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Review Article

Current status of clinical trials and therapeutic approaches for COVID-19: A Review

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Abstract: Covid-19 has affected the global population and brought normal human life to a standstill. There are currently no approved treatments for COVID-19, and researchers across the globe are working furiously to find a potential treatment for COVID-19. In the present review paper, we have analyzed the research characteristics and trends of COVID-19 clinical trials by processing and analyzing the relevant data from the WHO International Clinical Trials Registry Platform (ICTRP), Chinese Clinical Trial Registration Center database, and ClinicalTrials.gov website to provide researchers with an overall summary and insight of the current clinical trials for the prevention and treatment of COVID-19.

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INTRODUCTION

Coronaviruses were not considered as highly pathogenic for humans until the severe acute respiratory syndrome (SARS) outbreak in the Guangdong state of China in 2002 and 2003 [1]. On 07 January 2020, Chinese authorities announced that a new type of coronavirus (novel Coronavirus, nCoV also called severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2) was isolated [2] which was named as 2019-nCoV by WHO on 12 January and COVID-19 on 11 February 2020 [3]. On 11 March 2020, the WHO declared the outbreak a pandemic [4]. As of 13 May 2020, over 4,342,685 cases have been confirmed in more than 212 countries and territories. More than 292,893 have died from the disease and 1,602,539 have recovered (https://www.worldometers.info/coronavirus/) with a mortality rate of 3.4% as estimated by WHO as of 03 March 2020 (https://www.worldometers.info/coronavirus/).

Of note, the fatal cases were primarily elderly patients (>70 yrs.) or patients with pre-existing comorbidities such as chronic respiratory and cardiovascular disease, among others. The WHO estimates that the reproductive number for COVID-19 is between 2 and 2.5 (higher than seasonal influenza), which represents the number of secondary Infections generated from one Infected individual. It took over three months to reach the first 100,000 confirmed cases, and only 12 days to reach the next 100,000 [2]. Further, based on 181 confirmed COVID-19 cases reported from 4/ 1/2020 to 24/2/ 2020 in areas outside of Wuhan Hubei Province, China the median incubation period was shown to be 5.1 days with 97.5% of individuals developing symptoms within 11.5 days (longer than seasonal Influenza) [5]. This shows that SARS-CoV-2 has a high transmission capacity and mortality, which has raised global concern and affected public health safety severely [6]. As the COVID-19 pandemic continues, an encouraging response has been observed from the research community globally, with the initiation of clinical trials assessing therapeutic and prophylactic strategies as well as diagnostic tools. Avigan (favilavir) has been approved to treat COVID-19 in China [7][8] and Veklury (remdesivir) in Japan [9]. The WHO has also launched a global trial, solidarity, evaluating various treatment candidates for COVID-19 [10]. Given the large number of clinical trials being conducted to find a cure for COVID-19, the present work analyzed the research characteristics and trends of COVID-19 clinical trials by processing and analyzing the relevant data from the WHO ICTRP, Chinese Clinical Trial Registration Center database, and ClinicalTrials.gov website, to provide an overall summary and insight into the current clinical trials for the prevention and treatment of COVID-19.

METHODOLOGY

COVID-19 clinical trials registered in the ClinicalTrials.gov, WHO International Clinical Trials Registry Platform (ICTRP), and Chinese Clinical Trials Registry were collected until May 10, 2020. Only one copy of the duplicate trials present in the three websites was considered for analysis. Clinical trial registration fields obtained include registration number, registration time, sample size, study type, study design, blinding, endpoints, intervention, and study locations.

MAJOR FINDINGS

Clinical Trials Registration Rate

Very few clinical trials were registered in January as illustrated in Fig. 1. However, due to the outbreak of the pandemic in February, the number of new trial registrations increased significantly. In February average daily registration was 12.3 and increased to 22.3 in April. One hundred sixty-four new trials have been registered as of 10 May 2020 and we anticipate that the registration of new trials will increase further in the coming months, because, several projects are in the early research/ planning stage and are expected to enter clinical development through 2020.

