ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Scientific Research Monitoring on COVID-19

01 March 2020

Reported by: (*Public Health Research Section*)

WHAT WE KNOW SO FAR

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

1. The virus have been sequenced and found to be similar to MERS-CoV and SARS-CoV. Research revealed that 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 is 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 are 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 humans are ongoing.**

WHAT WE KNOW SO FAR

7. WHO forum held 11-12 Feb 2020 to mobilize research on COVID19 vaccinations and therapies.

8. WHO issued a response budget for three month starting from February 2020.

9. 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.

10. 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.

11. Isolation is the best measure to control transmission. The epidemic is expected to peak in early March 2020.

12. 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.

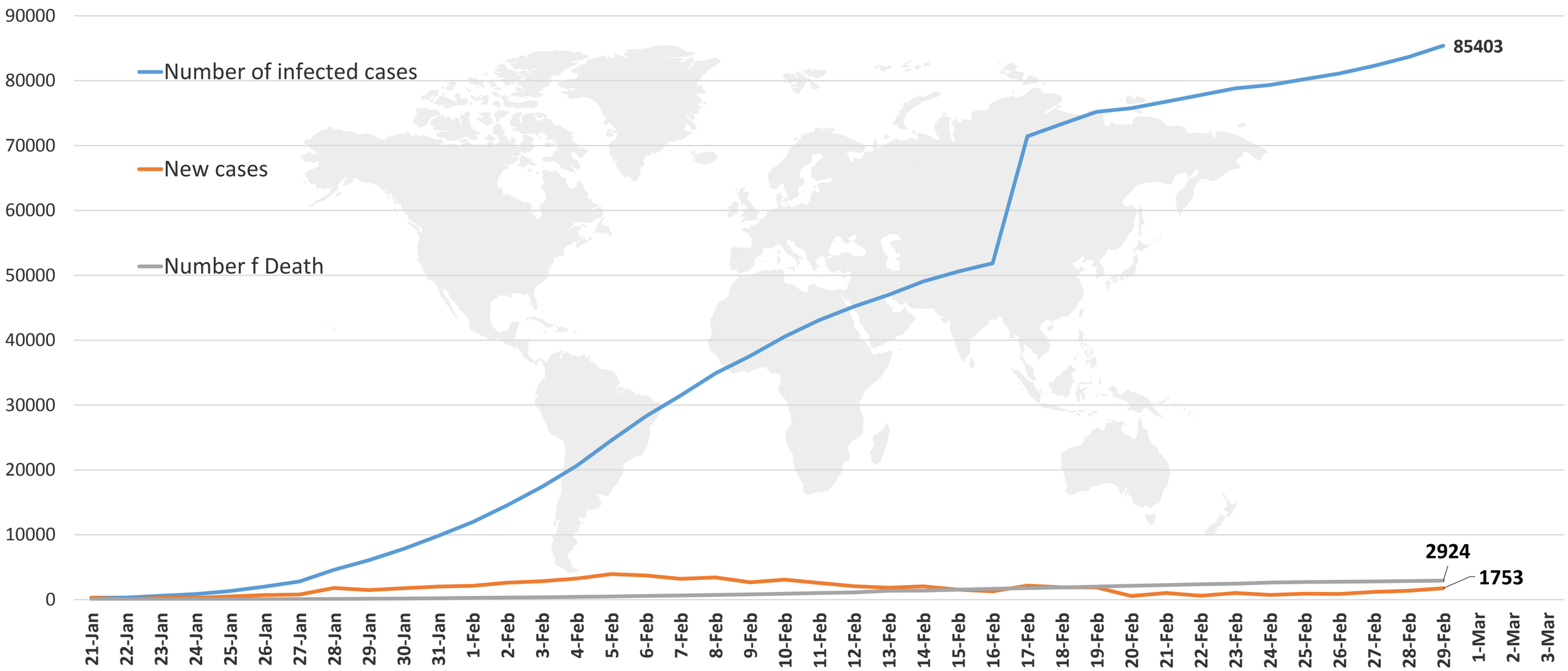
15. People with mild disease, recovery time is about two weeks, while people with severe or critical disease recover within 3 to 6 weeks.

NEW UPDATES FROM TODAY'S REPORT:

- **Epidemiology section:** Two new Member States (Mexico and San Marino) reported cases of COVID19 in the past 24 hours.
- **Clinical feature and transmission section:** Testing positive of COVID19 after recovery raise concern of carrier status .
- **Clinical feature and transmission section:** information in infants infected and hospitalized with COVID19 showed no sever disease.
- **Public Health Response:**
  - The Coalition for Epidemic Preparedness Innovations is developing a vaccine expected to be ready for larger-scale trials as early as June. In addition to exploring AI application (Machine Learning) for innovative screening techniques to identify antivirals.
  - Clinical diagnosis may be made based on symptoms, exposures, and chest imaging in the case of lack of resources to initiate the nucleic acid testing of respiratory tract samples (i.e. throat swabs).

EPIDEMIOLOGY:

Figure 1: Total number of infected, new, and death cases (January 24st to February 29th , 2020)

