Coronavirus Situation Report

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Definition of COVID-19

COVID-19 is officially named as "severe acute respiratory syndrome coronavirus 2" (also known as SARS-CoV-2)[7]. Those who are older or have any underlying medical conditions may be at a higher risk for contracting the virus.

##Situation by Numbers[1]

Table 1: Situation by numbers as July 11, 2020

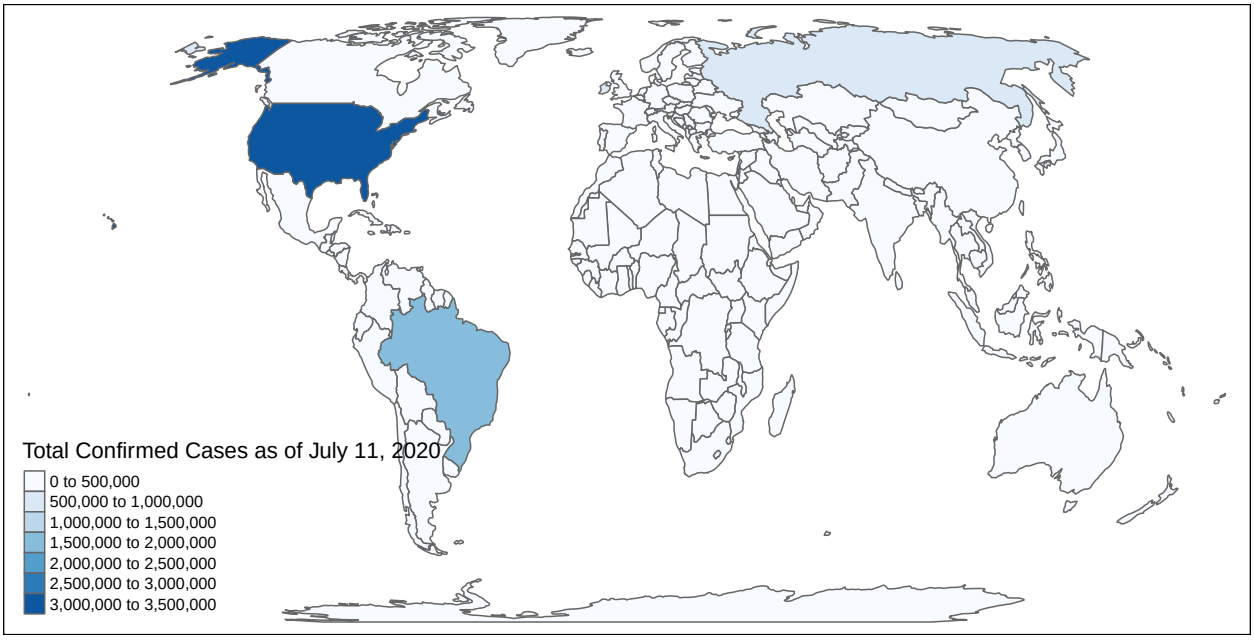
Geographic_Regions	Total_Cases	Total_Deaths
Globally	7941791	434796
Africas	181903	4235
Americas	3841609	203574
Eastern Mediterranean	796759	17558
Europe	2434184	188779
South East Asia	486673	13409
Western Pacific	199922	7228