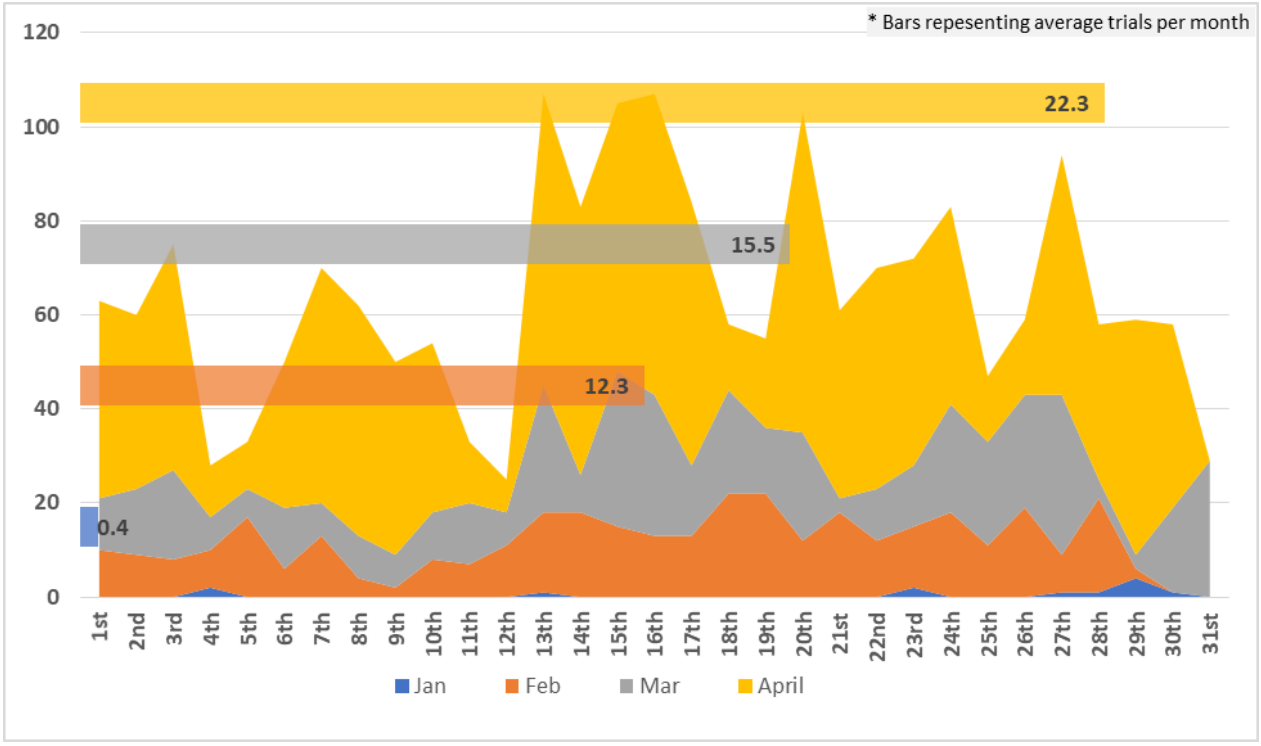

Figure 1: COVID-19 Clinical Trials Registration by Date

Study Types and Patient Allocation Methods

Out of the total of 2376 trials, 1430 (60%) trials are interventional and 875 (37%) are observational. In addition, there are 40 diagnostic, 10 epidemiological, 8 basic science and 8 health service research and 5 other trials (Fig. 2). In interventional trials main trial designs are randomized- parallel assignment (68%) followed by single group assignment (15%) and non-randomized assignment (6%). Out of 875 observational trials, the most preferred designs are sequential assignment (18%) followed by cohort studies (10%), factorial assignment (6%), and single-arm assignment (5%).

