

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



Scientific Research Monitoring on COVID-19

05 April 2020

Summary on COVID19



SARS-COV2 virus

- 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.
- New designation for the disease and the virus: COVID-19 and SARS-COV2.
- SARS-COV2 stay viable in aerosol for hours and in surface up to 3 days.
- Two strain have been identified for SARS-COV2 (L type (more aggressive) and S type .

Transmission

- Transmission from human to human has been confirmed. Incubation period ranges from 5 days and can reach up to 14 days.
- Suggested human-to-human transmission occurs through droplets, contact and fomites, similar to Severe Acute Respiratory Syndrome (SARS).
- Isolation is the best measure to control transmission.

Clinical features and outcome

- Non-specific and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia and death.
- Highest risk for severe disease and death include people aged over 60 years and those with underlying conditions
- 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.

Therapies and vaccination

- Efforts currently in developing therapies for this virus focus on previously known medications and vaccination for MERS-CoV and SARS-CoV. In addition to other type of medication.
- WHO forum held 11-12 Feb 2020 to mobilize research on COVID19 vaccinations and therapies.

Summary on COVID19 (Cont.)

ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



COVID19 in figure

- 80% of laboratory confirmed patients have had mild to moderate disease
- 13.8% have severe disease.
- 6.1% are critical
- Children account for 2.4% of all reported cases.(less than 19 years)



Todays' Highlights

All articles presented in this report represents the authors' views and not necessarily represents Abu Dhabi Public Health Center views or directions.

Scientific Research

- **Vaccine:** an article that discusses the new strategy of developing vaccines in COVID19 pandemic.
- **Treatment:** New announcement of COVID19 International Research Coalition.
- **Treatment:** A randomized trial using HCQ show its effectiveness .

Due to abundant COVID19 information resources and given the urgent need to keep up with the updates .Below is a cluster of other academic articles for interested reviewer.

Listed articles may represent information that has been previously shared in the report and/or may target specific technical audience.

Others

1. [Personal Risk and Societal Obligation Amidst COVID-19](#)
2. [COVID-19 in Turkey: An urgent need for the implementation of preparedness and response strategies](#)
3. [Detection of antibodies against SARS-CoV-2 in patients with COVID-19](#)
4. [Global approaches for global challenges: the possible support of rehabilitation in the management of COVID-19](#)
5. [Positive Externalities of an Epidemic: The Case of the Corona Virus \(COVID-19\) in China](#)



WHO daily report

- One new country/territory/area reported cases of COVID-19 in the past 24 hours: Bonaire, Sint Eustatius and Saba.
- As worldwide cases climb **above 1 million and deaths over 50 000**, Dr Tedros stressed that the best way for countries **to end restrictions and ease their economic effects was to attack the virus with an aggressive and comprehensive package of measures.**
- WHO has released new technical guidance recommending universal access to public hand hygiene stations and making their use obligatory on entering and leaving any public or private commercial building and any public transport facility. It also recommends that healthcare facilities improve access to and practice of hand hygiene.
- WHO/Europe has received a €30 million contribution from the European Commission for 6 WHO European Region Member States – Armenia, Azerbaijan, Belarus, Georgia, the Republic of Moldova and Ukraine – to meet immediate needs in their responses to COVID-19.



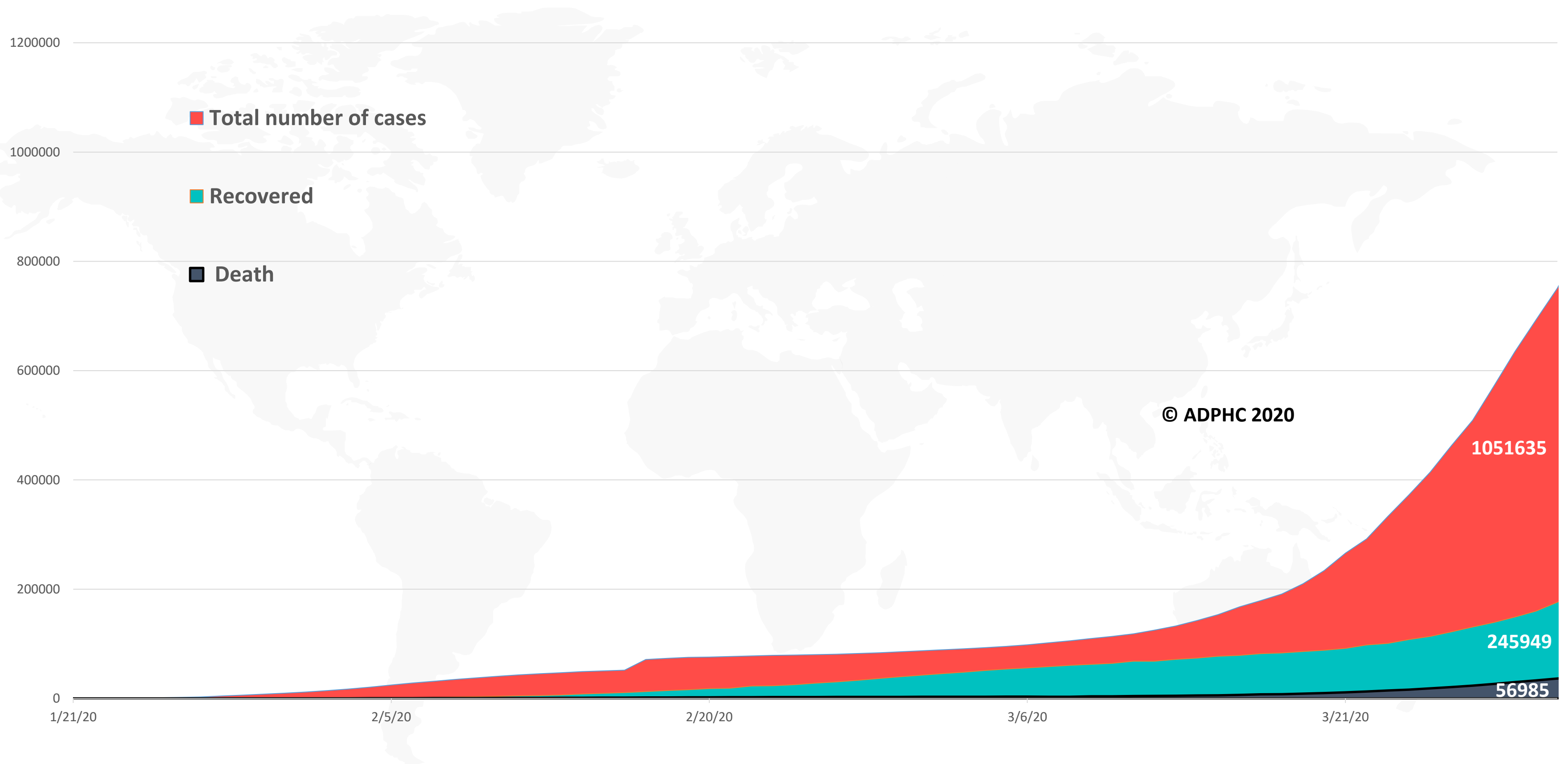
WHO DG Briefing

- Advice countries to provide **social welfare programs and debt relief to enable them to take care of their people.**
- Best way for countries to end restrictions and ease their economic effects is to **attack the virus**, with the **aggressive and comprehensive package of measures: find, test, isolate and treat every case, and trace every contact.**
- There are three main areas for countries to focus on while Financing the health response so that to ensure social and economic recovery :
 - First, countries to ensure core **public health measures are fully funded**, including case-finding, testing, contact tracing, collecting data, and communication and information campaigns.
 - Second, countries and partners to **strengthen the foundations of health systems.** That means **health workers must be paid their salaries**, and **health facilities need a reliable supply of funding** to purchase essential medical supplies.
 - Third, countries to **remove financial barriers to care.** (insurance ,..etc.)
- The DG raise a Concern about polio vaccine and advice to use guidance for countries on how to maintain essential health services even while responding to this crisis.
- Concern about increase in domestic violence since the COVID-19 outbreak began and call on countries to include services for addressing domestic violence
- WHO Strategic Preparedness and Response Plan funding reached above the target of US\$675 million reaching to US\$690 million has now been pledged or received
- thank the State of Kuwait, which today is becoming one of the largest donors, with a total of US\$60 million.