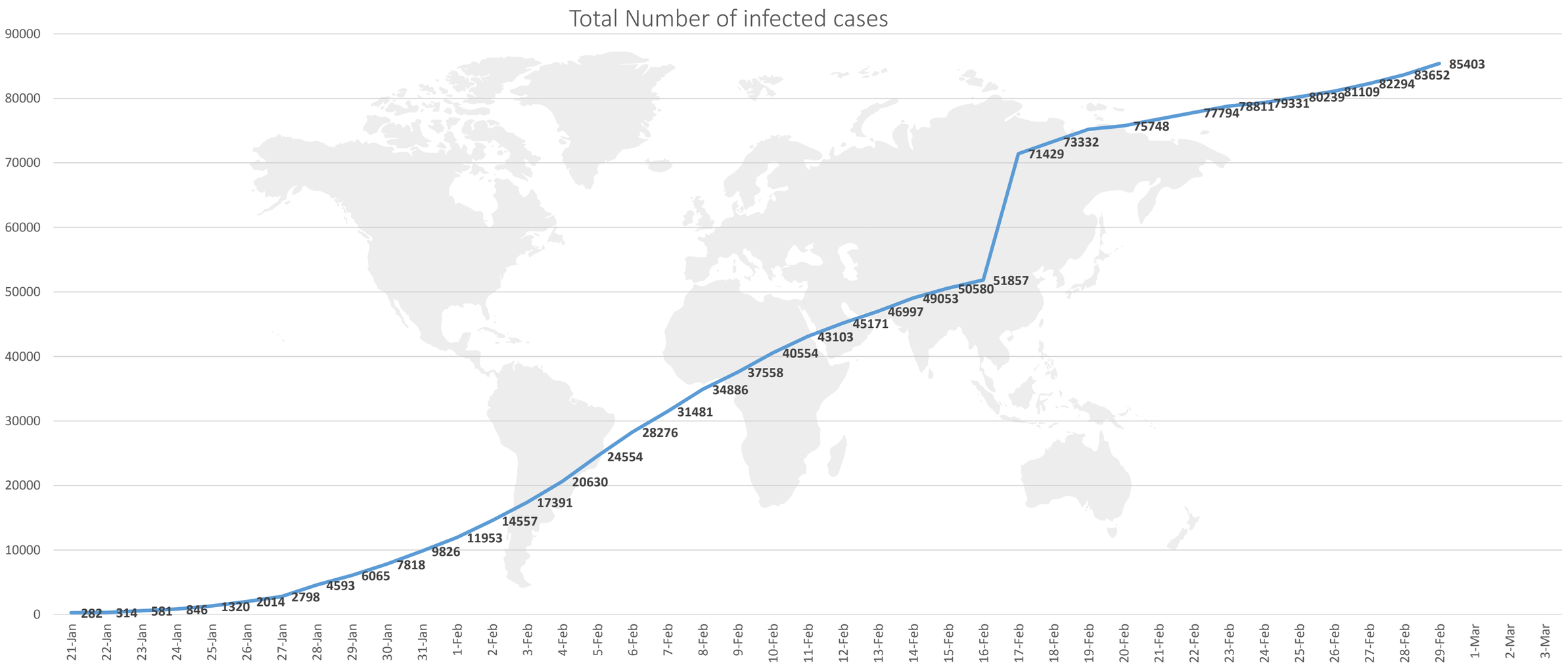


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 2: Number of infected cases (January 22st to February 29th, 2020)

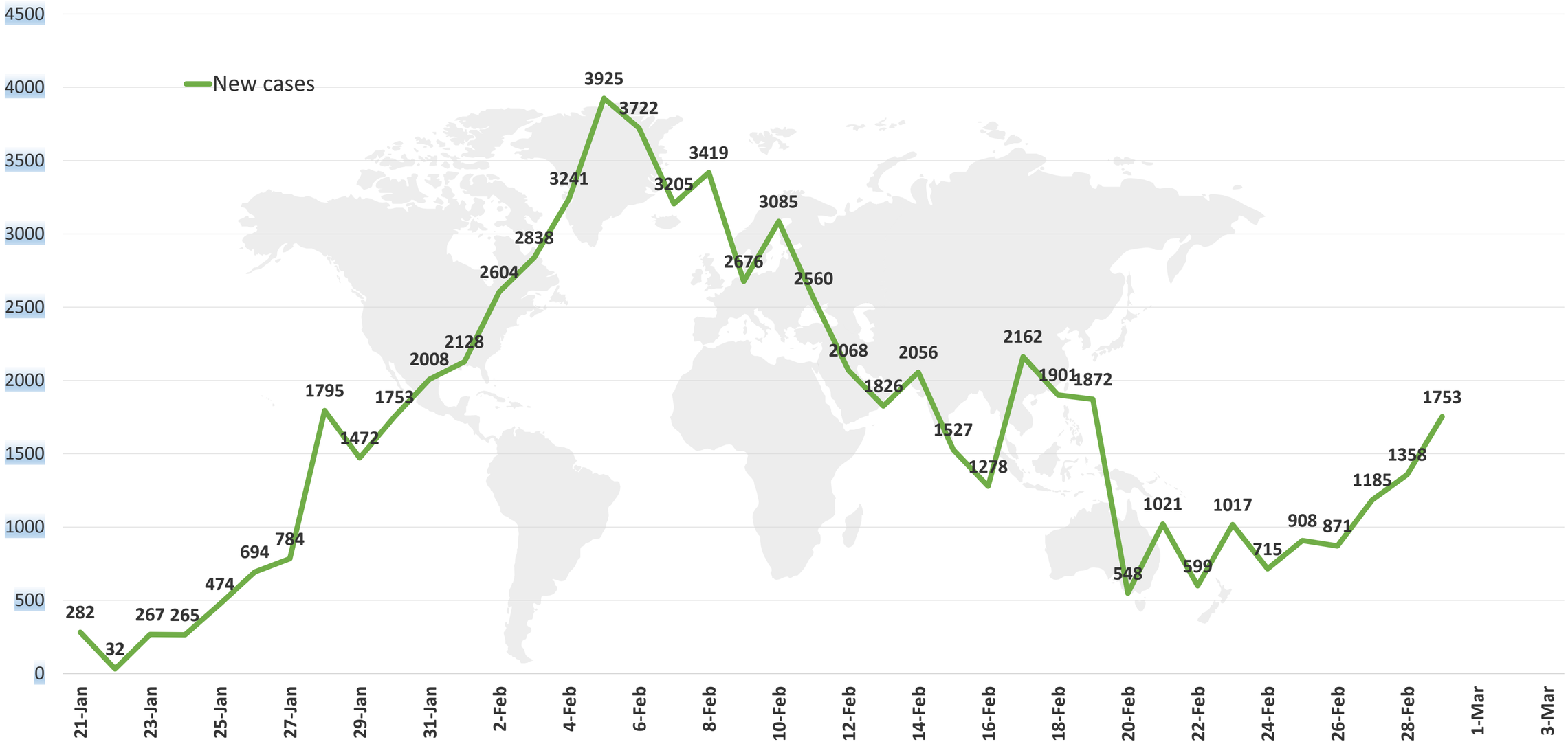


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 3: Number of new cases (January 21st to February 29th , 2020)

