

Oct | 22

COVID-19

Situation Report 486

Centre for Infectious Disease Epidemiology and Research (CIDER)

i. Background

In December, China notified the World Health Organization (WHO) of several cases of human respiratory illness, which appeared to be linked to an open seafood and livestock market in the city of Wuhan. The infecting agent has since been identified as a novel coronavirus, previously known as 2019-nCoV and now called SAR-CoV-2; The new name of the disease has also been termed COVID-19, as of 11th February 2020. Although the virus is presumed zoonotic in origin, person-to-person spread is evident. Screening of travellers, travel bans and quarantine measures are being implemented in many countries. Despite these precautions, it is anticipated that more cases will be seen both inside China and internationally. The WHO declared the outbreak of COVID-19 constitutes a Public Health Emergency of International Concern on 30 January. On 11 March, 2020, WHO declared the coronavirus outbreak a pandemic as the global death toll rose above 4,600 and the number of confirmed cases topped 125,000. This report aims to update Global Risk Assessment, Global Epidemiology, Quarantine Orders, Travel Ban/Advisory by countries, WHO's and CDC's Guidance and Protocols and Scientific publication on a daily basis. **New updates in the tables are bolded.**

ii. Global Risk Assessment

Table 1. Risk assessment of COVID-19 by WHO regions (Updated as of 22 October 2021, 1200H SGT)

Environmental Risk	Transmissibility	Severity of Disease	Availability of Treatment/ Vaccination [#]	Overall Risk [%]
Global (n=198 countries)				
<p>High</p> <p>Globally, 190 (96.0%) countries (excluding territories*) have reported the outbreak.</p> <p>Using an incidence >20 cases/100,000 people over the past 14-days as cut-off for a surge in cases, the number of countries reporting a surge in cases in each region are as follows: Combined WPRO and SEARO (18 countries), EURO (50 countries), EMRO (11 countries), Americas (31 countries), and Africa (8 countries).</p> <p>Only 4 (2%) countries/territories have no reported restrictions on inbound arrivals, while 148 (80%) countries/territories have partially reopened their borders – require arrivals to produce a negative COVID-19 test result and/or undergo self-quarantine upon arrival. 47 (25%) countries/territories are totally closed to international arrivals. [1]</p> <p>On October 7, the Centers for Disease Control and Prevention (CDC) confirmed airborne transmission of SARS-CoV-2. [2]</p> <p>The U.S. CDC has revised its guidance on COVID-19 quarantine period from 14 days to 7-10 days, based on one's test results and symptoms. Individuals without symptoms only need quarantine for 10 days without testing; those tested negative can quarantine for 7 days. [14]</p> <p>The US Centers for Disease Control and Prevention (CDC) on 10 Feb announced that fully vaccinated people did not need to quarantine if they received their last dose within three months and 14 days after their last shot, the time it takes to develop immunity. [16]</p>	<p>Based on CDC data, median R_0 is estimated to be 5.8 (95% CI 4.4–7.7), but the estimated effective reproduction number in 176 countries ranged from 0.042 to 1.5.^{\$}</p>	<p>Case fatality rate is currently at 2.03% globally. Most cases present as flu-like illness.</p>	<p>Limited</p> <p>The number of countries that have commenced mass vaccination in each region are as follows: Combined WPRO and SEARO (33 countries), EURO (53 countries), EMRO (21 countries), Americas (35 countries), and Africa (46 countries).^{&}</p> <p>International clinical trials published on 2 September confirm that cheap, widely available steroid drugs can help seriously ill patients survive Covid-19. The World Health Organization issued new treatment guidance, strongly recommending steroids to treat severely and critically ill patients, but not to those with mild disease. [4]</p> <p>Researchers have found all regimens of anticoagulants to be far superior to no anticoagulants in COVID-19 patients. More specifically, patients on both a “therapeutic” or full dose and those on a “prophylactic” or lower dose, showed about a 50% higher chance of survival and roughly a 30% lower chance of intubation, than those not on anticoagulants. It was observed that therapeutic and prophylactic subcutaneous low-molecular weight heparin and therapeutic oral apixaban may lead to better results. [3]</p> <p>A new strain known as B.1.525 containing the same E484K mutation found in the Brazilian and South African variants has been detected in Britain [18].</p> <p>As of 6 July, the WHO recommended using arthritis drugs Actemra (tocilizumab) and Kevzara (sarilumab) with corticosteroids for severe and critical COVID-19 patients. [27]</p>	<p>High</p>

			<p>On 4 Aug, the WHO called for a moratorium on COVID-19 vaccine boosters until at least the end of September, to enable that at least 10% of the population of every country was vaccinated. [28]</p> <p>On 3 Sept, emergency use of the Soberana 2 vaccine was authorized in Cuba for minors between the ages of two and 18. [31]</p> <p>On 8 Sep, World Health Organization called for a moratorium on using coronavirus booster shots until the end of the year or longer especially among healthy people who are fully vaccinated. [32]</p>	
Western Pacific Region and South-East Asia Region (n=41 countries)				
<p>Moderate</p> <p>34 (82.9%) countries have reported outbreaks; but only 18 (43.9%) countries are reporting a surge in cases.</p> <p>14 (34.2%) countries have either a constant decreasing change in incidence or no case in the last 14 days.</p> <p>Highest incidence over the past 14 days were reported from Brunei, Malaysia, Maldives, Mongolia and Singapore, and highest case numbers were reported from India, Malaysia, Philippines, Thailand and Vietnam.</p> <p>At least 18 countries have closed their borders, 22 countries have opened their borders partially conditionally, and none is allowing free travel.</p>	<p>As of Oct 20, the estimated effective reproduction no. of 25 countries ranged from 0.61-1.2.^{\$}</p>	<p>Case fatality rate is 1.53%.</p>	<p>High</p> <p>33 countries have commenced vaccination as of 22 October 2021. Coverage was available for the following: i) at least 1 dose was at <50% for 11 countries; 51-70% for 11 countries; >70% for 11 countries ii) full vaccination was at <50% for 16 countries; 51-70% for 11 countries; >70% for 5 countries.^{&}</p> <p>Indonesia has approved Russian drug Avifavir for emergency use. [22]</p> <p>China has approved the use of 3 traditional chinese medicines, Qingfei Paidu Formula, Huashi Baidu Formula and Xuanfei Baidu Formula, for COVID-19 treatment. [20]</p> <p>As of 4 June, India has approved a combination of monoclonal antibodies, bamlanivimab and etesevimab for restricted use in emergency situations in hospital settings in adults [24].</p> <p>As of 8 Oct 2021, Philippines authorized the emergency use of Ronapreve as a treatment against mild and moderate COVID-19 for patients aged 12 and above [33].</p>	<p>High</p>