Risk Assessment

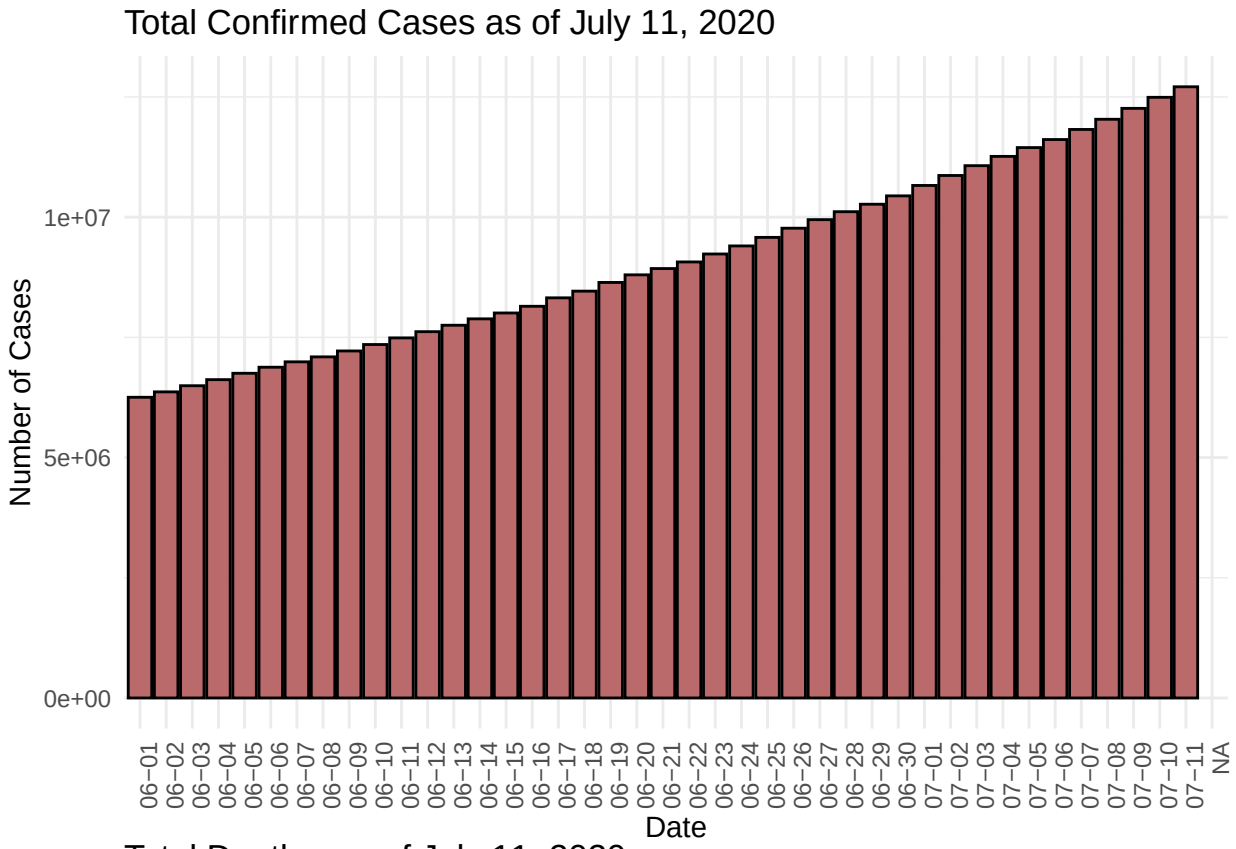
Currently, the Global Risk Assessment is Very High.

