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SCIENTIFIC RESEARCH MONITORING ON COVID-19

15 SEPTEMBER 2020

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SCIENTIFIC RESEARCH MONITORING ON COVID-19 (ISSUE 226)

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Abu Dhabi Public Health Center (ADPHC) is gathering the latest scientific research updates and trends on coronavirus disease (COVID-19) in a daily report. The report provides summaries on breakthrough or updated research on COVID-19 to allow health care professionals and public health professionals get easy and fast access to information.

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Update

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Note : All articles presented in this report represent the authors' views and not necessarily represents Abu Dhabi Public Health Center views or directions. Due the nature of daily posting , some minor language errors are expected.
For further inquiries you may communicate with us as PHP@adphc.gov.ae

RESEARCH UPDATES

The views and opinions expressed in this report are those of the authors and do not reflect the official policy or position of the Abu Dhabi Public Health Center (ADPHC).

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Treatment

Azithromycin in Addition to Standard of Care Versus Standard of Care Alone in the Treatment of Patients Admitted to the Hospital with Severe COVID-19 in Brazil (COALITION II): A Randomized Clinical Trial

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Cardiovascular Magnetic Resonance Findings in Competitive Athletes Recovering From COVID-19 Infection

Diagnosis

Testing for Responses to the Wrong SARS-CoV-2 Antigen?

EPIDEMIOLOGY

FROM 21 JAN TO 14 SEPT 2020

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Figure 1: Total Number of Infected, Recovered, and Death Cases

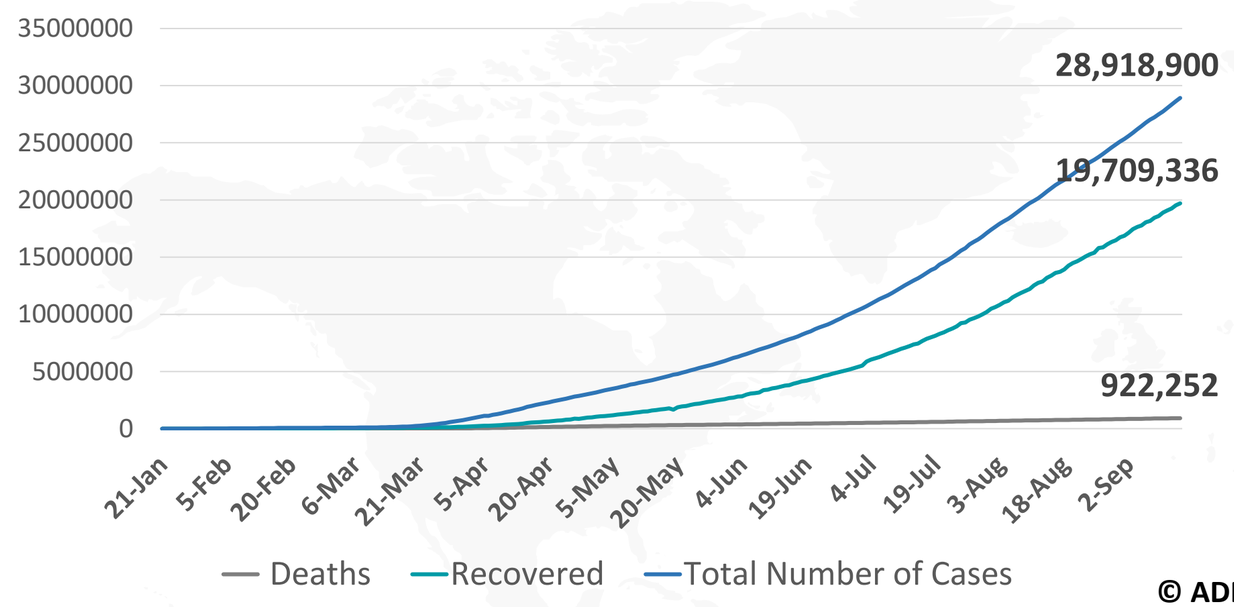


Figure 3: Total Number of Death Due to COVID-19 (china and result of the world)

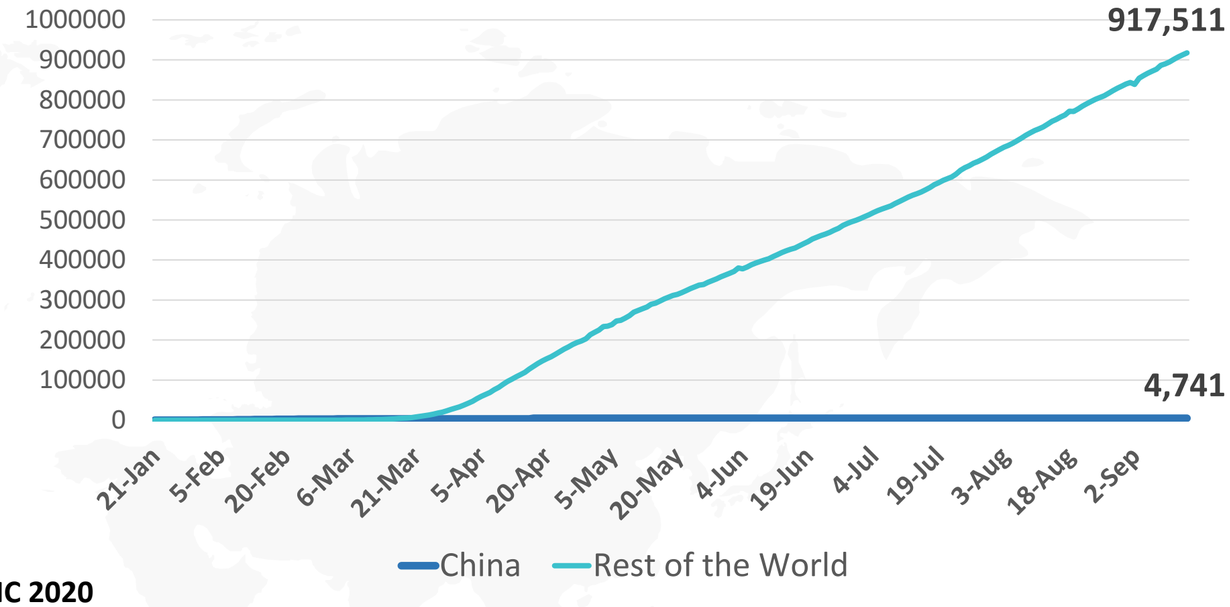


Figure 2: Daily New Infected COVID-19 Cases (China and rest of the world)

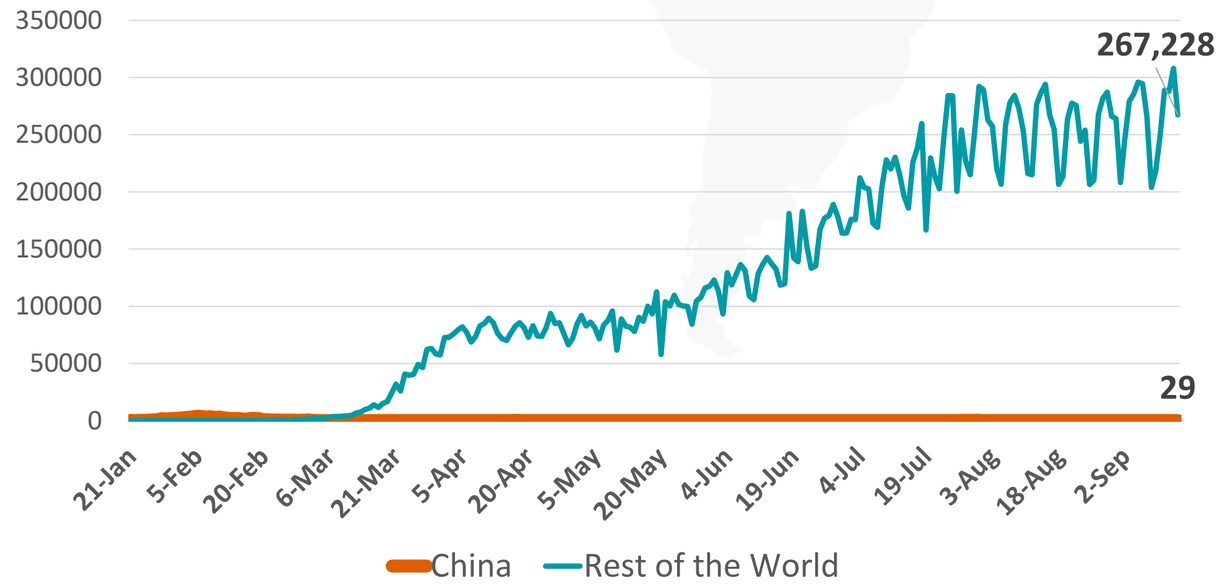
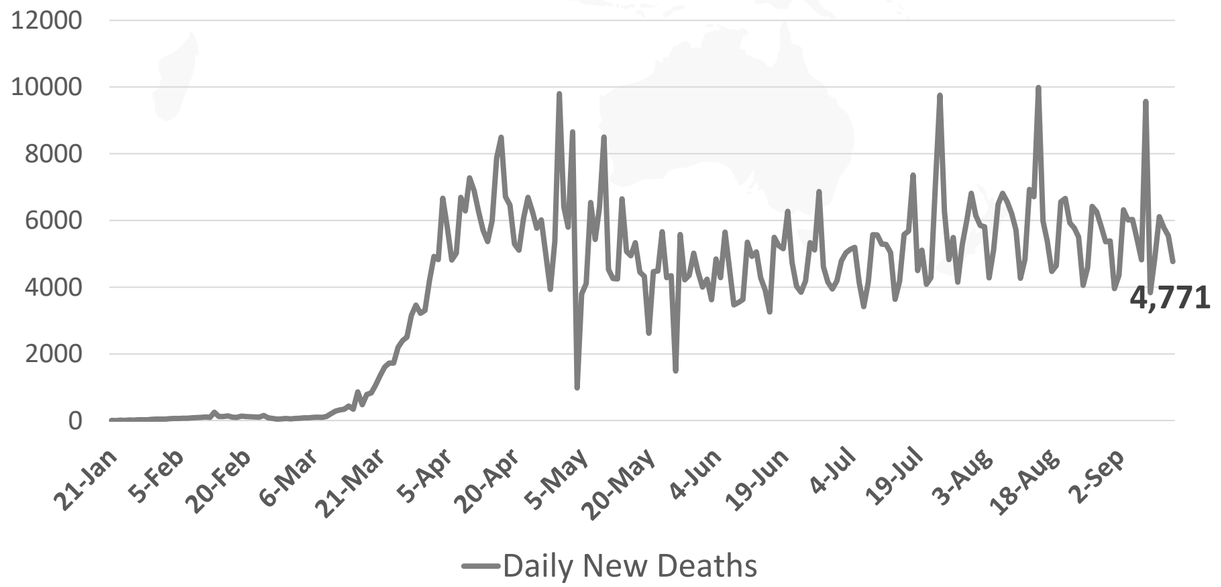