European Region (n=53 countries)				
<p>High</p> <p>52 (98.1%) countries have reported with outbreaks; 50 (94.3%) countries are reporting a surge in cases.</p> <p>1 (1.9%) country has either a constant decreasing change in incidence or no case in the last 14 days.</p> <p>Highest incidence over the past 14 days were reported from Estonia, Georgia, Latvia, Lithuania and Romania, and highest case numbers were reported from Romania, Russia, Turkey, United Kingdom and Ukraine.</p> <p>At least 6 countries have closed their borders, 46 countries have opened their borders partially conditionally, and only 1 country is allowing free travel.</p>	<p>As of Oct 20, the estimated effective reproduction no. of 51 countries ranged from 0.044-1.5.^{\$}</p>	<p>Case fatality rate is 1.87%.</p>	<p>High</p> <p>53 countries have commenced vaccination as of 22 October 2021. Coverage was available for the following i) at least 1 dose was at <50% for 20 countries; 51-70% for 17 countries; >70% for 16 countries; ii) full vaccination was at <50% for 21 countries; 51-70% for 22 countries; >70% for 10 countries. &</p> <p>On February 28, France authorized its first ever use of synthetic monoclonal antibody, bamlanivab by Eli Lilly, for use on severe COVID-19 patients. [19]</p> <p>As of February 14, Italy authorized the use of the two monoclonal antibodies of companies Eli Lilly and Regeneron aimed mainly at more serious patients with COVID-19 [17].</p>	<p>High</p>
Eastern Mediterranean Region (n=22 countries)				
<p>High</p> <p>22 (100%) countries have reported with outbreak; 11 (50.0%) countries are reporting a surge in cases.</p> <p>No country has either a constant decreasing change in incidence or no case in the last 14 days.</p> <p>Highest incidence over the past 14 days were reported from Iran, Jordan, Lebanon, Libya and Palestine, and highest case numbers were reported from Egypt, Iran, Iraq, Jordan and Pakistan.</p> <p>At least 4 countries have closed their borders, 17 countries have opened their borders partially conditionally, and only 1 country is allowing free travel.</p>	<p>As of Oct 20, the estimated effective reproduction no. of 21 countries ranged from 0.5-1.2.^{\$}</p>	<p>Case fatality rate is 1.84%.</p>	<p>High</p> <p>21 countries have commenced vaccination as of 22 October 2021. Coverage was available for the following: i) at least 1 dose was at <50% for 12 countries; 51-70% for 3 countries; >70% for 5 countries; ii) full vaccination was at <50% for 14 countries; 51-70% for 3 countries; >70% for 3 countries. &</p> <p>As of June 25, the Abu Dhabi Stem Cell Centre has treated more than 2,000 COVID-19 patients using UAECell19. 1,200 have fully recovered. [6]</p> <p>As of April, an Israeli firm is using placenta pluristem cells to treat COVID-19 patients on a compassionate use basis. [5]</p> <p>As of June 4, UAE authorised the emergency use of Sotrovimab, a kind of monoclonal antibody drug [25].</p>	<p>High</p>

Region of the Americas (n=35 countries)				
<p>High</p> <p>35 (100%) countries have reported with outbreak; 31 (88.6%) countries are reporting a surge in cases.</p> <p>No country has either a constant decreasing change in incidence or no case in the last 14 days.</p> <p>Highest incidence over the past 14 days were reported from Barbados, Belize, Dominica, St. Vincent Grenadines and Nevis and Suriname, and highest case numbers were reported from Brazil, Canada, Cuba, Mexico and USA.</p> <p>At least 10 countries have closed their borders, 23 countries have opened their borders partially conditionally, and 2 countries are allowing free travel.</p>	<p>As of Oct 20, the estimated effective reproduction no. of 35 countries ranged from 0.49-1.4.^{\$}</p>	<p>Case fatality rate is 2.45%.</p>	<p>High</p> <p>35 countries have commenced vaccination as of 22 October 2021. Coverage was available for the following: i) at least 1 dose was at <50% for 17 countries; 51-70% for 10 countries; >70% for 8 countries ii) full vaccination was at <50% for 24 countries; 51-70% for 8 countries; 70% for 3 countries.^{&}</p> <p>With the increase of multiple variants of COVID-19, the U.S. FDA will limit the use of monoclonal antibody treatments developed by Regeneron and Eli Lilly due to concerns the medications are not effective against these new strains. Eli Lilly's bamlanivimab will not be distributed to California, Arizona and Nevada, where those variants are more common. [21]</p> <p>FDA has issued EUA to Eli Lilly's combination antibody therapy of bamlanivimab and etesevimab to treat mild to moderate COVID-19 patients who are at risk of serious illness or hospitalization. [15]</p> <p>The Food and Drug Administration has allowed the combination use of baricitinib and Remdesivir under emergency use authorization. The EUA covers dosing of patients (above the age of two) who are on supplemental oxygen, receiving invasive mechanical ventilation or extracorporeal membrane oxygenation. [12]</p> <p>Health Canada has approved bamlanivimab, for the treatment of COVID-19 in patients 12 years and older with mild to moderate symptoms who are at risk of severe disease progression. [11]</p> <p>FDA has allowed emergency use of Eli Lilly & Co's bamlanivimab for non-hospitalized patients at risk of serious illness due to age or other conditions. [10]</p> <p>FDA has issued emergency authorisation for convalescent plasma to treat COVID-19. [9]</p>	<p>High</p>

			<p>RLF-100 (aviptadil) by NeuroRx and Relief Therapeutics was approved for emergency use in COVID-19 patients who are too ill to participate in the trial. [8]</p> <p>As of October 22, remdesivir is the first and only FDA-approved COVID-19 treatment in the U.S. [7].</p> <p>FDA has issued emergency authorisation for sotrovimab to treat mild-to-moderate Covid-19 adults and paediatric patients (12 years old and older weighing at least 40kg) who are at risk of severe disease progression. [23]</p> <p>As of 25 June, US FDA has issued emergency authorisation for Actemra/RoActemra (tocilizumab) to treat hospitalized adults and pediatric patients receiving corticosteroids and requiring supplemental oxygen, breathing support or ECMO. [26]</p> <p>As of 5 Aug, FDA has expanded the use of antibody cocktail, REGEN-COV, updating its emergency use authorisation (EUA) to include those at high risk of developing severe COVID-19 who have been exposed to the virus. [29]</p> <p>As of Aug 11, Brazil has issued emergency authorisation to Celltrion's regdanvimab for high-risk patients with mild and moderate Covid-19. [30]</p>	
African Region (n=47 countries)				
<p>Moderate</p> <p>47 (100%) countries have reported with outbreak; 8 (17.4%) countries are reporting a surge in cases.</p> <p>2 (4.3%) countries have either a constant decreasing change in incidence or no case in the last 14 days.</p> <p>Highest incidence over the past 14 days were reported from Botswana, Cabo Verde, Gabon, Mauritius and Seychelles, and highest case numbers were reported from Botswana, Cameroon, Ethiopia, Nigeria and South Africa.</p> <p>At least 9 countries have closed their borders, 38 countries have opened their</p>	<p>As of Oct 20, the estimated effective reproduction no. of 44 countries ranged from 0.042-1.3.[§]</p>	<p>Case fatality rate is 2.47%.</p>	<p>High</p> <p>46 countries have commenced vaccination as of 22 October 2021. Coverage was available for the following: i) at least 1 dose was at <50% for 42 countries; 51-70% for 2 countries; >70% for 1 country; ii) full vaccination was at <50% for 42 countries; 50-70% for 1 country; >70% for 1 country. ^{&}</p> <p>Ethiopia has approved the use of Dexamethasone treatment for seriously ill COVID-19 patients. [13]</p>	High

borders partially conditionally, and no country is allowing free travel.				
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*Only WHO member states are included. 30 territories that have reported cases (with the exception of Palestine) are excluded from the tabulation of total countries affected/imported/local cases and case fatality rate. Refer to WHO situation reports or table 4 for information.