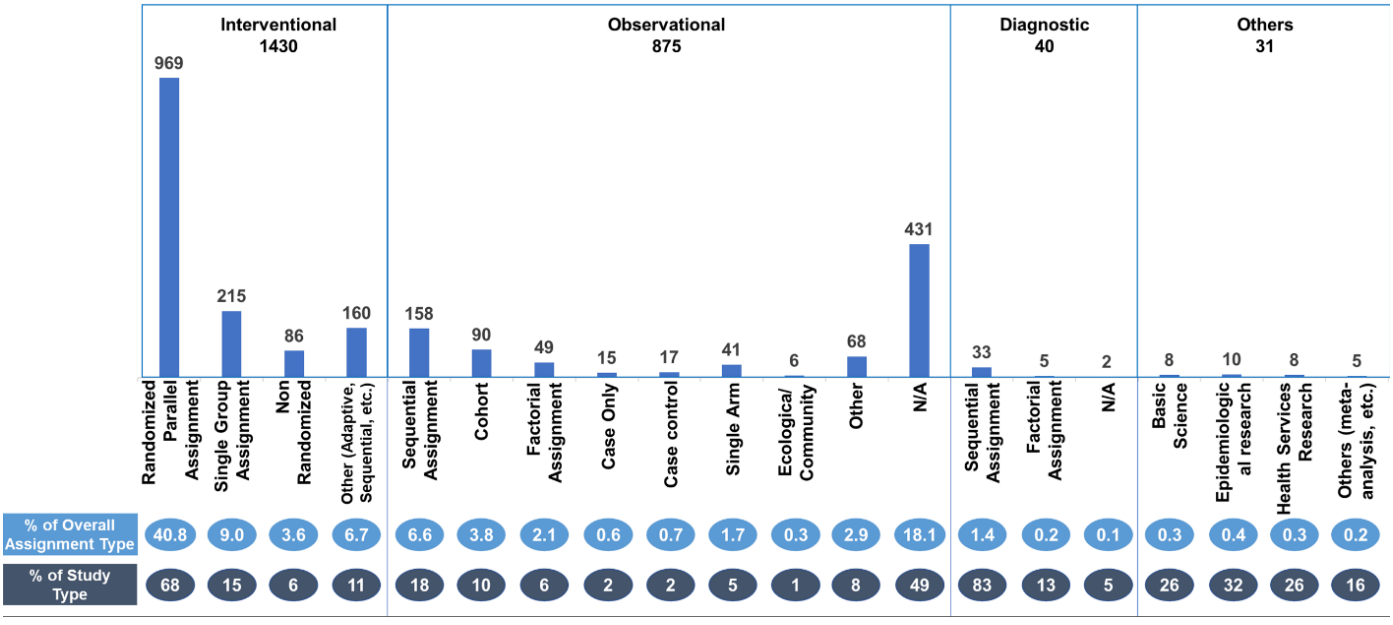

Fig. 2: Study types and designs used in COVID-19 Clinical trials

Geographical Distribution

Of the 1430 interventional trials, over 29% of the trials (n=418) for COVID-19 are being conducted in China, which is not surprising, because the outbreak of the disease was reported in the country first, with the first clinical trial being registered within 1 month of the disease outbreak. A large number of trials in china are investigating Traditional Chinese Medicines (n=109) including herbal medicines, acupuncture, and other forms of complementary medicine.

Since the first report of the COVID-19 case outside Asia in January 2020, the incidence of COVID-19 has increased dramatically [11]. In late March, the United States became the new disease epicenter, with the case count surging past China's and the hardest-hit European nations. In response to increasing disease incidences in USA and Europe, there has also been an increase in clinical trial registration for COVID-19. As of 13 May, 188 trials are registered in the USA, 134 in France, 93 in Spain, 48 in Italy, and 44 in Germany. The Geographical distribution of clinical trial registration till 13 May 2020 is illustrated in Fig. 3.

