirect.com/science/article/pii/S246804272030004X>

Article 3 : Title: : 2019-nCoV Pneumonia: Relationship to Negative RT-PCR Testing.

Published: 12th February 2020.

Summery finding: **one nasal swap might not be enough to detect cases (Swab missed 5 cases out 176, and became positive after repetitive swab between 2-8 days later)**

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

** Note the article is still under peer-review. However, the article is indexed by the WHO research database*



PUBLIC HEALTH RESPONSE *NO UPDATE*

Article 4 : Title: Effectiveness of airport screening at detecting travelers infected with novel coronavirus (2019-nCoV)

Published: 6 Feb 2020.

Summery finding: Under generally conservative assumptions on sensitivity, it was found that **46 out of 100 infected travelers will enter undetected.** As well it was found that exit or entry screening at **airports** for initial symptoms, via **thermal scanners or similar**, is **unlikely to prevent passage of infected travelers into new countries or regions where they may seed local transmission**

Link: <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.5.2000080#r11>

** Note the article is still under peer-review. However, the article is indexed by the WHO research database*



CLINICAL FEATURES AND TRANSMISSION *NO UPDATE*

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Clinical features:

Title: The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) - China, 2020

Published 17 February 2020.

Link:

<http://magictour.free.fr/study17.pdf>

Summery : All COVID-19 cases (# 72,314) reported through February 11, 2020 were extracted from China's Infectious Disease Information System. Study includes the following summary of patient by age group and patient characteristics, fatality rate / mortality rate, viral spread, health care worker analysis .

- **61.8% confirmed cases, 22.4% suspected cases, 14.6% clinically diagnosed cases and 1.2 % without symptoms.**
- **80% mild cases and 13.8% sever cases.**
- **2.3% fatality rate .**
- A total of 1,716 health workers have become infected and 5 have died (0.3%)
- **Author conclusion:** the epidemic spread so quickly in 30 days to all china. China need to **prepare** well for **possible rebound** as people are coming from holiday.



CLINICAL FEATURES AND TRANSMISSION *NO UPDATE*

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Articles in special population:

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.

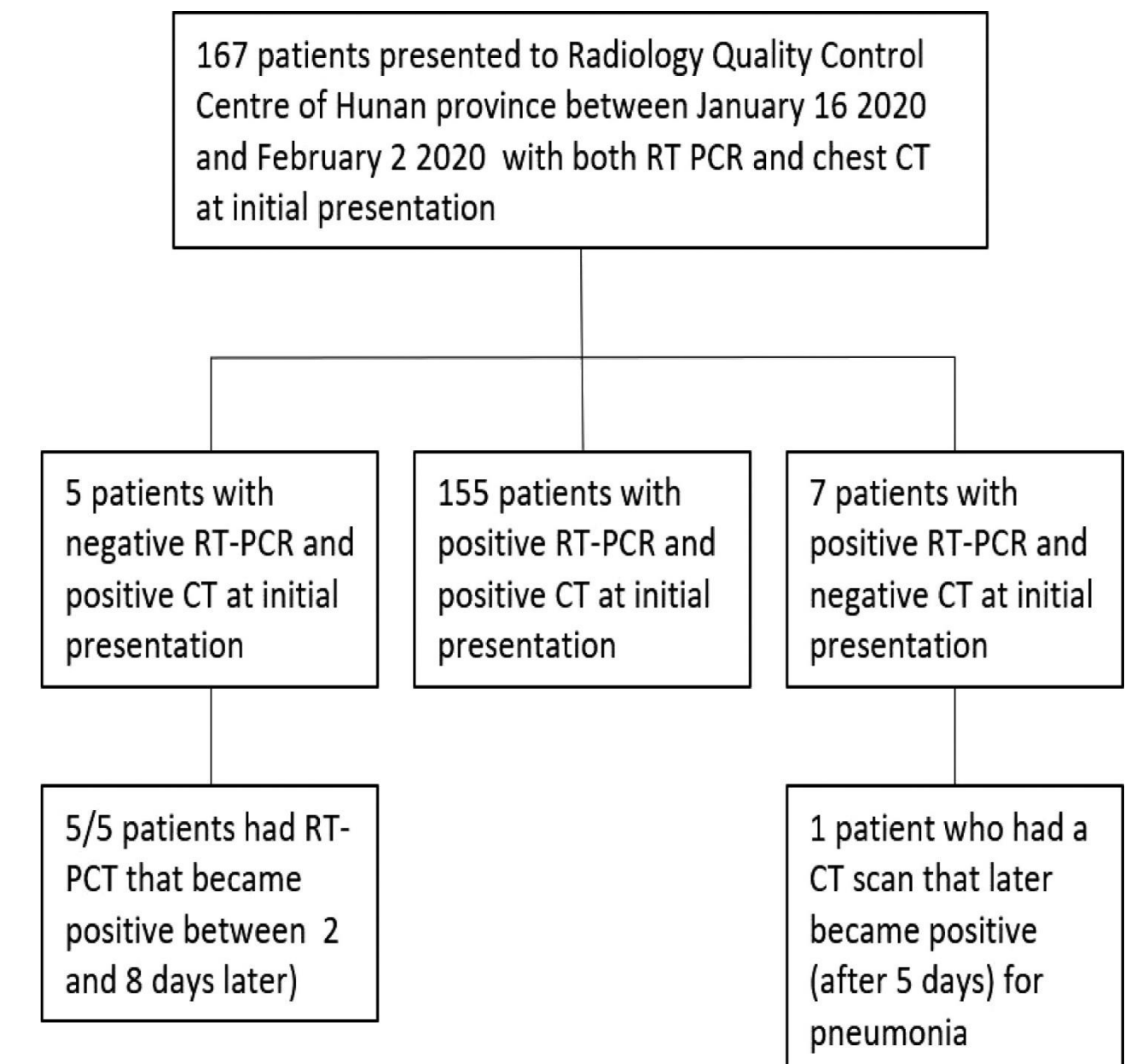
link : <http://www.365heart.com/show/143317.shtml>

** 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

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-RDBBlueprintnCoV-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>