§ <https://epiforecasts.io/covid/posts/global/>

^Differences between R0 and effective R can be found here <https://www.coronavirustoday.com/r-number-refers-either-basic-or-effective-reproduction-number>

& <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/>; High vaccine coverage defined as >70% population with full vaccination

% In view of the reduction in case fatality rate and effective reproduction number with increasing vaccination, the two metric are no longer conferred a risk level in our risk assessment matrix; overall risk of each region is compiled using risk of the environment and availability of treatment only.

iii. Global Epidemiology

Table 2. Summary of COVID-19 cases & fatalities globally (Updated as of 22 October 2021, 1200H SGT)

No. of Countries/ Territories with Cases	Total Global Cases	Total Cases Outside Mainland China	Total Deaths	Case- Fatality Rate (%) [overall]	Case- Fatality Rate (%) [outside China]	R ₀
221	243,273,624	243,176,959	4,945,287	2.03%	2.03%	5.8 (95% CI 4.4–7.7) [^]

[^]Based on early release as of 10th April, 2020: https://wwwnc.cdc.gov/eid/article/26/7/20-0282_article

Table 3. Comparison with other viruses

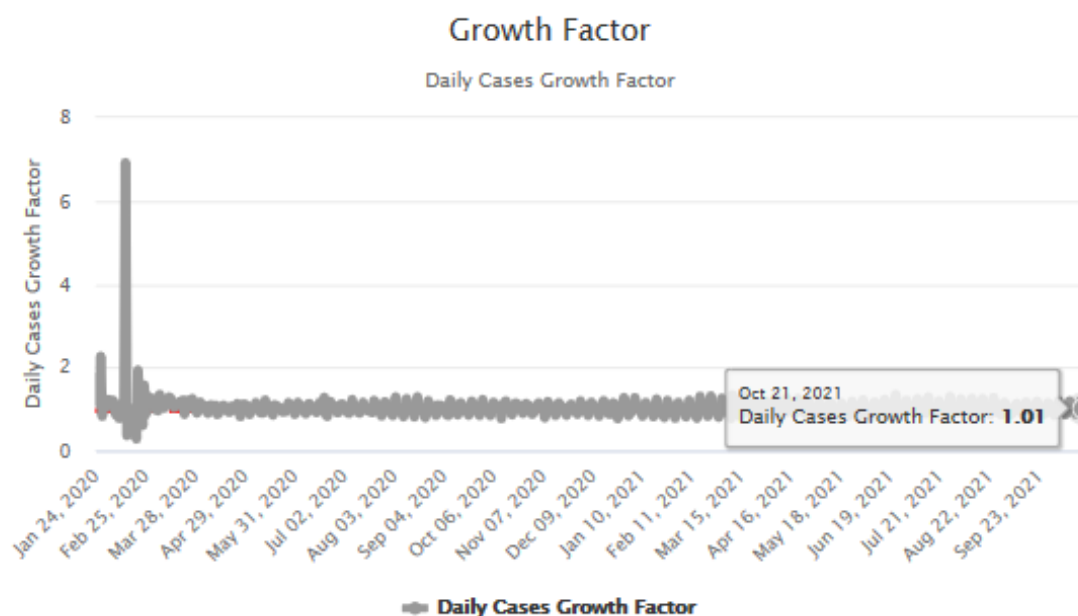
Virus	Incubation Period (Days)	Case Fatality Rate (%)	R ₀
SARS-CoV-2	Median = 5.1 [§] (2-14) or up to 24*	2.03	5.8 (95% CI 4.4–7.7) [^]
SARS-CoV	2-7	9.6	2.0
MERS-CoV	5 (2-14)	34	<1 (higher in health care setting)
Swine Flu	1-4	0.02	1.2-1.6

*Data on 1099 patients from 552 hospitals in 31 provinces of China

[^]https://wwwnc.cdc.gov/eid/article/26/7/20-0282_article

[§]Data on 181 cases outside china

Figure 1. Growth Factor of Daily New Cases (Mainland China+ Other countries)



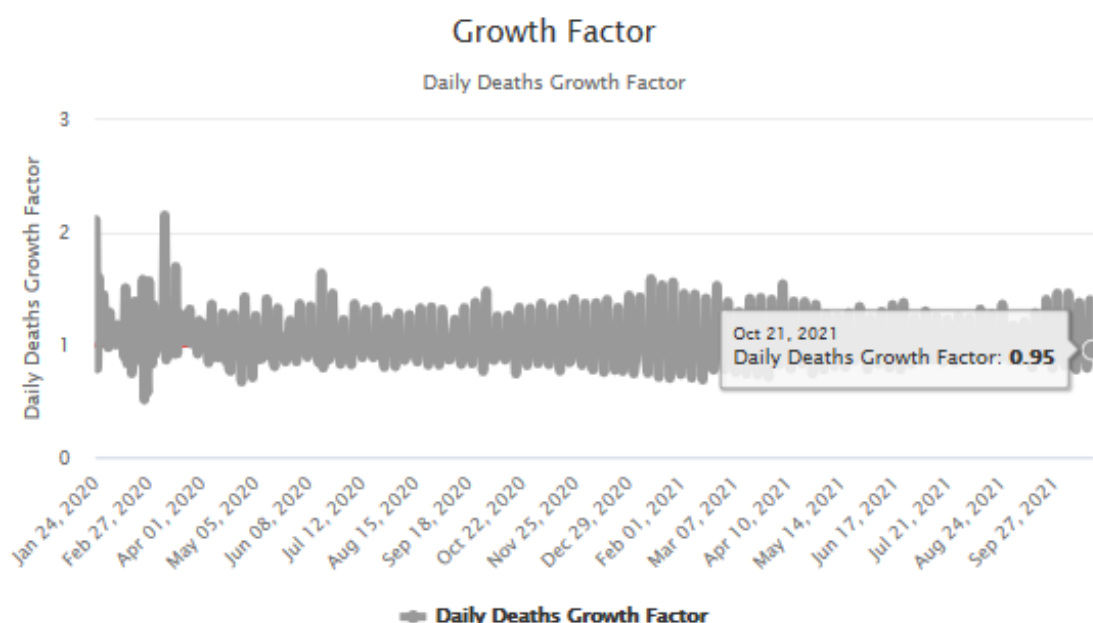
Growth Factor = every day's cases/cases on previous day. A growth factor above 1 indicates an increase, whereas one between 0 and 1 is a sign of decline, with the quantity eventually becoming zero. A growth factor below 1 (or above 1 but trending downward) is a positive sign, whereas a growth factor constantly above 1 is the sign of exponential growth.

*Huge jump in cases on Feb. 12 is attributed to the change in diagnostic criteria in China.

Figure 2. Growth Factor excluding mainland China



Figure 3. Growth Factor of Novel Coronavirus Daily Deaths (Mainland China + Other Countries)



Growth Factor = every day's cases/cases on previous day. A growth factor above 1 indicates an increase, whereas one between 0 and 1 is a sign of decline, with the quantity eventually becoming zero. A growth factor below 1 (or above 1 but trending downward) is a positive sign, whereas a growth factor constantly above 1 is the sign of exponential growth.

Source: <https://www.worldometers.info/coronavirus/coronavirus-cases/>

Case Breakdown by Countries

Live update of COVID-19 global cases can be found at

<https://storymaps.arcgis.com/stories/a1746ada9bff48c09ef76e5a788b5910>

Table 4. Breakdown of COVID-19 confirmed cases and deaths from 16 – 22 October 2021
(Updated as of 22 October 2021, 1200H SGT)