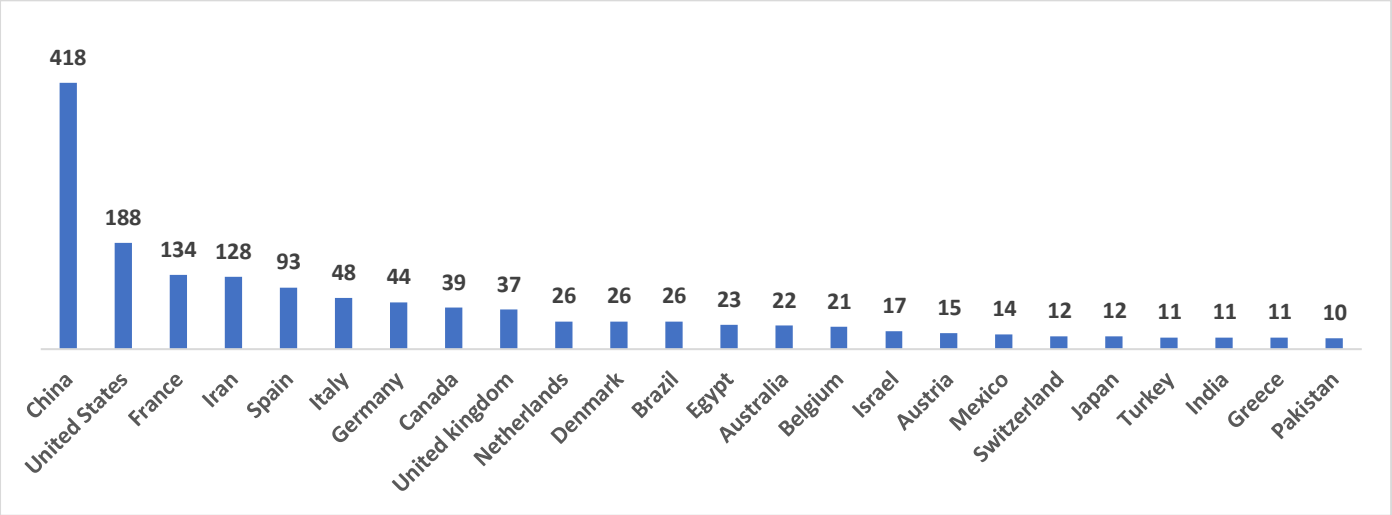

Fig. 3: Geographical distribution of clinical trial registration till May 10, 2020 (countries with <10 trials are not included in the chart)

Interventions:

We analyzed the 1430 interventional trials (Table 1). A total of 762 trials (53%) are investigating chemical and biological treatments. Traditional Chinese or western medicines account for 17% (n=243) of the interventional trials. Plasma-derived therapy, cell therapy, medical devices, and vaccines account for 6%, 4%, 4%, and 2% trials respectively. 15% of the trials are evaluating behavioral, psychological, and other rehabilitation interventions.

Table 1: Intervention Type Used in COVID-19 Clinical Trials

Intervention Type	**Number of trials**	**Total (%)**
Chemical Biologic	762	53%
Traditional Chinese or Western Medicine (including herbal medicines, acupuncture, and other forms of complementary medicine)	243	17%
Plasma derived therapy (convalescent plasma, immunoglobulins, AAT, etc.)	83	6%
Cell Therapy	52	4%
Medical devices	54	4%
Vaccine	26	2%
Other (includes behavioral, psychological, and rehabilitation)	210	15%
Total	**1430**	**100%**

KEY TREATMENT STRATEGIES BEING STUDIED

Antivirals: The majority of the antivirals being studied for COVID-19 are already approved for some other indication, especially those which showed efficacy against SARS-CoV and MERS-CoV [12]. So far, trials of antivirals have largely focused on a combination of lopinavir/ritonavir and remdesivir (Gilead Pharma) [13]. Lopinavir and ritonavir are both protease inhibitors developed specifically to treat HIV [14]. Remdesivir, on the other hand, is a broad-spectrum antiviral [15]. It was initially developed to treat Ebola, but it is a nucleotide analog that mimics adenosine, one of the building blocks of any RNA