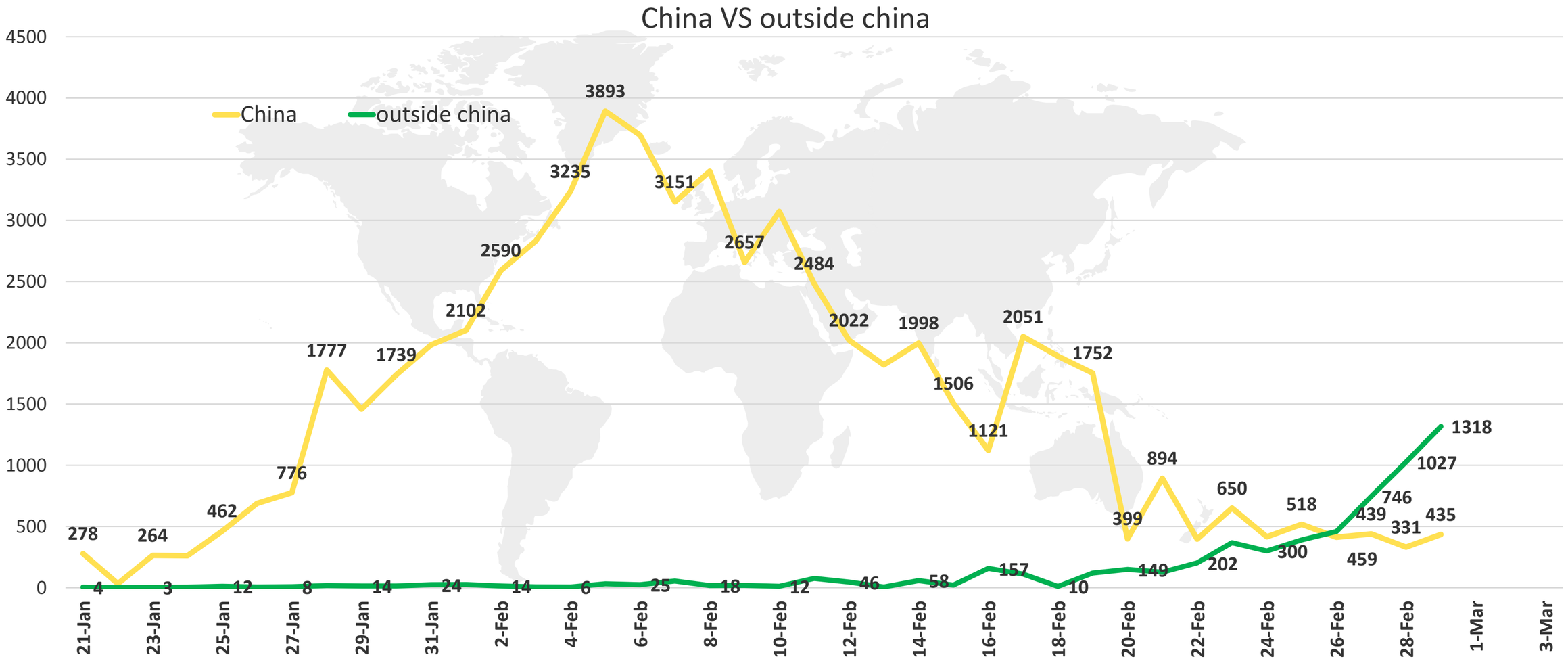


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 4: Number of new cases in China versus outside China (January 22st to February 29th , 2020)

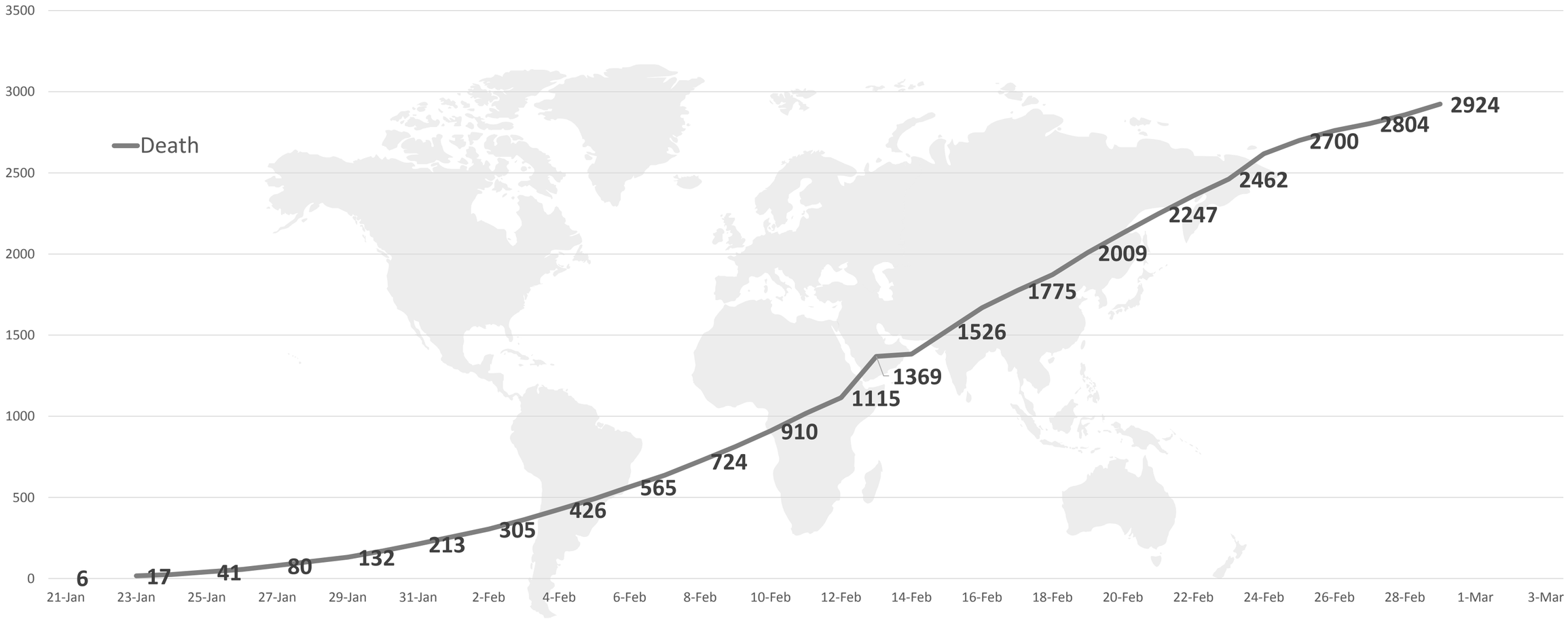


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 5: Number of total deaths (January 21st to February 29th , 2020)