No.	Country	Total Cases	Change in Cases	Total Deaths	Change in Deaths	Total Recovered	Region
1	USA	46,174,547	+535,535	753,747	+11,854	35,898,041	Americas
2	UK	8,641,221	+323,782	139,146	+909	7,057,586	EURO
3	Russia	8,131,164	+238,184	227,389	+7,074	7,091,607	EURO
4	Turkey	7,772,604	+201,672	68,472	+1,428	7,201,620	EURO
5	India	34,143,236	+105,644	453,076	+1,229	33,514,449	SEARO
6	Romania	1,519,532	+104,885	43,487	+2,722	1,288,761	EURO
7	Ukraine	2,701,600	+90,701	62,389	+2,252	2,352,835	EURO
8	Brazil	21,697,341	+85,104	604,764	+2,563	20,875,999	Americas
9	Germany	4,446,857	+80,614	95,753	+419	4,182,800	EURO
10	Iran	5,833,525	+79,478	124,763	+1,265	5,375,475	EMRO
11	Thailand	1,831,389	+69,199	18,625	+502	1,710,447	SEARO
12	Serbia	1,078,032	+46,749	9,331	+385	946,400	EURO
13	Malaysia	2,413,592	+43,979	28,234	+553	2,303,583	WPRO
14	Philippines	2,740,111	+41,879	41,237	+1,016	2,633,039	WPRO
15	France	7,108,206	+33,930	117,411	+200	6,900,956	EURO
16	Georgia	680,182	+30,775	9,617	+247	622,181	EURO
17	Belgium	1,305,678	+29,457	25,835	+103	1,197,389	EURO
18	Netherlands	2,064,729	+28,101	18,280	+49	1,969,625	EURO
19	Mexico	3,772,556	+27,982	285,669	+2,095	3,133,267	Americas
20	Bulgaria	559,893	+25,581	22,839	+737	465,032	EURO
21	Poland	2,956,207	+25,143	76,300	+282	2,679,824	EURO
22	Singapore	162,026	+23,699	280	+73	132,892	WPRO
23	Vietnam	877,537	+23,695	21,487	+537	798,124	WPRO
24	Greece	707,587	+20,309	15,519	+230	659,994	EURO
25	Italy	4,729,678	+19,925	131,724	+263	4,524,204	EURO
26	Canada	1,693,169	+19,772	28,667	+246	1,635,293	Americas
27	Austria	787,644	+18,933	11,220	+77	749,934	EURO
28	Lithuania	379,438	+18,675	5,544	+195	337,557	EURO
29	Latvia	194,256	+15,958	2,967	+110	162,028	EURO
30	Australia	154,489	+15,769	1,611	+104	119,295	WPRO
31	Slovakia	446,305	+14,548	12,883	+92	408,041	EURO
32	Czechia	1,718,808	+14,372	30,587	+63	1,664,910	EURO
33	Belarus	580,029	+14,164	4,466	+113	552,415	EURO
34	Ireland	423,260	+13,613	5,369	+63	372,568	EURO
35	Croatia	436,189	+13,281	8,968	+121	413,504	EURO
36	Azerbaijan	509,862	+13,082	6,829	+109	481,696	EURO
37	Spain	4,995,176	+13,038	87,102	+185	4,846,456	EURO

38	Cuba	941,562	+12,878	8,133	+139	926,280	Americas
39	Armenia	288,906	+12,240	5,902	+227	257,352	EURO
40	Kazakhstan	924,802	+12,003	11,879	+207	867,961	EURO
41	Iraq	2,042,117	+11,619	22,875	+194	1,979,563	EMRO
42	Mongolia	346,455	+11,590	1,626	+113	313,256	WPRO
43	Moldova	323,469	+11,027	7,386	+249	302,147	EURO
44	Chile	1,676,019	+10,103	37,640	+57	1,626,200	Americas
45	S. Korea	348,969	+9,608	2,725	+99	320,317	WPRO
46	Hungary	841,277	+9,411	30,468	+127	793,288	EURO
47	Colombia	4,986,249	+9,206	126,959	+200	4,830,746	Americas
48	Slovenia	314,162	+9,199	4,661	+34	294,588	EURO
49	Jordan	847,506	+8,983	10,918	+71	820,026	EMRO
50	Estonia	177,287	+8,403	1,444	+35	156,437	EURO
51	Israel	1,320,962	+8,054	8,036	+64	1,298,172	EURO
52	Venezuela	396,477	+7,734	4,763	+82	376,877	Americas
53	Argentina	5,277,525	+7,522	115,796	+163	5,143,070	Americas
54	Switzerland	861,123	+7,486	11,191	+26	817,201	EURO
55	Myanmar	491,584	+7,267	18,465	+210	444,740	SEARO
56	Guatemala	591,767	+7,154	14,566	+362	567,485	Americas
57	Egypt	321,967	+6,125	18,151	+305	271,792	EMRO
58	Denmark	372,533	+5,926	2,696	+20	359,467	EURO
59	Dominican Republic	373,929	+5,798	4,097	+15	363,580	Americas
60	Indonesia	4,237,834	+5,735	143,120	+272	4,079,120	SEARO
61	Peru	2,192,205	+4,837	199,945	+170	N/A	Americas
62	Portugal	1,082,721	+4,758	18,117	+46	1,034,043	EURO
63	Pakistan	1,267,393	+4,622	28,344	+116	1,214,663	EMRO
64	Costa Rica	554,604	+4,470	6,895	+124	480,720	Americas
65	Sri Lanka	533,860	+4,105	13,562	+133	493,674	SEARO
66	Bosnia and Herzegovina	247,182	+3,962	11,283	+205	192,218	EURO
67	Sweden	1,165,194	+3,930	14,949	+63	1,132,876	EURO
68	Lebanon	636,147	+3,876	8,441	+35	610,142	EMRO
69	Bolivia	508,702	+3,545	18,891	+80	471,189	Americas
70	Libya	352,192	+3,545	4,962	+113	284,983	EMRO
71	South Africa	2,918,366	+3,539	88,835	+329	2,810,316	Africa
72	Finland	152,707	+3,533	1,133	+24	46,000	EURO
73	Norway	198,909	+3,524	893	+9	88,952	EURO
74	Palestine	420,154	+3,478	4,343	+55	404,794	EMRO
75	Ethiopia	361,027	+3,477	6,316	+175	331,267	Africa
76	Laos	33,998	+3,383	49	+13	6,558	WPRO
77	Albania	180,029	+3,362	2,855	+58	170,730	EURO
78	Nepal	807,522	+3,246	11,326	+57	784,881	SEARO
79	Japan	1,715,737	+3,088	18,157	+137	1,691,046	WPRO
80	Botswana	184,919	+3,063	2,396	+10	181,187	Africa
81	Montenegro	139,488	+2,807	2,054	+44	132,400	EURO
82	North Macedonia	198,646	+2,683	7,012	+124	185,660	EURO
83	Syria	40,630	+2,563	2,467	+92	25,390	EMRO