Epidemiology



Figure 1: Total number of infected, recovered, and death cases (January 21st to April 4th, 2020)

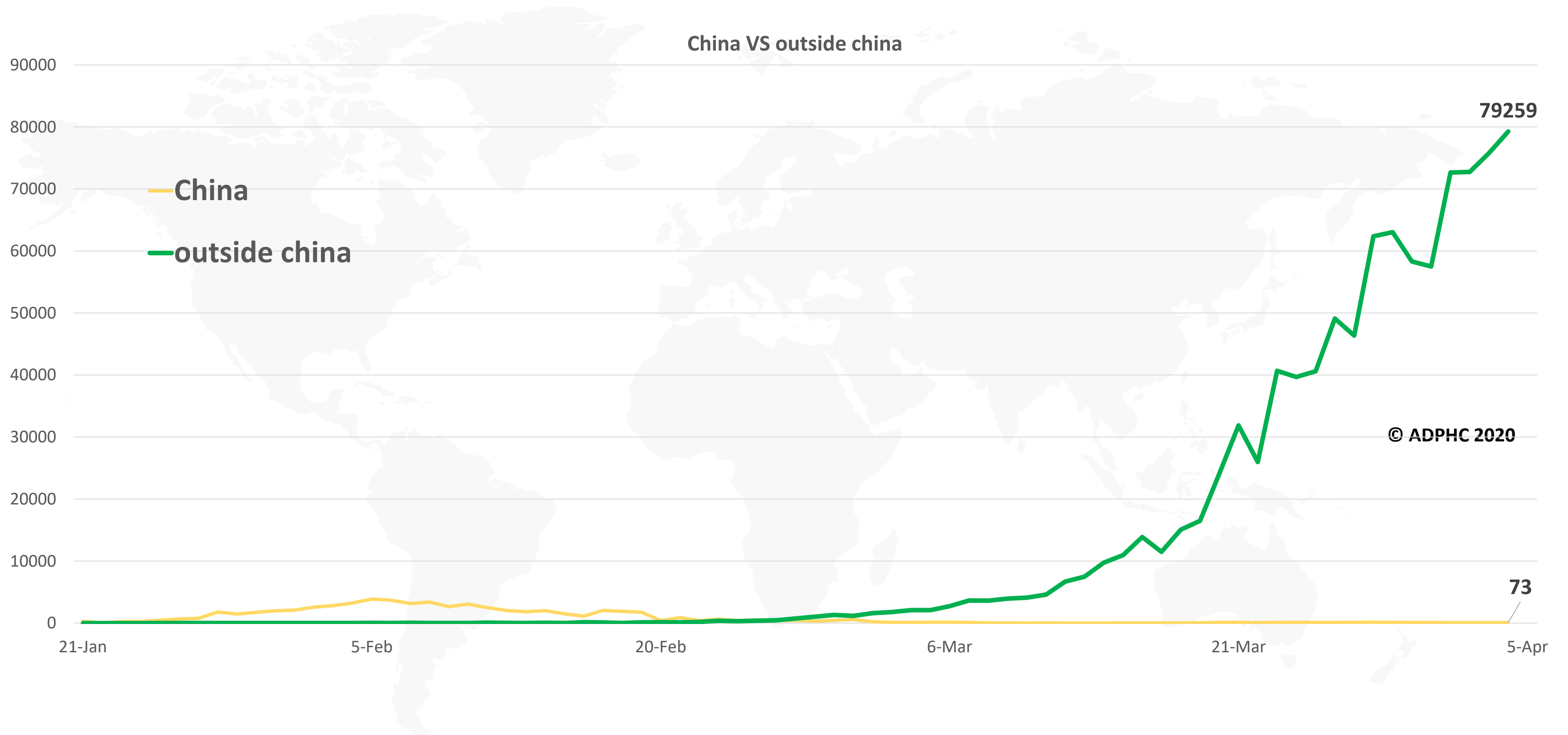


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#), [John Hopkins University](#)



Figure 2: Daily new infected COVID-19 cases reported between (January 21 to April 4th, 2020).



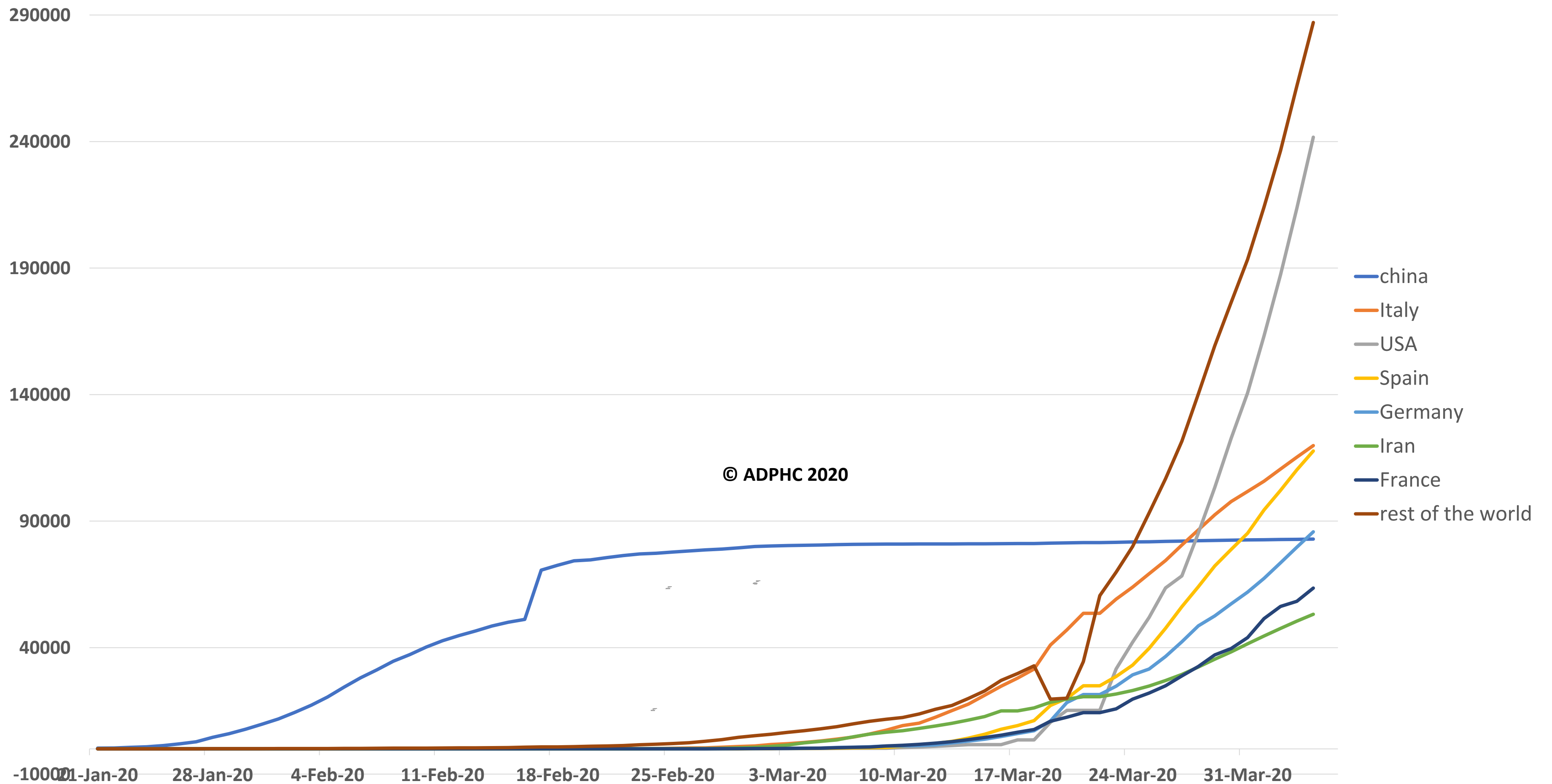
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 3 : Top 7 countries in the total number of cases due to COVID-19 (January 21 to April 4th, 2020).