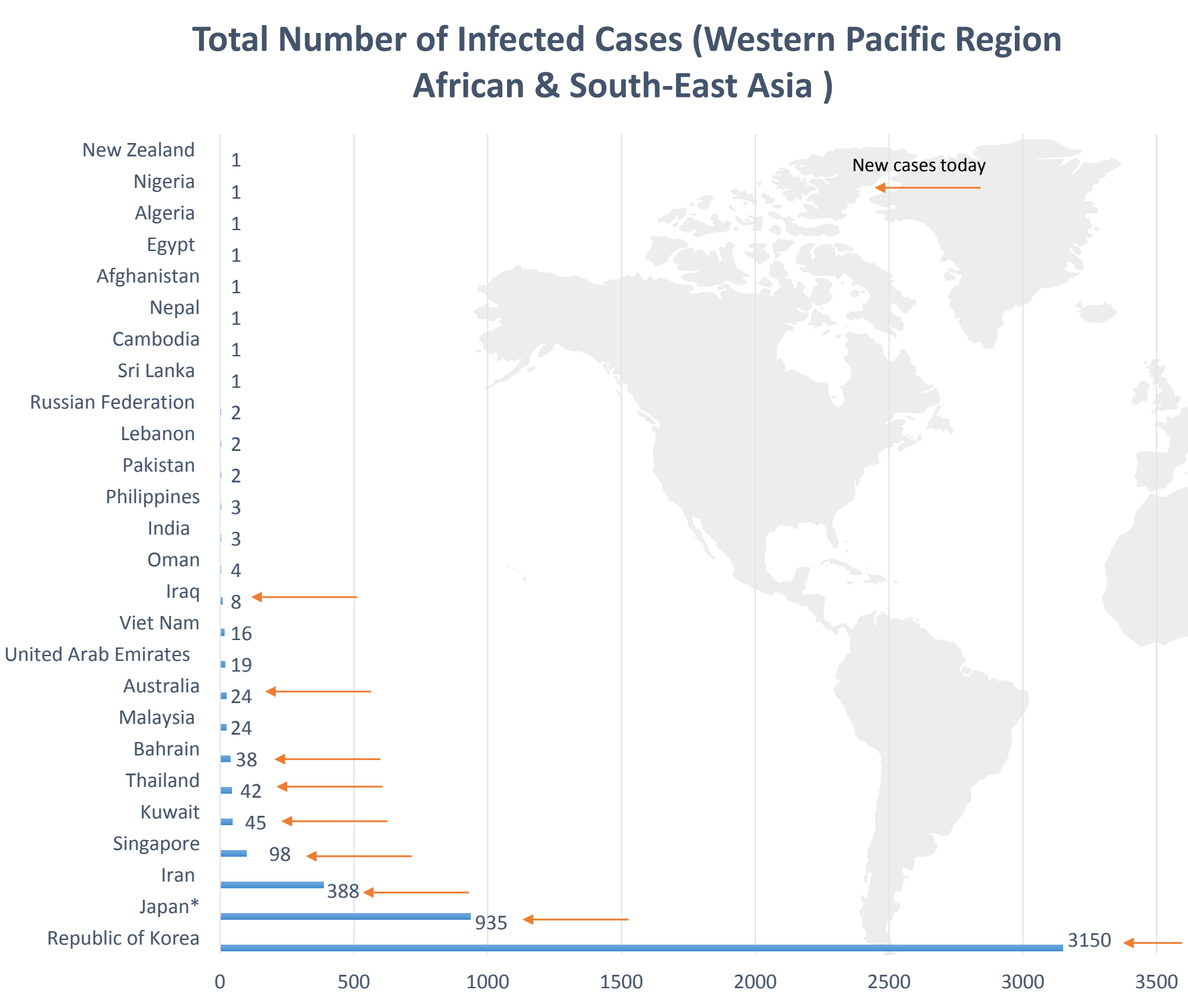


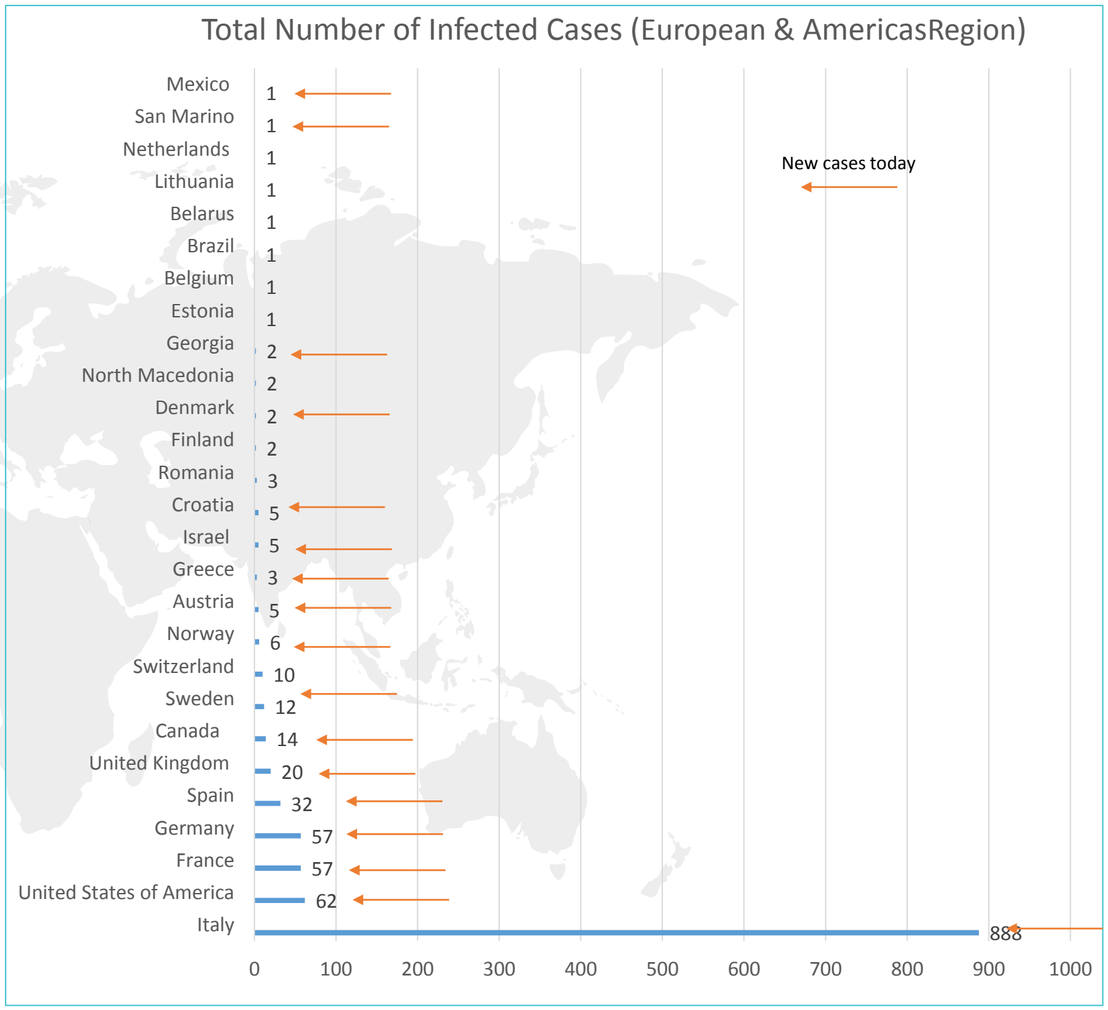
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 6: Total number of cases outside China per country (January 21st to February 29th , 2020)