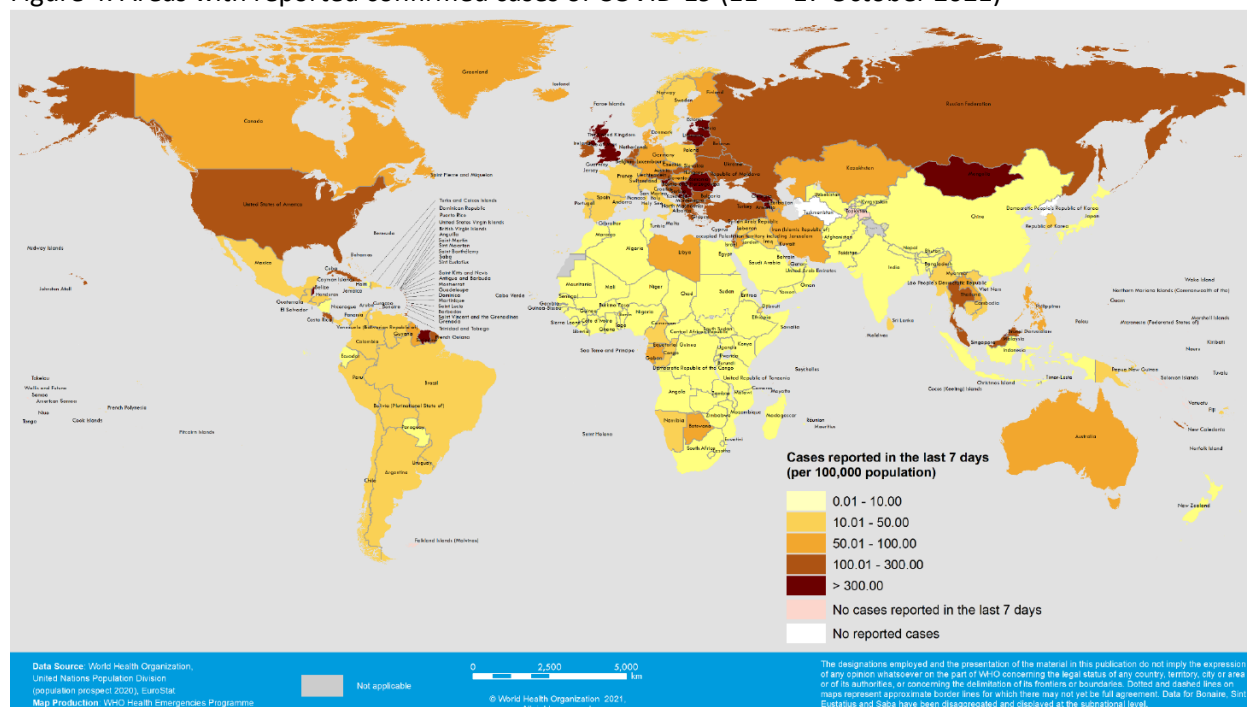
84	El Salvador	110,188	+2,524	3,532	+97	92,173	Americas
85	Bangladesh	1,566,907	+2,422	27,801	+64	1,530,083	SEARO
86	Uzbekistan	182,421	+2,259	1,297	+14	178,319	EURO
87	Barbados	14,326	+2,221	124	+16	9,919	Americas
88	Morocco	943,222	+2,213	14,593	+73	923,257	EMRO
89	Papua New Guinea	26,154	+2,113	325	+59	23,066	WPRO
90	Honduras	373,838	+1,977	10,182	+98	115,022	Americas
91	Cameroon	100,289	+1,887	1,600	+50	80,433	Africa
92	Suriname	47,677	+1,816	1,048	+48	29,409	Americas
93	Brunei	11,542	+1,714	79	+12	8,874	WPRO
94	Nigeria	209,960	+1,556	2,850	+89	198,026	Africa
95	Martinique	42,634	+1,505	670	+62	104	Non
96	Trinidad and Tobago	54,881	+1,489	1,629	+56	48,892	Americas
97	Belize	25,244	+1,482	473	+16	22,000	Americas
98	Panama	471,060	+1,264	7,303	+19	461,441	Americas
99	Ghana	129,592	+1,224	1,169	+11	126,085	Africa
100	Cambodia	117,352	+1,212	2,704	+94	112,056	WPRO
101	Angola	63,567	+1,182	1,685	+32	52,390	Africa
102	Gabon	34,281	+1,166	219	+10	28,179	Africa
103	Congo	16,408	+1,153	239	+20	12,421	Africa
104	Uruguay	391,700	+1,125	6,069	+4	383,967	Americas
105	Tunisia	711,397	+1,075	25,132	+79	684,968	EMRO
106	Jamaica	87,797	+1,075	2,133	+74	56,106	Americas
107	Ecuador	514,087	+1,061	32,937	+38	443,880	Americas
108	Cyprus	121,274	+1,001	567	+7	90,755	EURO
109	Luxembourg	80,462	+834	842	+4	78,013	EURO
110	UAE	739,018	+750	2,126	+9	732,872	EMRO
111	Sudan	39,550	+726	3,038	+110	32,872	EMRO
112	Kenya	252,375	+706	5,238	+36	245,882	Africa
113	French Guiana	43,938	+683	298	+3	9,995	Non
114	Guyana	34,800	+668	887	+30	30,372	Americas
115	Maldives	86,550	+618	240	+3	84,918	SEARO
116	Algeria	205,599	+594	5,881	+17	141,017	Africa
117	Isle of Man	8,931	+588	57	+3	8,156	Non
118	Haiti	23,406	+579	658	+9	20,149	Americas
119	Bahamas	22,154	+574	630	+40	20,153	Americas
120	St. Vincent Grenadines	4,786	+569	56	+14	2,974	Americas
121	New Zealand	5,449	+552	28	0	4,402	WPRO
122	Kyrgyzstan	180,223	+542	2,643	+14	174,875	EURO
123	New Caledonia	10,305	+538	247	+21	55	Non
124	Qatar	238,271	+530	608	+1	236,708	EMRO
125	Nicaragua	16,241	+504	207	+1	4,225	Americas
126	Uganda	125,426	+502	3,192	+13	96,457	Africa
127	Bahrain	276,395	+483	1,392	+1	274,354	EMRO
128	Mauritius	16,951	+479	145	+22	1,854	Africa
129	Iceland	12,827	+437	33	0	12,179	EURO

130	Réunion	54,438	+414	372	+2	53,696	Non
131	Channel Islands	12,531	+396	99	+1	11,838	Non
132	Burundi	19,819	+378	38	0	773	Africa
133	Paraguay	460,646	+345	16,229	+21	444,128	Americas
134	Saudi Arabia	548,111	+314	8,773	+18	537,149	EMRO
135	Dominica	4,465	+312	30	+2	4,070	Americas
136	Rwanda	99,288	+301	1,316	+3	45,510	Africa
137	Zimbabwe	132,540	+289	4,662	+7	126,776	Africa
138	Mauritania	36,820	+270	791	+5	35,586	Africa
139	Seychelles	21,903	+265	119	+1	21,567	Africa
140	Fiji	51,909	+261	663	0	48,420	WPRO
141	Equatorial Guinea	13,097	+257	163	+7	12,506	Africa
142	Namibia	128,414	+227	3,544	+15	124,000	Africa
143	Kuwait	412,449	+221	2,459	+4	409,490	EMRO
144	Afghanistan	155,891	+209	7,249	+11	127,365	EMRO
145	Saint Lucia	12,331	+202	238	+6	11,677	Americas
146	Guadeloupe	54,350	+198	736	+5	2,250	Non
147	Ivory Coast	61,139	+197	689	+16	59,666	Africa
148	Mali	15,741	+178	558	+3	14,524	Africa
149	China	96,665	+177	4,636	0	91,511	WPRO
150	Yemen	9,635	+168	1,831	+38	6,143	EMRO
151	Zambia	209,589	+158	3,658	+1	205,746	Africa
152	Cayman Islands	1,165	+154	2	0	905	Non
153	Antigua and Barbuda	3,984	+154	97	+4	3,291	Americas
154	Burkina Faso	14,793	+153	214	+11	14,287	Africa
155	DRC	57,402	+133	1,091	+2	50,930	Africa
156	Togo	25,950	+124	240	+3	25,423	Africa
157	Cabo Verde	38,098	+122	347	0	37,380	Africa
158	Mozambique	151,174	+113	1,927	+3	148,611	Africa
159	Malta	37,523	+111	459	0	36,406	EURO
160	Curaçao	16,984	+99	172	+3	16,617	Non
161	Anguilla	743	+99	1	0	655	Non
162	Gibraltar	5,824	+97	98	+1	5,524	Non
163	South Sudan	12,279	+95	133	+3	11,889	Africa
164	Oman	304,116	+91	4,107	+4	299,492	EMRO
165	Grenada	5,795	+91	194	+3	5,469	Americas
166	Niger	6,227	+88	206	+2	5,902	Africa
167	Faeroe Islands	1,410	+87	2	0	1,297	Non
168	Aruba	15,779	+87	171	+1	15,452	Non
169	Saint Kitts and Nevis	2,591	+80	21	0	2,182	Americas
170	Lesotho	21,566	+76	655	0	12,098	Africa
171	Greenland	716	+71	0	0	641	Non
172	Caribbean Netherlands	2,373	+67	19	0	2,251	Non
173	Andorra	15,382	+56	130	0	15,168	EURO
174	Timor-Leste	19,749	+55	120	+1	19,556	SEARO
175	Djibouti	13,423	+54	181	+2	13,161	EMRO