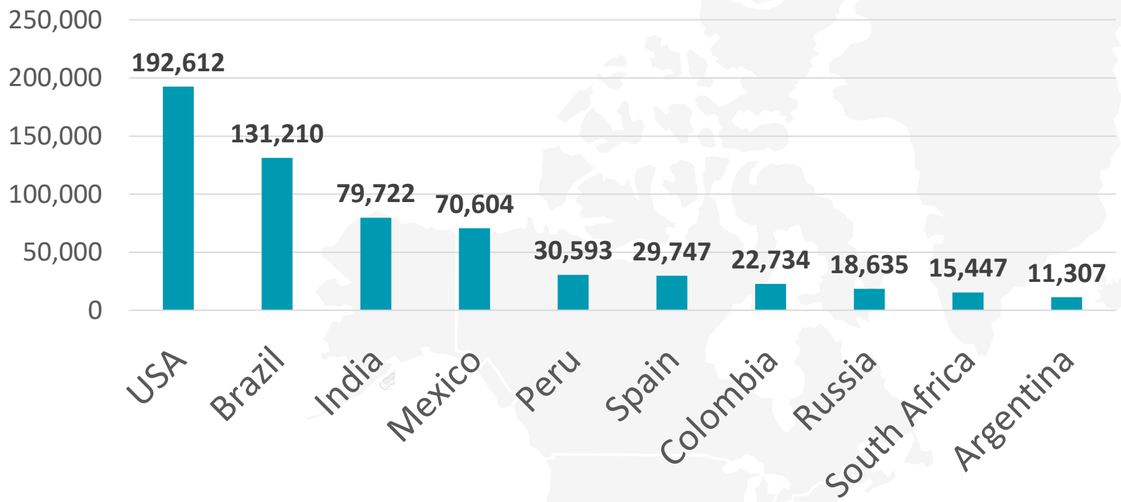
Figure 4: Global Daily New Deaths Due to COVID-19 (china and rest of the world)



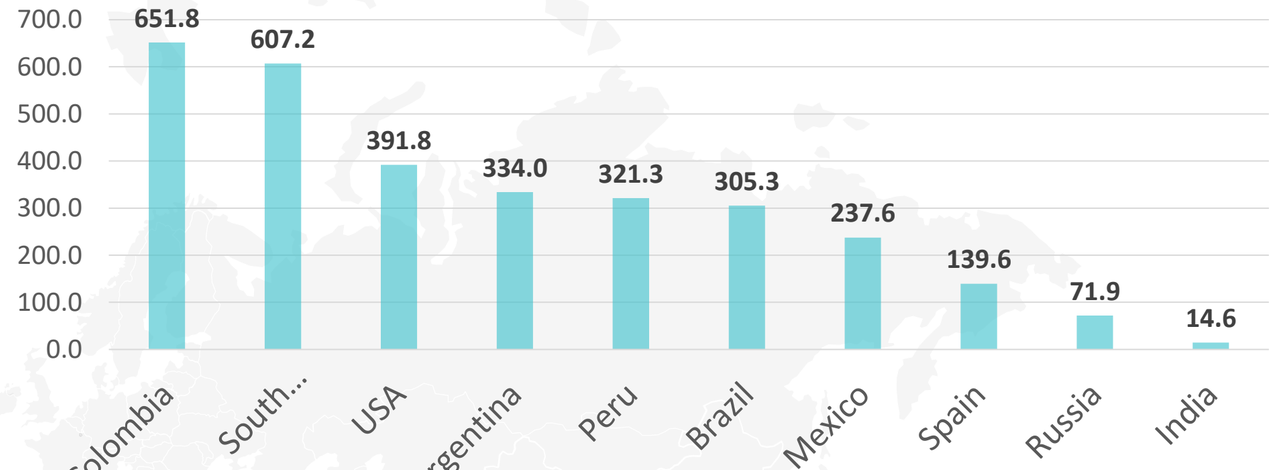
Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

Figure 5: Top 10 Countries in the Total Number of Cases Due to COVID-19

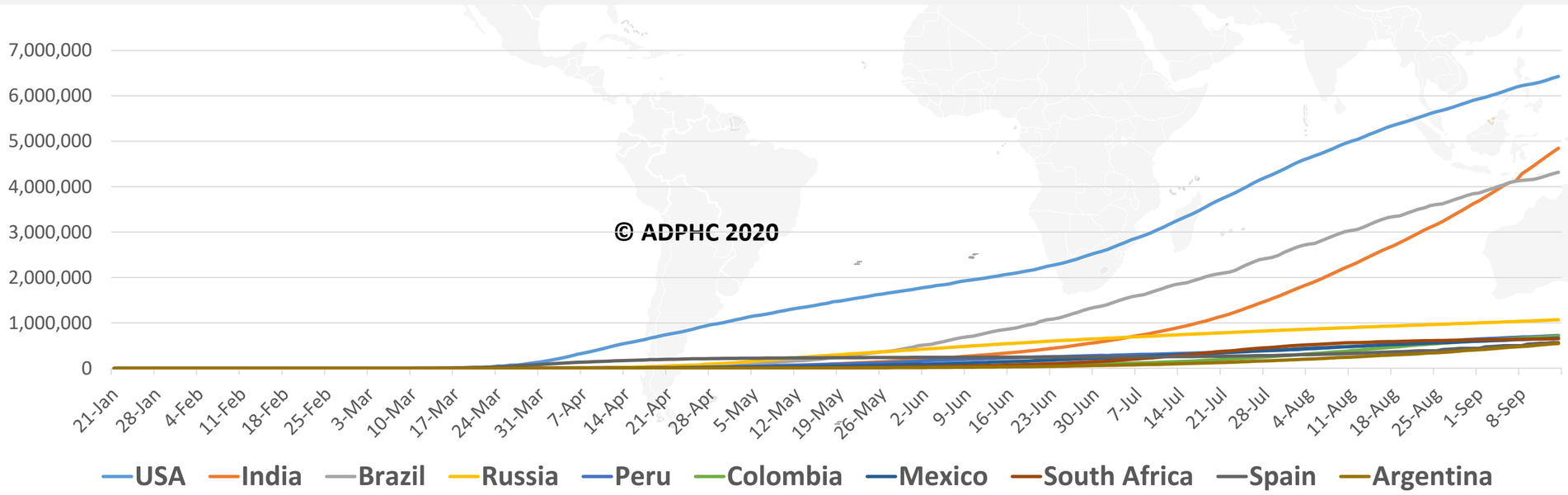
TOTAL DEATHS



DEATHS PER MILLION



TOTAL INFECTED CASES



USA	6,426,958
Brazil	4,846,427
India	4,315,687
Russia	1,068,320
Peru	722,832
Colombia	708,964
Mexico	663,973
South Africa	649,793
Spain	566,326
Argentina	546,481

Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

EPIDEMIOLOGY

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Figure 6: COVID-19 Status in the UAE (Federal Competitiveness and Statistics Authority Dashboard)