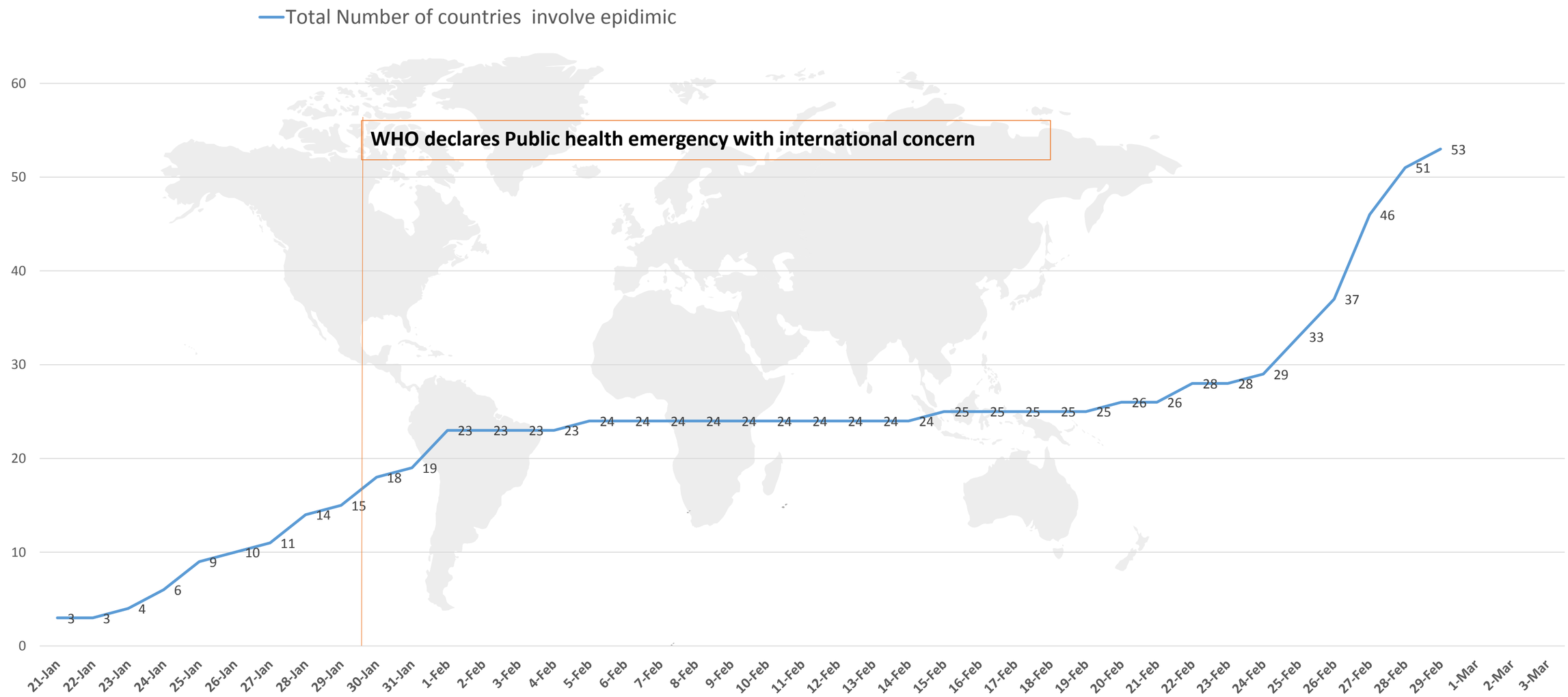


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

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



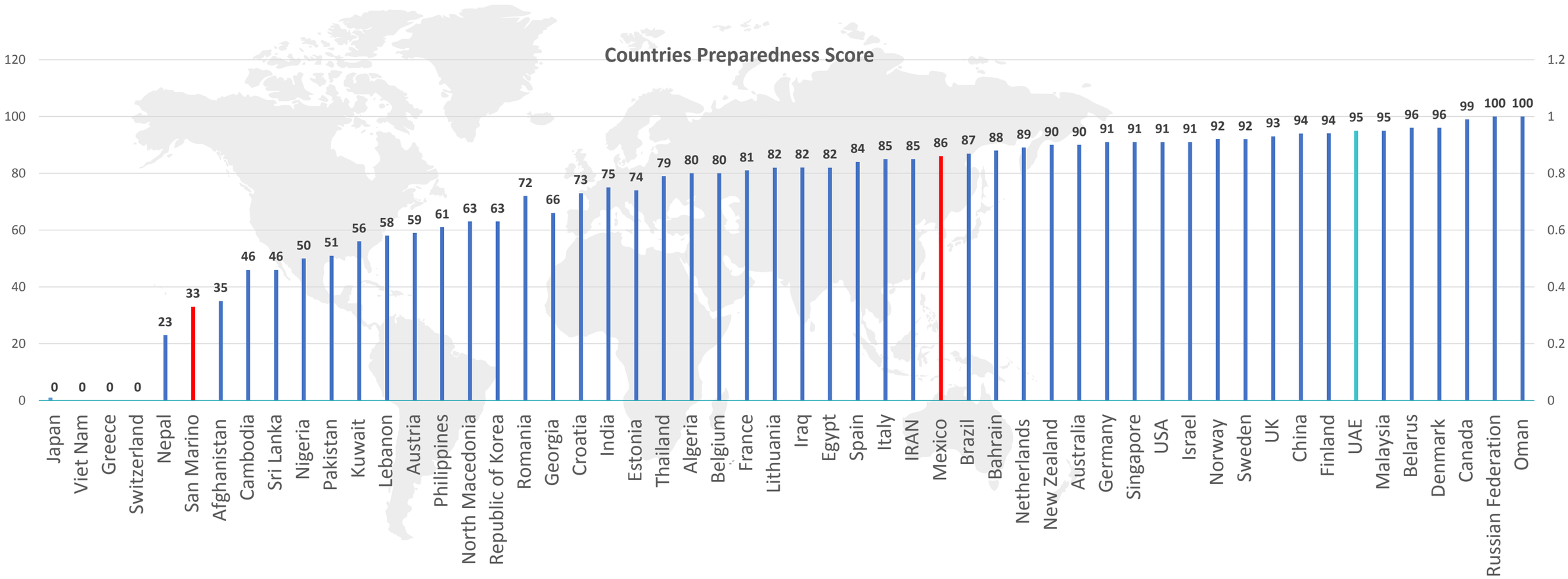
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: WHO