Surveillance

Map



Graph


Total Confirmed Cases as of July 11, 2020
Number of Cases
1e+07
5e+06
0e+00
06−01
06−02
06−03
06−04
06−05
06−06
06−07
06−08
06−09
06−10
06−11
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06−30
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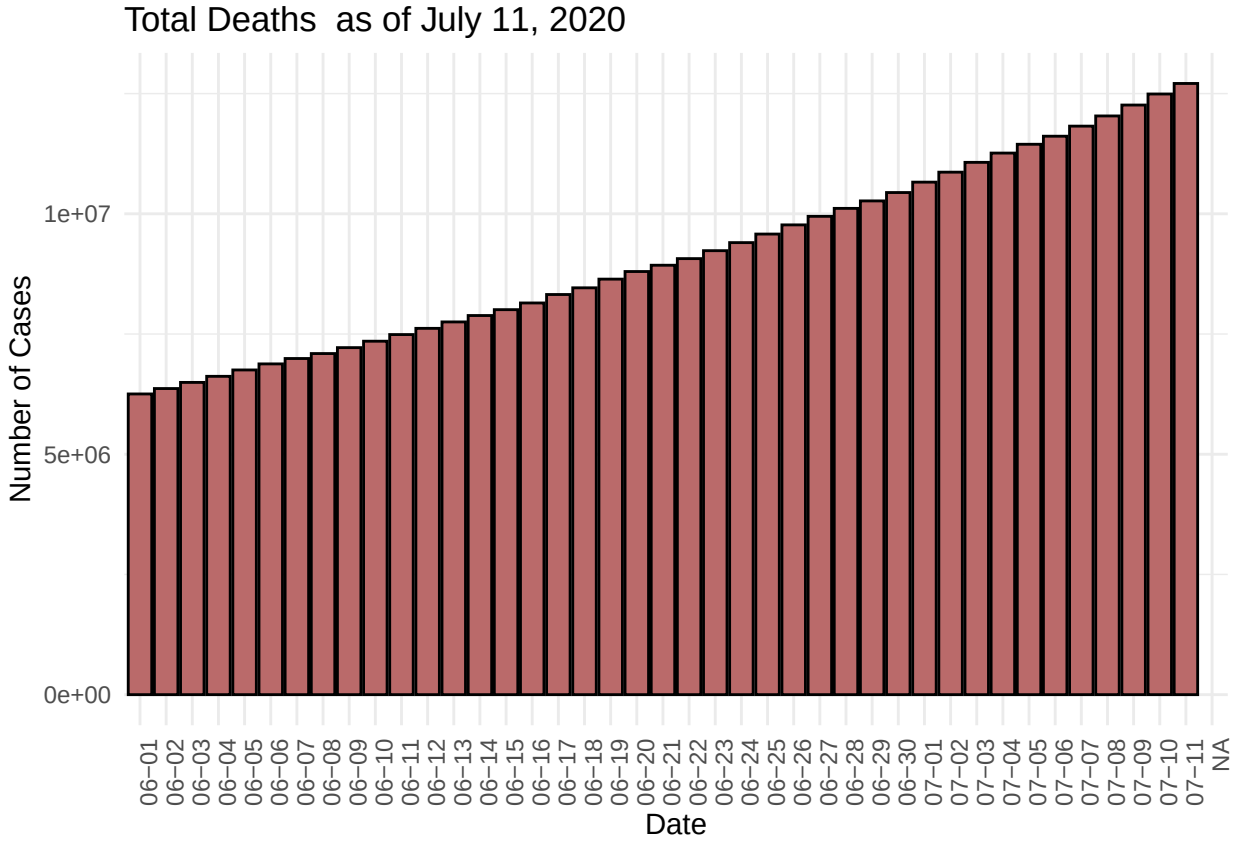
07−09
07−10
07−11
NA
Date


Total Deaths as of July 11, 2020
Number of Cases
1e+07
5e+06
0e+00
06−01
06−02
06−03
06−04
06−05
06−06
06−07
06−08
06−09
06−10
06−11
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NA
Date

Table[11]