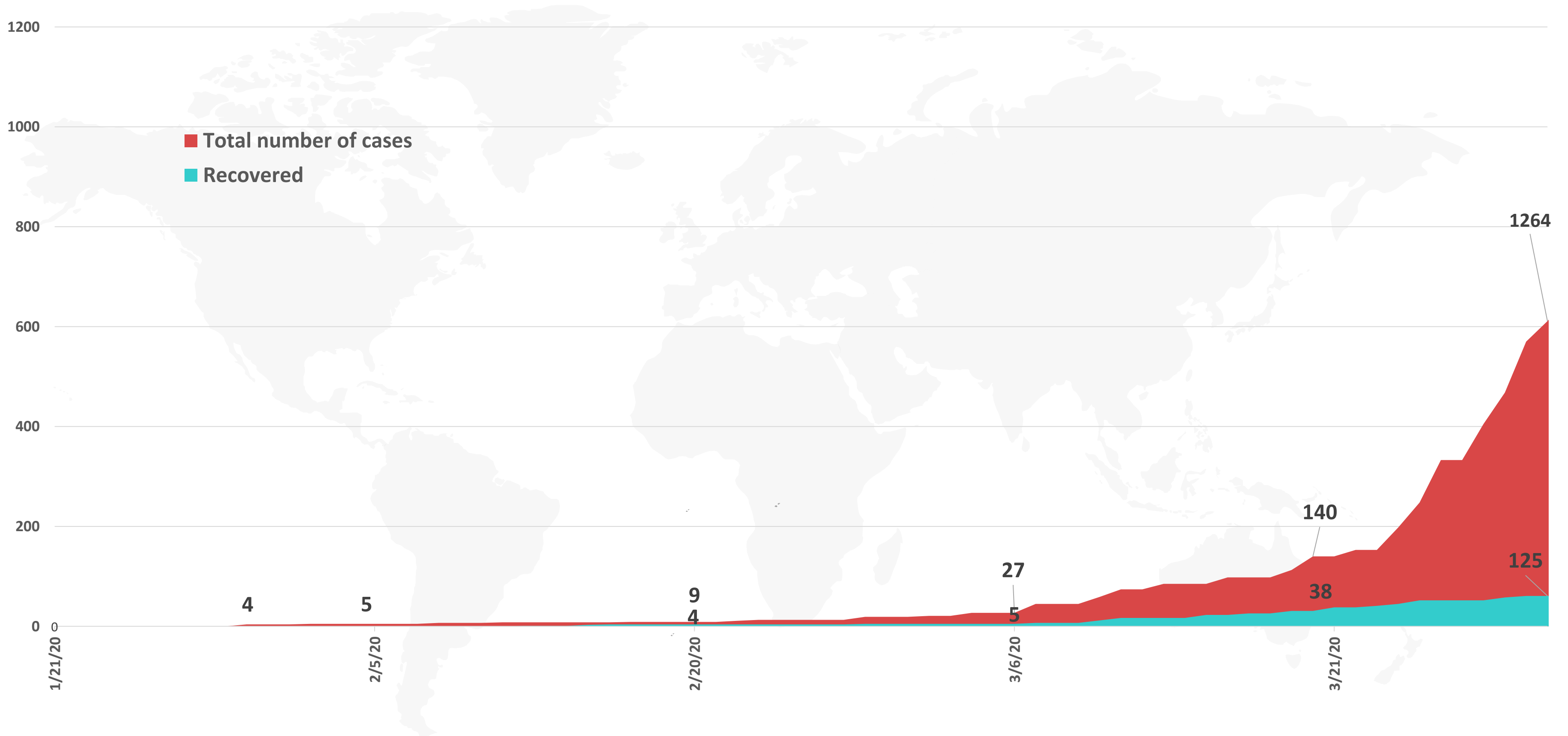


Line graph published by Abu Dhabi Public Health Center 2020.

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



Figure 4: Total number of COVID-19 infected and recovered cases in UAE over time

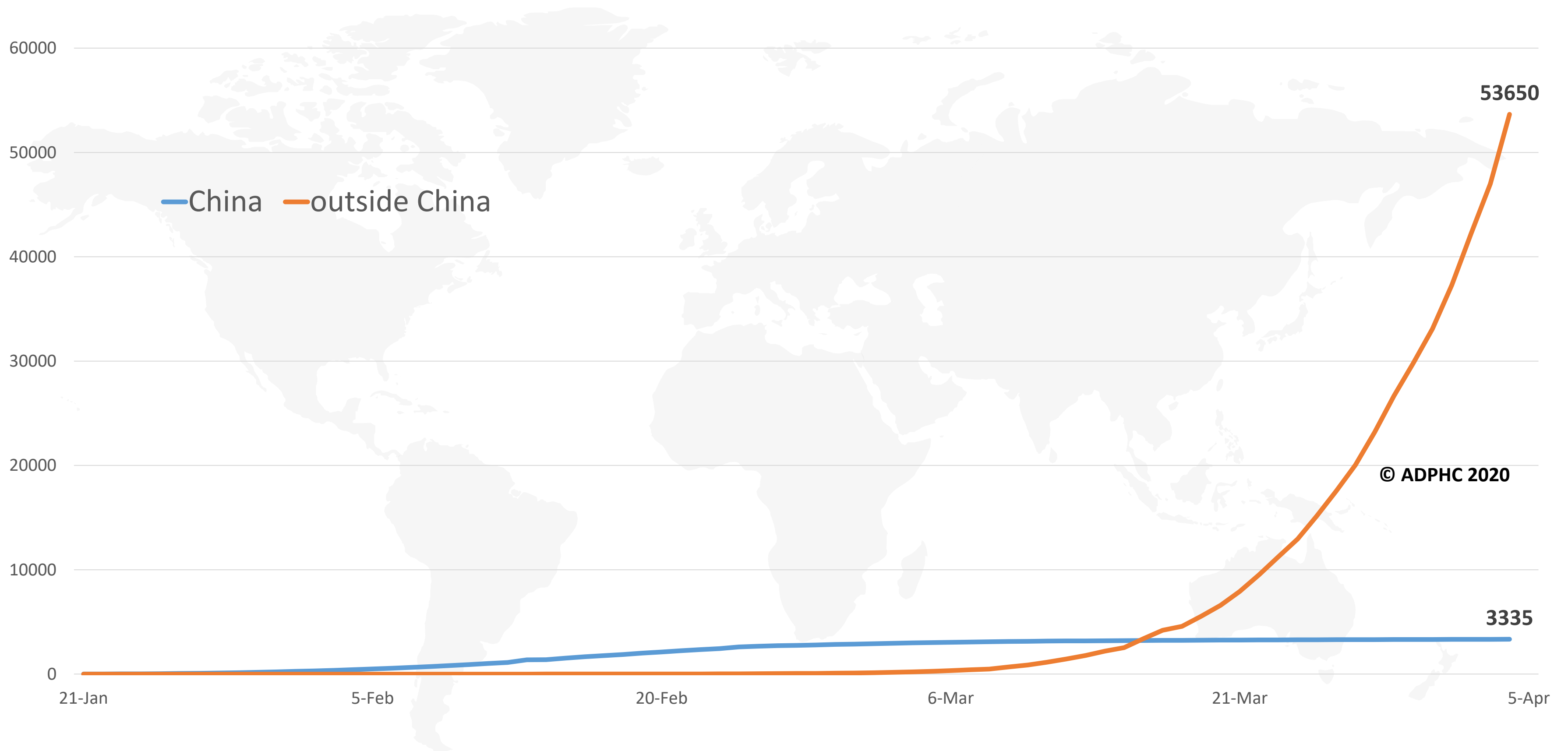


Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#), [John Hopkins University](#)



Figure 5: Total number of death due to COVID-19 reported by China and the rest of the world (January 21 to April 4th, 2020).



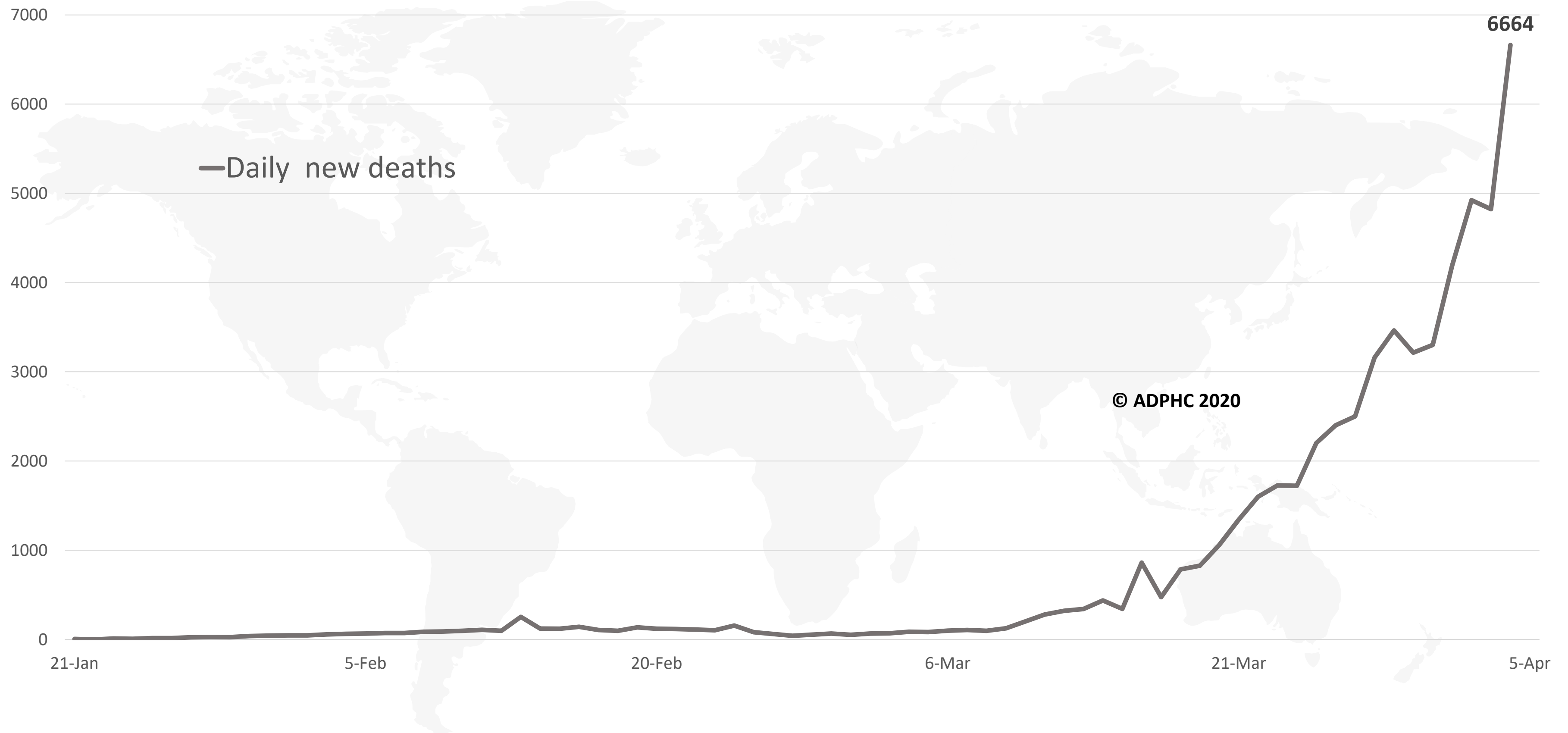
Line graph published by Abu Dhabi Public Health Center 2020.