EPIDEMIOLOGY:

Figure 8 : Capacities of countries reporting COVID19 cases

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



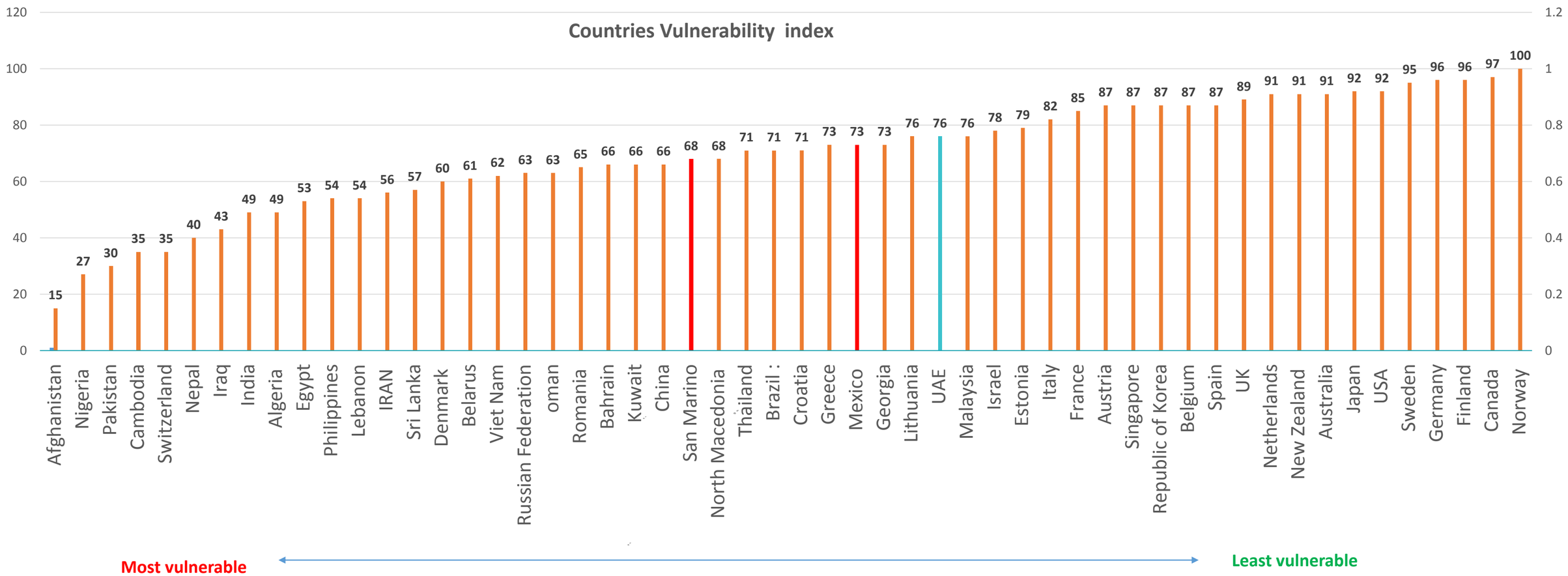
Line graph published by Abu Dhabi Public Health Center 2020.