virus's genome [16]. Lopinavir/ritonavir combination is the most commonly studied antiviral with 73 registered trials, however, results so far are not encouraging [17][18][19]. The results of a randomized trial of lopinavir-ritonavir in 199 adults hospitalized with COVID-19 in Wuhan, China, revealed no benefit in terms of time to clinical improvement in the patients who received the drug combo versus placebo [20]. There has been high interest in remdesivir after data published in the New England Journal of Medicine revealed that 68% of 53 hospitalized patients showed improvement after taking the drug. However, this was not a controlled study and the data came from a compassionate use program [21]. Various drugs and biologics currently in development for the treatment and prevention of COVID-19 are listed in Table 2. Multiple antiviral drugs with activity against influenza and RNA viruses are also being investigated alone or in combination with other drugs such as favipiravir (viral RNA polymerase) [22], umifenovir (fusion inhibitor) [23], baloxavir marboxil (polymerase acidic endonuclease inhibitor) [24], danoprevir/ritonavir (HCV protease/ HIV protease) [25], darunavir/cobicistat (HIV protease/ cytochrome P450) [26], azvudine (reverse transcriptase inhibitor) [27], Galidesivir (Viral RNA-dependent RNA polymerase) [28], Oseltamivir (Neuraminidase inhibitor) [29] and Emtricitabine/tenofovir (HIV reverse transcriptase inhibitors) [30]. Additionally, 30 studies are investigating interferon-based treatments [31]. Extensive clinical trial activity is also being undertaken for the evaluation of antimalarial drugs chloroquine [32] and hydroxychloroquine [33]. Though, early results from clinical studies conducted in China suggest that chloroquine use might have been associated with reduced fever, increased resolution of lung lesions on CT, and delayed disease progression [34][35]. The results of other French studies suggested that hydroxychloroquine could reduce the viral load in patients with COVID-19, in particular, if combined with azithromycin, however, it is not conclusive to support the use of hydroxychloroquine for prophylaxis or treatment of COVID-19 [36], [37]. Currently, there are 110 registered trials of chloroquine and hydroxychloroquine, alone, or in combination with other drugs in the prevention or treatment of COVID-19. In addition to antivirals and antimalarials, several studies are evaluating immunostimulants [38], [39] and immunomodulators [40], [41]. Currently, 25 trials are investigating the effect of corticosteroids in COVID-19 [42]–[44]. Other immunosuppressants being investigated include, sarilumab (anti-IL-6) [45], fingolimod (sphingosine-1-phosphate receptor modulator) [46] and meplazumab (anti-CD147) [47]. Few studies are also investigating immune stimulation using anti-PD-1 antibody camrelizumab [48], and DAS181 (fusion protein that acts as virus internalization inhibitors) [49]. Convalescent plasma or immunoglobulins have earlier been used to improve the survival rate of patients with SARS [50]–[57]. In 2014, the use of convalescent plasma collected from patients who had recovered from Ebola virus disease was recommended by WHO as an empirical treatment during outbreaks [58]. A protocol for the use of convalescent plasma in the treatment of Middle East respiratory syndrome coronavirus was established in 2015 [59]. Preliminary findings indicate convalescent plasma may be beneficial for patients with COVID-19. In a study conducted in Wuhan, China, in 10 severely ill COVID-19 patients who also received many different antivirals, most patients exhibited improved clinical symptoms within 3 days of Convalescent Plasma Therapy. Treatment was particularly successful if CP was given within 14 days of symptom onset [60]. On 24 March, the FDA allowed the use of convalescent plasma from recovered cases of COVID-19 for patients with "serious or immediately life-threatening COVID-19 infections under an emergency investigational new drug (eIND) application [61]. On 25 March, Grifols announced they were partnering with BARDA to create a COVID-19 treatment based on convalescent plasma [62]. There are currently 58 registered trials to investigate convalescent plasma or immunoglobulins in COVID-19.

There are over 70 vaccines in the development of which only 8 are currently in clinical trials [63][64]. China's CanSino Biological, in partnership with the Beijing Institute of Biotechnology, is in the lead, with the only candidate vaccine currently in phase two trials [65]. The USA-based Moderna and Inovio Pharmaceuticals are the other two developers testing vaccines on humans and both are currently in phase one [66]. The remaining potential vaccines are still in the pre-clinical trial stage and a number of them are anticipated to enter clinical trials in the coming months.

At present, there is no vaccine or specific drugs for the novel human coronavirus [67]. The most effective measures to 2019-nCoV are still early detection and quarantine of new sources of infection, and early diagnosis and supportive treatments for confirmed patients [68], [69]. As COVID-19 continues to spread around the globe, researchers are investigating several drugs in clinical trials. At present, 1430 interventional trials are registered and it is anticipated that registration of new trials will increase further in the coming months. The top 3 countries that are doing most COVID-19 clinical trials are China, the USA, and France. Antivirals and antimalarial are the most widely studied drug classes for COVID-19. So far, trials of antivirals have largely focused on a combination of lopinavir/ritonavir (protease inhibitors) and remdesivir (RNA polymerase inhibitor). Lopinavir/ritonavir combination is the most commonly studied antiviral with 70 registered trials, however, results so far are not encouraging. In a randomized trial conducted on 199 patients in China, no clinical improvement was observed. Earlier in May, Japan approved Gilead Sciences Inc's remdesivir (trade name Veklury) as a treatment for COVID-19, making it the country's first approved drug to tackle COVID-19 [70]. With no other drug approved for COVID-19, interest in remdesivir is growing around the world. On 1 May, FDA allowed the use of remdesivir for COVID-19 under an emergency use authorization (EUA) [71]. The EUA was based on preliminary results of NIH's ACTT trial, showing that the cut hospital stays by 31% compared with a placebo treatment, although it did not significantly improve survival [72]. On 3 April, EMA released recommendations on how to receive remdesivir under compassionate use programs [73]. Another antiviral that is in focus is favipiravir, which has been approved in China and Italy (trade name Avigen) to treat COVID-19. A study on 80 people in comparison to lopinavir/ritonavir found that it reduced viral clearance time and that 91% of people had improved CT scans with few side effects. The limitation of this study was that it was not randomized double-blinded and placebo-controlled [74]. In March 2020, Italy approved favipiravir for experimental use against COVID-19 and has begun conducting trials. The Italian Pharmaceutical Agency, however, has reminded the public that the existing evidence in support of this drug is scant and preliminary [75]. An observational study published in the New England Journal of Medicine analyzing 811 of 1,446 COVID-19 patients taking HCQ found there was no association between the use of HCQ and intubation or death, although patients who received HCQ were more likely to have severe cases of COVID-19 [76]. An in vitro study from China showed HCQ was better than chloroquine at inhibiting SARS-CoV-2, but results from a