Daily Tests

79,788.1 Average Tests

806.7 per 100k population

1.0% Positive Rate

Daily Cases

830.3 Average Cases

8.4 per 100k population

Daily Recovered

492.6 Average Recovered

5.0 per 100k population

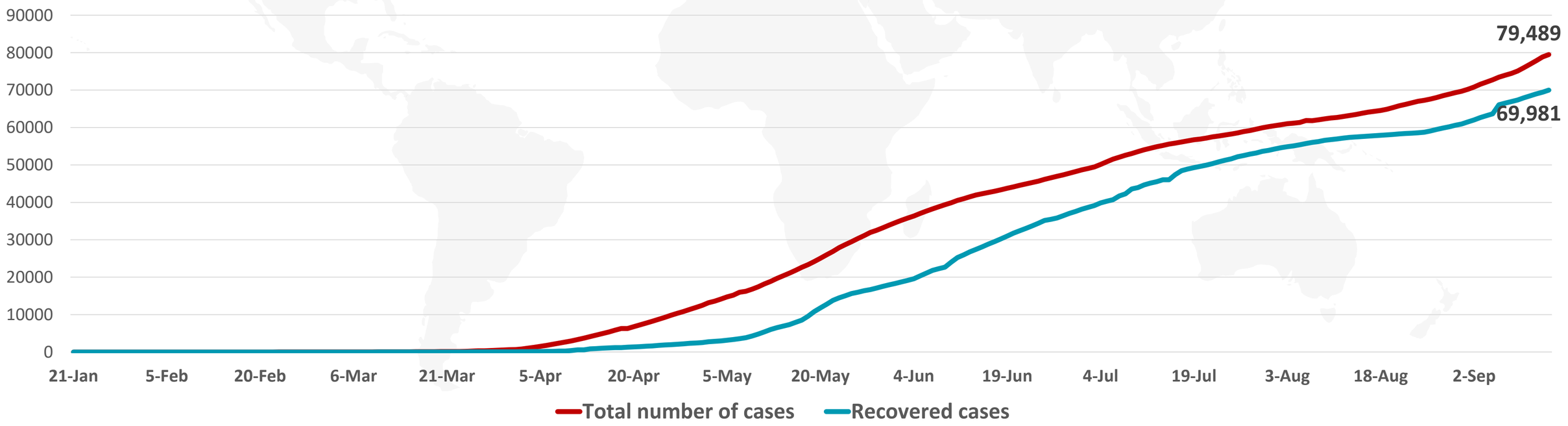
Daily Deaths

1.3 Average Deaths

0.0 per 100k population

0.2% Case Fatality Rate

TOTAL NUMBER OF INFECTED AND RECOVERED CASES DUE TO COVID-19 REPORTED BY THE UAE



Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: FCSA, WHO, John Hopkins

EPIDEMIOLOGY

Date: 14 SEPT 2020

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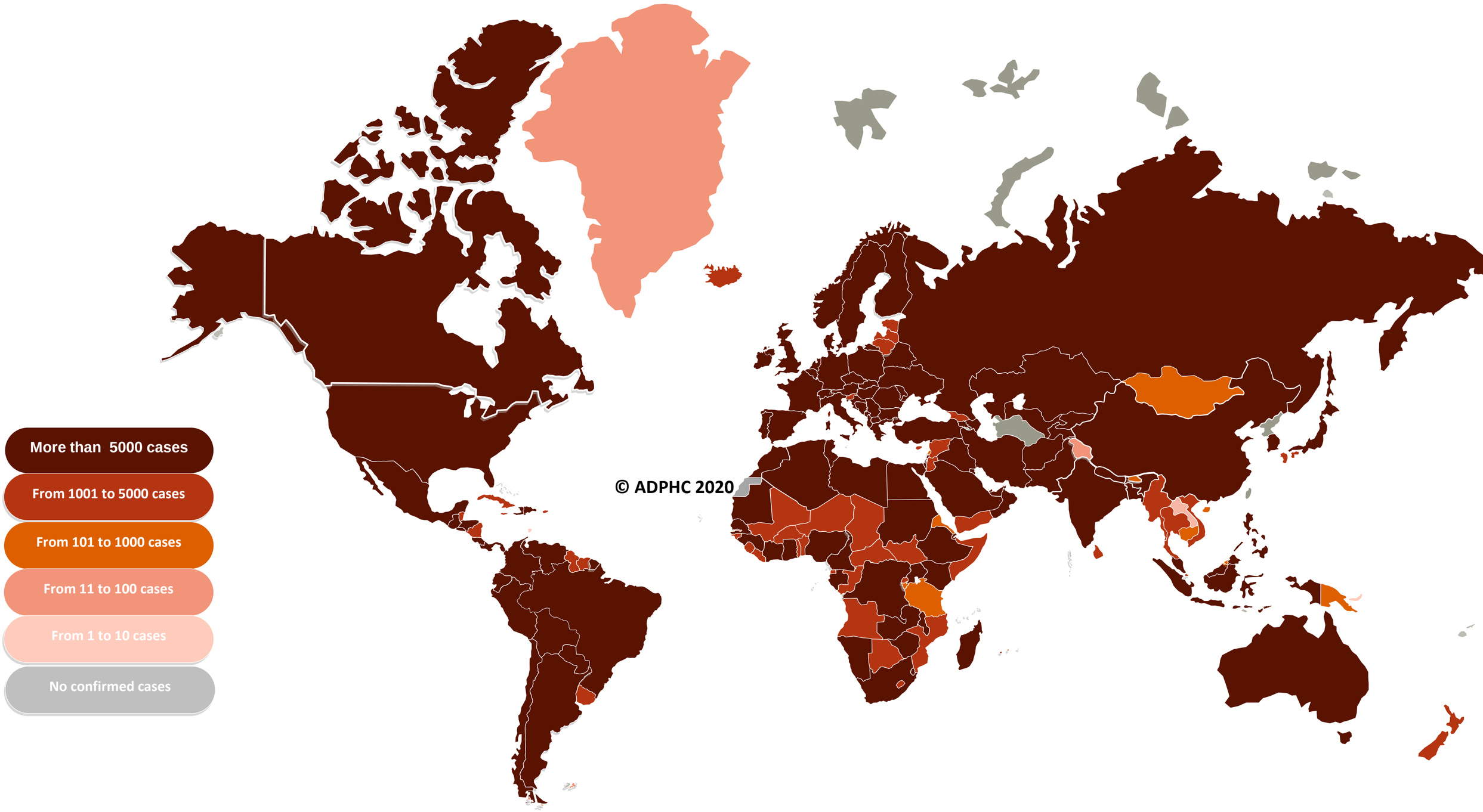
Figure 7A : Global Distribution of COVID-19 Cases



Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

EPIDEMIOLOGY

Date: 14 SEPT 2020

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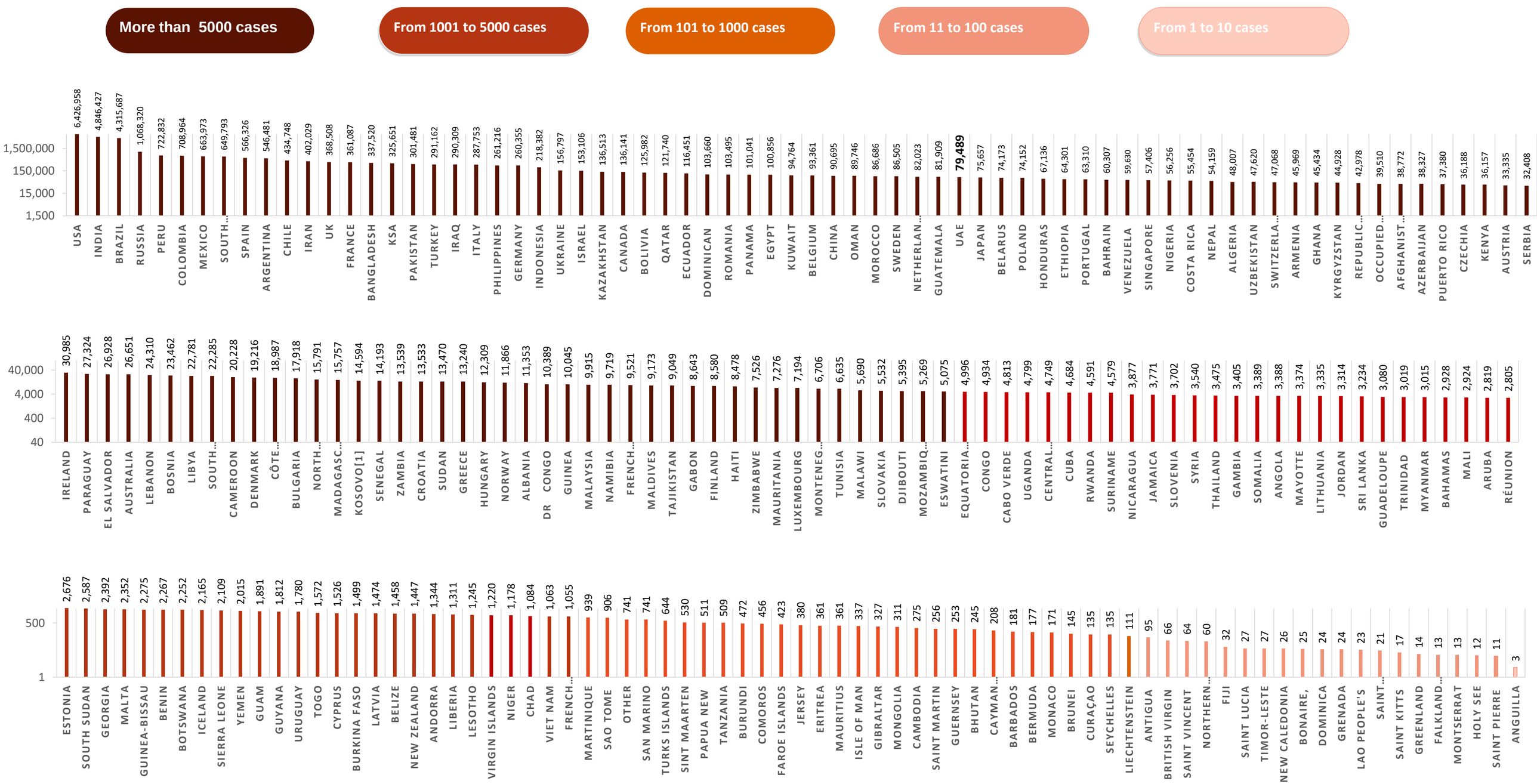
Figure 7B: Bar Chart Illustrates the Global Distribution of COVID19 Cases



Other*:includes cases and deaths reported under the international conveyance(Diamond Princess)

Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

EPIDEMIOLOGY

Date: 14 SEPT 2020

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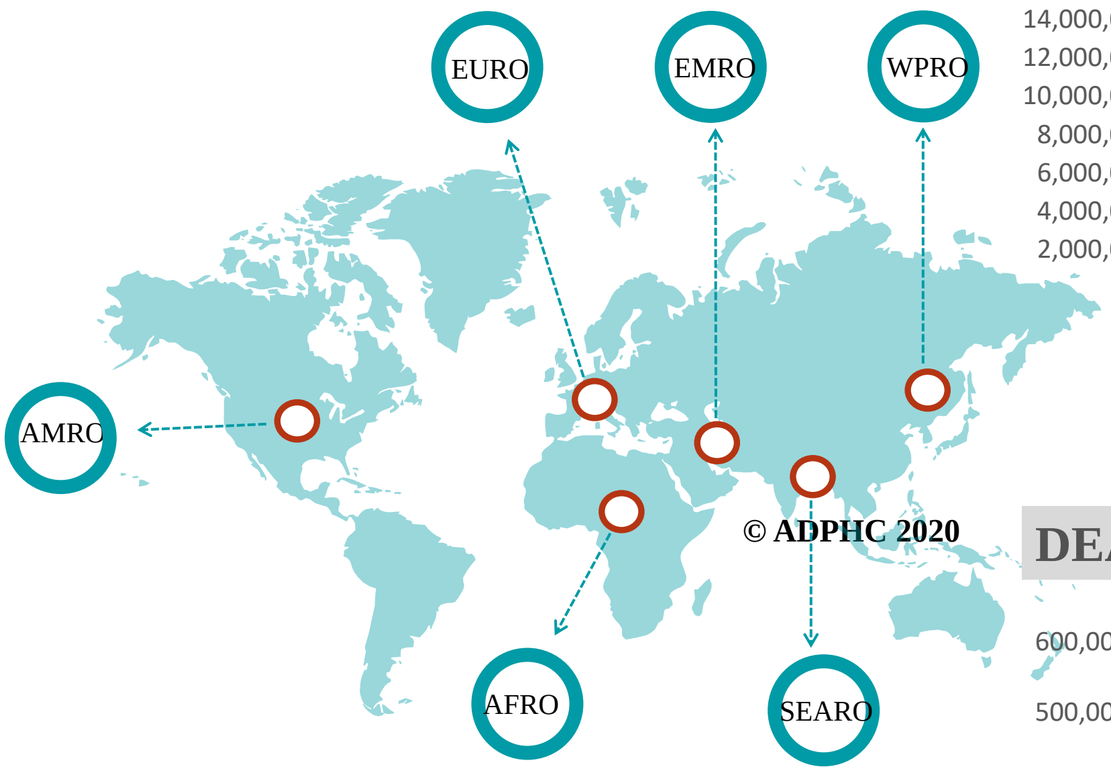
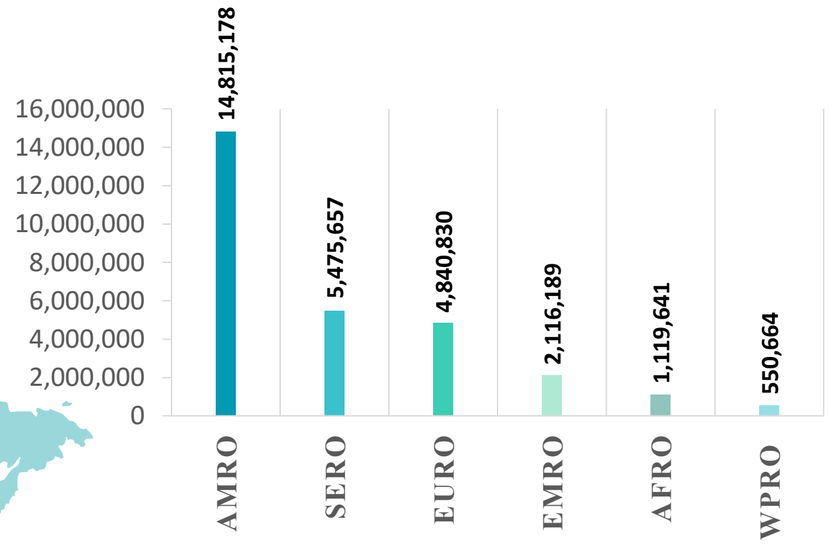
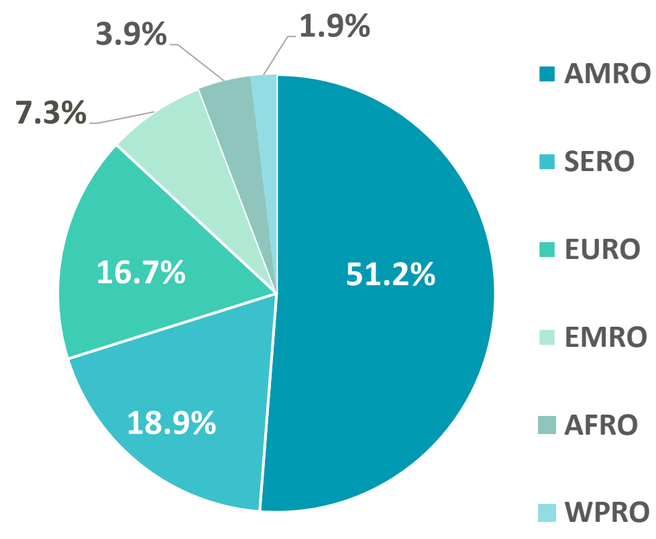
Figure 8: Global Distribution of COVID-19 Cases per Region

