

## COMMENTARY

## Comprehensive overview of COVID-19 clinical trials

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## Abstract

Here, we present an overview of the clinical trials that are currently being conducted or have concluded to date on COVID-19 globally. A comprehensive search was conducted to present 16 trial registries from around the world. Collectively, there are 1,528 trials reported for COVID-19 to date. Out of them, 50 studies included paediatric age group from day 0 to less than or equal to 18 years of age. A few 18 studies involve only females and 20 only males. There are 2 trials currently underway in Bangladesh, 4 in Pakistan and 13 in India. Overall, 940 trials are related to medicines and/or interventions. They include standard of care for any viral illness, antivirals, anti-inflammatory and immune altering medications. Two out of 10 vaccine trials are novel vaccines. It is knowledgeable and resourceful to reach out to the concerned sponsor if a physician thinks his patient can benefit from the trials in the region.

**Keywords:** Coronavirus, 2019-nCoV, SARS-CoV-2, 2019nCoV, Clinical Trial, Asia.

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## Introduction

There are numerous speculations about diagnosis and treatment of the novel coronavirus detected in the end of 2019 (COVID-19) since Wuhan's whistleblowers informed the world about the current outbreak.<sup>1</sup> As members of the scientific community we need to inform our patients and communities with sound scientific information. Hence, we present here an overview of the clinical trials that are currently being conducted or have concluded to date on COVID-19 globally.

## Methods

To have an extensive search, 16 trial registries from around the world were included. These include Australian New Zealand Clinical Trials Registry (ANZCTR),<sup>2</sup> Chinese Clinical Trial Registry (ChiCTR),<sup>3</sup> ClinicalTrials.gov from

United States,<sup>4</sup> Clinical Trials Registry - India (CTRI),<sup>5</sup> European Union (EU) Clinical Trials Register,<sup>6</sup> DRKS - German Clinical Trials Register,<sup>7</sup> Iranian Registry of Clinical Trials,<sup>8</sup> International Standard Randomized Controlled Trial Number (ISRCTN)<sup>9</sup> registry by World Health Organization (WHO), International Clinical Trials Registry Platform (ICTRP) and the International Committee of Medical Journal Editors (ICMJE), Japan Primary Registries Network (JPRN),<sup>10</sup> Lebanese Clinical Trials Registry (LBCTR),<sup>11</sup> Netherlands Trial Registry (NTR),<sup>12</sup> Pan African Clinical Trial Registry (PACTR),<sup>13</sup> Brazilian Registry of Clinical Trials (ReBEC),<sup>14</sup> Peruvian Clinical Trials Registry (REPEC),<sup>15</sup> Cuban Public Registry of Clinical Trials (RPCEC),<sup>16</sup> and Thai Clinical Trials Registry (TCTR).<sup>17</sup> All these registries combine their data under the umbrella of WHO to ensure a single point of access and the documentation of trials.<sup>18</sup> We used it to extract all our findings. The data is dynamic and updated frequently. Hence, we report all findings as noted on April 27, 2020.<sup>18</sup> Trials not registered in these registries were excluded. All the trial registries were searched for specific key words, 'COVID-19' and 'SARS-CoV-2' and 'Severe acute respiratory syndrome coronavirus 2' and '2019-nCoV'.

## Results

## Demographics

Collectively there are 1,528 trials involving COVID-19 to date.<sup>18</sup> Fifty studies included paediatric age group from day 0 to less than or equal to 18 years of age. Two studies involved newborns up to 1 year of age currently underway in China, of which one is an interventional study testing moxibustion in preventing COVID-19 pneumonia. The other is an observational study about pneumonia due to COVID-19 in neonates.<sup>18</sup>

There are 18 studies involving only females.<sup>18</sup> Majority (n=14) are just observational and are related to pregnancy. A researcher from China is studying the impact of the novel virus on ovarian function as a basic science project.<sup>18</sup> A study about diagnostic testing such as detecting the virus in vaginal secretions is also currently underway in China.<sup>18</sup> Two studies are interventional: one related to postpartum depression and another about effects of a mobile meditation application on stress. There are 20 studies involving only males.<sup>18</sup> Most (n=14)

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**Table-1:** Details of trials planned for some Asian countries.<sup>18</sup>