Data resources: [WHO](#)

Epidemiology



Figure 6: Global daily new deaths due to COVID-19 (January 21 to April 4th, 2020).



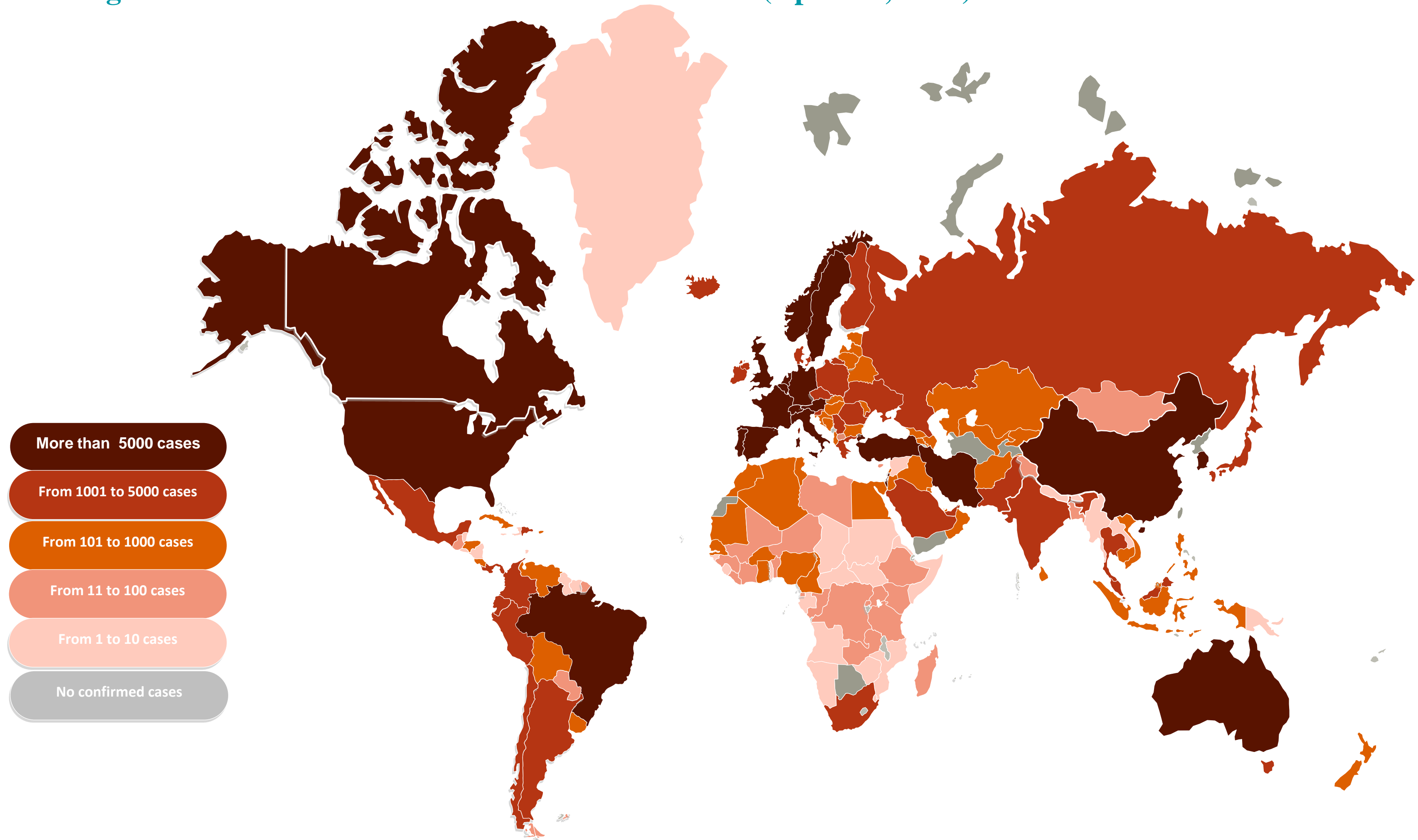
Line graph published by Abu Dhabi Public Health Center 2020.

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

Epidemiology



Figure 7a : Global distribution of COVID-19 cases (April 4th, 2020).

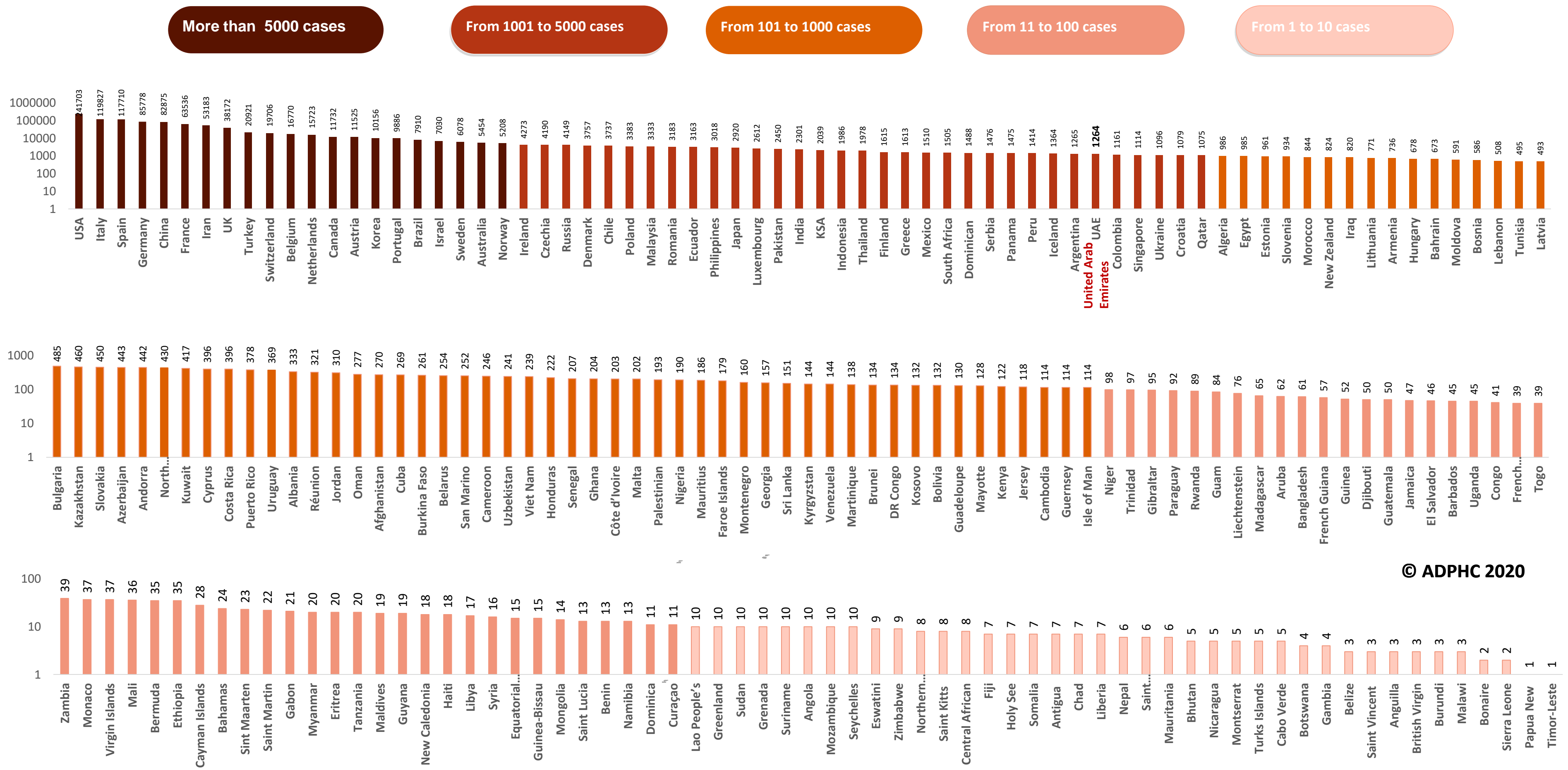


Map chart published by Abu Dhabi Public Health Center 2020.