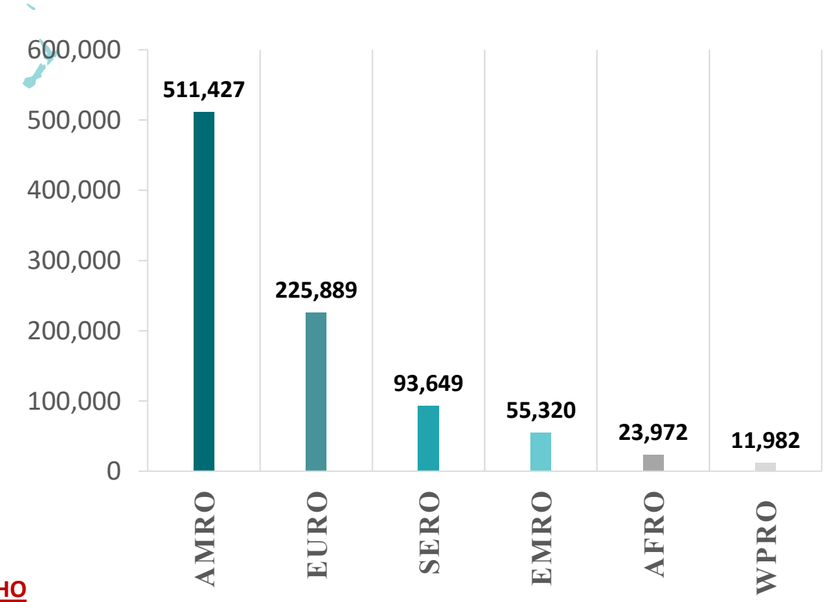


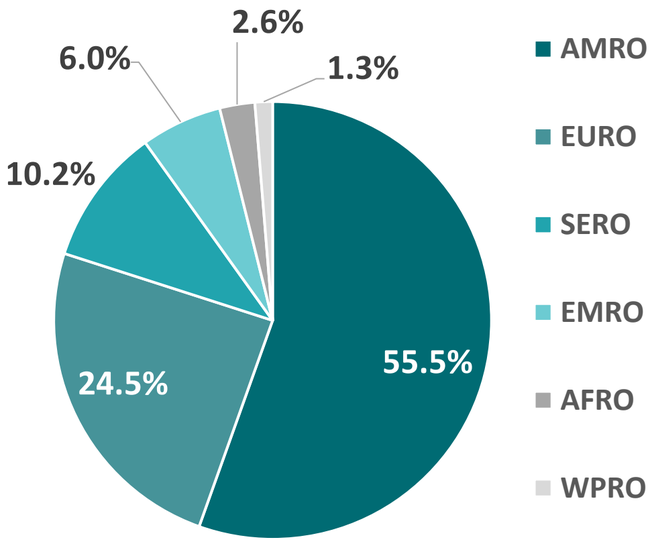
INFECTED





DEATHS

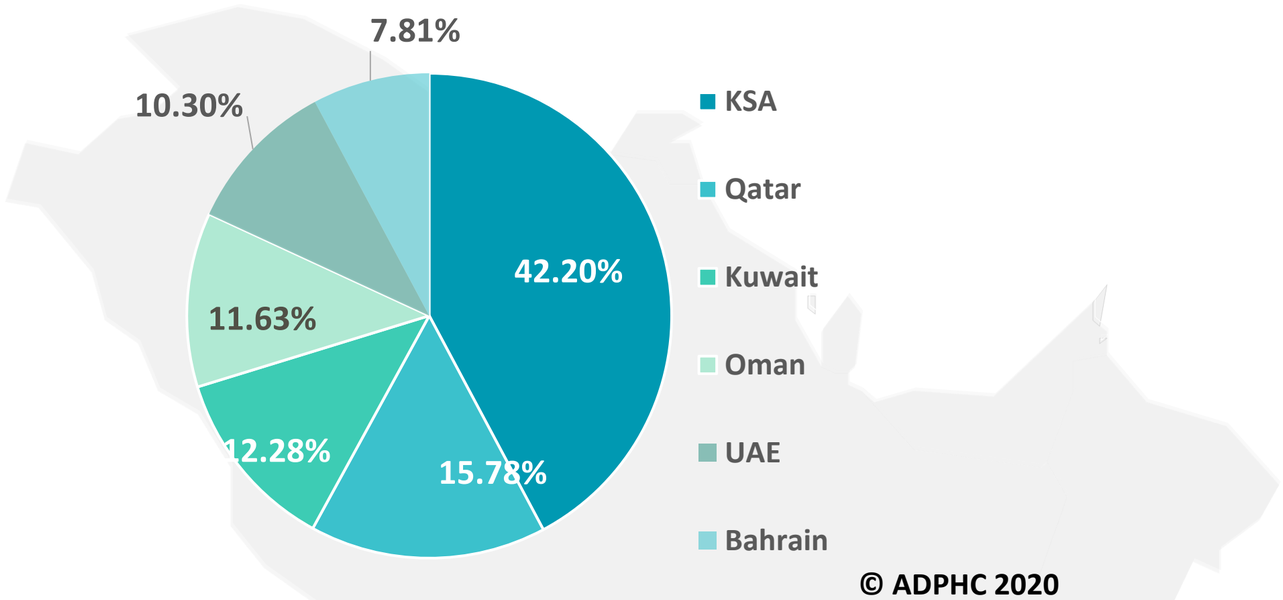


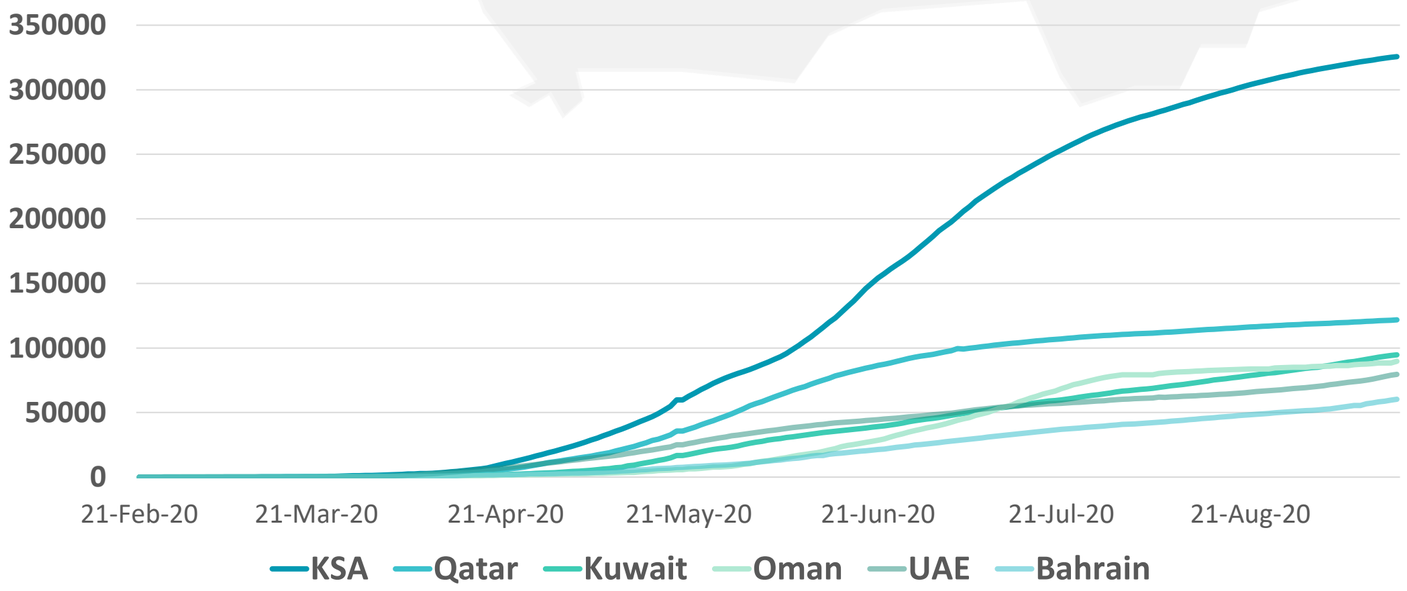


Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: WHO

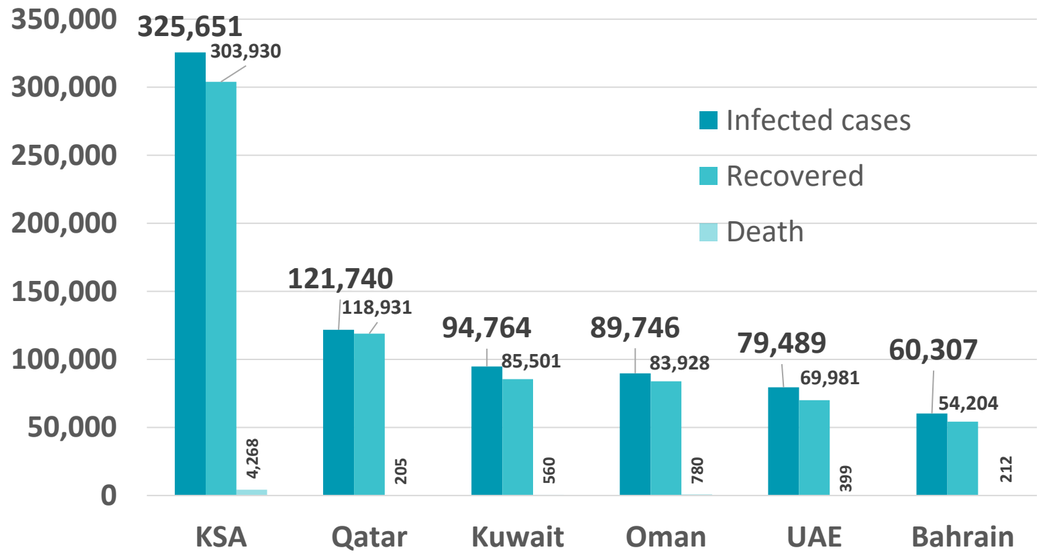
Figure 9: Comparative Analysis of the Distribution of COVID-19 Cases in GCC Countries

TOTAL NUMBER OF INFECTED CASES

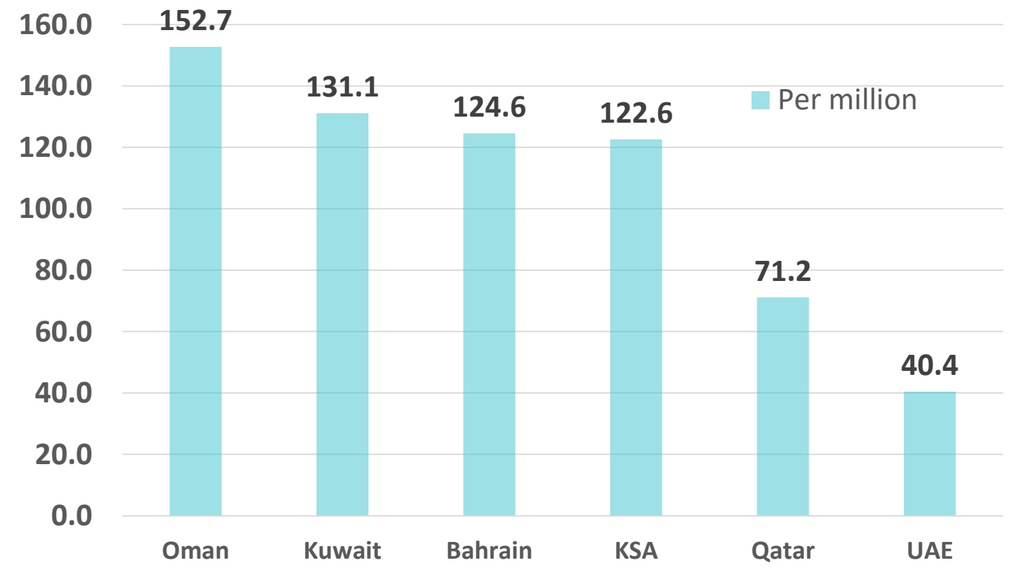




TOTAL NUMBER OF INFECTED, RECOVERED AND DEATHS



DEATHS PER MILLION



Graphs published by Abu Dhabi Public Health Center 2020 | Data resources: John Hopkins, WHO

Figure 10: Comparative Analysis of the Distribution of COVID-19 New Cases in GCC Countries