pilot study in China showed the control group had more patients improve after 7 days of treatment [77]. On April 19, an NIH panel recommended against the use of HCQ and azithromycin to treat COVID patients [78][79]. The panel also recommended against the use of Lopinavir/Ritonavir or other HIV protease inhibitors due to negative clinical trial data, and also recommended against using interferon because it appeared to make patients with SARS and MERS worse.

Table 2: Selected drugs and biologics in development for the treatment and prevention of COVID-19

S.N.	Compound	Target	Modality	Phase	Source
1.	darunavir/ cobicistat	HIV protease / cytochrome P450	Small molecule	Phase 3	NCT04252274
2.	Colchicine	Tubulin	Small molecule	Phase 3	NCT04328480
3.	Emtricitabine/ tenofovir/ disoproxil	HIV reverse transcriptase	Small molecule	Phase 3	NCT04334928
4.	Hydroxychloroquine	Not determined	Small molecule	Phase 3	NCT04328285
5.	Naproxen	Cyclooxygenases (COX)	Small molecule	Phase 3	NCT04325633
6.	Baricitinib	Janus kinase-1 & 2	Small molecule	Phase 3	clinicaltrials.gov
7.	Oseltamivir	Neuraminidase inhibitor	Small molecule	Phase 3	NCT04260594
8.	Sildenafil	PDE5	Small molecule	Phase 3	NCT04304313
9.	Symbicort Rapihaler	Corticoid/ Adrenergic receptor beta 2	Small molecule	Phase 3	NCT04331054
10.	Favipiravir (Avigan)	Viral RNA polymerase	Small molecule	Phase 3	NCT04336904
11.	Tradipitant	Substance P (NK1)	Small molecule	Phase 3	NCT02735707
12.	Remdesivir	Viral RNA-dependent RNA polymerase	Small molecule	Phase 3	NCT04292899
13.	ASC09 & ASC09/ritonavir	HIV protease	Small molecule	Phase 3	NCT04261270
14.	Tocilizumab	Interleukin-6 (IL-6) receptor (CD126)	Antibody	Phase 3	NCT04320615
15.	Lenzilumab	anti-granulocyte-macrophage colony-stimulating factor antibody	Antibody	Phase 3	NCT04351152
16.	Tacrolimus	FK506 binding protein 1A 12kDa (FKBP12; FKBP1A)	Macrocycle	Phase 3	NCT04341038
17.	eicosapentaenoic acid	Not determined	Lipid	Phase 3	NCT04335032
18.	FluDase (DAS181)	Sialic acid	Fusion protein	Phase 3	NCT03808922
19.	CD24Fc	Danger-Associated Molecular Patterns (DAMPs); Sialic acid binding Ig like lectin 10 (SIGLEC10)	Protein	Phase 3	NCT04317040
20.	rhIFNα Nasal Drops + Thymosin α 1	Type I interferon (IFN) receptor	Protein; Peptide	Phase 3	NCT04320238
21.	BCG Vaccine	N/A	Live attenuated vaccine	Phase 3	NCT04328441
22.	Levamisole	Nicotinic acetylcholine receptor (nAchR)	Small molecule	Phase 2/3	NCT04331470
23.	bevacizumab	Vascular endothelial growth factor (VEGF)	Antibody	Phase 2/3	NCT04313023
24.	sarilumab	Interleukin-6 (IL-6) receptor (CD126)	Antibody	Phase 2/3	NCT04315298
25.	emapalumab	Interferon-gamma	Antibody	Phase 2/3	NCT04324021
26.	IFX-1	Complement 5a (C5a)	Antibody	Phase 2/3	NCT04333420
27.	anakinra	Interleukin-1 (IL-1) receptor 1 (IL1R1)	Protein	Phase 2/3	NCT02735707
28.	Angiotensin-(1-7)	MAS receptor	Peptide	Phase 2/3	NCT04332666
29.	Convalescent Plasma	N/A	Biologic	Phase 2/3	clinicaltrials.gov
30.	ciclesonide	Corticoid receptors	Small molecule	Phase 2	clinicaltrials.gov