Epidemiology



Figure 7B: Bar chart illustrate the global distribution of COVID19 cases April 4th, 2020



© ADPHC 2020

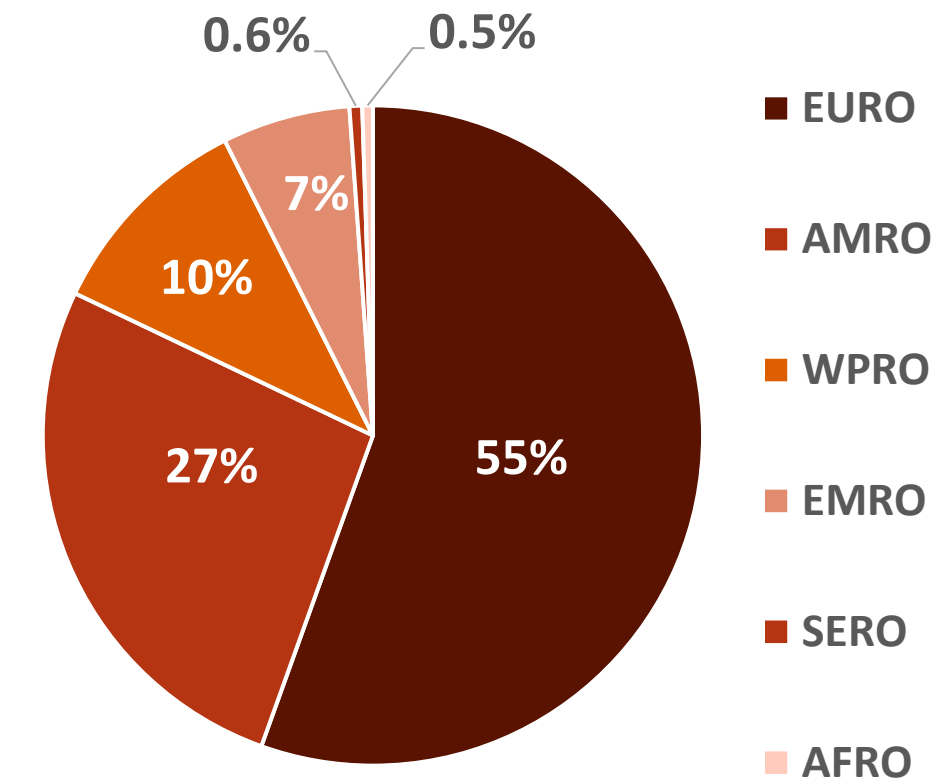
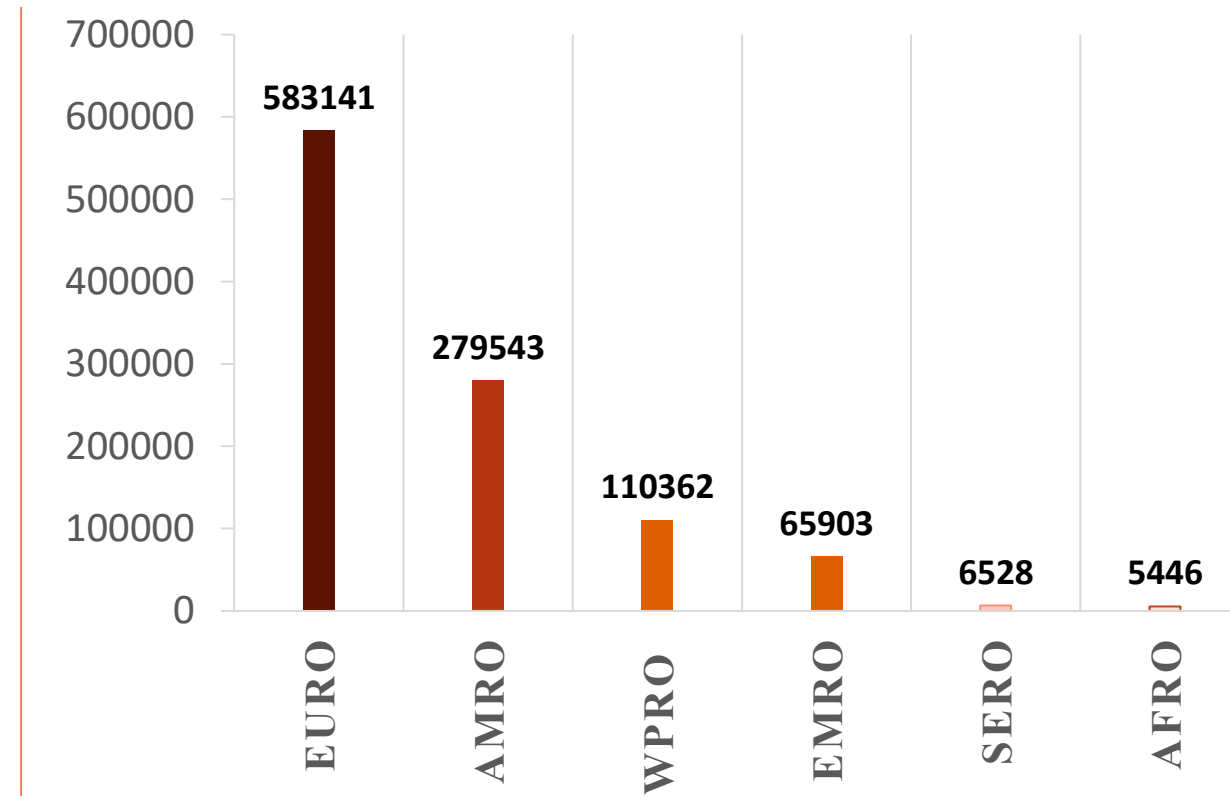
Map chart published by Abu Dhabi Public Health Center 2020.