176	Guinea	30,605	+45	385	0	29,298	Africa
177	Bermuda	5,593	+45	95	0	5,240	Non
178	Malawi	61,745	+43	2,296	+4	57,051	Africa
179	Mayotte	20,464	+42	182	+1	2,964	Non
180	Liechtenstein	3,513	+40	60	0	3,412	Non
181	Turks and Caicos	2,948	+38	23	0	2,866	Non
182	Eswatini	46,380	+36	1,238	+6	44,998	Africa
183	Hong Kong	12,312	+35	213	0	12,006	WPRO
184	Monaco	3,387	+33	34	+1	3,300	EURO
185	Saint Martin	3,850	+31	55	0	1,399	Non
186	Sao Tome and Principe	3,689	+30	56	0	3,167	Africa
187	Sint Maarten	4,468	+30	75	+5	4,347	Non
188	Taiwan	16,349	+28	846	0	15,388	WPRO
189	Eritrea	6,788	+24	45	+1	6,694	Africa
190	Senegal	73,876	+23	1,876	+7	71,985	Africa
191	Comoros	4,194	+18	147	0	4,029	Africa
192	CAR	11,478	+9	100	0	6,859	Africa
193	Liberia	5,811	+8	287	+1	5,458	Africa
194	Guinea-Bissau	6,131	+7	141	0	5,407	Africa
195	San Marino	5,475	+5	91	0	5,367	EURO
196	Chad	5,067	+4	174	0	4,874	Africa
197	Gambia	9,946	+3	339	0	9,600	Africa
198	Tajikistan	17,086	+2	124	0	16,960	EURO
199	Bhutan	2,617	+1	3	0	2,605	SEARO
200	St. Barth	1,589	+1	6	0	462	Non
201	Benin	24,560	0	161	0	23,971	Africa
202	Madagascar	42,898	0	958	0	41,322	Africa
203	Somalia	21,269	0	1,180	0	9,927	EMRO
204	French Polynesia	40,178	0	635	+3	33,500	Non
205	Tanzania	26,034	0	724	0	N/A	Africa
206	Diamond Princess	712	0	13	0	699	NA
207	British Virgin Islands	2,725	0	37	0	2,649	Non
208	Montserrat	41	0	1	0	31	Non
209	Macao	77	0	0	0	66	WPRO
210	Sierra Leone	6,396	0	121	0	4,393	Africa
211	Saint Pierre Miquelon	32	0	0	0	32	Non
212	Falkland Islands	68	0	0	0	67	Non
213	Wallis and Futuna	445	0	7	0	438	Non
214	Palau	8	0	0	0	8	WPRO
215	Vatican City	27	0	0	0	27	Non
216	Samoa	3	0	0	0	3	WPRO
217	Solomon Islands	20	0	0	0	20	WPRO
218	Western Sahara	10	0	1	0	8	Non
219	MS Zaandam	9	0	2	0	7	NA
220	Vanuatu	4	0	1	0	3	WPRO
221	Marshall Islands	4	0	0	0	4	WPRO

222	Saint Helena	2	0	0	0	2	Non
223	Micronesia	1	0	0	0	1	WPRO
	Total	243,273,624	+2,870,521	4,945,287	+47,679	218,749,380	

Figure 4. Areas with reported confirmed cases of COVID-19 (11 – 17 October 2021)



Source: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>

Table 5. COVID-19 cases and deaths reported by states/UT in India between 16 – 22 October, 2021
(Updated as of 22 October 2021, 1200H SGT)

Name of State / UT	Total Diagnosed Cases	Change from previous week	Total Active Cases	Change from previous week	Total Recovered	Change from previous week	Total Deaths	Change from previous week
Andaman and Nicobar Islands	7646	+6	7	-3	7510	+9	129	0
Andhra Pradesh	2062303	+3181	5500	-1088	2042476	+4228	14327	+41
Arunachal Pradesh	55065	+107	140	-62	54645	+169	280	0
Assam	607811	+1964	3762	+116	598087	+1824	5962	+24
Bihar	726042	+26	30	-12	716351	+38	9661	0
Chandigarh	65315	+20	26	-6	64469	+26	820	0
Chhattisgarh	1005773	+159	206	+3	991995	+154	13572	+2
Dadra and Nagar Haveli and Daman and Diu	10678	+3	4	+1	10670	+2	4	0
Delhi	1439488	+177	311	-26	1414087	+202	25090	+1
Goa	177765	+409	618	-61	173790	+448	3357	+22
Gujarat	826353	+109	156	-59	816110	+167	10087	+1
Haryana	771125	+90	131	+26	760945	+64	10049	0
Himachal Pradesh	222138	+1025	1452	+65	216955	+944	3731	+16
Jammu and Kashmir	331386	+552	814	-121	326143	+670	4429	+3
Jharkhand	348526	+120	166	+36	343225	+84	5135	0
Karnataka	2984849	+2450	9017	-590	2937848	+2978	37984	+62
Kerala	4888523	+58579	82093	-14328	4779228	+72372	27202	+535
Ladakh	20896	+29	43	-1	20645	+30	208	0
Lakshadweep	10365	0	0	-2	10314	+2	51	0
Madhya Pradesh	792721	+52	88	-23	782110	+75	10523	0
Maharashtra	6598218	+11938	27899	-5258	6430394	+16976	139925	+220
Manipur	123051	+619	1346	-98	119800	+701	1905	+16
Meghalaya	83210	+476	735	-157	81034	+623	1441	+10
Mizoram	115944	+5225	10034	-3567	105510	+8766	400	+26
Nagaland	31670	+154	250	+20	30743	+130	677	+4
Odisha	1037056	+3247	4336	-554	1024422	+3777	8298	+24
Puducherry	127564	+305	454	-193	125258	+495	1852	+3
Punjab	602135	+164	226	-8	585358	+159	16551	+13
Rajasthan	954395	+13	36	-6	945405	+19	8954	0
Sikkim	31819	+97	185	-39	31241	+133	393	+3
Tamil Nadu	2691797	+8401	13790	-1661	2642039	+9947	35968	+115

Telangana	669739	+1121	3967	-204	661829	+1317	3943	+8
Tripura	84369	+74	105	-5	83448	+79	816	0
Uttarakhand	343787	+58	176	+1	336213	+56	7398	+1
Uttar Pradesh	1710068	+60	107	-28	1687062	+86	22899	+2
West Bengal	1583646	+4634	7535	-41	1557090	+4599	19021	+76
Total	34143236	+105644	175745	-27933	33514449	+132349	453042	+1228

 Source: <https://www.mohfw.gov.in/>

iv. Travel Bans/Advisories & Quarantine Orders

- [1] **Australia** - Starting November 1, Australia will lift its ban on outbound travel. Australians, permanent residents, citizens and their families will be allowed to leave Australia from wherever they reside and return. In New South Wales, there will be no cap nor quarantine for inbound vaccinated travellers from November 1, and a limit of 210 per week for inbound unvaccinated travellers.
- [2,3] **Canada**
- Canada lifted a blanket advisory against all non-essential outbound travel as of October 21, reverting all advisories to their status before the pandemic. The blanket advisory had been in place since March 2020.
 - Starting October 29, Canada will resume direct flights with Morocco. Travellers are required to present a negative PCR test taken in the 72 hours prior to departure. Travellers with COVID-19 infection history and still tests positive can supply a positive test taken between 14 and 180 days before departure, while travellers who had COVID-19 before going to Morocco have to prove that they were infected in another country.
- [4] **China** - As of October 21, authorities in China have cancelled hundreds of flights including 60% of flights to the main airports in Xi'an and Lanzhou in a bid to stamp out a new outbreak linked to tourists.
- [5] **Cyprus** - As of October 18, travellers from Italy no longer have to undergo testing or quarantine upon arrival in Cyprus. In addition, Vatican City has been added to the "green" travel list of Cyprus. On the other hand, unvaccinated and unrecovered travellers from Luxembourg, Hungary, and Finland will now be subjected to quarantine and testing in Cyprus.
- [6] **Denmark** - On October 16, Denmark removed its ban on inbound travellers from Bahrain and United Arab Emirates. All travellers, regardless of their vaccination status, would be able to enter Denmark. Arrivals from the EU and Schengen Area who have been fully vaccinated, previously infected with COVID-19, and those who test negative for COVID-19 before reaching Denmark, will be permitted to enter restriction-free.
- [7] **Malaysia** - Quarantine for fully vaccinated travellers entering Malaysia have been reduced to 7 days on October 18, 2021. The reduced quarantine applies to fully vaccinated travellers who are close contacts of COVID-19 cases or had been given supervision orders.
- [8] **Morocco** - As of October 21, Morocco has banned direct flights to and from the United Kingdom and Germany until November 30. Since UK passengers are not banned from travelling to Morocco, they can travel via a third country at the moment. Passengers are required to provide proof of full vaccination for at least 2 weeks or a negative PCR test.
- [9] **Palau** - From October 21, visitors from Taiwan will be allowed entry even with one dose of the COVID-19 vaccine. There is no restriction of the vaccine type so long as they are WHO-validated vaccines. No quarantine is required for these travellers from Taiwan, including citizens and foreign nationals with a resident certificate.