Reporting_Area	Total_Confirmed	Total_Deaths	Transmission_Classification
South Africa	350879	4948	Community transmission
Nigeria	36107	778	Community transmission
Ghana	27060	145	Community transmission
Algeria	22549	1068	Community transmission
Cameroon	16157	373	Community transmission
Kenya	12750	225	Community transmission
Ethiopia	9503	167	Community transmission
Senegal	8669	163	Community transmission
Democratic Republic of the Congo	8249	192	Community transmission
Madagascar	6849	55	Community transmission
Guinea	6491	39	Community transmission
Gabon	6121	46	Community transmission
Mauritania	5710	151	Community transmission
Central African Republic	4485	55	Community transmission
Zambia	2980	120	Community transmission
Malawi	2907	59	Clusters of cases
Congo	2633	49	Community transmission
Mali	2472	121	Community transmission
Equatorial Guinea	2350	41	Community transmission
South Sudan	2200	43	Community transmission
Cabo Verde	2014	21	Clusters of cases
Guinea-Bissau	1950	26	Community transmission
Eswatini	1729	21	Community transmission
Sierra Leone	1701	65	Community transmission
Benin	1602	31	Community transmission
Rwanda	1539	5	Community transmission
Zimbabwe	1478	25	Clusters of cases
Mozambique	1435	10	Community transmission
Namibia	1203	2	Clusters of cases
Niger	1104	69	Community transmission
Liberia	1088	70	Community transmission
Uganda	1062	0	Clusters of cases
Burkina Faso	1047	53	Community transmission
Chad	889	75	Community transmission
Togo	774	15	Community transmission
Sao Tome and Principe	743	14	Clusters of cases
Angola	687	29	Clusters of cases
Botswana	522	1	Clusters of cases
United Republic of Tanzania	509	21	Community transmission
Lesotho	359	6	Clusters of cases
Mauritius	343	10	Sporadic cases
Comoros	328	7	Community transmission
Burundi	310	1	Clusters of cases
Eritrea	251	0	Sporadic cases
Seychelles	108	0	Sporadic cases
Gambia	93	4	Sporadic cases
Mayotte	2782	37	Clusters of cases
Réunion	624	3	Clusters of cases
United States of America	3544143	137674	Community transmission
Brazil	2046328	77851	Community transmission

Reporting_Area	Total_Confirmed	Total_Deaths	Transmission_Classification
Peru	345537	12799	Community transmission
Mexico	331298	38310	Community transmission
Chile	328846	8445	Community transmission
Colombia	182140	6288	Community transmission
Argentina	119301	2204	Community transmission
Canada	109669	8839	Community transmission
Ecuador	73382	5282	Community transmission
Bolivia (Plurinational State of)	56102	2049	Community transmission
Dominican Republic	51519	971	Community transmission
Panama	51408	1038	Community transmission
Guatemala	33809	1443	Community transmission
Honduras	31745	857	Community transmission
El Salvador	11508	324	Community transmission
Venezuela (Bolivarian Republic of)	11191	107	Community transmission
Costa Rica	9969	47	Community transmission
Haiti	6975	146	Community transmission
Paraguay	3457	28	Community transmission
Nicaragua	2712	99	Community transmission
Cuba	2445	87	Clusters of cases
Uruguay	1037	32	Clusters of cases
Suriname	943	19	Clusters of cases
Jamaica	768	10	Clusters of cases
Guyana	320	19	Clusters of cases
Trinidad and Tobago	136	8	Sporadic cases
Bahamas	129	11	Clusters of cases
Barbados	104	7	Clusters of cases
Antigua and Barbuda	76	3	Clusters of cases
Belize	40	2	Sporadic cases
Saint Vincent and the Grenadines	35	0	Sporadic cases
Grenada	23	0	Clusters of cases
Saint Lucia	23	0	Sporadic cases
Dominica	18	0	Clusters of cases
Saint Kitts and Nevis	17	0	No cases
Puerto Rico	11453	178	Community transmission
French Guiana	6655	37	Community transmission
United States Virgin Islands	283	6	Clusters of cases
Martinique	262	15	Clusters of cases
Cayman Islands	203	1	Clusters of cases
Guadeloupe	195	14	Clusters of cases
Bermuda	152	9	Sporadic cases
Aruba	108	3	Sporadic cases
Sint Maarten	79	15	No cases
Turks and Caicos Islands	75	2	Clusters of cases
Saint Martin	46	3	Sporadic cases
Curaçao	28	1	No cases
Falkland Islands (Malvinas)	13	0	No cases
Montserrat	12	1	No cases
Bonaire, Sint Eustatius and Saba	10	0	No cases
British Virgin Islands	8	1	No cases
Saint Pierre and Miquelon	4	0	Sporadic cases
Anguilla	3	0	No cases
Iran (Islamic Republic of)	271606	13979	Community transmission