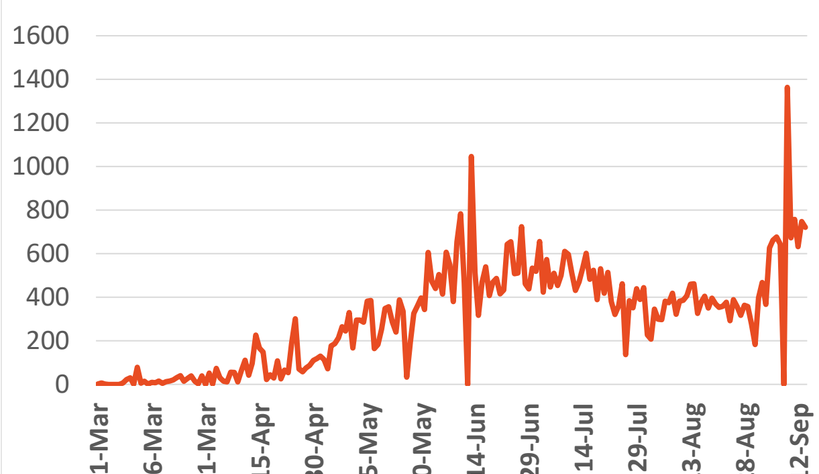
UAE

Source : National Emergency Crisis and Disaster Management Authority

KSA

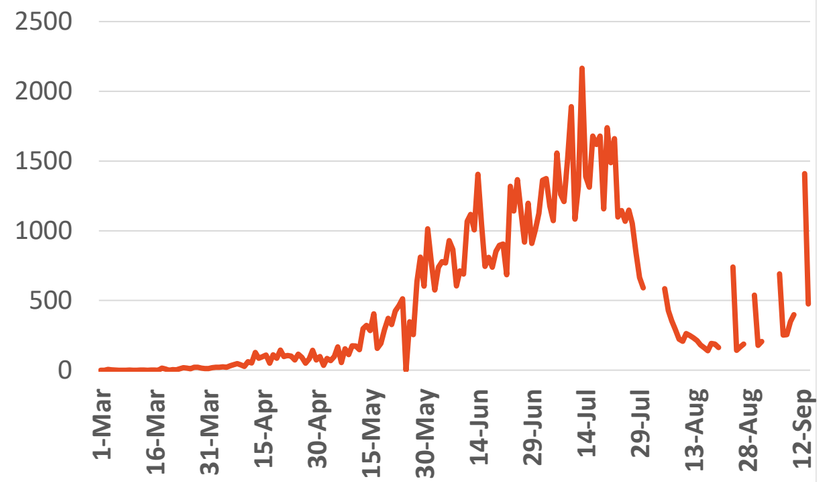
Source : KSA ministry of health

Bahrain



Source :WHO

Oman

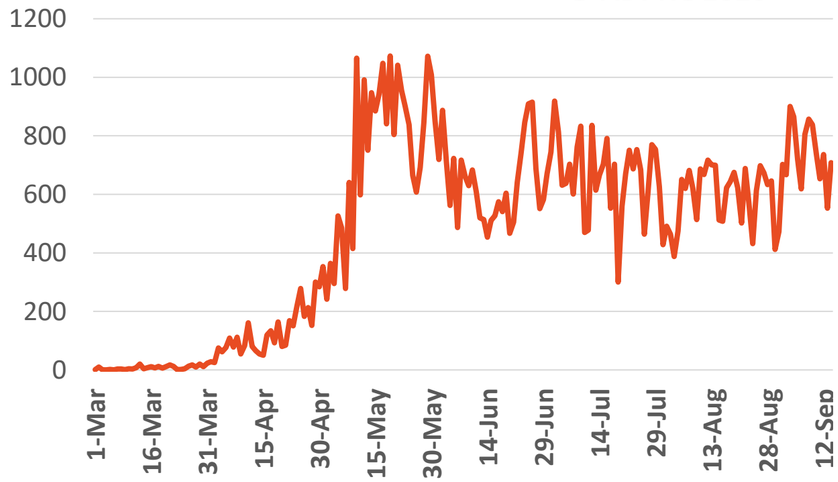


Source :Oman ministry of health

*No announced statistic data from 31 July to 4 August, 21 to 23 August & from 28 to 30 August, 2, 4، 5,11 & 12 September

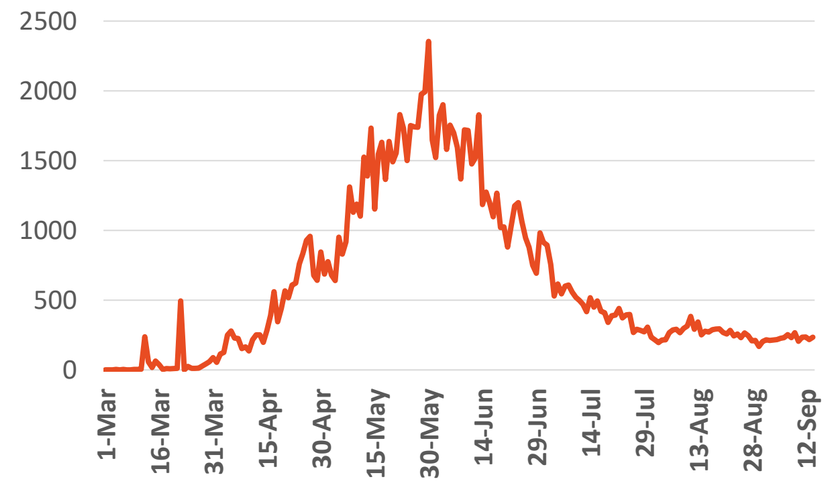
*No announced statistic data on weekends and official holidays.

Kuwait



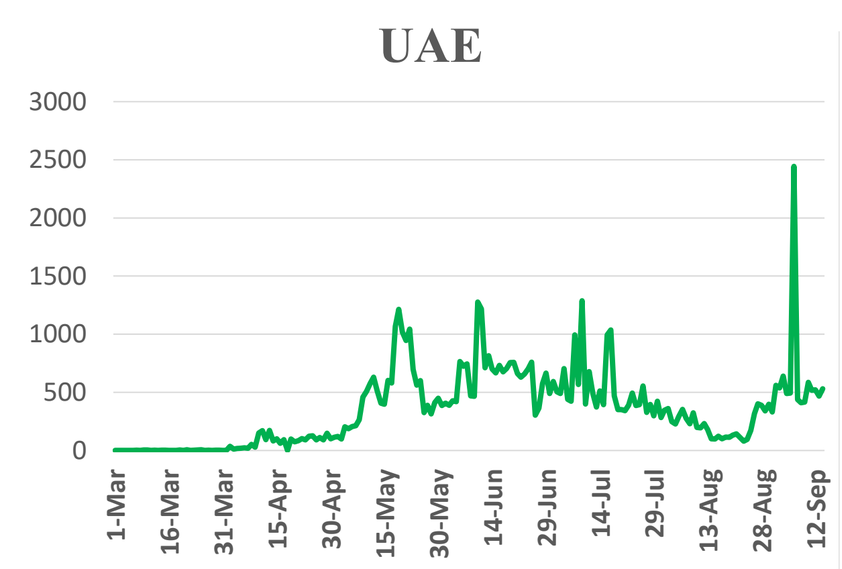
Source : Kuwait ministry of health

Qatar

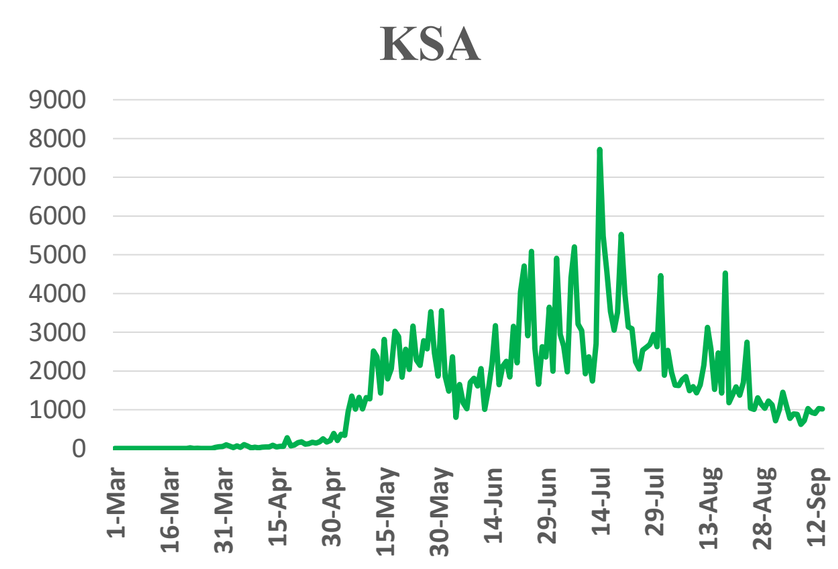


Source : Qatar ministry of health

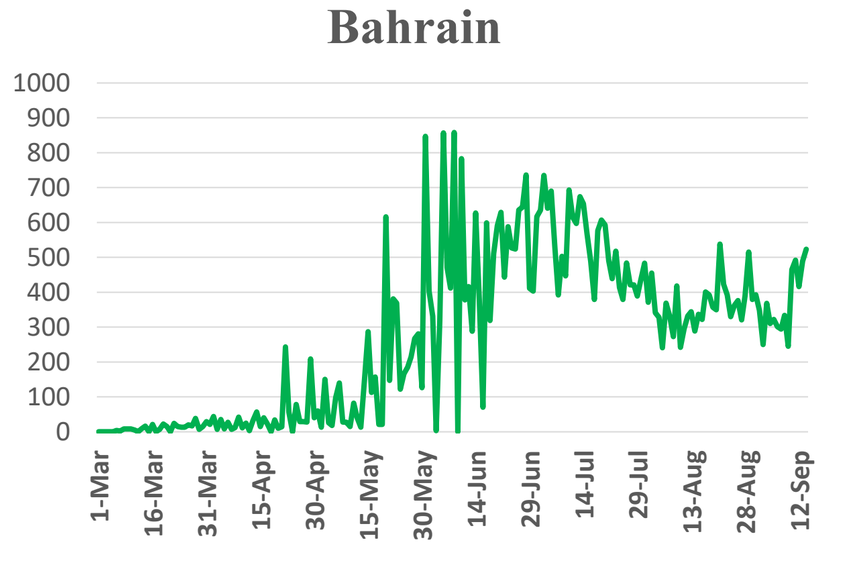
Figure 11: Comparative Analysis of the Distribution of COVID-19 Newly Recovered Cases in GCC Countries



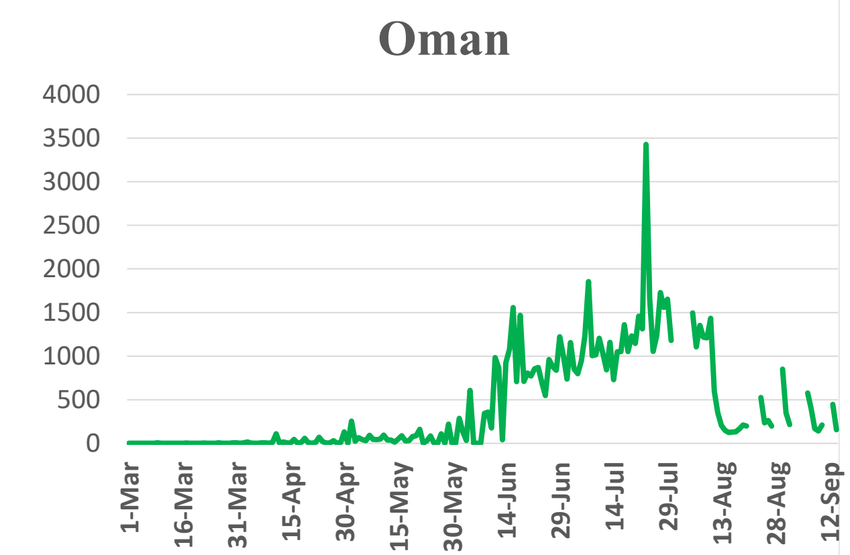
Source : National Emergency Crisis and Disaster Management Authority