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

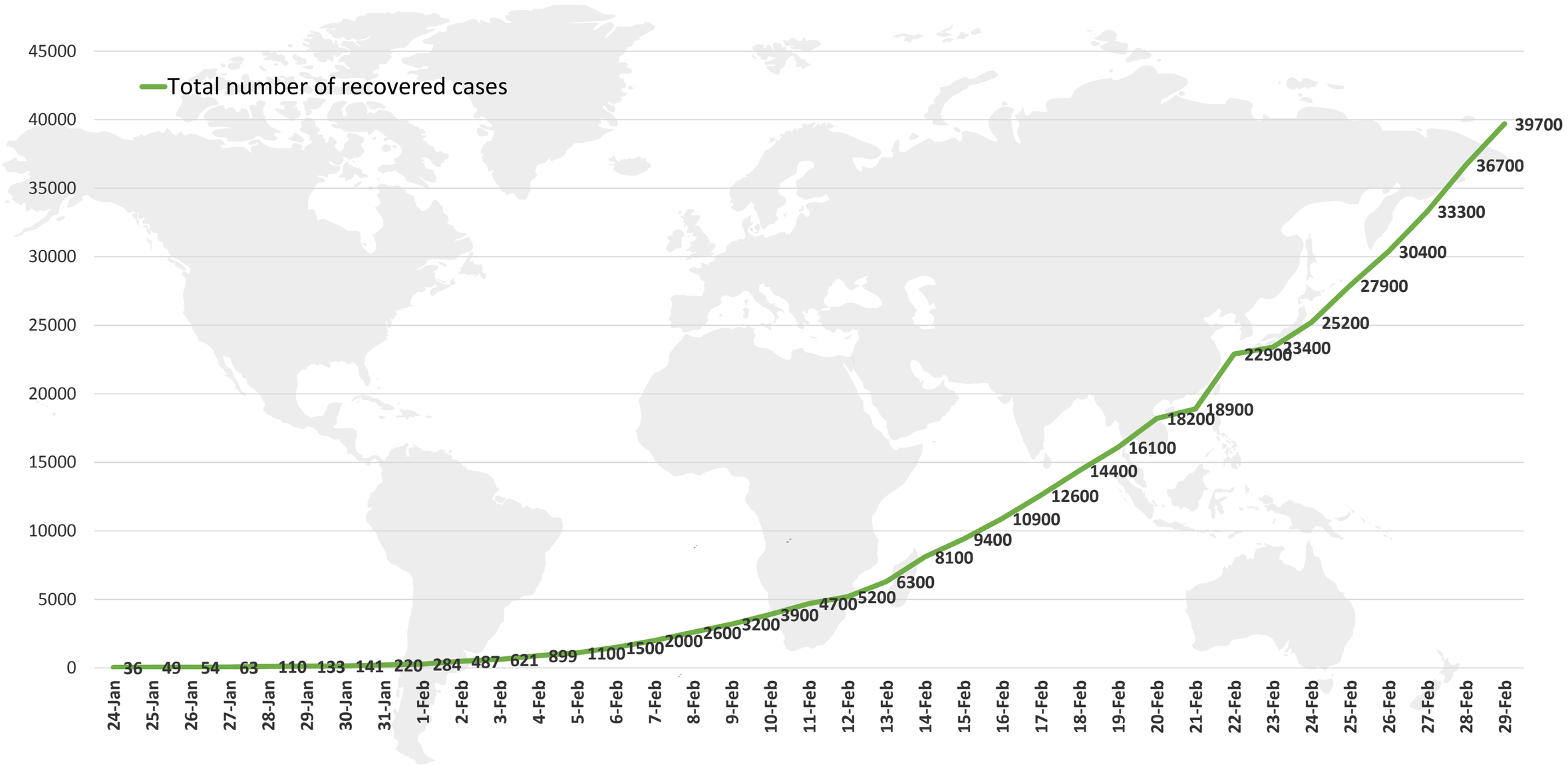


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources : SPAR score , IDVI score

EPIDEMIOLOGY:

Figure 10: Total recovered cases of COVID-19. (January 24st to February 29th, 2020)



Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: John Hopkins University

Retrieved at 19:30

EPIDEMIOLOGY:

WHO report 29/2/2020 important points

- WHO has published the *Rational use of personal protective equipment for COVID-19.* This document summarizes WHO recommendations for the appropriate use of personal protective equipment (PPE) in health care and community settings, including **the handling of cargo**.
- Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19): Published in 28 February 2020.

  - summary of the report and major findings related to (virus, outbreak, transmission dynamic , china response , knowledge gaps); assessment of china and global response and next step and major recommendation is provided in a separate document (*Attachment 1*)

    Link: https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf

PUBLIC HEALTH RESPONSE

Article: Behavioural science must be at the heart of the public health response to covid-19

Published Date: February 28, 2020.

Summary/Findings:

This article summaries the importance of ensuring that protective measures are delineated and that behavioural advice to the public and health professionals is taking place proactively.

Interpretation according to the author:

- ❑ Centre for Disease Control and Public Health England suggests 13 behaviours important to reducing transmission (Table 1).

- ❑ The relative importance of each behaviour may differ from country to country depending on local context. Each of these behaviours require sub-behaviours that may differ according to situation. Each behaviour involves different challenges in terms of the motivation, capability and opportunity needed to enact them. We must be considering now how to meet these challenges.

Group of behaviours	Behaviour
Hand hygiene	1. Wash hands regularly with soap and water for at least 20 seconds
	2. Always wash hands: • after coughing and sneezing • after touching nose or mouth • after caring for the sick • before, during, and after food preparation • before eating • after using the toilet • after handling animals or animal waste
	3. If soap and water are not available, use an alcohol-based hand sanitiser. This is particularly important after taking public transport.
Surface hygiene	4. Clean and disinfect frequently touched objects and surfaces the home and work environment.
Respiratory	5. Cough or sneeze into crook of elbow or tissue. Stifle sneeze as much as possible.
	6. Immediately dispose of tissue into closed bin after coughing or sneezing.
Touching	7. Do not touch mouth, eyes, or nose with unwashed hands.
Self-isolation	8. If symptomatic or otherwise advised to, stay at home for 14 days.
Social distancing	9. If not caring for a symptomatic person, avoid contact and proximity. Maintain distance between yourself and other people, particularly those who are coughing, sneezing, or have a fever.
Healthcare	10. If experiencing a fever, cough, and difficulty breathing seek medical advice early and describe previous travel history to the healthcare professional.
	11. If recently arrived from specified countries within the last 14 days, call a telephone helpline.
Personal protective equipment	12. If caring for someone who has been diagnosed, wear facemasks, eye protection, and gloves.
Food safety	13. Avoid eating raw or undercooked animal products. Handle raw meat, milk, or animal organs in such a way as to avoid cross-contamination with other foods.

Link: here

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

PUBLIC HEALTH RESPONSE

Article: **Covid-19: preparedness, de-centralization, and the hunt for patient zero**
Published Date: **February 28, 2020.**

Summary/Findings:
This article highlights several lessons learnt from the recent Italian experience with COVID-19 outbreaks. Italy healthcare and public health system is decentralized with autonomous regional governance contributed to the delayed response in Italy.

Interpretation according to the author:

- De-centralisation can work efficiently when all authorities have a pre-existing agreement of transparency and proactive data/information sharing across regions with acceptance of both public scrutiny and evaluation by an independent authority.
- The solution, rather than re-centralisation, is better integration of de-centralised competence. During an outbreak, regional authorities can actively slow the spread of infection, as countries do with their borders.
- Italy's system is perfectly designed to enable population-based surveillance: each citizen has a personal ID (corresponding to the tax file number) linked to a unique general practitioner, local healthcare authority, and region or autonomous province. All services use citizen ID to link records stored in databases held by local health authorities to optimise healthcare. However, access is limited and restricted by region mostly.