Reporting_Area	Total_Confirmed	Total_Deaths	Transmission_Classification
Pakistan	263496	5568	Clusters of cases
Saudi Arabia	248416	2447	Clusters of cases
Qatar	106308	154	Community transmission
Iraq	90220	3691	Community transmission
Egypt	87172	4251	Clusters of cases
Oman	65504	308	Community transmission
Kuwait	58904	407	Clusters of cases
United Arab Emirates	56711	338	Community transmission
Bahrain	36004	124	Clusters of cases
Afghanistan	35475	1181	Clusters of cases
Morocco	17015	269	Clusters of cases
Sudan	10762	680	Community transmission
Djibouti	5003	56	Clusters of cases
Somalia	3111	93	Sporadic cases
Lebanon	2775	40	Clusters of cases
Libya	1791	48	Clusters of cases
Yemen	1585	444	Community transmission
Tunisia	1348	50	Sporadic cases
Jordan	1214	11	Clusters of cases
Syrian Arab Republic	496	25	Community transmission
occupied Palestinian territory	9587	62	Clusters of cases
Russian Federation	771546	12342	Clusters of cases
The United Kingdom	294070	45273	Community transmission
Spain	260255	28420	Clusters of cases
Italy	244216	35042	Community transmission
Turkey	218717	5475	Community transmission
Germany	201574	9084	Clusters of cases
France	164247	30046	Clusters of cases
Sweden	77281	5619	Community transmission
Kazakhstan	70339	375	Clusters of cases
Belarus	65953	495	Community transmission
Belgium	63706	9800	Community transmission
Ukraine	58842	1485	Community transmission
Netherlands	51526	6129	Community transmission
Portugal	48390	1684	Community transmission
Israel	48041	395	Pending
Poland	39746	1618	Community transmission
Romania	36691	2009	Community transmission
Armenia	34877	641	Community transmission
Switzerland	33406	1687	Community transmission
Azerbaijan	27133	349	Clusters of cases
Ireland	25750	1753	Clusters of cases
Kyrgyzstan	24984	923	Clusters of cases
Republic of Moldova	20794	680	Community transmission
Serbia	20498	461	Community transmission
Austria	19508	711	Community transmission
Uzbekistan	16429	84	Clusters of cases
Czechia	13855	358	Clusters of cases
Denmark	13173	611	Community transmission
North Macedonia	9026	414	Clusters of cases
Norway	9015	255	Clusters of cases
Bulgaria	8638	299	Clusters of cases

Reporting_Area	Total_Confirmed	Total_Deaths	Transmission_Classification
Bosnia and Herzegovina	8164	245	Community transmission
Finland	7318	328	Clusters of cases
Tajikistan	6834	57	Pending
Luxembourg	5409	111	Community transmission
Hungary	4315	596	Community transmission
Croatia	4235	120	Clusters of cases
Albania	4008	111	Clusters of cases
Greece	3983	194	Clusters of cases
Estonia	2021	69	Clusters of cases
Slovakia	1976	28	Clusters of cases
Slovenia	1940	111	Clusters of cases
Iceland	1922	10	Community transmission
Lithuania	1915	80	Community transmission
Montenegro	1664	30	Clusters of cases
Latvia	1189	31	Clusters of cases
Cyprus	1037	19	Clusters of cases
Georgia	1028	15	Sporadic cases
Andorra	880	52	Community transmission
San Marino	716	42	Community transmission
Malta	674	9	Sporadic cases
Monaco	99	1	Sporadic cases
Liechtenstein	86	1	Sporadic cases
Holy See	12	0	Sporadic cases
Kosovo	5574	120	Community transmission
Isle of Man	336	24	No cases
Jersey	331	31	Community transmission
Guernsey	252	13	Community transmission
Faroe Islands	188	0	Pending
Gibraltar	180	0	Clusters of cases
Greenland	13	0	No cases
India	1077618	26816	Clusters of cases
Bangladesh	202066	2581	Community transmission
Indonesia	84882	4016	Community transmission
Nepal	17502	40	Clusters of cases
Thailand	3249	58	Clusters of cases
Maldives	2930	15	Clusters of cases
Sri Lanka	2708	11	Clusters of cases
Myanmar	341	6	Clusters of cases
Bhutan	87	0	Sporadic cases
Timor-Leste	24	0	No cases
China	85937	4653	Clusters of cases
Philippines	65304	1773	Community transmission
Singapore	47656	27	Clusters of cases
Japan	24642	985	Clusters of cases
Republic of Korea	13745	295	Clusters of cases
Australia	11441	118	Clusters of cases
Malaysia	8764	122	Clusters of cases
New Zealand	1203	22	Clusters of cases
Viet Nam	382	0	Clusters of cases
Mongolia	287	0	Sporadic cases
Cambodia	171	0	Sporadic cases
Brunei Darussalam	141	3	No cases