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

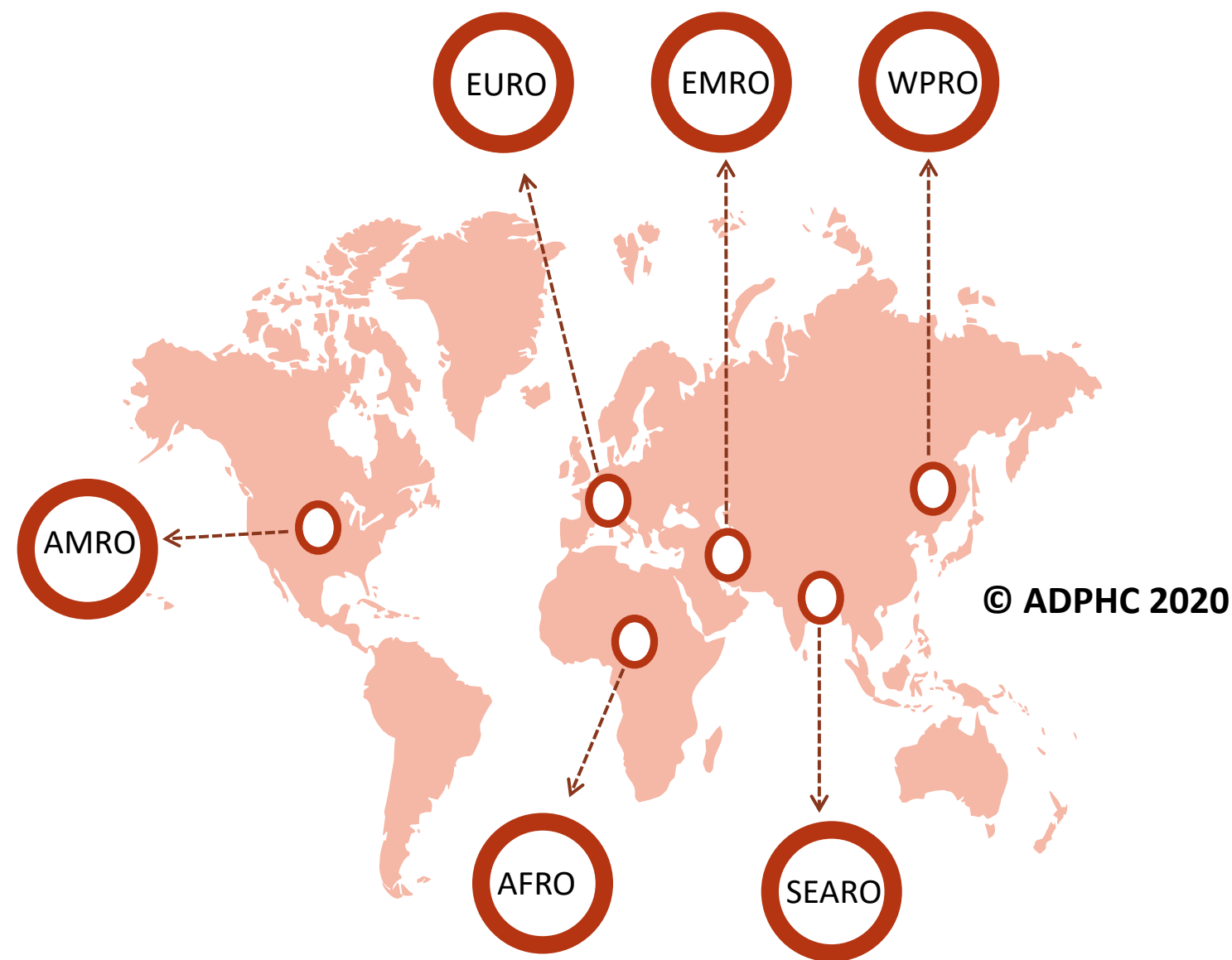
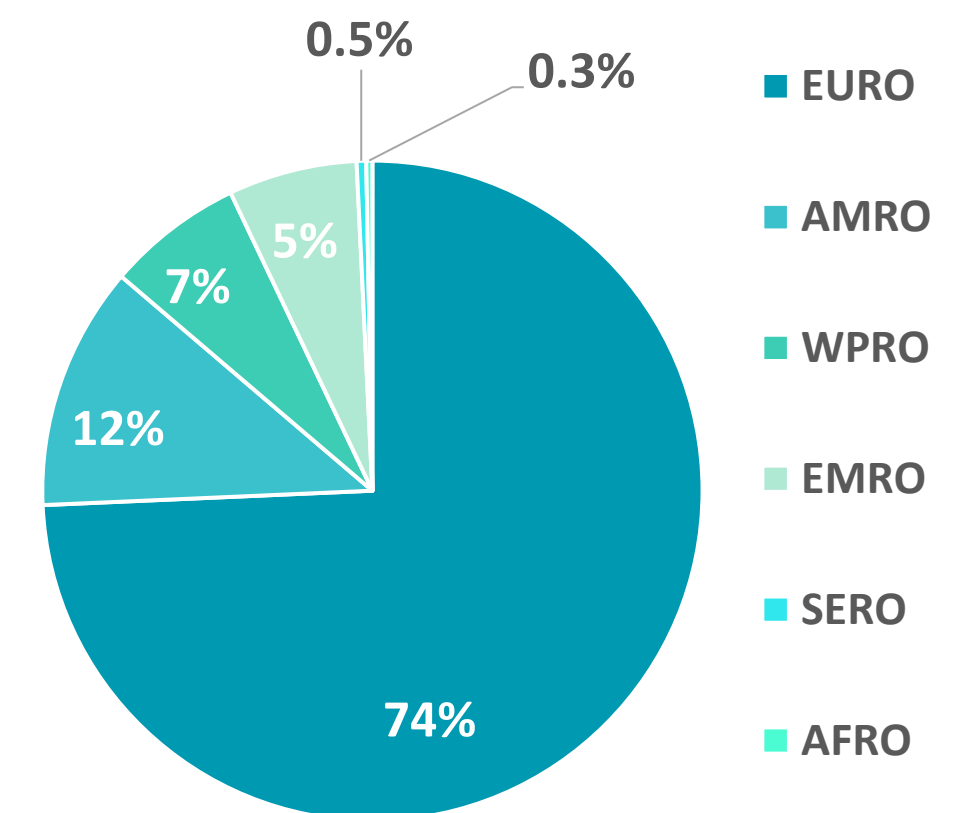
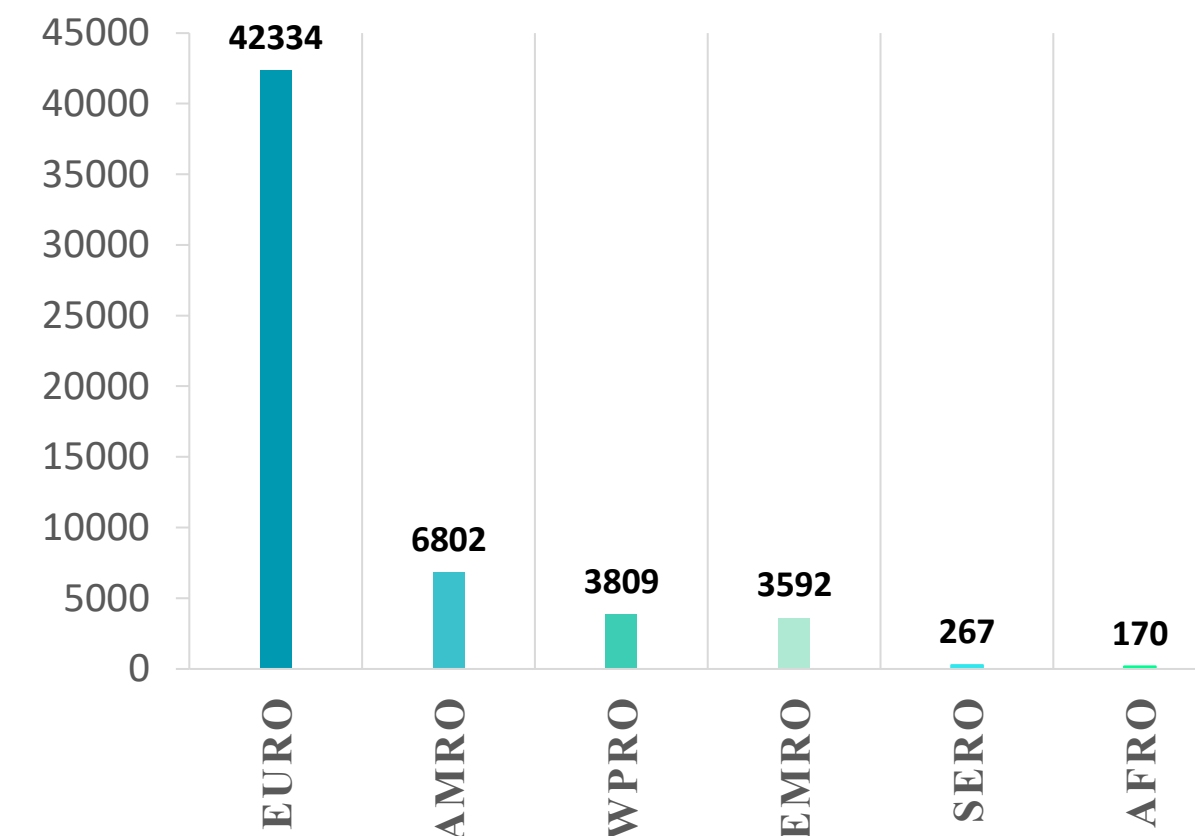


Figure 8: illustrate the Global distribution of COVID19 cases per region (April 4th, 2020)

INFECTED



DEATH



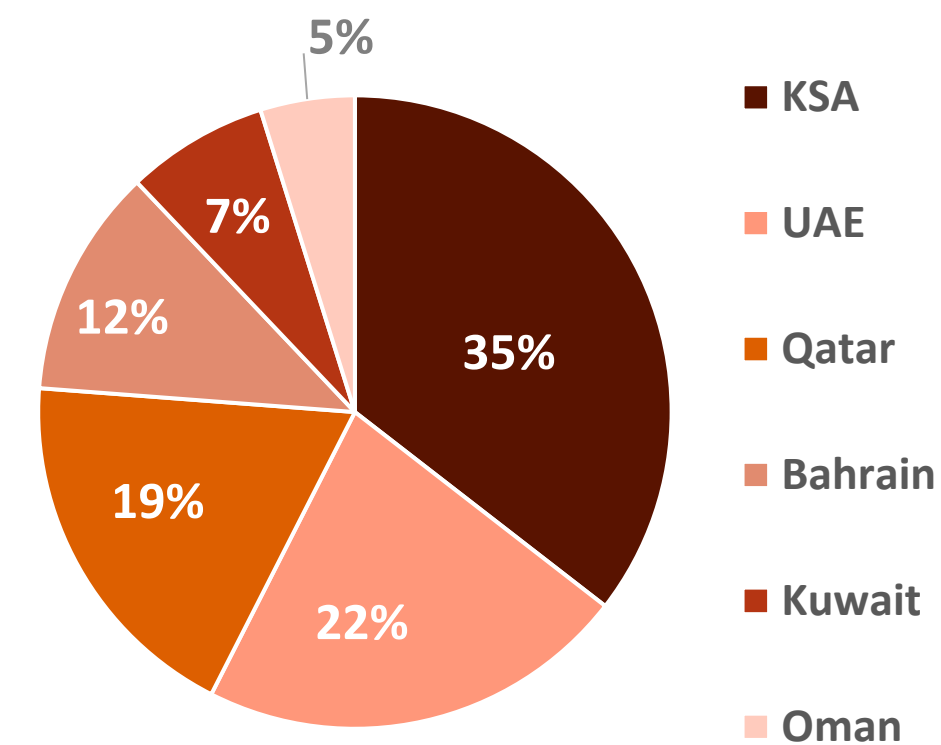
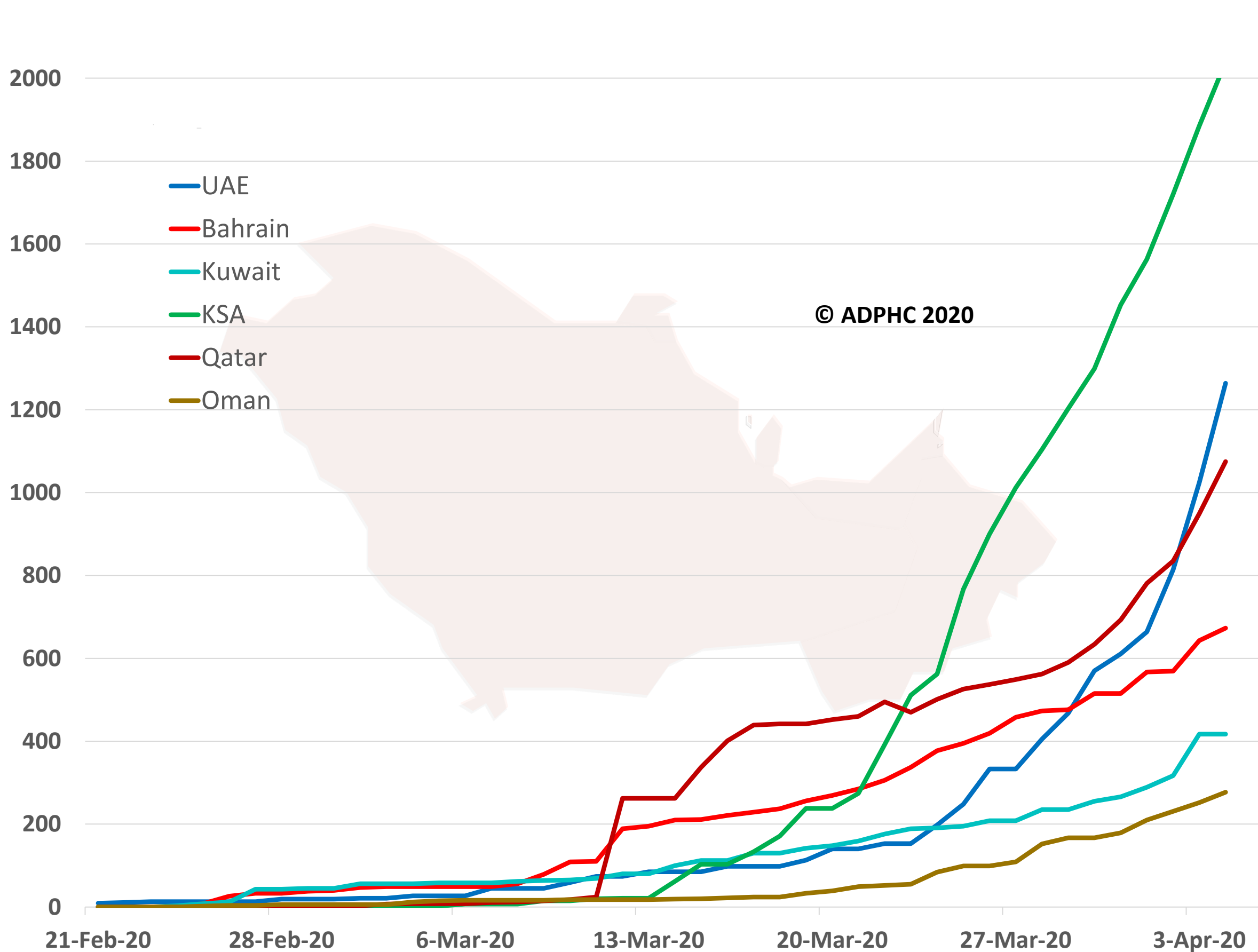
Map chart published by Abu Dhabi Public Health Center 2020.