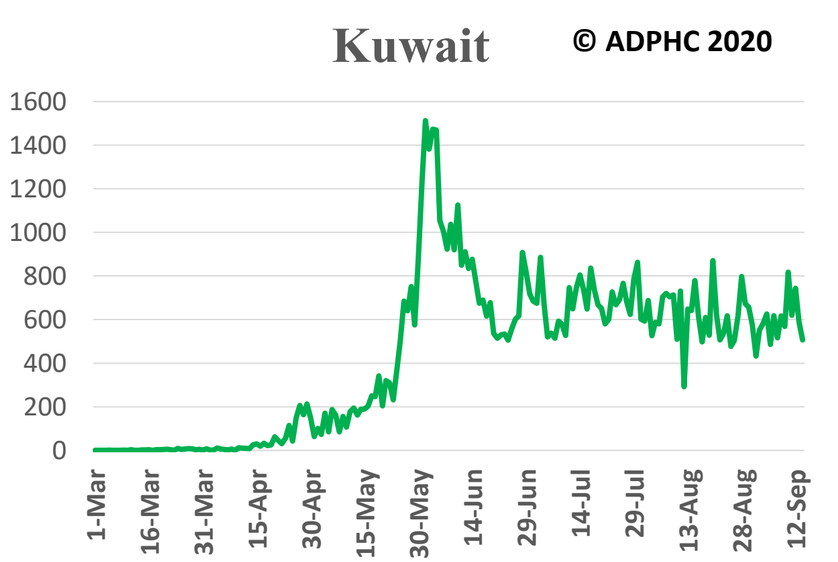
Source : KSA ministry of health



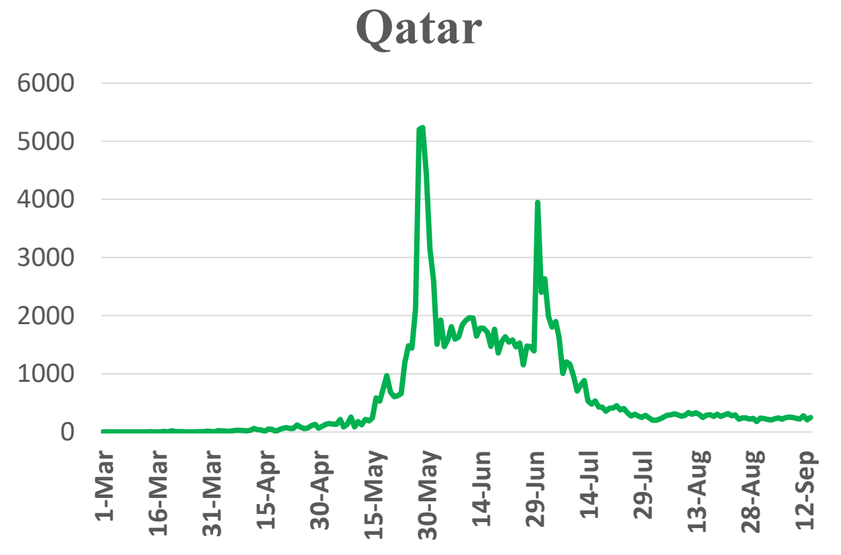
Source : Bahrain ministry of health



Source :Oman ministry of health



Source : Kuwait ministry of health



Source : Qatar ministry of health

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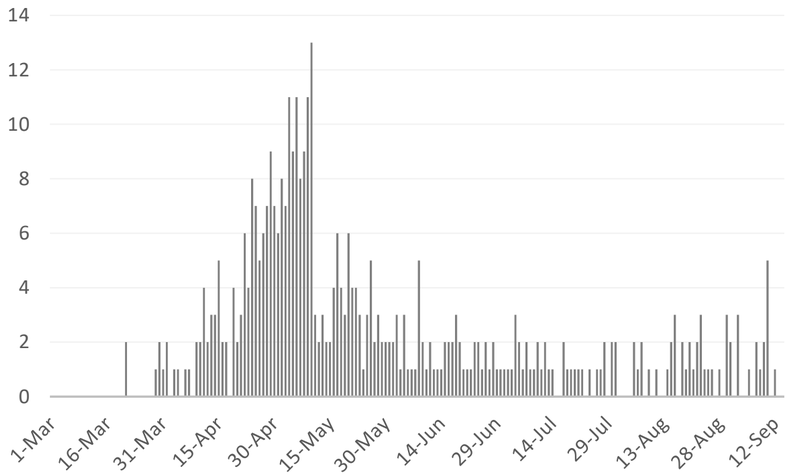
*No announced statistic data on weekends and official holidays.

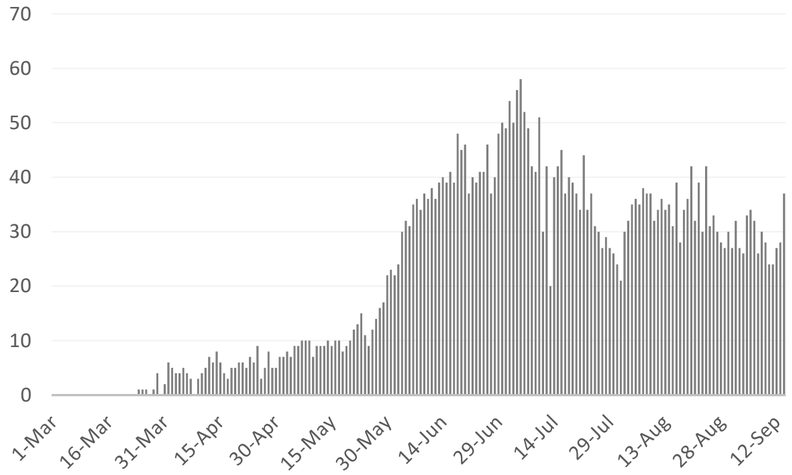
Figure 12: Comparative Analysis of the Distribution of COVID-19 New Death Cases in GCC Countries

UAE



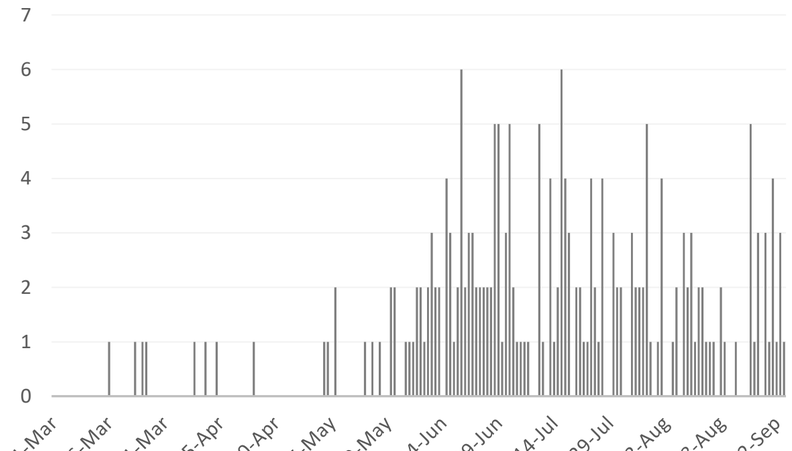
Source : National Emergency Crisis and Disaster Management Authority

KSA



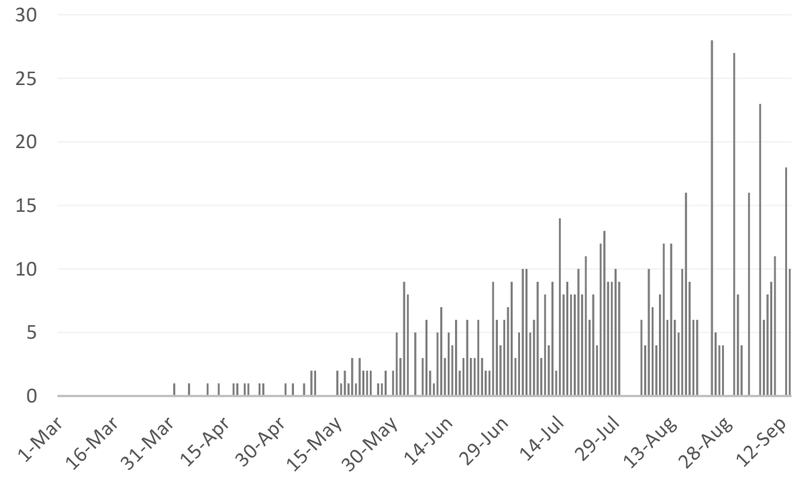
Source : KSA ministry of health

Bahrain



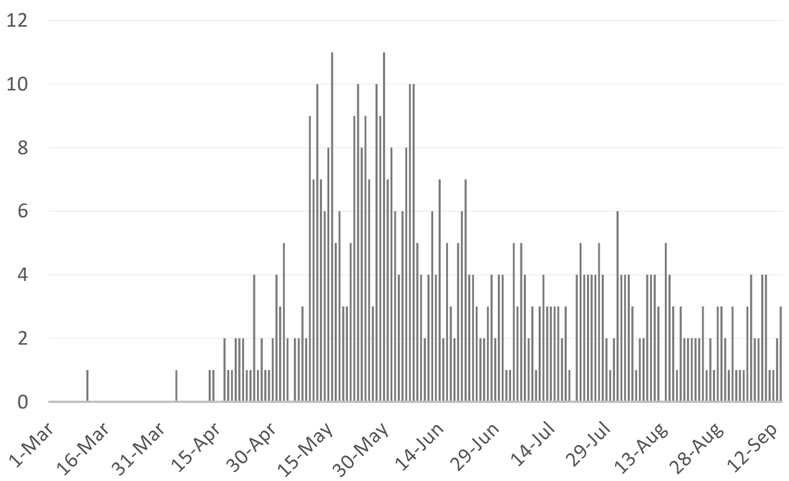
Source :WHO

Oman



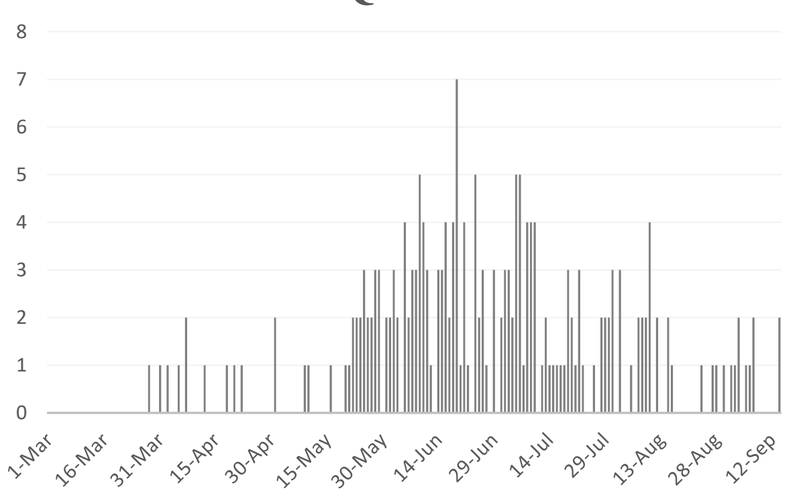
Source :Oman ministry of health

Kuwait



Source : Kuwait ministry of health

Qatar



Source : Qatar ministry of health

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*No announced statistic data on weekends and official holidays.