- [10] **Singapore** - As of this week, Singapore has extended its quarantine-free travel programme to vaccinated arrivals from Canada, Denmark, France, Italy, the Netherlands, Spain, Britain and the United States. Quarantine will be waived upon passing COVID-19 tests. The programme will be further extended to South Korea from mid-November.
- [11] **Sweden** - On October 19, Sweden removed its ban on inbound travellers from Bahrain and United Arab Emirates. All travellers, regardless of their vaccination status, would be able to enter Denmark.
- [12] **Thailand** - Starting November 1, Thailand will allow quarantine-free travel for fully vaccinated travellers from 46 countries. Air travellers from these countries, which include Australia, Britain, the United States, China, Singapore and Germany, are obliged to present proof of recent negative COVID-19 test and full vaccination to skip the mandatory quarantine.
- [13] **United States** - Starting November 8, the United States will lift travel ban for fully vaccinated foreign nationals. Foreign travellers intending to enter US will have to present proof of vaccination rather than recent negative COVID-19 test. The travel restrictions remain for unvaccinated travellers.

v. Lockdowns

- [1] **Australia** - The lockdown in Melbourne is to be lifted on October 21, 2021. All restrictions will be lifted as the city exits its sixth pandemic lockdown.
- [2] **China** - As of October 19, Erenhot city and Ejina Banner of Inner Mongolia have been placed under lockdown. Vehicles were banned from entering and leaving unless for essential cars with clearance, and indoor public venues, tourist sites, religious sites were closed.
- [3] **Latvia** - As of October 21, Latvia has entered a month-long COVID-19 lockdown, making it the first European country to impose such restrictions amid a new case of cases in countries on the continent. With the lockdown, an 8pm – 5am curfew will be imposed, and schools and all non-essential shops will be closed.
- [4] **New Zealand** - The lockdown in Auckland has been extended for 2 more weeks as of October 18, 2021. Some curbs were eased to allow people to leave home and gather in groups of no more than 10. Visits to beaches and parks are permitted. However, schools, businesses and offices remain shut as indoor gatherings remain prohibited.
- [5] **Russia** - Moscow will reintroduce lockdown measures from October 28; all non-essential shops, bars and restaurants are required to close. Workplaces will also be shut down. Russia also reported some infections with a new coronavirus variant, AY4.2.
- [6] **Sri Lanka** - The inter-province ban in Sri Lanka has been extended until October 31. This comes as Sri Lanka lifted a 42-day nationwide lockdown earlier this month.

vi. Military Surveillance

South Korea [1-3]

- On October 16, the South Korean military reported one new COVID-19 case, bringing its caseload to 1,961.
- On October 19, 8 new cases were reported in Army soldiers in the South Korean military. Six were trainees who were quarantined following an outbreak in their unit in Yeoncheon; all of whom were not fully vaccinated. The remaining two case were in an Army officer based in Yangju and an enlisted soldier in Paju; both of whom were fully vaccinated. The military has reported 290 breakthrough cases as of October 19.
- On October 22, 6 COVID-19 cases were reported in South Korea's military – 4 Army officers and 2 draftees. Five of them were fully vaccinated. This brings the total caseload among military personnel to 1,992, 1,923 (96%) of whom have fully recovered.

United States [4,5]

- Between October 13 and 20, the US military reported 3 deaths in service members, bringing the death toll for October to 11. While the death toll has more than doubled since late July, data from the latest week showed fewer deaths than in any week since August.
- As of October 20, the US military recorded 248,865 COVID-19 cases, including 238,284 recoveries, 2,257 hospitalisations and 70 deaths. The distribution of cases are as follows – Army (86,700), Marine Corps (28,547), Navy (48,490), Air Force (43,251), National Guard (40,280), and other agencies (1597). A total of 1,431,012 service members have been fully vaccinated – Army (494,669), Marine Corps (163,879), Navy (365,607) and Air Force (406,857); 315,075 service members have received one dose of the vaccine – Army (194,369), Marine Corps (24,875), Navy (21,712) and Air Force (74,119).

United States Forces Korea (USFK) [6]

- As of October 20, 32 people affiliated with the USFK newly tested positive for the coronavirus. The cases were detected from October 9 to 16, including 18 US troops stationed at Camp Humphreys and Osan Air Base in Pyeongtaek. The remaining cases were in Department of Defense civilian employees (4), contract workers (5), and family members (5). This raises the case tally in the USFK-affiliated population to 1,557. More than 85% of the USFK affiliated community has been vaccinated.

vii. WHO Guidance & Other Protocols

No updates were published by WHO from 16 – 22 October 2021.

viii. CDC Guidance & Protocols

US CDC

The following update was published by the US CDC from 16 – 22 October 2021:

- **Standard Operatign Procedure (SOP) for Triage of Suspected COVID-19 Patients in non-US Healthcare Settings: Early Identification and Prevention of Transmission during Triage**
Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/sop-triage-prevent-transmission.html>

EU CDC

The following updates were published by the EU CDC from 16 – 22 October 2021:

- **COVID-19 surveillance guidance – Transition from COVID-19 emergency surveillance to routine surveillance of respiratory pathogens**
Available at: <https://www.ecdc.europa.eu/en/publications-data/covid-19-surveillance-guidance>
- **Facilitating COVID-19 vaccination acceptance and uptake in the EU/EAA**
Available at: <https://www.ecdc.europa.eu/en/publications-data/facilitating-covid-19-vaccination-acceptance-and-uptake>

ix. Vaccines/Therapeutics Development

Noteworthy reports are included to inform main developments of COVID-19 pharmaceuticals. Past updates are available from situation report 211 onwards. A global map and registry of trials is also visualised & accessible at: <https://www.covid-nma.com/dataviz/> and trial results are available at: https://covid-nma.com/living_data/index.php. A living systematic review of vaccine trials is also accessible at <https://covid-nma.com/vaccines/> or <https://covid-nma.com/>.

Vaccines

- [1] **Japan** - On October 20, Shionogi & Co Ltd reported starting a phase I/II trial for its COVID-19 vaccine candidate. The recombinant protein-based vaccine will be trialed in Japan before global trials are conducted. Separately, Daiichi Sankyo Co also planned to start a phase II trial for its COVID-19 vaccine candidate, an mRNA-type vaccine DS-5670.
- [2] **Malaysia** - From October 22, Malaysia will begin administering off-label heterologous COVID-19 vaccination using Pfizer-BioNTech boosters for senior citizens who have received 2 doses of the Sinovac vaccine. Off-label refers to the prescription of vaccine or drug for unapproved usage.
- [3] **Singapore** - Some individuals in Singapore have been mixing different types of COVID-19 vaccines, taking the Sinovac and Sinopharm non-mRNA vaccines as booster shots. On October 9, Singapore extended its booster programme using the Pfizer and Moderna vaccines to healthcare workers, frontline workers and those aged 30 and above. However, some have paid to be vaccinated with the Sinovac and Sinopharm vaccines 3-6 months after their 2nd mRNA jab under the special access route, either to boost immunity ahead of the national booster programme, or due to worries after severe side effects experienced with the mRNA vaccine.
- [4] **South Africa** - As of October 20, South Africa has begun vaccinating adolescents aged between 12 and 17 years, joining the likes of France, Canada, Germany and the United States in vaccinating teens and younger children.
- [5] **United States** - The Food and Drug Administration has authorized a mix and match strategy for COVID-19 vaccine, in addition to its authorization of booster doses from Moderna and Johnson & Johnson vaccines. The committee had unanimously recommended the authorization of half-dose boosters of the Moderna vaccine for people aged 65 and above, and younger people with health and occupational risk factors, to be given after at least 6 months, and a booster after 2 months for recipients of the Johnson & Johnson vaccine aged 18 and above.