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

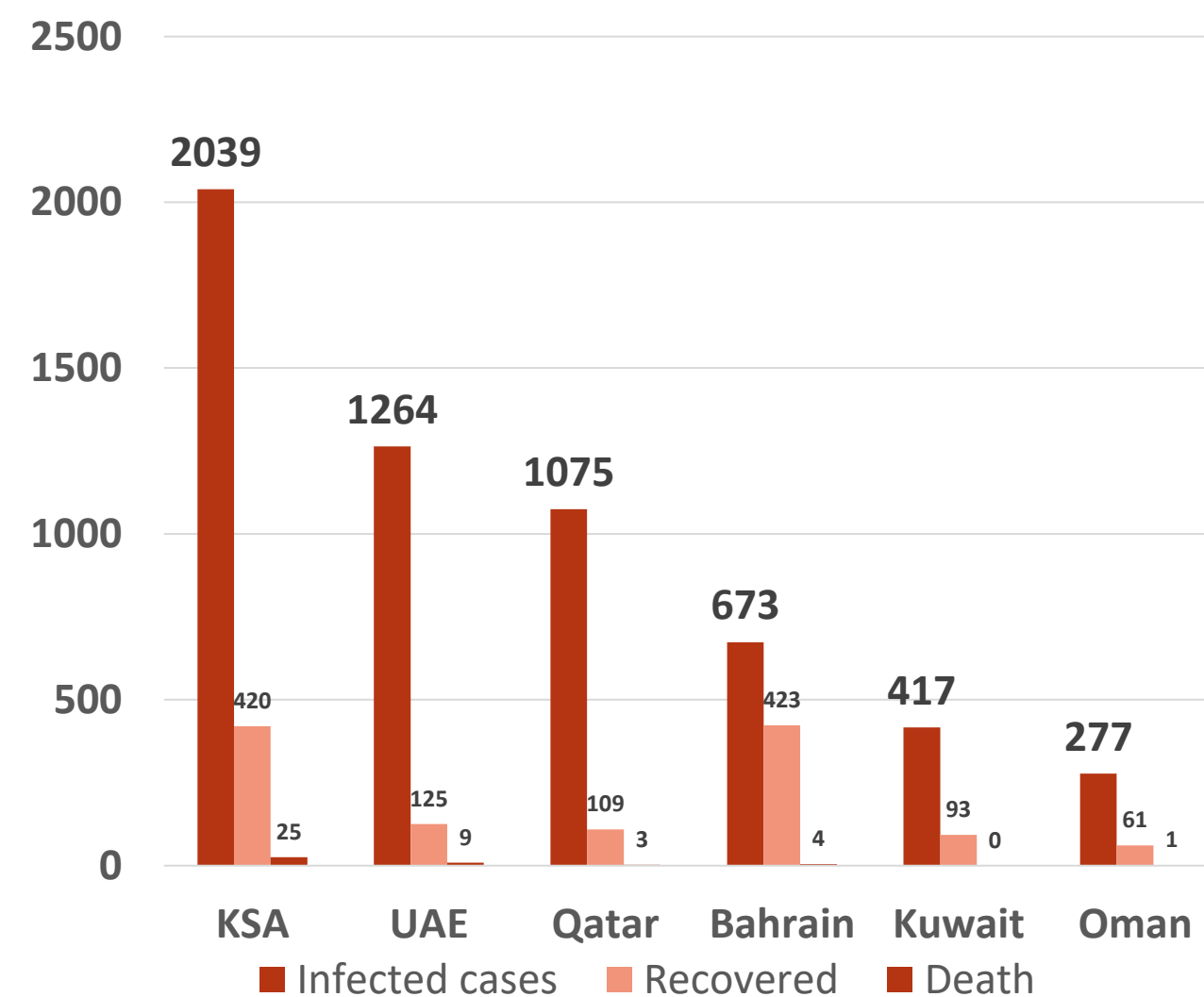


Figure 9: Comparative analysis of the distribution of COVID19 cases in GCC countries (April 4th, 2020)

TOTAL NUMBER OF INFECTED CASES



Total number of infected, recovered and Deaths



Map chart published by Abu Dhabi Public Health Center 2020.

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



Vaccine :

Article 1: Developing Covid-19 Vaccines at Pandemic Speed.

Published: March 30, 2020 in [NEMJ](#)

This article was summarized by subject matter expert

Summary:

This is a “perspective” on developing a COVID-19 vaccine rapidly using a new “**pandemic paradigm**”. It is written by the **Coalition for Epidemic Preparedness Innovation (CEPI)**, a non-governmental organization composed of top global vaccine stakeholders like the Wellcome Trust, Bill & Melinda Gates Foundation, the European Commission, and 8 countries, including Japan, Australia, Canada, Ethiopia, Norway, Germany, Belgium, and UK. CEPI has been tasked to support vaccine development against WHO’s list of five top pandemic pathogens, including Zika, Ebola, MERS, and SARS, as well as prepare for future pandemics (Disease X) like COVID-19. The idea is to use emerging technologies to **develop “reserves” of experimental vaccines for each pathogen post phase 2a human trials (efficacy testing)**, which would then **undergo clinical trials only when an outbreak actually happens** in future, thus expediting vaccine development. In their eyes, an ideal vaccine platform should initiate from viral sequencing to human trials in less than 16 weeks with the ability to induce sustained immunity against the pathogen and at the same time be amenable to large scale manufacturing. The paper shares their experience with COVID-19 vaccine development using the new pandemic paradigm, **starting with various vaccine platforms being used (DNA/RNA, inactivated, live attenuated, viral vectors, protein subunit, etc.)**, followed by a discussion of challenges faced (vaccine design—**i.e., which antigen to use, appropriate animal models to test vaccine safety without exacerbate disease, as well as the need for adjuvants, induction of neutralizing antibodies, and correlates of protection for COVID-19, etc.**). The new paradigm requires a “**fast start**” and **multiple steps conducted “in parallel”** rather than the classical “**linear**” approach to vaccine development, thereby putting more financial risk.