Countries	Source Register	Scientific Title	Primary Sponsor	Study Type	Phase
Afghanistan; Bangladesh; Bhutan; India; Maldives; Pakistan; Sri Lanka	ISRCTN	The Impact of The COVID-19 Pandemic on The Provision, Practice, And Outcomes Of Vascular Surgery. An International Cohort Study (COVER)	University Hospitals Coventry and Warwickshire NHS Trust	Observational	N/A
Bangladesh	CTRI	Knowledge, Attitudes, And Fear Of COVID-19 During The Rapid Rise Period In Bangladesh	K M Amran Hossain	Observational	N/A
India	REPEC	Solidarity: An International Randomized Controlled Trial To Evaluate Non-Licensed Covid-19	OMS/OPS,	Interventional	N/A
India	Clinicaltrials.Gov	A Clinical Trial To Evaluate The Safety And Efficacy Of Mycobacterium W In Critically Ill Patients Suffering From COVID 19 Infection	Cadila Pharmaceuticals	Interventional	N/A
India	CTRI	Max COVID Study	Max Super Specialty Hospital A Unit Of Devi Foundation	Observational	N/A
India	CTRI	Open Labelled Randomised Controlled Trial To Study The Effect Of Chloroquine In Addition To Standard Therapy In COVID-19 Patients	Command Hospital Airforce	Interventional	N/A
India	CTRI	Outbreak Of Respiratory Tract Infection Score (ORTIS): Objective Screening For Children To Rule Out COVID-19 And Prevent Nosocomial Spread - ORTIS	DACH Jaipur	Observational	N/A
India	CTRI	Viral Infection And Respiratory Illness Universal Study: COVID-19 Registry And Validation Of C2D2 (Critical Care Data Dictionary)	Discovery The Critical Care Research Network	Observational	N/A
India	Clinicaltrials.Gov	Efficacy Of Convalescent Plasma Therapy In Severely Sick COVID-19 Patients: A Pilot Randomized Controlled Trial	Institute Of Liver And Biliary Sciences, India	Interventional	Phase 2
India	EU Clinical Trials Register	Preventing Pulmonary Complications In Surgical Patients At Risk Of COVID-19 - Covidsurgrct_V1.0_20200330	University Of Birmingham	Interventional	Phase 3
India	CTRI	Hydroxychloroquine, In Open Labelled, Randomised Intervention For Prevention Of New Infection And Adverse Outcomes Following COVID-19 Infection- A Tertiary Hospital Based Study - CORONA Study	Dr Remesh Bhasi	Interventional	Phase 3
India	CTRI	An Open Labelled Trial To Evaluate Safety And Efficacy Of SSV Formulation To Boost Immunity In Quarantine Patients Of COVID-19	SSV Phytopharmaceuticals	Interventional	Phase 3
India	Clinicaltrials.Gov	A Prospective, Longitudinal, Observational Study Of Healthcare Workers And The General Population To Watch For Flu-Like Symptoms In Suspicion Of COVID 19	Max Healthcare Institute Limited	Observational	N/A

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Countries	Source Register	Scientific Title	Primary Sponsor	Study Type	Phase
India	Clinicaltrials.Gov	The Spectrum And Profile Of COVID-19 Infection And Its Impact On Liver – The Pan Asia-Pacific Prospective Multi-Centre Observational Study (APCOLIS STUDY)	Institute Of Liver And Biliary Sciences, India	Observational	N/A
Pakistan	Clinicaltrials.Gov	Aspirin, Losartan And Simvastatin In Hospitalised COVID-19 Patients: A Multinational Randomised Open-Label Factorial Trial	London School Of Hygiene And Tropical Medicine	Interventional	Phase 3
Pakistan	Clinicaltrials.Gov	With Uncontroversial Honey And Nigella Sativa (WUHAN) Treatment For Novel Coronavirus Infection; Randomized, Controlled, Double Blind, Investigator Initiated Trial	Sheikh Zayed Federal Postgraduate Medical Institute	Interventional	Phase 3
Pakistan	Clinicaltrials.Gov	Effectiveness Of Hydroxychloroquine In Covid-19 Patients: A Single Centred Single-Blind RCT Study	Prof. Dr. Umar Farooq	Interventional	Phase 3

of which are observational while only one is a single validation study about COVID-19 RNA diagnostic kits among males happening in China. Remaining trials included both genders.

There are 2 trials in Bangladesh, 4 in Pakistan and 13 in India. Details of trials currently underway in some Asian countries are mentioned in Table-1.

## Treatment Trials

Scientists are studying treatment options from a vast array of new medications to household remedies noted in various cultures. Overall, 940 trials are related to medicines and/or interventions. The top treatment options currently being studied are considerable.<sup>18,19</sup> They include standard of care for any viral illness, antivirals, anti-inflammatory and immune altering medications. Direct-acting antiviral drugs, LPV/r (lopinivir-ritonavir), LPV/r plus direct-acting antiviral drugs, LPV/r plus interferon, LPV/r plus corticosteroids, favipiravir, remdesivir, umifenovir, umifenovir plus interferon, azithromycin, tocilizumab are the most tested immunosuppressive drugs.<sup>18,19</sup> Others include sarilumab, corticosteroids and hydroxychloroquine plus antivirals. A total of 157 trials include chloroquine phosphate and/or hydroxychloroquine sulphate,<sup>18</sup> used either alone or in combination with another medication. ClinicalTrials.gov reported that a Brazilian study was terminated at early stages due to high death rates associated with the adverse effects linked to higher doses of hydroxychloroquine and azithromycin required to treat the novel virus.<sup>20</sup>

Seven immunoglobulin and 41 inactivated convalescent plasma and some stem cell therapies are also being tested.<sup>18</sup> Psychological interventions are also being studied for adjacent therapy.

## Vaccine Trials

To date, 10 vaccine trials are underway.<sup>18</sup> Two are novel LV-SMENP-DC and Cuban vaccine CIGB 2020 (CIGB 2020).<sup>18</sup> Others are previously used vaccines that are being tested for their safety and efficacy on COVID19 prevention. These include Bacille Calmette-Guérin (BCG), adenovirus type 5, measles, mumps, and rubella (MMR).

Traditional Chinese Medicine is the most studied other than allopathic medicines. Twenty-eight are traditional, mostly Chinese such as Lianhua Qingwen Capsules.<sup>18</sup> Others are from Iran including medium-chain triglyceride intake and a mixture of Astragalus gossypinus plus food spice based on Ferula assa-foetida mixed in apple juice.

## Conclusion

This is an overview of the clinical trials underway to face this pandemic. It is knowledgeable and resourceful to reach out to the concerned sponsor if a physician thinks that his patient might benefit from the trials in the region.

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