TREATMENT

Article 1

Published September 4, 2020 The Lancet

Azithromycin in Addition to Standard of Care Versus Standard of Care Alone in the Treatment of Patients Admitted to the Hospital with Severe COVID-19 in Brazil (COALITION II): A Randomized Clinical Trial

This open-label, randomized clinical trial (COALITION II) aimed to test the hypothesis of whether adding azithromycin to a standard of care regimen with hydroxychloroquine was superior to standard of care alone in improving the 15-day clinical status and 29-day survival of patients hospitalized with severe COVID-19.

METHODS

- This study was conducted from March 28 to May 19, 2020, at 57 centres in Brazil. 447 patients were enrolled; however, it included 397 patients with confirmed COVID-19 infection and constituted the modified Intention-To-Treat (mITT) population (214 in the azithromycin group and 183 in the control group).
- Patients were randomly assigned (1:1) to azithromycin (500 mg via oral, nasogastric, or IV administration once daily for 10 days) plus standard of care or standard of care without macrolides.
- Hydroxychloroquine was provided for all the patients in the control group as part of the standard of care.
- Primary outcome was clinical status at day 15 after randomization, assessed by a six-point ordinal scale, with levels ranging from 1 to 6 and higher scores indicating a worse condition.

FINDINGS

- The addition of azithromycin to the standard of care treatment was not superior to the standard of care treatment alone in improving the clinical status of patients with severe COVID-19.
- Mortality rates, levels of the incidence of secondary infections, duration of hospital stay, and time free from mechanical ventilation all showed similar results.
- Patients with azithromycin had the worst primary endpoints of clinical status at day 15.

TREATMENT

Continued

LIMITATIONS

- Only patients with severe COVID-19 infection were enrolled in the study.
- It can not be confirmed whether azithromycin should be used as a standalone therapy for COVID-19 without hydroxychloroquine.
- The open-label design might have led to reporting bias

CONCLUSION

- In this trial, the addition of azithromycin to standard of care treatment was not superior to standard of care alone (standard of care included hydroxychloroquine according to local guidelines) in improving the clinical status in patients with severe COVID-19.

	Azithromycin group (n=214)	Control group (n=183)	Difference (95% CI)	p value
Primary outcome				
Score on six-point ordinal scale at day 15	..	..	1·36 (0·94 to 1·97)*	0·11
1: not admitted to hospital	46 (21%)	49 (27%)	..	..
2: admitted to hospital, not requiring supplemental oxygen	7 (3%)	15 (8%)	..	..
3: admitted to hospital, requiring supplemental oxygen	21 (10%)	9 (5%)	..	..
4: admitted to hospital, requiring HFNC or NIPPV	5 (2%)	3 (2%)	..	..
5: admitted to hospital, requiring ECMO, invasive mechanical ventilation, or both	69 (32%)	52 (28%)	..	..
6: death	66 (31%)	55 (30%)	..	..
Key secondary outcome				
Death at 29 days	90 (42%)	73 (40%)	1·08 (0·79 to 1·47)†	0·63
Secondary outcomes				
Score on six-point ordinal scale at 7 days	..	..	1·60 (1·08 to 2·35)*	0·018
1: not admitted to hospital	9 (4%)	15 (8%)	..	..
2: admitted to hospital, not requiring supplemental oxygen	12 (6%)	8 (4%)	..	..
3: admitted to hospital, requiring supplemental oxygen	31 (14%)	32 (17%)	..	..
4: admitted to hospital, requiring HFNC or NIPPV	9 (4%)	14 (8%)	..	..
5: admitted to hospital, requiring ECMO, invasive mechanical ventilation, or both	119 (56%)	86 (47%)	..	..
6: death	34 (16%)	28 (15%)	..	..
Score on six-point ordinal scale at 29 days	..	..	1·43 (0·96 to 2·12)*	0·081
1: not admitted to hospital	69 (32%)	76 (42%)	..	..
2: admitted to hospital, not requiring supplemental oxygen	12 (6%)	6 (3%)	..	..
3: admitted to hospital, requiring supplemental oxygen	16 (7%)	7 (4%)	..	..
4: admitted to hospital, requiring HFNC or NIPPV	2 (1%)	5 (3%)	..	..
5: admitted to hospital, requiring ECMO, invasive mechanical ventilation, or both	23 (11%)	16 (9%)	..	..
6: death	90 (42%)	73 (40%)	..	..
Ventilation-free days (n=310)	0 (0 to 14)	1 (0 to 18)	−3·33 (−5·89 to −0·77)‡	0·37
Duration of hospital stay among survivors, days (n=234)	26 (11 to 29)	18 (11 to 29)	8·00 (0·81 to 15·19)‡	0·064
Incidence of secondary infections	87 (41%)	65 (36%)	1·11 (0·92 to 1·33)§	0·29

CLINICAL FEATURE

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Article 2

Published September 11, 2020 JAMA

Cardiovascular Magnetic Resonance Findings in Competitive Athletes Recovering From COVID-19 Infection

- Recent studies have raised concerns about myocardial inflammation in asymptomatic and mildly symptomatic patients after recovery from coronavirus disease 2019 (COVID-19).

- The investigators of this study performed a comprehensive Cardiovascular Magnetic Resonance CMR examination on 26 competitive college athletes (mean [SD] age, 19.5 [1.5] years; 15 males [57.7%]). Electrocardiogram, serum troponin I, and transthoracic echocardiogram were performed on the day of CMR imaging. Cardiac magnetic resonance imaging was performed after the recommended quarantine (11-53 days).
- Twelve athletes (26.9%; including 7 female individuals) reported mild symptoms during short-term infection (sore throat, shortness of breath, myalgias, fever), while others were asymptomatic. There were no diagnostic ST/T wave changes on electrocardiogram, and ventricular volumes and function were within normal range in all athletes by transthoracic echocardiogram and CMR imaging. No athlete had elevated serum levels of troponin I.

- Pericardial effusion was present in 2 athletes with CMR evidence of myocarditis. Two of these 4 athletes with evidence of myocardial inflammation had mild symptoms (shortness of breath), while the other 2 were asymptomatic. Twelve athletes (46%) had Late Gadolinium Enhancement LGE (mean of 2 American Heart Association segments), of whom 8 (30.8%) had LGE without concomitant T2 elevation. Mean (SD) T2 in those with suspected myocarditis was 59 (3) milliseconds compared with 51 (2) milliseconds in those without CMR evidence of myocarditis.

- The authors concluded that in competitive athletes, CMR may provide an excellent risk stratification assessment for myocarditis in those who have recovered from COVID-19 to help guide safe and competitive sports participation.

Article 3

Testing for Responses to the Wrong SARS-CoV-2 Antigen?

Published August 28, 2020, The Lancet

- The authors of this correspondence express their concerns regarding the Abbot assay and the Roche assay; both of which detect antibodies and are used to determine past infection by the government of the UK.
- Multiple proteins in the virus have been a target for these assay. One of them is the Anti-NP, which is currently used commercially by Abbott and Roche. Other proteins are receptor-binding domain (RBD) and the spike S1, S2 protein.
- The authors studied 2204 serum samples from staff and patients previously screened for anti-NP on the Abbott platform as part of the routine diagnostic service by the UK National Health Service aiming to determine the abbot performance with different kit targeting different proteins.
- They use Imperial Hybrid DABA; Imperial College London, London, UK), which detects total antibodies to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) receptor-binding domain (RBD) and also they used in house ELISA testing for S1 protein (Figure 1).
- The authors concluded that the UK Government's decision to facilitate the use of Abbott' assay was intemperate as Anti-NP seems insensitive in the field.
- Those who might still deign to use these assays, as the sole marker of past infection, would be wise to consider confirmatory algorithms to better inform individuals investigated for anti-NP.

Table: Frequency of anti-RBD antibody detection according to the binding ratio in SARS-CoV-2 Abbot IgG

	Total Number	Imperial Hybrid DABA positive n (%)
Negative in Abbott (Binding ratio < 1.4)		
Binding ratio (Abbott)		
0.25 - 0.5	196	67 (34.2)
0.5 - 0.75	101	60 (59.4)
0.75 - 1	95	67 (70.5)
1 - 1.25	70	54 (77.1)
1.25 - 1.4	49	46 (93.9)
Total	511	294* (57.5)
Positive in Abbott (Binding ratio ≥ 1.4)		
Binding ratio (Abbott)		
1.4-2.5	906	834 (92.1)
> 2.5	787	783 (99.5)
Total	1693 (76*)	1,617 (95.5)

*Discrepant sample totals

THANK YOU

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