Reporting_Area	Total_Confirmed	Total_Deaths	Transmission_Classification
Fiji	26	0	Sporadic cases
Lao People's Democratic Republic	19	0	Sporadic cases
Papua New Guinea	15	0	Sporadic cases
Guam	307	5	Clusters of cases
French Polynesia	62	0	Sporadic cases
(Commonwealth of the)	37	2	Pending
New Caledonia	22	0	Sporadic cases

Transmission Classification:

• **Community transmission**: people within a certain area have been infected with the virus, some don't know who or where they became infected

• **Cluster of cases**: an aggregate of cases that are grouped in a specific place and time that is appeared to be greater than expected

• **Sporadic cases**: infrequent or irregular appearance of cases

• **No Cases**: no known individuals have been infected with the virus

Incidence Rate:

• Low: There have been 10 or fewer new cases per 100,000 people in the past two weeks

• Moderate: There have been between 10 and 50 new cases per 100,000 people in the past two weeks.

• Moderately High: There have been between 50 and 100 new cases per 100,000 people in the past two weeks.

• High: There have been more than 100 new cases per 100,000 people in the past two weeks.

Guidelines by CDC

Recommendations

The CDC recommends that all individuals should wear a mask when in public and practice social distancing of at least 6 feet. Gatherings should be limited to <10 people. Social distancing, also known as "physical distancing" is important as the droplets from one individual's sneeze, cough can be spread and land onto another person's nose or mouth and get into the lungs.

Additionally, people who are infected with the virus, but don't show any symptoms (asymptomatic) also can spread the virus.

It is also possible to get infected by touching a surface that may have been exposed to the virus and then touching your face, nose, mouth. However, this isn't the most common cause of the spread of the virus, as the virus can't survive long hours on surfaces.

Current Treatments

Currently, there is no vaccine for the SARS-CoV-2. However, there are various treatments that are being tested in hospitals.

People with mild symptoms are able to recover at home with over the counter medication (pain killers, decongestants, cough suppressants).

The FDA and CDC both disagree on the effect of hydroxychloroquine, the malaria drug, to prevent COVID-19. A UK study said that "in a group of 1542 hospitalized patients treated with hydroxychloroquine, 25.7% had died after 28 days, compared with 23.5% in a group of 3132 patients who had only received standard care"[6] This rules out the benefit of this drug.

The drug remdesivir, is a new intravenous antiviral that hasn't been approve yet but is far along on their clinical trial phase. This drug has been shown to have some effect against SARS, MERS, and Ebola.[10] Current studies, in vitro, have shown that remdesivir prevented human cells from being infected with the coronavirus. Currently, the FDA approved this drug for EUA, emergency use authorization on May 1, 2020.

Another drug, dexamethasone, is a common steroid used to treat many autoimmune conditions and allergic reactions.[10] A UK study seemed to suggest that this drug is helpful for patients who were on a ventilator or needed more oxygen due to the virus.