Link: here

PUBLIC HEALTH RESPONSE

Article: **Responding to Covid-19 — A Once-in-a-Century Pandemic**
List of Authors: **Bill Gates**
Published on: **The New England Journal of Medicine**
Published: **February 28, 2020**

Summary/Findings:
The article highlights the short-term challenges such as, funding R&D to find the treatments as well as the vaccine and making it available for the most affected regions regardless of their financial capabilities. It also highlights the importance of noting lessons learnt during this outbreak to enhance the preparedness for future outbreaks such as readily accessible lists of trained personnel, from local leaders to global experts, who are prepared to deal with an epidemic immediately, as well as lists of supplies to be stockpiled or redirected in an emergency.

Interpretation according to the author:

- The average infected person spreads the disease to two or three others — an exponential rate of increase. It can be transmitted by people who are just mildly ill or even asymptomatic.
- The Coalition for Epidemic Preparedness Innovations is developing a vaccine expected to be ready for larger-scale trials as early as June
- In addition to exploring AI application (Machine Learning) for innovative screening techniques to identify antivirals.
- Governments financial support will encourage pharmaceutical companies and researchers to take risks and accelerate finding treatment/vaccine as well as producing it at a broad scale.

Link: here

PUBLIC HEALTH RESPONSE

Article: Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China. Summary of a Report of 72,314 Cases from the Chinese Center for Disease Control and Prevention

Published Date: February 24, 2020.

Summary/Findings:

This summary and learnings extracted from the Chinese Center for Disease Control and Prevention recently published largest case series to date of coronavirus disease 2019 (COVID-19) in mainland China (72,314 cases, updated through February 11, 2020).

Interpretation according to the author:

- ❑ Not all cases reported in China were confirmed; Hence, the total number of COVID-19 cases is likely higher due to inherent difficulties in identifying and counting mild and asymptomatic cases.
- ❑ Current reported crude case fatality rate CFR of 2.6%, all CFRs still need to be interpreted with caution and more research is required.
- ❑ Although COVID-19 seems to be more transmissible than SARS and MERS many estimates of the COVID-19 reproductive number (R0) have already been published, it is still too soon to develop an accurate R0 estimate or to assess the dynamics of transmission. More research is needed in this area as well.
- ❑ After SARS outbreak, the Chinese government has improved its epidemic response capacity which was reflected during COVID-19 outbreak.
- ❑ China focused on traditional public health outbreak response tactics—isolation, quarantine, social distancing, and community containment. Whether these measures have been effective (eg, in terms of reduced infections and deaths averted), and whether these potential benefits have outweighed the costs (eg, economic losses), it will be debated for years.

Link: here

CLINICAL FEATURES AND TRANSMISSION

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

NEW UPDATE

Articles in special population: (children) (1/2)

Article 1: Title: Novel Coronavirus Infection in Hospitalized Infants Under 1 Year of Age in China

Published : 14 February 2020.

Summery: information on All hospitalized infant (28days -12 months) between December 8, 2019, and February 6, 2020 was collected. 9 infants (1-11 months) were admitted all have does not require intensive care management.

Table. Characteristics of 9 Hospitalized Infants Infected With Coronavirus Disease 2019

	Patient								
Characteristic	1	2	3	4	5	6	7	8	9
Demographics									
Age	9 mo	11 mo	8 mo	10 mo	7 mo	1 mo 26 d	3 mo	3 mo 22 d	6 mo
Sex	Female	Female	Female	Male	Female	Female	Female	Female	Male
Symptoms at onset	Fever, peaking at 38.8 °C	Mild fever	None	NA	Fever	Runny nose; cough	Cough; sputum production	Fever	NA
Time between admission and diagnosis, d	1	1	3	3	1	1	1	1	2
Epidemiologic history									
No. of family members infected	2	1	5	1	2	2	2	1	1
Linkage to Wuhan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	NA	No
Treatment									
Intensive unit care	No	No	No	No	No	No	No	No	No
Mechanical ventilation	No	No	No	No	No	No	No	No	No
Severe complications	No	No	No	No	No	No	No	No	No

Abbreviation: NA, not available.

Link : https://jamanetwork.com/journals/jama/fullarticle/2761659?widget=personalizedcontent&previousarticle=2762130

CLINICAL FEATURES AND TRANSMISSION

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Articles in special population: (children) (2/2)

Article 2: Title: First case of severe childhood novel coronavirus pneumonia in China
Published: after 7 February 2020*
Summery finding:. 13-month-old male developed shock and kidney failure. No positive contact. Two negative PCRs; third was positive. 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 3: 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 4 : 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.***

DIAGNOSTICS:

ABU DHABI PUBLIC HEALTH CENTRE | مركز أبوظبي للصحة العامة

Article 2: Title: Positive RT-PCR Test Results in Patients Recovered From COVID-19
Published : 27 February 2020.

Summery:

- One patient and 3 health care workers were admitted to the hospital for positive COVID19 between January 1 to February 15, 2020
- Discharge criteria: (1) normal temperature lasting longer than 3 days, (2) resolved respiratory symptoms, (3) substantially improved acute exudative lesions on chest computed tomography (CT) images, and (4) 2 consecutively negative RT-PCR test results separated by at least 1 day.
- All 4 patients had **2 consecutive negative RT-PCR test results.**
- The time from symptom onset to recovery ranged from 12 to 32 days.
- After discharged patients were asked **to quarantine at home for 5 more days.**
- The RT-PCR tests **were repeated 5 to 13 days later** and **all were positive**.
- All patients had **3 repeated RT-PCR tests** performed over the **next 4 to 5 days** and **all were positive.** (**with different manufacturer diagnostic kits)**
- Patient denied positive contact during the period.
- These findings suggest that at least a proportion of recovered patients may still **be virus carriers**.
- **Current criteria for hospital discharge or discontinuation of quarantine** and continued patient management **may need to be reevaluated.**

Link : https://jamanetwork.com/journals/jama/fullarticle/2762452