Table 2: Selected drugs and biologics in development for the treatment and prevention of COVID-19 (Cont..)

S.N.	Compound	Target	Modality	Phase	Source
31.	losartan	Angiotensin II type 1 (AT1) receptor (AGTR1)	Small molecule	Phase 2	NCT04280588
32.	fingolimod	Sphingosine 1-phosphate receptor	Small molecule	Phase 2	NCT04280588
33.	Thalidomide	Tumor necrosis factor (TNF) alpha	Small molecule	Phase 2	NCT04273529
34.	BLD-2660	Calpain	Small molecule	Phase 2	NCT04334460
35.	CM4620-IE	Calcium release-activated calcium channel (CRAC)	Small molecule	Phase 2	NCT04345614
36.	Piclidenoson	Adenosine A3 receptor (ADORA3)	Small molecule	Phase 2	NCT04333472
37.	Tofacitinib	Janus kinase-1 (JAK-1)	Small molecule	Phase 2	NCT04332042
38.	eculizumab	Complement 5 (C5)	Antibody	Phase 2	NCT04346797
39.	siltuximab	Interleukin-6 (IL-6)	Antibody	Phase 2	NCT04329650
40.	Leronlimab (PRO 140)	CC chemokine receptor 5 (CCR5)	Antibody	Phase 2	NCT04343651
41.	BDB-001	Complement 5a (C5a)	Antibody	Phase 2	Clinicaltrialsarena
42.	LY3127804	Angiopoietin 2 (ANG2; ANGPT2)	Antibody	Phase 2	NCT04342897
43.	Gimsilumab	Granulocyte-macrophage colony-stimulating factor (GM-CSF; CSF2)	Antibody	Phase 2	NCT04351243
44.	anti-PD-1 antibody	Programmed cell death protein 1 (PD-1)	Antibody	Phase 2	NCT04268537
45.	Sirolimus (rapamycin)	Mammalian target of rapamycin (mTOR; FRAP; RAFT1)	Macrocycle	Phase 2	NCT04341675
46.	Defibrotide	Cathepsin G (CTSG)	Oligonucleotides	Phase 2	NCT04335201
47.	Aviptadil	Vasoactive intestinal peptide receptor 1 (VPAC1); VPAC2	Peptide	Phase 2	NCT04311697
48.	APN01 (rhACE2)	SARS-CoV-2 spike (SARS-Cov-2 S)	Protein	Phase 2	NCT04309084
49.	SNG001 (inhaled interferon-β-1a)	Type I interferon (IFN) receptor	Protein	Phase 2	EUCTR2020-001023-14-GB
50.	PUL-042 Inhalation Solution	Toll-like receptor (TLR) 2 (TLR2); TLR6; TLR9	Peptide + DNA oligonucleotide	Phase 2	NCT04313023
51.	Ad5-nCoV	SARS-CoV-2 spike (SARS-Cov-2 S)	Viral vector	Phase 2	clinicaltrials.gov
52.	Deferoxamine	Iron	Small molecule	Phase 1/2	NCT04333550
53.	ruxolitinib	Janus kinase-1 (JAK-1); JAK-2	Small molecule	Phase 1/2	NCT04330586
54.	Meplazumab	CD147	Antibody	Phase 1/2	NCT04275245
55.	TJM2 (TJ003234)	antigranulocyte-macrophage colony-stimulating factor	Antibody	Phase 1/2	NCT04341116
56.	Mesenchymal stem cells (MSCs)	N/A	Cell therapy	Phase 1/2	NCT04288102
57.	NKG2D-ACE2 CAR-NK cells	SARS-CoV-2 spike; IL-15; GM-CSF; CSF2; NKG2D; KLRK1; CD314	Cell therapy	Phase 1/2	NCT04324996
58.	ChAdOx1 nCoV-19	SARS-CoV-2 spike (SARS-Cov-2 S)	Viral vector	Phase 1/2	NCT04324606
59.	LV-SMENP-DC + antigen-specific CTLs	SARS-CoV-2 spike; SARS-CoV-2 membrane; SARS-CoV-2 envelope; SARS-CoV-2 nucleocapsid; SARS-CoV-2 protease	Cellular vaccine	Phase 1/2	NCT04276896
60.	Vazegepant	Calcitonin gene-related peptide (CGRP) receptor	Small molecule	Phase 1	NCT04346615