Lastly, an antibiotic azithromycin, is commonly used to treat bacterial infections such as bronchitis and pneumonia.[10] It was shown that this antibiotic had "some in vitro activity against viruses like influenza A and Zika, but did not work against the coronavirus that causes MER."[10]

Update July 20, 2020

AstraZeneca[4] published their study of a phase 1/2, single-blind, randomized controlled trial in five trial sites in the UK of a chimpanzee adenovirus-vectored vaccine (ChAdOx1 nCoV-19) expressing the SARS-CoV-2 spike protein compared with a meningococcal conjugate vaccine (MenACWY) as control. 1077 healthy adults aged 18–55 years with no history of laboratory confirmed SARS-CoV-2 infection or of COVID-19-like symptoms were randomly assigned to receive ChAdOx1 nCoV-19. There were no serious adverse events related to ChAdOx1 nCoV-19. ChAdOx1 nCoV-19 showed an acceptable safety profile, and homologous boosting increased antibody. One dose was sufficient to elicit some antibody response in over 90% of people, and a second dose pushed it to 100%, at levels similar to what's observed in convalescent patients.[4]

Testing

"The number of people infected with the coronavirus in different parts of the United States was anywhere from two to 13 times higher than the reported rates for those regions."[2] CDC is working with a commercial laboratory and conducted a survey that tested blood specimens from people in Connecticut, Louisiana, Minnesota, Missouri, New York City, Philadelphia, San Francisco, South Florida, Utah and Western Washington State for SARS-CoV-2 antibodies. The results from the blood samples suggest that people who don't seek medical care or are asymptomatic to the virus are being unreported in the public data.[1]

Test Diagnostics

I will be analyzing the effectiveness of the Roche COVID-19 Serology Antibody Test through sensitivity and specificity. Sensitivity is the probability of test being positive if one has the disease, while specificity is probability of test being negative given one does not have the disease.

Roche tested 5,272 blood samples and found to have specificity greater than was 99.81% and a sensitivity of 100%.[5]

Another study[9] in the UK tested the effectiveness of saliva specimens. 132 patients underwent combined OP/NP swab and saliva collection during the same clinic visit. The sensitivity was 83.3%, while the specificity was 99.1%. The study also calculated the positive predictive value (PPV) which is the probability of having the disease if an individual tests positive, resulting in 93.8%. Lastly, the negative predictive value (NPV), which is the probability of not having the disease if an individual tests negative was 97.4%.[9]

Comparison to the SARS Outbreak in 2002

1 November 2002 to 31 July 2003[11]

Areas	Total Cases	Total Deaths
Australia	6	0
Brazil	1	0
Canada	251	41
China	5327	349
China, Hong Kong Special Administrative Region	1755	300
China, Macao Special Adnmisitrative Region	1	0
China, Taiwan	665	180
Colombia	1	0
Finland	1	0
France	7	1
Germany	9	0
India	3	0
Indonesia	2	0
Italy	4	0
Kuwait	1	0
Malaysia	5	2
Mongolia	9	0
New Zealand	1	0
Philippines	14	2
Republic of Ireland	1	0
Republic of Korea	3	0
Romania	1	0
Russian Federation	1	0
Singapore	238	33
South Africa	1	1
Spain	1	0
Sweden	3	0
Switzerland	1	0
Thailand	9	2
United Kingdom	4	0
United States	33	0
Viet Nam	63	5
Total	8422	916

Both viruses – SARS-CoV-2 and SARS – originated in China and are spread through respiratory droplets. Both had a more severe effect for older individuals of ages greater than 60.

The CDC reported ~8,098 people were infected with SARS in 26 countries and a total of 774 individuals died.[3] This number is significantly smaller than the number of infected cases from the coronavirus.

There has been research suggesting that both originated and came from bats, specifically horseshoe bats. In 2002, horseshoe bats were sold in China's wet markets. The SARS outbreak occurred in Guangdong province and has been linked to these specific wet markets.[3] By 2019, these bats were no longer sold in the markets.

However, these bats don't live near Wuhan, therefore there isn't a clear reason for the origin of the SARS-CoV-2. According to Wuhan University, COVID-19 was linked to horseshoe bats, but are currently used in research and two labs in Wuhan are studying this. Research suggest that the scientist may have been bitten by a bat and became infected, starting the spread[3] but there is no clear consensus.

Appendix

Data and Tables

Caution taken when looking at data as it might not be fully accurate. Various sources have slight differences in the total counts.

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