Article 1 : Continued.,

Summary:

This article was summarized by subject matter expert

- CEPI initiated the COVID-19 vaccine development efforts as soon as China announced a novel coronavirus being the cause of the Wuhan outbreak. It immediately contacted partners already working on MERS vaccine to expedite COVID-19 vaccine development as soon as the first viral sequence was available. This resulted in **an RNA-based vaccine entering phase I clinical trials is less than 10 weeks**, followed by entry of several other novel vaccines in **phase I clinical trials**. Expedited entry of these vaccines into phase 2 will require scaling up vaccine levels to commercial levels before extensive safety and efficacy data are available, costing millions with many caveats, such as large scale manufacturing of unlicensed **novel technologies** that has not been attempted earlier. Thus, CEPI **recommends that traditional approaches to vaccine development must continue in parallel** to ensure that a successful vaccine will be at hand. It goes on to discuss the logistical difficulties and ethics of multiple clinical trials in epidemic-hit, overburdened countries, **use of “shared control groups” in high mortality situations**, and coming up with strategies for “globally fair vaccine-allocation systems” once a vaccine is at hand **to determine who gets it first**. It ends with a call to global financing systems to support **the new vaccine development paradigm to “ensures fair allocation, and protect private-sector partners from significant financial losses”** in case of vaccine failure



Treatment :

Article 2: Global coalition to accelerate COVID-19 clinical research in resource-limited settings

Published: April 02, 2020 by [the lancet](#)

Summary:

- **The article** address the challenges in accelerating the research needed in **resource-limited settings** and the authors announced of the establishment of **new international research coalition** that brings together existing multinational, multidisciplinary expertise and clinical trial capacity.
- The coalition will synergize with existing initiatives, such as the [COVID-19 Therapeutics Accelerator](#), the [Coalition for Epidemic Preparedness Innovations](#) (CEPI), and the [SARS-CoV-2 Diagnostic Pipeline](#).
- The objective of this coalition is to use their existing research capabilities to support, promote, and accelerate multicenter trials of the safety, efficacy, and effectiveness of interventions against COVID-19 in resource-limited settings.

Goals:

- 1- Facilitate rapid and joint protocol reviews by **ethics committees** and **national regulatory agencies**.
 - 2- Facilitate approvals for the **importation of study medications** and **materials through agreed coordinated** fast-track mechanisms.
 - 3- Ensure **standardized and simple collection of key data, sufficient for robust analysis of efficacy** and safety of the tested interventions.
 - 4- Provide a **governance framework** to share outcomes **before publication**.
- The coalition consist of scientists, physicians, funders, and policy makers who have come together in an international coalition, the COVID-19 Clinical Research Coalition, to support WHO's efforts to counter the COVID-19 pandemic.
 - They are **welcoming collaboration with organizations ready to contribute existing capacity** to join at the website of [COVID-19 Clinical Research Coalition](#).



Treatment :

Article 3: Efficacy of hydroxychloroquine in patients with COVID-19: results of a randomized clinical trial

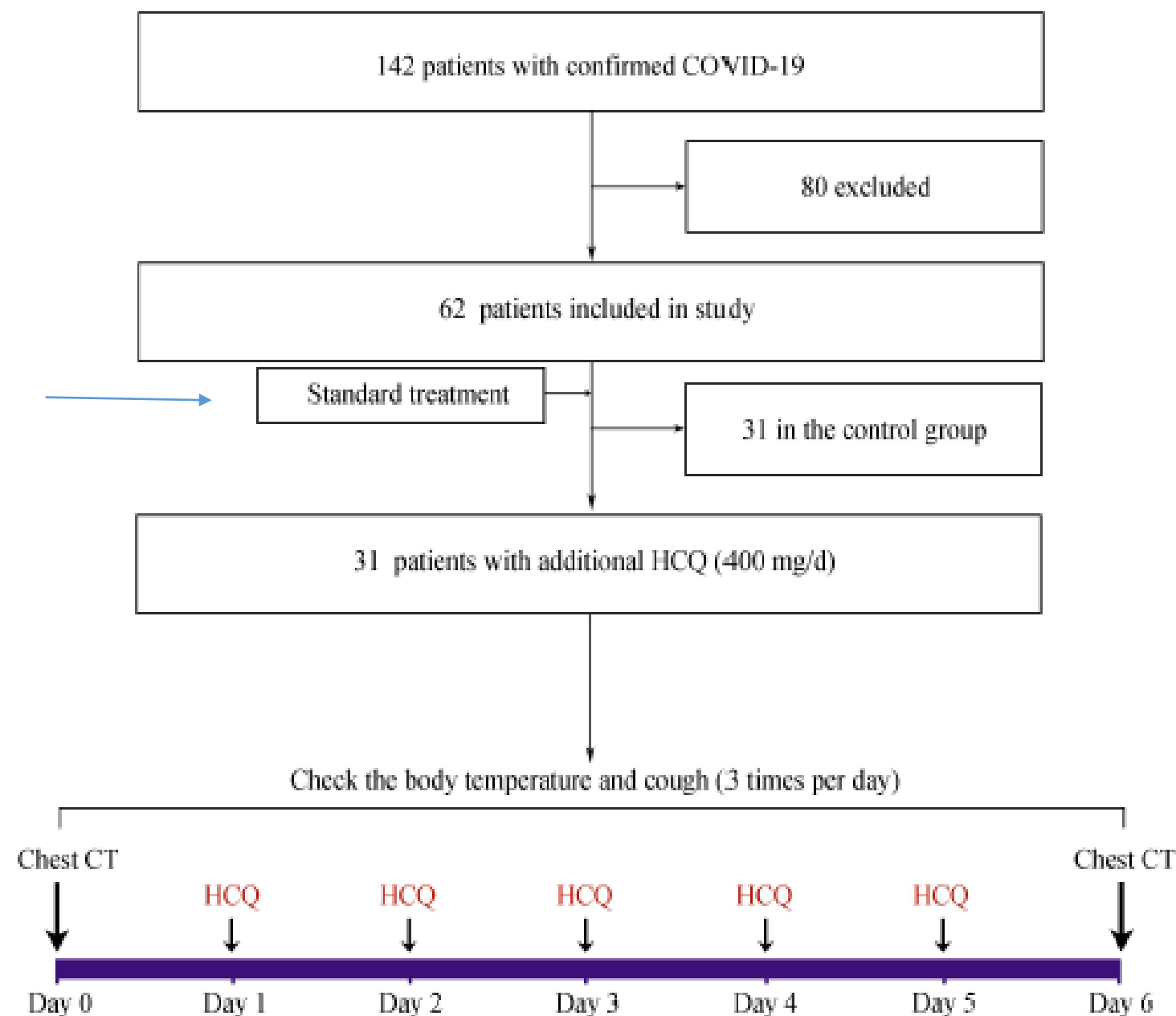
Published: March 31, 2020 by [Medrxiv](#)

Summary:

A Randomized controlled trial to measure the efficacy of Hydroxychloroquine in 62 patient in Wuhan city from February 4 to February 28, 2020,

Study Endpoint: Time to clinical recovery (TTCR), clinical characteristics, and radiological results were assessed at baseline and 5 days after treatment to evaluate the effect of HCQ.

Figure 1: Study design :



Tables Patient demographic and outcomes

Characteristics	All	Control	HCQ	P value
Cases, n	62	31	31	
Age, mean (SD)	44.7 (15.3)	45.2 (14.7)	44.1 (16.1)	0.8809
Sex, n (%)				0.7991
Male	29 (46.8%)	15 (48.3%)	14 (45.2%)	
Female	33 (53.2%)	16 (51.7%)	17 (54.9%)	
Fever, day (SD) [†]	2.6 (1.0)	3.2 (1.3)	2.2 (0.4)	0.0008
Cough, day (SD) [†]	2.4 (1.1)	3.1 (1.5)	2.0 (0.2)	0.0016
Progressed to severe illness	4 (6.5 %)	4 (12.9 %)	0	
Adverse effects	2 (3.2 %)	0	2 (6.4 %)	

Table 1: Characteristics of patients in this trial.

Treatment:



Article 3: Cont., Summary:

- The data in this study revealed that after 5 days of HCQ treatment, the symptoms of patients with COVID-19 were significantly relieved, manifesting as shortening in the recovery time for cough and fever.
- Larger proportion of patients with **pulmonary inflammatory has been partially absorbed in the HCQ treatment group**, indicating the immune modulation and **anti-inflammatory properties of HCQ** in non-malarial diseases.
- **Study limitation:** small sample size. Clinical significance in addition to statistical significance should be consider when interpreting the study data,

Group	All	Exacerbated	Unchanged	Improved		
				Moderate	Significant	Total
All	62	11 (17.7 %)	9 (14.5 %)	18 (29.0 %)	24 (38.7 %)	42 (67.7 %)
Control, n (%)	31	9 (29.0 %)	5 (16.1%)	12 (38.7 %)	5 (16.1%)	17 (54.8%)
HCQ, n (%)	31	2 (6.5 %)	4 (12.9 %)	6 (19.4%)	19 (61.3%)	25 (80.6%)
P value	0.0476					

Table 2: Absorption of pneumonia on chest CT.

Abbreviations: HCQ, hydroxychloroquine.