Table 2: Selected drugs and biologics in development for the treatment and prevention of COVID-19 (Cont..)

S.N.	Compound	Target	Modality	Phase	Source
61.	Galidesivir	Viral RNA-dependent RNA polymerase	Small molecule	Phase 1	NCT03891420
62.	INO-4800	Undisclosed	DNA vaccine	Phase 1	NCT04283461
63.	mRNA-1273	SARS-CoV-2 spike (SARS-Cov-2 S)	RNA vaccine	Phase 1	NCT04283461
64.	Pathogen-specific aAPC	Undisclosed	Cellular vaccine	Phase 1	NCT04299724
65.	bacTRL-Spike	SARS-CoV-2 spike (SARS-Cov-2 S)	Cellular vaccine	Phase 1	NCT04334980
66.	baloxavir marboxil	polymerase acidic endonuclease inhibitor	Small molecule	Phase 0	ChiCTR2000029544
67.	azvudine	reverse transcriptase inhibitor	Small molecule	Phase 0	ChiCTR2000030487

The progress that is being watched the closest is the development of a COVID-19 vaccine. Creating a safe vaccine for a new illness is not easy, however, rapid progress is being made for several reasons, including China's efforts to sequence the genetic material of Sars-CoV-2 and to share that information with research groups around the world. Another factor contributing to the accelerated development is the fact that researchers were already aware of the coronaviruses. Both SARS and MERS were caused by coronaviruses, and even though vaccines were abandoned once those outbreaks were controlled, learnings are being applied to develop therapeutics for COVID-19. One of the most promising COVID-19 vaccines is mRNA-1273, being developed by Moderna Therapeutics, which is being investigated in a clinical trial [80]. If everything goes well with the trials, the company anticipates having an early version of the vaccine ready by fall 2020. The earliest versions of the vaccine would be made available to at-risk groups such as healthcare workers. Most of the therapeutic trials are currently ongoing and results are anticipated in the coming months, and we will continue to follow up on the results.

CONCLUSION

In response to the global COVID-19 pandemic, clinical trials investigating the efficacy and safety of various therapeutic strategies for the treatment and prevention of COVID-19 are emerging at an unprecedented rate. As of May 13, 2020, well over 1400 interventional clinical trials have been registered at the various clinical trial registries. Findings from several trials have given mixed results. Several trials are investigating promising therapies such as remdesivir, IL-6 inhibitors (tocilizumab and sarilumab), convalescent plasma therapy, stem-cell therapy, and vaccines. Given the rate at which trial data are emerging, there is an urgent need to track clinical trials to avoid duplication of efforts and understand what trials are being done and where. While there are no approved therapies for COVID-19, clinical trials should be well designed and adequately powered to generate evidence. The conduct of these trials must not suffer because of overburdened health services. Furthermore, the clinical trials will also have to overcome manufacturing and logistic challenges. In this article, trial data from ICTRP, ChiCTR database, and ClinicalTrials.gov website was collected and analyzed to provide researchers with an overall summary and insight of the current clinical trials for the prevention and treatment of COVID-19. Unfortunately, there is no silver bullet for solving this pandemic. Effective therapies to combat COVID-19 are urgently needed. Also, treatments that have been made available based on preliminary pieces of evidence will need to be refined over time.

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Conflict of interest: None

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