Therapeutics

No updates were reported between 16 – 22 October 2021.

Vaccine Approval Status

Table 6: Number of approving countries per vaccine as of 22 October 2021

Developer	Vaccine	Number of countries approving
Anhui Zhifei Longcom	RBD-Dimer	3
Bharat Biotech	Covaxin	9
CanSino	Ad5-nCoV	9
Center for Genetic Engineering and Biotechnology (CIGB)	CIGB-66	4
Chumakov Center	KoviVac	1
FBRI	EpiVacCorona	2
Gamaleya	Sputnik Light	18
Gamaleya	Sputnik V	72
Johnson & Johnson	Ad26.COV2.S	75
Kazakhstan RIBSP	QazVac	2
Medigen	MVC-COV1901	1
Minhai Biotechnology Co	SARS-CoV-2 Vaccine (Vero Cells)	1
Moderna	mRNA-1273	76
Oxford/AstraZeneca	AZD1222	124
Pfizer/ BioNTech	BNT162b2	103
Serum Institute of India	Covishield	46
Shifa Pharmed Industrial Co	COVID-19 Inactivated Vaccine	1
Sinopharm	BBIBP-CorV	67
Sinopharm	Inactivated	2
Sinovac	CoronaVac	41
Takeda	TAK-919 (Moderna formulation)	1
Vaxine/CinnaGen Co.	COVAX-19	1
Zydus Cadila	ZyCoV-D	1

Source: <https://covid19.trackvaccines.org/vaccines/>

Adverse Reactions & Effects

- [1] **India** - As of October 6, Maharashtra reported 0.007% of adverse events following 8,520,000 immunizations. Of 6,656 adverse event reports since the start of the COVID-29 vaccination drive, nearly 98% were minor, about 1% were serious and another 1% were severe.
- [2] **Philippines** - Four cases of mild side effects were documented in 1,509 minors vaccinated with their first dose. One had high blood pressure, another had an allergic reaction, while 2 experienced stress-related reactions; all could be resolved immediately. Pediatric vaccination in Philippines started on October 15, 2021.
- [3] **United Kingdom** - As of October 21, the United Kingdom added an extremely rare nerve-damaging disorder, Guillain-Barre syndrome (GBS) as a very rare side effect of the Astra-Zeneca vaccine.

x. Scientific Publications with Epidemiology and Clinical Focus

Prevalence of mental illness among COVID-19 survivors in South Korea: nationwide cohort [1]

Background: Mental illness among survivors of coronavirus disease 2019 (COVID-2019) during the post-illness period is an emerging and important health issue.

Aims: We aimed to investigate the prevalence of mental illness and the associated factors for its development among COVID-2019 survivors.

Method: From 1 January to 4 June 2020, data were extracted from the National Health Insurance Service COVID-19 database in South Korea. Patients with COVID-19 were defined as those whose test results indicated that they had contracted the infection, regardless of disease severity. COVID-19 survivors were defined as those who recovered from the infection. The primary end-point was the development of mental illness, which was evaluated between 1 January and 1 December 2020.

Results: A total 260 883 individuals were included in this study, and 2.36% (6148) were COVID-19 survivors. The COVID-19 survivors showed higher prevalence of mental illness than the control group (12.0% in the COVID-19 survivors v. 7.7% in the control group; odds ratio (OR) = 2.40, 95% CI 2.21-2.61, $P < 0.001$). Additionally, compared with the control group, the no specific treatment for COVID-19 group (OR = 2.23, 95% CI 2.03-2.45, $P < 0.001$) and specific treatment for COVID-19 group (OR = 3.27, 95% CI 2.77-3.87, $P < 0.001$) showed higher prevalence of mental illness among survivors.

Conclusions: In South Korea, COVID-19 survivors had a higher risk of developing mental illness compared with the rest of the populations. Moreover, this trend was more evident in COVID-19 survivors who experienced specific treatment in the hospital.

Seroprevalence of anti-SARS-CoV-2 IgG antibodies, risk factors for infection and associated symptoms in Geneva, Switzerland: a population-based study [2]

Aims: To assess SARS-CoV-2 seroprevalence over the first epidemic wave in the canton of Geneva, Switzerland, as well as risk factors for infection and symptoms associated with IgG seropositivity. *Methods:* Between April and June 2020, former participants of a representative survey of the 20-74-year-old population of canton Geneva were invited to participate in the study, along with household members aged over 5 years. Blood samples were tested for anti-SARS-CoV-2 immunoglobulin G. Questionnaires were self-administered. We estimated seroprevalence with a Bayesian model accounting for test performance and sampling design. *Results:* We included 8344 participants, with an overall adjusted seroprevalence of 7.8% (95% credible interval 6.8-8.9). Seroprevalence was highest among 18-49 year-olds (9.5%), and lowest in 5-9-year-old children (4.3%) and individuals >65 years (4.7-5.4%). Odds of seropositivity were significantly reduced for female retirees and unemployed men compared to employed individuals, and smokers compared to non-smokers. We found no significant association between occupation, level of education, neighborhood income and the risk of being seropositive. The symptom most strongly associated with seropositivity was anosmia/dysgeusia. *Conclusions:* Anti-SARS-CoV-2 population seroprevalence remained low after the first wave in Geneva. Socioeconomic factors were not associated with seropositivity in this sample. The elderly,

young children and smokers were less frequently seropositive, although it is not clear how biology and behaviours shape these differences.

Resistance of SARS-CoV-2 Beta and Gamma variants to plasma collected from Canadian blood donors during the Spring of 2020 [3]

Background: This pilot study assesses the ability of plasma collected from Canadian blood donors in the first wave of the SARS-CoV-2 pandemic to neutralize later SARS-CoV-2 variants of concern (VOCs).

Study design and methods: A repeated cross-sectional design was employed, and a random cross-sectional sample of all available Canadian Blood Services retention samples (n=1500/month) was drawn monthly for April and May of 2020. Qualitative IgG analysis was performed on aliquots of specimens using anti-spike, anti-receptor binding domain and anti-nucleocapsid protein enzyme-linked immunosorbent assays as well as the Abbott Architect SARS CoV-2 IgG assay (Abbott Laboratories, USA) against anti-nucleocapsid protein. Selected plasma specimens were then assessed for neutralization against VOCs using pseudotyped lentivirus inhibition assays as well as plaque reduction neutralization test 50% (PRNT₅₀).

Results: Six specimens with a high neutralizing titer against wild-type SARS-CoV-2 and three specimens with a low neutralizing titer against wild-type SARS-CoV-2 were chosen for further analysis against VOCs. Four of six high neutralizing titer specimens had a reduced neutralizing capacity against Beta VOCs by both neutralization methods. Three of six high neutralizing titer specimens had reduced neutralization capacity against Gamma VOCs.

Conclusions: This preliminary data can be used as a justification for limiting the use of first wave plasma products in upcoming clinical trials but cannot be used to speculate on general trends in the immunity of Canadian blood donors to SARS-CoV-2.

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